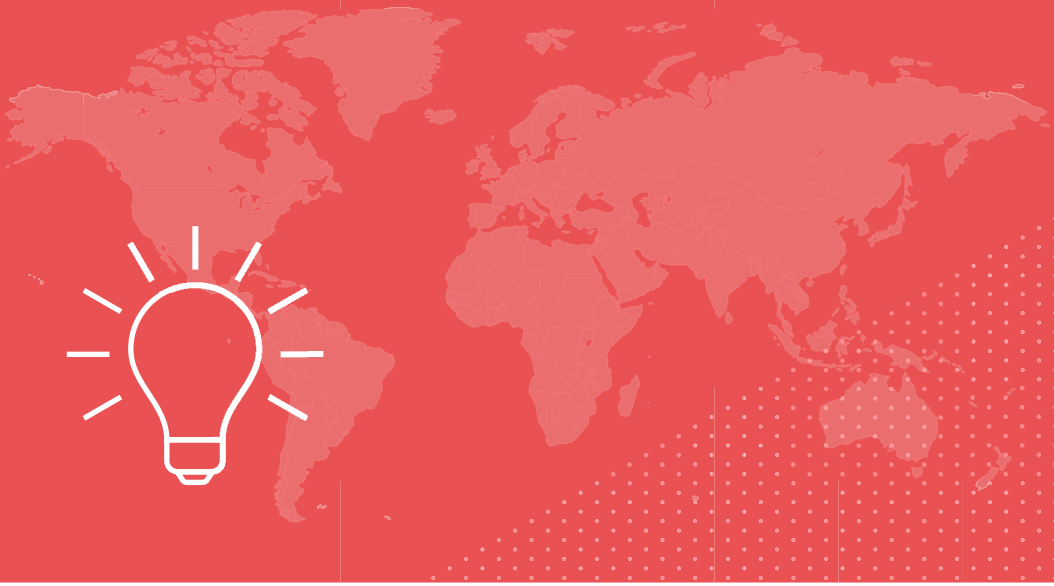
2021 edition

ENERGY ACCESS : PRESENTATION OF THE KNOW-HOW *MADE IN FRANCE*



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ADEME
AGENCY FOR ECOLOGICAL TRANSITION

ser French Renewable Energy trade association

This document is published by SER,
the French Renewable Energy Trade Association,
13-15 rue de la Baume, 75008 Paris, France
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155bis avenue Pierre Brossolette, 92240 Montrouge.

Graphic design : THINK UP®

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ADEME
AGENCY FOR ECOLOGICAL TRANSITION

Here at ADEME - the French Agency for Ecological Transition - we are firmly committed to fighting global warming and the depletion of our natural resources. On all fronts, we mobilise citizens, economic actors and territories, giving them the means to move towards a fairer, more harmonious, low carbon and resource-efficient society. Whatever the field - energy, air, circular economy, food, waste disposal, soils, etc. - we advise, facilitate and help finance many projects, from research to solutions sharing. At every level, our expertise and forecasting capacities serve to guide and inform public policies.

ADEME is a public agency under the joint authority of the Ministry for the Ecological Transition and the Ministry for Higher Education, Research and Innovation.

www.ademe.fr

ser French Renewable Energy trade association

The Syndicat des énergies renouvelables (French Renewable Energy Trade Association) was founded in 1993 and comprises, whether directly or indirectly, several thousand businesses, resource producers, manufacturers and installers, power plant developers and operators, and specialist professional organisations, representing the different sectors. Its members include world leading energy companies as well as local groups and stakeholders in the renewable energy sector, but above all it comprises a large number of SME's. Its mission is to increase renewable energy's share of the energy produced in France, and to promote the interests of the industrialists and professionals operating in the sector, in both the domestic and foreign markets. As a key contact for the public authorities and a proactive representative of the whole sector, the SER works with French, European and worldwide institutional bodies to help draft and implement renewable energy development programmes, and also serves as a catalyst in efforts to structure French export streams.

www.enr.fr

A WORD FROM THE CHAIRMAN OF SER, THE FRENCH RENEWABLE ENERGY TRADE ASSOCIATION

Jean-Louis Bal

Sustainable development goal n°7 aims to ensure access to affordable, reliable, sustainable and modern energy for all by 2030. Despite the progress made in recent years, 759 million people remain without electricity, while several hundred million have to depend on unreliable power supplies that prevent any kind of lasting economic development.

Although the global electrification rate did rise from 83% in 2010 to 90% in 2019, behind these figures lie significant geographical disparities. While Latin America and South-East Asia have achieved a rate of 98% electrification, in 2019, 570 million people living in Sub-Saharan Africa were still unable to access electricity.

Yet, the technological solutions already exist. The drastic reduction in renewable energy production costs, combined with the development of digitalisation, has opened up a whole raft of sustainable, affordable solutions for populations without access to electricity. Meanwhile, storage technologies have made enormous progress and the cost is following the same downward path as that of renewable energy.

Clean cooking is still a segment where our efforts need to increase tenfold. In 2019, about 2.6 billion people worldwide still had no access to sustainable, non-polluting cooking systems. Here too, innovative solutions are available, but they are thwarted by regulatory, organisational and cost-based obstacles.

French actors of the renewable sector, including administrative regions, NGOs and innovative businesses, have the wherewithal to meet these vast needs. France's offer – whether in terms of technologies (e.g. multi-purpose public lighting systems, pico, micro and mini-networks, renewable cooling, multifunction kiosks), new ways of financing and supporting economic development in electrified villages, or regional initiatives facilitating the emergence of a sector – deserve to be promoted and made more visible.

Therefore, in late 2018, ADEME and the SER launched a national Access to Energy task force, intended to structure the sector in France and optimise coordination between the different types of stakeholders, identify the primary obstacles preventing solutions from being implemented, and make an inventory of the French offer. This inventory serves as the foundation stone for an attempt to structure the sector, granting increased knowledge of our strengths, as well as showing where are the missing links that prevent us from meeting people's expectations.

This document, presenting the French offering in terms of access to energy, is the national task force's first contribution to a market brought to weigh over 8 billion USD in 2022, and which grow by nearly 30% p.a. from 2018 to 2020.

A WORD FROM THE CHIEF EXECUTIVE OFFICER OF ADEME, THE FRENCH AGENCY FOR ECOLOGICAL TRANSITION

Arnaud Leroy

One of UN's Sustainable Development Goals for 2030 is to ensure access to affordable, reliable, sustainable and modern energy for all. Yet, according to the latest "Tracking SDG 7 - the Energy Progress Report", today, with less than 10 years left to achieve this goal, 759 million people worldwide remain without electricity and around 2.6 billion people have no access to clean cooking systems. Access to energy is at the crossroads of the fight against poverty and global warming, as well as the improvement of living conditions and people's health. It is vital to find levers of action that will help to create a true dynamic for change and mobilise stakeholders to work together in a coordinated manner.

For nearly 30 years, ADEME and its partners have contributed to the implementation of access-to-energy solutions based on renewable energy, primarily in Africa. From providing support to public policies to strengthening local skills and funding innovative projects, ADEME has played a pioneering role in introducing lasting solutions that meet the needs in rural and peri-urban areas.

In areas such as these, it is often better to develop decentralised solutions that are most suited to the local geographical, social and economic conditions. This is why, in 2017 and 2019, we launched two calls for projects in partnership with the French Ministry for the Ecological Transition and the French Development Agency, respectively. These calls aimed at supporting the implementation of innovative, off-grid renewable energy solutions. The selected projects do not just involve technological innovations, but also promote new organisational frameworks and support technologies deployment through business models that should ensure their sustainability.

We also launched an initiative in partnership with the French Renewable Energy Trade Association to strengthen the joint mobilisation of French stakeholders engaged in the field of access to energy. France has many advantages when it comes to renewable energy, with several dynamic businesses, start-ups and NGOs that all have very precise knowledge of the needs and challenges of the areas most affected by access to energy issues.

Despite this, the French know-how needs to increase its visibility among international organisations and contractors. Thus, the aim of this brochure is to showcase solutions developed by French companies, NGOs, Regions and associations, with numerous examples of projects carried out abroad.

In short, the solutions are there: it's time to accelerate their deployment!

We wish you an insightful reading.

FOCUS ON THE 2019 ADEME AND AFD CALL FOR PROJECTS: INNOVATIVE SOLUTIONS FOR OFF-GRID ACCESS TO SUTAINABLE ENERGY (SolInAE)

In September 2019, the French Agency for Ecological Transition (ADEME) and the French Agency for Development (AFD) launched a call for projects aimed at developing «Innovative solutions for off-grid access to sustainable energy» (SolInAE) in Africa. This initiative follows a previous call for projects on the same topic launched in 2017 by ADEME and the French Ministry for the Ecological Transition, which was a great success. This second call built on the momentum created by the first one, since 80 project proposals were submitted by different companies and NGOs.

Among the 80 candidates for this call for projects, 10 were selected to develop their innovations, for a total budget of around 6 million euros and ADEME and AFD's contribution of 1.6. million euros. Project leaders will benefit from technical and financial support to implement technological solutions powered by solar energy, recover agricultural waste, try out new payment and governance methods adapted to local specificities, foster training etc... Capacity building is a priority, in order to guarantee long-lasting benefits for local populations. In order to boost rural development, innovations are needed for both domestic and productive energy uses and should thus allow the creation of income-generating activities for agricultural producers and micro-entrepreneurs. Project leaders rely on their local

For more information, please refer to the brochure that presents the selected projects, which is available following this link: https://librairie.ademe.fr/pays-emergents-et-en-developpement/3914-solutions-innovantes-pour-l-acces-a-l-energie-durable-hors-reseaux-solinae-9791029716485.html

knowledge to identify needs in terms of access to energy and involve their partners' expertise and skills to address them. Hence, they participate in a transfer of skills for the beneficiaries and in the dissemination of the French know-how internationally.

The selected projects implement solutions that concern:

- *Training*
- *Governance*
- *Agriculture*
- *Solar kits*
- *Nano and mini-grids*

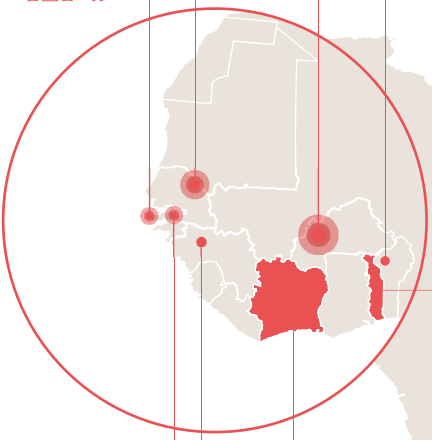
The projects supported by the call for projects SolInAE

Fawrou Remobe · EDM
Matam Region, Senegal

PCES · Sahelia Solar
Boucle du Mouhoun and Northen regions, Burkina Faso

CASASOL · INES
Bignona Department, Senegal

SESOLDEV · BISS
Natitingou and Toucountouna municipalities, Benin



Solergie Nano-Grids · Solergie
Togo

ELCE · Nanoé
Madagascar

Moon Kolda · Moon
Kolda Region, Senegal

Pro-Agrovalor · Nitidae
Ivory Coast

ACTEURS · Fondem
Kouramangui municipality, Guinea

Solagri Mada · CIDR Pamiga
Itasy, Bongolava and Boeny Regions, Madagascar

OBJECTIVE:
SHOWCASE THE FRENCH OFFER ABROAD

One of the objectives of the national Access to Energy task force initiated by ADEME and the SER was to contribute to the promotion of the French know-how concerning renewable energy access.

At the first national conference on Energy Access held in June 2018 and at the task force kick-off meeting that followed, the stakeholders identified four priority working areas: regulatory framework, cooperation between stakeholders, innovation and financing.

French stakeholders all felt that there was insufficient knowledge of the French know-how concerning the various energy access technologies, as well as the capacities and programmes implemented by NGOs or regions. This lack of visibility also concerns international decision-makers, energy ministers, bi- and multi-lateral financial institutions and local economic players (businesses, development agencies, etc.).

In order to catalyse multi-actor integrated offers, the first step is to conduct a comprehensive knowledge of Businesses', NGOs' and administrative regions' know-how and expertise.

The aim of this document is to give visibility to the current French offer, and to structure it according to needs, technologies and position in the value chain.

This inventory of the French know-how is intended to be a living, regularly updated document.

Index by technologies offered

	Page	Mini-grid	Pico/micro-grid	SHS - solar home systems	Pico solar light	Clean cooking	Storage	Pay As You Go solutions	Training platforms	Innovative means of production and agrivoltaics	Smart grids	Socially-oriented engineering, Technical assistance	Other
AGENCE DE DÉVELOPPEMENT ET D'INNOVATION DE LA NOUVELLE-AQUITAINE	14	●	●	●									
AKUO ENERGY	16	●	●				●			●			
ARTELIA	18	●	●	●	●		●		●	●	●	●	
BAOBAB+	20			●	●	●		●					
BENOO ÉNERGIES	22											●	
BEST ENERGIES	24		●		●	●				●			
CICLE	26	●	●	●	●	●	●	●	●	●	●	●	
CNIM	28												●
DÉPARTEMENT D'ILLE-ET-VILAINE	30											●	
ÉCOSUN INNOVATIONS	32	●		●									
EDF	34	●		●				●					●
ÉLECTRICIENS SANS FRONTIÈRES	36	●	●	●	●		●		●	●		●	●
ENGIE	38	●	●	●	●	●	●	●	●	●	●	●	
ENTECH	40	●	●				●				●		
ENTREPRENEURS DU MONDE	42		●		●			●		●			
EXPERTS-SOLIDAIRES	44	●		●		●	●		●			●	
FONDATION ÉNERGIES POUR LE MONDE	46	●	●	●									
GAIA IMPACT FUND	48	●	●	●	●	●		●	●	●	●		
GÉNÉRALE DU SOLAIRE	50	●					●			●			
GERES	52	●		●		●							●
GRET	54	●				●			●			●	
GUINARD ÉNERGIES	56	●	●							●			
HÉLIOSLITE	58	●					●			●	●		
HYDRO POWER PLANT (HPP)	60												●
INFINERGIA	62												
INNOVATION ÉNERGIE DÉVELOPPEMENT (IED)	64	●	●	●	●		●	●	●	●		●	
INSTITUT SMART GRIDS	66	●					●		●		●		
ISL INGÉNIERIE	68	●	●				●						●
LAGAZEL	70			●	●								
LE PARTENARIAT	72	●	●		●	●							
LEROUX & LOTZ TECHNOLOGIES	74												●

Index by technologies offered

	Page	Mini-grid	Pico/micro-grid	SHS - solar home systems	Pico solar light	Clean cooking	Storage	Pay As You Go solutions	Training platforms	Innovative means of production and agrivoltaics	Smart grids	Socially-oriented engineering, Technical assistance	Other
MASCARA RENEWABLE WATER	76	●											●
MOON	78			●				●					
MYJOULEBOX	80	●	●	●	●		●						
NANOÉ	82		●					●	●		●	●	
PAMIGA	84	●	●	●	●			●					
PÔLE MEDEE	86	●	●				●		●	●			
QOTTO	88			●			●	●					
RÉGION HAUTS-DE-FRANCE	90	●	●	●			●				●		
REYES GROUPE	92	●	●				●			●	●		
SABELLA	94									●	●		
SAGEMCOM ENERGY & TELECOM	96	●									●		●
SCALE	98	●					●		●		●	●	●
SCHNEIDER ELECTRIC	100	●	●	●	●			●	●		●	●	
SETEC ÉNERGIE ENVIRONNEMENT	102										●		
SOLTYS	104				●								
SUN'AGRI	106									●			
SUNKOFA ENERGY	108	●											
SUNNA DESIGN	110		●				●	●					
SUPERGRID INSTITUTE	112	●									●		
SYNERGIE SOLAIRE	114	●	●	●		●							
TOTAL EREN	116	●					●						
TOTALENERGIES	118			●	●			●					
TRYBA	120												●
UPOWA	122			●				●					
ZEMBO	124						●	●		●	●		

Index by needs met

	Page	Agriculture	Electricity	Water (pumping, treatment, desalination)	Street lighting	Multiservices (e.g.: solar kiosks, water kiosks)	Cooling	Cooking	Technical assistance	Microfinance	Other
AGENCE DE DÉVELOPPEMENT ET D'INNOVATION DE LA NOUVELLE-AQUITAINE	14			●	●	●					
AKUO ENERGY	16	●	●								
ARTELIA	18		●	●		●	●		●		
BAOBAB+	20		●				●	●			
BENOO ÉNERGIES	22			●		●	●		●	●	
BEST ENERGIES	24	●	●				●		●		
CICLE	26	●	●	●	●	●	●	●	●	●	
CNIM	28		●				●				●
DÉPARTEMENT D'ILLE-ET-VILAINE	30	●	●	●	●	●	●		●		
ÉCOSUN INNOVATIONS	32		●								
EDF	34	●	●	●							
ÉLECTRICIENS SANS FRONTIÈRES	36		●	●	●	●			●		
ENGIE	38	●	●	●	●	●		●	●	●	
ENTECH	40		●								
ENTREPRENEURS DU MONDE	42	●								●	
EXPERTS-SOLIDAIRES	44		●	●				●	●		
FONDATION ÉNERGIES POUR LE MONDE	46	●	●	●	●		●		●		
GAIA IMPACT FUND	48	●	●	●			●	●	●	●	
GÉNÉRALE DU SOLAIRE	50	●	●	●	●	●					
GERES	52		●								
GRET	54	●	●	●	●	●	●	●	●	●	
GUINARD ÉNERGIES	56		●								
HÉLIOSLITE	58	●	●	●							
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INFINERGIA	62		●	●	●	●					
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PAMIGA	84								●	●	
PÔLE MEDEE	86		●						●		
QOTTO	88		●			●	●				
RÉGION HAUTS-DE-FRANCE	90		●			●	●	●	●		
REYES GROUPE	92	●	●	●	●	●	●	●	●		
SABELLA	94		●								
SAGEMCOM ENERGY & TELECOM	96		●								
SCALE	98		●	●		●			●		●
SCHNEIDER ELECTRIC	100	●	●	●	●		●		●		
SETEC ÉNERGIE ENVIRONNEMENT	102		●								
SOLTYS	104		●			●					
SUN'AGRI	106	●	●								
SUNKOFA ENERGY	108	●	●		●				●		
SUNNA DESIGN	110		●		●						
SUPERGRID INSTITUTE	112		●						●		
SYNERGIE SOLAIRE	114	●	●	●	●	●	●	●			
TOTAL EREN	116		●			●					
TOTALENERGIES	118				●	●					
TRYBA	120		●								
UPOWA	122		●								
ZEMBO	124		●							●	

Innovation center

AGENCE DE DÉVELOPPEMENT ET D'INNOVATION DE LA NOUVELLE-AQUITAINE

Support profession

6 Allée du Doyen Georges Brus
33600 Pessac
France

+33 6 78 77 96 22

l.bonamy@adi-na.fr

https://energies-stockage.fr/a-35-actelier-acces-a-leenergie-hors-reseau-en-afrique.html

ADI Nouvelle-Aquitaine
Agence de Développement et d'Innovation

DESCRIPTION

Support of the regional offgrid sector: Analysis of the value chain, market targeting, organisation of events to bring together the players, distribution of calls for projects and market opportunities; Individual and collective support of companies and industries.

TECHNOLOGIES

SHS - solar home systems · Pico/micro grid · Mini grid · Solar kiosk · Public lighting / solar outdoor light

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Senegal · Burkina Faso · Madagascar

LEADING PROJECT ON ENERGY ACCESS

Group of companies and NGO witch have product, services, network, or budget to develop offgrid projects.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Workshop «Access to energy off-grid in Africa»
What opportunities for the actors of Nouvelle-Aquitaine?

This event – organized in 2019 in partnership with FONDEM and Région Nouvelle-Aquitaine – brought together a hundred of players from the NGO sector, companies, funders, elected officials, support structures to connect, inform and disseminate innovative solutions.

AKUO ENERGY

Projects development · Equipment manufacturer · Construction · Operation and maintenance · Storage

140 avenue des Champs-Élysées
75008 Paris
France

+33 6 35 15 89 14

gaymard@akuoenergy.com

www.akuoenergy.com

DESCRIPTION

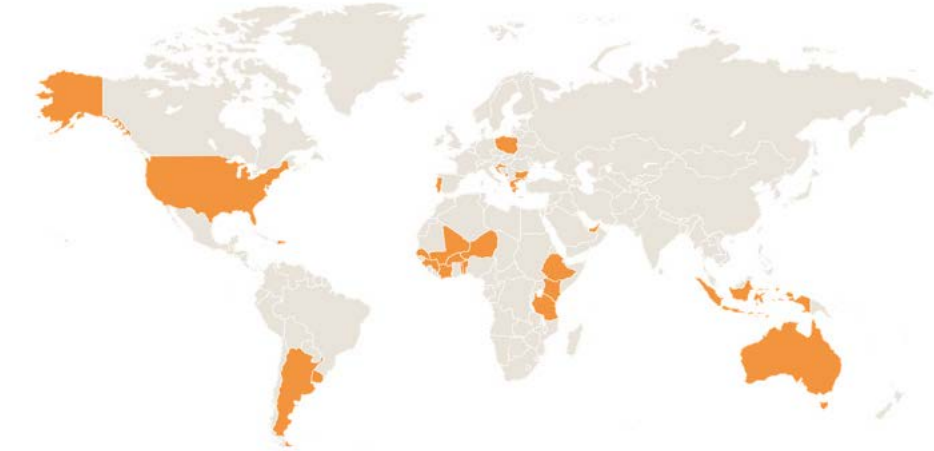
Akuo Energy is a leading independent French player in distributed and renewable energy. Founded in 2007 and controlled by its co-founders, the group develops its own assets, operates them as soon as they are commissioned and consolidates their revenues. As an integrated player, Akuo Energy is present throughout the entire value chain: development, financing, construction and operation of its projects. Akuo Energy is growing according to a strategy of geographical diversification, on a global scale, with subsidiaries in 18 countries, on which it bases its regional influence.

TECHNOLOGIES

Pico/micro grid · Mini grid

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Akuo subsidiaries: Portugal · Greece · Poland · Bulgaria · Indonesia · Australia · Uruguay · Argentina · United States · Dominican Republic · Croatia · Mali · Mauritius · Dubai · Montenegro
Priority of intervention: Senegal · Burkina Faso · Niger · Benin · Ivory Coast · Togo · Guinea · Ethiopia · Kenya · Tanzania



LEADING PROJECT ON ENERGY ACCESS

MCA-Indonesia : electrification of 3 isolated villages

Indonesia

The 400 households of Merabu, Long Beliu and Teluk Sumbang, 3 villages located on the island of Borneo and several hours away from the first large city, have now access to electricity in their homes. This crazy project, carried out by Millunium Challenge Account Indonesia, was brilliantly conducted by Akuo Energy's team. The project MCA-Indonesia is combining solar, storage and micro hydro and mobilizing more than thirty collaborators. It led to the creation of distribution mini-grids that are working 24/24, in complete autonomy, and are equipped with a pre-paid solution. For each villages, the human component was very important: a community management was established, local staff was trained, and villagers participated in the implementation of the project. At the end, this project represented a full-scale demonstration of Storage GEM® and Solar GEM® solutions, and a beautiful showcase of Akuo Energy's know how that could revolutionize the lives of the one billion people living away from the networks.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Henrietta · *Mauritius*

Located in Mauritius, Henrietta, a 17MW solar project, was one of three projects to win the government's latest call for tenders. Jointly developed by the Akuo Energy Indian Ocean teams and local real-estate leader Médine Ltd. teams, Henrietta will benefit from the industrial, administrative and regulatory expertise of its two shareholders.

Kita · *Mali*

With installed capacity of 50MW it is the biggest solar farm in west Africa. Initiated by the 'R20-Regions of Climate Action' NGO founded by Arnold Schwarzenegger, the project will meet the vital energy needs of a region suffering from significant electricity shortages, and will help the country begin the move towards energy independence that is vital to its development. The Kita project will also generate numerous social benefits, creating many local and sustainable jobs. As an integrated company, Akuo Energy is setting up a local subsidiary, employing only Malian teams, and will have control over the plant's full life cycle.

ARTELIA

Support profession · Storage

2 avenue Lacassagne
69425 Lyon Cedex 03
France

+33 4 37 65 56 00

enr@arteliagroup.com

www.arteliagroup.com

DESCRIPTION

ARTELIA Group has now 5,900 staff members, and a turnover of €632M in 2018 (Artelia and MOE combined), 37% of which coming from exports. The group specializes in nine business lines: Building, Water, Energy, Environment, Industry, Maritime, Multi-site Projects, Urban Development and Transportation. There are still many isolated regions in the world that cannot be served by existing networks. Giving access to electricity to the populations of these areas requires a thorough knowledge of the needs and resources available locally. Based on the experience acquired through its assignments related to rural development, Artelia offers a wide range of solutions for the installation of stand-alone power plants (based on renewable energies or hybrid systems) and micro-distribution networks, with and without storage system. ARTELIA thus proposes a comprehensive approach to energy access programmes.

TECHNOLOGIES

SHS - solar home systems · Pico/micro grid · Mini grid

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Africa · Middle East · Southeast Asia · Latin America

LEADING PROJECT ON ENERGY ACCESS

Hybrid Systems and Rural Electrification Project (PHARE)

Mali · 2019-2023

PHARE project consists in implementing hybrid solar/diesel systems in 60 villages in order to improve rural populations' access to basic energy services. The assignment, carried out in collaboration with our local partner CTEX-CEI, consists of the following: assistance with the studies realization, recruitment of the works companies, follow-up & control of the installation works and assistance with the realization of the 60 hybrid systems.

- Number. of power plants: 60
- Number of connected people: 156,000 / New customers: 22,000 / Total of customers: 26,000
- Total PV output: 3.6 MWp / Total diesel output: 4.5 MW
- Length of MV/LV lines: 100 km / 740 km

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

PHARE project (Hybrid Systems and Rural Electrification Project) · *Bamako (Mali) · 2019 to 2023*

Hybridization of MiniGrids with renewable energy sources · *Kenya · 2018 to 2022*

Technical assistance for the development of renewable energy projects · *Maputo (Mozambique) · 2018 to 2022*

Zagtouli solar photovoltaïc power plant 33 MWp · *Zagtouli (Burkina Faso) · 2017 to 2020*

Technical consultant for works supervision and control - rural electrification hybrid systems (SHER Project) · *Bamako (Mali) · 2017 to 2019*

Feasibilty study - Shinyanga solar PV power plant 150 MW · *Tanzania · 2018 to 2019*

Pre-feasibilty of a hybrid power plant on Gorée island · *Gorée island (Senegal) · 2018 to 2019*

Belep hybrid solar PV power plant with storage system · *Belep (France) · 2018*

Hybrid power plants and solar PV plants on MicroGrids · *Madagascar · 2016 to 2017*

Feasibilty studies for hybrid renewable energy projects (PV&Hydro) with storage system · *Nosy Be-Bevory (Madagascar)*

Realisation of a solar PV/Hydro/Diesel hybrid MiniGrid · *Kouramangui · Guinea · 2016*

Hybrid solar power plant 4.8 MWp with storage system 4 MWh *Remire Montjoly (Guyane Française) · 2011 to 2015*

Pre-feasibilty study for the electrification of Nosy Be island · *Nosy Be (Madagascar) · 2012 to 2014*

BAOBAB+

Development

1 rue de Gramont
75002 Paris
France

+33 1 85 73 19 00

contact@baobabplus.com

www.baobabplus.com

DESCRIPTION

Baobab+ is a social business committed to providing access to energy, digital and financial inclusion in Africa. We commercialize innovative products that meet the needs of local populations (Solar home systems and digital products with social impact content) with financing solutions like Pay-As-You-Go to make them accessible to all. Baobab+ is active in Senegal, Ivory Coast, Madagascar, Mali, Nigeria and the Democratic Republic of the Congo. In 5 years, Baobab+ has equipped over 220,000 households with solar energy and 90,000 with digital products.

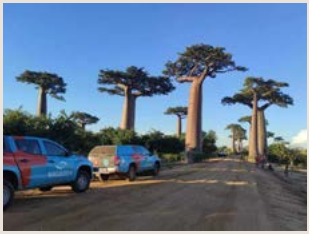
TECHNOLOGIES

Solar Home Systems (SHS) · Pico solar light · Clean cooking · Pay As You Go solutions

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Senegal · Mali · Madagascar · Ivory Coast · Nigeria · Democratic Republic of the Congo

LEADING PROJECT ON ENERGY ACCESS


© Baobab+

Dedicated sales force and microfinance network

In order to reach urban, peri-urban and rural areas, Baobab+ has implemented an innovative distribution model:

- A dedicated sales force to prospect in villages: people living in rural areas can benefit from a Pay-As-You-Go (PAYG) offer. Payments flexibility can adapt to their spending habits and revenues. It also allows remote control access of the product. After an initial deposit equivalent to 10% of the price of the product, the customer makes payments via mobile money according to its repayment capabilities to activate the product before becoming owner. Once owner of the kit, the customer becomes eligible for a digital loan (scoring analysis is based on its payment history of the solar product). The client will be able to upgrade the current kit by adding new equipment (television, fans, digital tablets...) for example.
- Microfinance network: thanks to a partnership with Baobab Group, their clients can benefit from our offers with dedicated lending products.»

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Access to energy as entry to financial inclusion

Pay-As-You-Go (PAYG) SHS not only provides access to a clean, safe and reliable energy, but can also be exploited as an entry point to much more! At first, we offer access to energy. Secondly, we offer access to financial inclusion. Together with Baobab Group we have developed a unique scoring analysis for their PAYG clients, based on their SHS reimbursement data. Once owners of their solar kit, they can access a digital loan with Baobab MFI. A pilot was conducted in Casamance (Senegal) and 150 loans were disbursed, this offer will extend in 2021. Clients can upgrade their existing SHS with additional devices (tablet, TV, fan...) or invest in their activities.

Access to energy also increases access to connectivity

This is why Baobab+, with the help of partners, select and add specific content on its digital tablets to address different needs such as education, business empowerment or health care.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BENOO ÉNERGIES

Development

47 rue Judaïque
33000 Bordeaux
France

+33 6 60 15 93 39

contact@xn--benoo-nergies-ghb.com

https://www.benoo-energies.com/

DESCRIPTION

Benoo Energies is a renewable energy access operator founded in 2015, with the aim of addressing productive energy needs of rural businesses in 'last mile' areas. Benoo has been created to address the funding issue of energy access. Its founders strive to develop, design, distribute and operate energy access solutions in off-grid rural areas that fit with local energy needs and capacity to pay, and anticipate the future growing energy demand in a sustainable way.

TECHNOLOGIES

Solar kiosks

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Burkina Faso · Togo

LEADING PROJECT ON ENERGY ACCESS

Entrepreneurs Renewable Energy Micro Producers (EMPER)

Location: Togo. French partner: ADEME. Local Partners: NGOs, Companies, Territories and Development ETD.

The EMPER project aims to promote productive access to energy in 10 rural off-grid villages of the Plateaux region by deploying self-sufficient standalone units equipped with solar production and storage systems, offering a point of sale and a set of business equipments (freezer, printer, TV) allowing productive and commercial activities. They are operated by rural entrepreneurs trained by Benoo and his local partner Entreprises, Territoires et Développement (ETD). The entrepreneurs are provided with digital tools for sales, supply management and business intelligence. Financial partners: ADEME (France).

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Fostering employment of young people and women through solar energy access in Sahel region · *Burkina Faso*

Benoo Energies operates as a technical partner in this programme is financed by the European Union and led by A2N, a local NGO. Firstly, it aims to foster the employability of young people and women, via vocational training tailored to local demand, and, secondly, to promote the creation of productive employment, by stimulating the development of micro and small businesses through solar energy access.

Promotion of rural entrepreneurship through solar energy access · *Togo*

The project is operated by ETD, with technical and financial support of Benoo Energies and Watt for Change Fund (Valorem). It aims at promoting an innovative 'energy entrepreneurship' model that fits with energy needs and capacity to pay in off-grid remote areas in Togo. For that purpose, a value-added service hub offering affordable and reliable energy services (fresh and frozen food, phone charging, copy) is being deployed in an off-grid area of the Plateaux region, run by a local entrepreneur trained and equipped with a mobile app serving as a point of sale to manage payments and supply.

BEST ENERGIES

Waste recovery · Development

36 rue Beaumarchais
93100 Montreuil-sous-Bois
France

+33 1 56 93 46 00

dg@best-energies.fr

www.best-energies.com

DESCRIPTION

With its experience of more than 25 years in the optimization of energy production and distribution facilities and reduction of the ecological impact, Best Energies develops systems for the recovery of agricultural or household waste destined for communities having little or no access to affordable energy. Best Energies has created Terravolt, to develop proven and standardized technological solutions, by ensuring their adaptation to the socio-economic conditions of these isolated, deprived or disadvantaged areas in a resolute short circuit circular economy approach. 2 processes based on pyrogazification are developed: Pack'n'Power and Valomm.

TECHNOLOGIES

Pico/micro grid

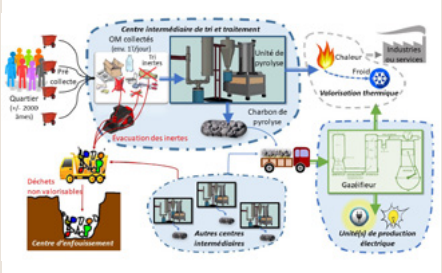
COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Madagascar · Togo · Morocco · Cameroon

LEADING PROJECT ON ENERGY ACCESS

VALOMM, Gestion des déchets ménagers

The management of municipal household waste in Africa is a subject of concern in more than one respect: With a very high growth rate of urbanization and the exodus of rural populations, the production of household waste is growing concomitantly, aggravated by notoriously inadequate infrastructure investments; With a garbage collection rate of less than 50%, wild dumps and unhealthy practices are commonplace; The health consequences are critical. WHO estimates that 80% of diseases in developing countries are related to unsanitary conditions (see «Preventing disease through a healthy environment»: WHO report; www.who.int/publications/).



Valomm is a treatment and recovery of municipal garbage unit, autonomous and decentralized (at the level of a district, a city or an industrial zone or commercial) so as to eliminate and valorize them, by producing char and Energy. It is a circular economy project. The benefits are sanitarian (reduction of unhealthiness), as well as environmental (reduction of pollution) as economic (endogenous energy production).

The solution is based on pyrolysis to reduce household waste, whether putrescible, solid or plastic. The char (pyrolysis coal) produced is then gasified to feed an electric generator. Innovation here consists of adapting and combining existing technologies to achieve standard, autonomous and repeatable units, close to waste production areas, reducing transport (only ultimate waste must be taken to controlled garbage dumps) and favoring a circular economy. Socially, the objectives are also to provide local employment opportunities, for garbage collecting and sorting activities before treatment, as well as easy operating and maintenance jobs thanks to the implementation of a simple and robust product. The capacity of the proposed system is 1 ton per day and corresponds to the production of a population of circa 2,000 inhabitants in disadvantaged urban areas.

In brief, Valomm is a local solution, close to waste production sites and has the following advantages:

- Collecting garbage is facilitated by the vicinity of the treatment unit that covers the needs of a neighborhood.
- Pre-collecting of waste is over short distances therefore simple and inexpensive (manual collection bins).
- Transport to final dump sites is reduced, only non-energetic (inert) waste has to be disposed of.
- Nearby employment is encouraged because of the work needed for collecting garbage and operating the equipment.
- The installation is simple and the size of premises limited.
- Operation and maintenance of the system can be done directly by local staff.
- Energy production allows public lighting and domestic electrification.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Projects in Madagascar and development in Togo and Cameroon

Non Governmental Organization (NGO)

CICLE

Support profession

22 Rue des Rasselins
75020 Paris
France

+33 6 74 55 06 40

contact@reseau-cicle.org

www.reseau-cicle.org

DESCRIPTION

The Cicle network is the pS-Eau program dealing with issues related to access to energy services, with reference to SDG7. It offers to all actors involved in international solidarity in the fields of energy and of the climate a space for dialogue and exchange. Its mission is to promote, facilitate and support their international cooperation actions. Energy is understood in a broad sense including cooking energy, heating, electricity, cold and productive energy. Capitalize on existing knowledge; Support project leaders and strengthen their capacities; Energize the dialogue between actors; Mobilize for international cooperation Climate-Energy.

TECHNOLOGIES

Mini grid · Pico/micro grid · Solar Home Systems (SHS) · Pico solar light · Clean cooking · Storage · Pay As You Go solutions · Training platforms · Innovative means of production and agrivoltaics · Smart grids · Socially-oriented engineering and technical assistance

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

World

LEADING PROJECT ON ENERGY ACCESS

The approximation of the three 1% (Water, Energy, Waste)

The Cicle network is responsible for the animation of the Energy component as part of the project to bring together the three 1%. A consortium associating three heads of sectoral networks: pS-Eau, AMORCE and CICLE, as well as five Regional Multi-Stakeholder Networks (RRMA) members of CIRRMA (RRMA network): BFC International, Centraider, Gescod, Lianes coopération, So-coopération, has been formed to build a program that aims to bring intersectoral coherence between the actors of essential services and the associated devices to carry out an integrated vision of the sector and mobilize CSOs and communities to carry out cooperation actions involving the three sectors. This program started on May 1, 2021.

Among the various tools at their disposal to implement their external actions, local and regional authorities can mobilise several specific measures in the basic services sector: 1% Water (since 2005), 1% Energy (since 2006) and 1% Waste (since 2014). While each of these devices has specific rules, they have a common philosophy: to create solidarity financing mechanisms between users of essential services by allowing French authorities to d vote up to 1% of the revenues related to the implementation of the service locally to international actions.

The overall objective of the project is to strengthen people's access to essential serviceslow-income countries through increased mobilization of CSOs and French communities and their partners via the ««Solidarity 1%»» and an integrated approach to essential services. To contribute to the achievement of this objective, it is proposed to:

- Build a consortium of CSOs to carry an integrated vision of essential services and a joint animation of the 1%.
- Strengthen the technical and methodological capacities of the actors of the decentralised cooperation carrying out integrated actions on essential services.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Thematic workshops on access to energy services

The Cicle network regularly organises thematic workshops on access to energy services. These workshops are a space for reflection and exchange aimed at transforming the experiences of committed actors into disseminatable knowledge.

Program:

- 11 May 2021: Mini-grids, a solution for rural electrification;
- 1 July 2021: Off-grid energy: Managing risks related to business models;
- 09 September 2021: Off-grid energy: Biomass valorization and cooking;
- October 2021: Off-grid energy: Management of productive uses;
- November 2021: Off-grid energy: Governance;
- 03 November: Water & Energy in the Nouvelle Aquitaine region;
- January 2022: Off-grid energy: Sustainability of projects;
- March 2022: Off-grid energy: Monitoring and evaluation.

CNIM E&E EPC

Development de projets · Construction

Immeuble le Viking
67 rue Anatole France
92300 Levallois-Perret
France

+33 1 44 31 11 00

contact@cnim.com

www.cnim.com

DESCRIPTION

CNIM is an international specialist in waste treatment and waste-to-energy solutions, providing its services to local authorities, public service contractors, and waste treatment operators. Its teams design, build and operate turnkey plants for the treatment of household waste and non-hazardous commercial and indu trial waste.

TECHNOLOGIES

Waste-to-Energy

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

World

LEADING PROJECT ON ENERGY ACCESS

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Reunion Island: a multi-channel facility

ILEVA, a group of 3 key intercommunities in La Reunion island, has given in August 2021 a notice to proceed to the CNIM-led consortium for the comprehensive performance-based contract for La Reunion Island's Pierrefonds South waste facility, a key project for the island's energy transition.

This multi-channel facility, which won the 1st ADEME invitation for projects on SRF (Solid Recovered Fuels), will promote the island's circular economy.

It will treat 60% of inhabitants' waste and generate renewable electricity for more than 10,000 homes. On a single site, the facility combines units for the anaerobic digestion of biowaste, sorting and processing of recyclable materials, refuse-derived fuel and energy recovery from those fuels. This project will contribute to transforming unavoidable waste into resources and reduce landfills by a factor of 10 by 2024.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

150th plant built by CNIM

In the Republic of Azerbaijan, CNIM has designed, built and operates, near Baku, the largest energy from waste recovery facility of the area. The plant, which takes its architectural inspiration from Azerbaijan mashrabiyas, can treat 500,000 tonnes of household waste and 10,000 tonnes of hospital waste per annum. It replaces a landfill, avoiding the emission of 500,000 tonnes of CO_2 per annum and protects the environment from pollution. The 231,500 MWh of electricity generated supply the equivalent of more than 50,000 households. Bottom ash are treated to recover and recycle the ferrous metals that they contain. The flue gases are treated to meet the strictest European and Azerbaijan standards relating to industrial emissions. Odours are neutralized during combustion and no aqueous waste is released to the environment. The plant is ISO 14001 certified. For construction, CNIM mobilized up to 900 people. The site employs 90 local staff.»

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Collectivity

DEPARTMENT OF ILLE-ET-VILAINE

Profession support

Mission coopération internationale
1 Avenue de la Préfecture
35000 Rennes
France

+33 6 59 54 50 89

sebastien.lefeuvre@ille-et-vilaine.fr

www.ille-et-vilaine.fr

Ille & Vilaine
LE DEPARTEMENT

DESCRIPTION

The Department of Ille-et-Vilaine (France) has been cooperating with the Region of Mopti (Mali) since 1984. In 2012, they decided to facilitate the development of renewable energies in the region of Mopti. With the help of the Ministry of Europe and Foreign Affairs, as well as the French Development Agency, the Ille-et-Vilaine Mopti cooperation allows the installation of 200 solar street lights, the solar electrification of schools, health centers, and hydraulic systems. These projects strengthen local skills, secure public places, and facilitate the economic and social development of rural areas. A Malian team based in Mopti, supported by the Energies pour le Monde Foundation, makes technical, administrative and financial circuits more reliable.

TECHNOLOGIES

Socially-oriented engineering, Technical assistance

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Mali (Region of Mopti) · Madagascar (Region Alaotra Mangoro) · Morrocco · Romania

LEADING PROJECT ON ENERGY ACCESS

TREZOR, Tranquility in rural areas

Mopti, Mali

This project aims to improve security in rural areas in the region of Mopti, affected by terrorist attacks and banditry. Ille-et-Vilaine Mopti cooperation, with technical support from the Energies pour le Monde Foundation and funding from the Ministry of Europe and Foreign Affairs, assessed 400 localities and 40 reservoirs that could benefit from solar equipment (networks electrics and public lighting).

20 municipalities have demonstrated their ability to mobilize the civilian population in defining needs, monitoring and sustaining projects. They were selected to be equipped with 20 solar street lights each. Each municipality has set up a committee to identify the installation sites, as well as an association for monitoring streetlights and opening a bank account for the management of local participations in the sustainability of the installations.

The Fonroche (France) and Synergie (Mali) companies were selected as part of a public contract to supply and install the solar street lights. The Ille-et-Vilaine Mopti cooperation regularly assesses the project, with the municipalities and associations, which are motivated to increase the number of lampposts.

During all stages of the project, AMADER (Malian Agency for the Development of Domestic Energy and Rural Electrification), AER (Renewable Energy Agency) and DRE (Regional Directorate of Mopti des Energies) were associated, and informed of progress. We were able to count on their support for customs and tax procedures.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

SOLSOMATI, Installation of two electricity networks with hybrid plants (solar / fuel oil), for the rural communes of Madiama and Somadougou · *Mali*

With the financial support of the French Development Agency, the Ille-et-Vilaine Departmental Council and the Energies pour le Monde Foundation, and the technical support of the Energies pour le Monde Foundation, the Mopti Region is electrifying two rural communities.
The Malian administrations are informed and associated with the project. Municipalities and civil society participate in the identification of needs and the layout of the network. The involvement of beneficiaries is systematically sought to facilitate ownership of the project, and respond as closely as possible to local needs while building a locally sustainable economic model.

ÉCOSUN INNOVATIONS

Equipment manufacturer

Zone Industrielle Ouest
68490 Hombourg
France

+33 3 89 820 820

contact@ecosuninnovations.com

www.ecosuninnovations.com

DESCRIPTION

Écosun Innovations is part of the group Écosun, specialized since 2008 in the production of electricity and the installation of conventional on-grid solar plants. Launched in 2015, the company Écosun Innovations develops, manufactures and sells a full range of innovative patented solar off-grid and mobile Plug & Play solutions dedicated to bring energy to off-grid remote areas and mobile operations. The aim of those solutions is to replace diesel gensets and to reduce carbon footprint. To date, more than 20 containerized solutions are in operation across the world (Africa, Europe, Latin America, Caribbean) for various applications.

TECHNOLOGIES

Innovative solar off-grid and mobile Plug-and-Play solutions

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Africa · South America · Asia

LEADING PROJECT ON ENERGY ACCESS

Fimela, Electrification of the Souimanga eco lodge

Senegal, 2018

The Souimanga eco lodge is located in Africa two hours and a half away from the south of Dakar in one of the most beautiful areas in Senegal, the Sine Saloum delta. In order to commit themselves to an ecological and environmental approach, the eco lodge has decided to order a photovoltaic solar power generator to reduce their carbon footprint: the Mobil-Watt® for ensuring their energy requirements. The Mobil-Watt® is a solar power generator in form of a shipping container 20 foots that comes pre-wired and pre-connected easily deployable in less than 2 hours with no civil engineering. The container is fitted with an insulated, air-conditioned control cell, helping to extend the lifespan of the unit's components. This is a rapid deployment solution, ideal for use in isolated areas or for ad hoc needs.
This solar power generator is connected to the SENELEC electricity grid and is also connected to a back-up power generator. The power of the solar power generator is 32 KWp, with annual production around 50.000 KWh. The solar power generator is connected to the public grid and to the existing genset and contributes from solar to about 80 % of the energy need of the lodge.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Algiers, Algeria: Delivery of a container Mobil-Watt® and Frame-Watt® to its partner SUNGY. These 2 units will be used as demos for the Algerian army as well as for Telecoms applications in Algeria.

Conakry Guinea: The second solar and storage container was supplied for the TOTAL filling station in Yattaya.

Vilankulo, Mozambique: The ROTARY Club has chosen the Mobil-Watt® for its first electrification project within the global ROTARY network. The solar installation with the Mobil-Watt® will provide electricity and lighting for both the training centre and the Majianza health centre.

Zambia: village electrification in Zambia: A village electrification project using the Mobil-Watt® "Charger" solar container, containing 100 batteries that can be dispatched directly to homes for direct use, without the need to create a grid or individual metering. The batteries can either be rented or purchased by inhabitants of the village and recharged at the container.

Martinique | Caribbean: Frame-Watt® to ensure the energy needed for a PET bottles recycling container. This product is easy to deploy on top of a 20-foot container. It was for this reason that Tri-Center made the decision to choose this patented system to power their recycling systems.

Other references: NATO, German army, mining projects in Chile...

EDF

Development · Financing · Construction · Operation and maintenance · Support profession · Storage

22/30 avenue de Wagram
75008 Paris
France

+33 1 40 42 22 22

contact@edf.fr

www.edf.fr

DESCRIPTION

The EDF Group has a historical and marked presence in Africa for more than 50 years, with 40 active projects on the continent, especially in the field of off-grid, renewable energy, energy services and new business. EDF employs 800 people through its African subsidiaries in 14 countries involving a wide range of projects to develop resources, including hydro, solar, wind, biomass, thermal and nuclear power. EDF has succeeded in electrifying more than 500,000 homes, with regular project continuity despite the health crisis.

TECHNOLOGIES

Mini-grid · Solar Home Systems (SHS) · Pay As You Go solutions · Pompes solaires

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

South Africa · Ivory Coast · Cameroon · Egypt · Gabon · Ghana · Kenya · Morroco · Ouganda · Togo · Senegal · Zambia

LEADING PROJECT ON ENERGY ACCESS

Off-Grid electricity

After 5 years since the launch of its Off-grid activity, EDF is offering solutions that are specifically adapted to populations with no access to the electrical grid (a solar kit connected to a battery that supplies low energy equipment) in countries such as Ivory Coast, Ghana, Togo, Senegal, South Africa and Kenya. To date, more than 1,200,000 people are powered by these systems. EDF is the Off-grid leader in Ivory Coast (20% of market shares), and in Togo nearly 50,000 households, or approximately 175,000 people, are equipped with these systems.

In addition, microgrid projects are being developed in Zambia with the Standard Microgrid Zambia company, where 11 microgrids are already serving nearly 7,000 people. The ambition for EDF is to reach 150 microgrids in the mid-term.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Hydropower: Nachtigal will provide 30% of Cameroon's energy consumption

Launched in February 2019, construction of the Nachtigal dam in Cameroon is progressing well despite the health crisis. This major 420 MW project will provide 30% of national energy consumption when it is commissioned in 2024.

Wind power

In South Africa, EDF is operating 3 wind farms at Grassridge (59.8 MW), Chaba (21 MW) and Waainek (23.3 MW) for a total power capacity of 111 MW. A new wind farm is being built in South Africa, at Wesley (34.5 MW). In Morocco, the upcoming Taza wind farm, which will be equipped with 27 wind turbines for a total capacity of 87 MW, will supply nearly 350,000 people in 2022 with renewable electricity.

Solar Power: Noor Midelt Power Plant, 800 MW · *Morocco*

Hybrid Technology: solar panels and energy storage (concentrated solar power). Expected commissioning: 2022.

Biomass: Biovéa Power Plant, 46 MW · *Ivory Coast*

Future largest Biomass power plant in West Africa, 100 km East of Abidjan. 1.7 million people will be supplied. Fuel: agriculture waste from local production. Expected commissioning in 2024.

Non Governmental Organization (NGO)

ÉLECTRICIENS SANS FRONTIÈRES

Development · Support profession · Storage

5 rue Jean Nicot
93691 Pantin Cedex
France

+33 1 84 21 10 40

contact@electriciens-sans-frontieres.org

www.electriciens-sans-frontieres.org

DESCRIPTION

Electriciens sans frontieres (Electricians without borders) is an international aid NGO which has impacted the lives of millions of people throughout its 30 years of experience in more than 50 countries. Targeting the most isolated and vulnerable, it improves their access to efficient, sustainable and clean energy and to safe water. Our 1200 volunteers work with partners from local NGOs to authorities, private sector to offer experience-based scalable solutions with the latest technologies, high-quality equipment, adapted to local needs, from emergency to development.

TECHNOLOGIES

Mini-grid · Pico/micro-grid · Solar Home Systems (SHS) · Pico solar light · Storage · Training Plateforms · Innovative means of production and agrivoltaics · Socially-oriented engineering, Technical assistance · Acces to energy in time of crisis or post natural catastrophies

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Argentina · Costa Rica · Dominica · Haïti · French Guyana · Saint-Martin · South Africa · Benin · Burkina Faso · Cameroon · Ivory Coast · Guinea Kenya · Madagascar · Niger · Nigeria · Democratic Republic of the Congo · Rwanda · Senegal · Togo · Lebanon · Armenia · Bangladesh · Laos Nepal

LEADING PROJECT ON ENERGY ACCESS

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Café Lumière

Madagascar et Bénin

The Café Lumière («Light Café») solution has been deployed in six villages of the Vakinankaratra Region in Madagascar. It is a multi-services energy platform, mainly powered by solar energy, allowing durable access to electricity for small rural communities which are not concerned by the national electrification plan. The platform allows the development of productive services (refrigerating food or drinks, grain milling, local craft etc.), comfort services (phone charging facility, lighting kits, computing) and public services (electrification of schools and health centers, street lighting). Hence, it contributes to foster economic growth, cover domestic needs but also improve the quality of community-level services through a tax on sales revenues covering their electrification. The Café Lumière pilot project is a public private partnership involving an NGO (Electriciens sans frontieres), the Malagasy agency for rural electrification (ADER), the municipalities of the areas of intervention, a local private operator (ANKA), and a research foundation (FERDI). This concept is currently replicated in Benin, in four villages located in the Atlantique department.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Light for the Rohingyas · *Bangladesh*

Distribution of solar lamps to households in the refugee camp and photovoltaic training for 40 apprentices. This project has been awarded in 2020 by the Zayed Sustainibility Prize.

Improved irrigation system · *Burkina Faso, Togo, Bénin*

Conceiving and deploying an innovative solution for solar pumping in rural areas, to strengthen the role of local actors in this sector and enhance the agricultural production of more than 100 small farmers.

Electrification of isolated villages in Phongsaly · *Laos*

Several solutions (hydro-electric facility, photovoltaics) for the electrification of 10 villages, to improve health, education, social and economic activities.

Solar power to improve resilience · *Dominique*

Installation of solar panels on the roof of health centers and community centers, damaged after Hurricane Maria, to reinforce energy resilience in Dominica. This project won in 2019 the UN Global Climate Action Award.

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ENGIE

Development · Construction · Operation and maintenance · Storage

1 Place Samuel de Champlain
92930 Courbevoie
France

+33 6 37 65 88 63

diane.domkam@engie.com

www.engie-energyaccess.com

DESCRIPTION

Engie Energy Access is a leading off-grid solar, Pay-As-You-Go (PAYGo) and mini-grid solutions provider in Africa, with a mission to deliver life-changing, affordable, reliable and sustainable energy solutions with exceptional customer experience. It is part of the Engie Group, a global energy leader, and is a result of the integration in 2020 of Fenix International, Engie Mobisol and Engie PowerCorner. With over 1,700 employees, operations in 9 African countries (Benin, Côte d'Ivoire, Kenya, Mozambique, Nigeria, Rwanda, Tanzania, Uganda and Zambia), over 1 million customers and 6 million lives transformed so far, Engie Energy Access is striving to impact 20 million lives by 2025.

TECHNOLOGIES

Mini grid · Pico/micro grid · Solar Home Systems (SHS) · Pico solar light · Clean cooking · Storage · Pay As You Go solutions · Training platforms · Innovative means of production and agrivoltaics · Smart grids · Socially-oriented engineering and technical assistance

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Tanzania · Zambia · Uganda · Ivory Coast · Benin · Nigeria · Kenya · Mozambique · Rwanda

LEADING PROJECT ON ENERGY ACCESS

Mini-grid

Engie Energy Access is a mini-grid developer and operator that provides electricity to off-grid rural businesses, public services, households and facilitates access to energy efficient appliances (mills, industrial tools, etc.) via lease-to-own model. Engie's capacity ranges between a few kWp and several hundred kWp, stored in batteries. Already active in 4 African countries: Tanzania, Zambia, Benin and Uganda, benefitting thousands of customers, Engie aims to continue expanding its activities in sub-Saharan Africa with the ambition to develop thousands of mini-grids in the coming years and becoming the leading mini-grid developer in Africa.

In Zambia, Engie commissioned its first Smart Solar Mini-grid project in February 2019 in Chitandika Village Chipata, Eastern Province of Zambia. With the help of key stakeholders (Communities, authorities and regulation bodies) and other strategic alliances, the site operations started with success and positively impacted the lives of the people of Chitandika Village. The mini-grid has a generation capacity of 28kWp and 162 households have been connected, including a school, rural health center, 5 big productive usage businesses, 7 medium range machines and 29 Electric Pressure Cookers. The innovation behind the technology is such that it combines solar energy, mobile money, pre-paid smart meters, modular design, efficient appliances and social engagement to offer a compelling service to its customers. Engie has powered Chiziye Secondary School, which is a Day Secondary school in Chitandika village and has supplied on lease-to-own basis, 15 Computers and a computer software that enables students and teachers to access online applications even when not connected to the internet.

Engie has encouraged productive end-users and enterprises to acquire energy efficient powered machinery to reduce on cost that comes from energy usage.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

We deliver life-changing clean energy to more than 1 million people in 9 African countries (Benin, Côte d'Ivoire, Kenya, Mozambique, Nigeria, Rwanda, Tanzania, Uganda and Zambia). Uganda, where we have had a long-standing presence since 2009, is currently impacting 2 million lives. Benin and Mozambique, our youngest markets, which were started up in 2019 are already serving more than 180,000 customers. Our mini-grids are serving 13 villages, with 3,200 connections, including households and businesses/community infrastructures. We have 3 mini-grids currently under construction in Nigeria, Benin and Uganda.

ENTECH

Development · Operation and maintenance · Storage

11 allée Jean-François de la Pérouse
ZA de Menez Prat
29000 Quimper
France

+33 2 98 94 44 48

contat@entech-se.com

entech-se.com

DESCRIPTION

Founded in 2016, Entech specializes in the production, storage and conversion of electrical energy in France and aborad. Entech's storage solutions enable the massive integration of renewable energies and access to energy. The company is working on the profound transformation of a centralized electricity grid, carbon and / or nuclear, towards smart, decentralized networks based on renewable energies. Entech develops, builds and commissions facilities such as: Mass production of high capacity storage systems; Installation of medium and high power photovoltaic power plants; Prototyping of complex conversion chains.

TECHNOLOGIES

Mini-grid · Picro/micro-grid · Storage · Smart grids

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Europe · Africa · South America

LEADING PROJECT ON ENERGY ACCESS

A hybrid power plant

Mali

Mali is marked by the country's vulnerability to climate change and strong pressure on natural resources which threatens the ecosystem and the living conditions of the populations who depend on it. As such, the country has set up «sustainable development objectives» and a «National Energy Policy». In addition, the rate of access to electricity in rural areas in Mali in 2019 was just 17%.

Thus, as part of the support for the electrification of rural municipalities, Entech intervened to install a hybrid power plant in the municipality of Sanando in the Segou region. The project aims to maximize the sustainable impact of electrification, the use of renewable / hybrid energies, a cost-effective production price and a favorable tariff for customers.

Some figures of the project:

- 500 kWh of battery storage
- 120 kWp solar field
- 60 kVA of generator set
- 12 km of distribution network

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Design, integration and installation of the largest hybrid system in Haiti

Pilot project for an NGO of a hybrid system in Sierra Leone

Design, integration and installation of solar equipment with conversion and storage by batteries on the site of the PASTEUR center in Yaoundé, Cameroon

Supply and installation of an energy storage and conversion system and also an integrated Electric Vehicle charging station in Senegal

Design and production of a complete microgrid system (storage, conversion, management and control) on the Engie platform within the REIDS demonstrator in Singapore.

Non Governmental Organization (NGO)

ENTREPRENEURS DU MONDE

Development

4 Allée du Textile
69120 Vaulx-en-Velin
France

+33 4 37 24 76 50

contact@entrepreneursdumonde.org

www.entrepreneursdumonde.org

DESCRIPTION

Entrepreneurs du Monde has been developing energy access programs since 2010. Entrepreneurs du Monde's energy access programs aim to improve access to energy in developing countries by providing clean, modern and affordable energy technologies (cooking and lighting equipment) to the poorest. The NGO works as an incubator for social enterprises that distribute LPG cooking stoves, improved biomass stoves, solar lights and solar home systems.

TECHNOLOGIES

SHS - solar home systems · Pico/micro grid

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Haiti · Burkina Faso · Togo · Philippines · Cambodia

LEADING PROJECT ON ENERGY ACCESS

Nafa Naana

Burkina Faso

Nafa Naana – which means «the benefit has arrived» in the local Dioula language – aims to make clean and economical cooking and lighting equipment accessible to Burkinabe populations in fuel poverty. Nafa Naana is involved in three areas: the creation of distribution channels in the form of social micro franchising; the implementation of financial services at all levels of the production and distribution chain; and the promotion of equipment among the population. From 2010 to the end of 2017, with the technical and financial support of Entrepreneurs du Monde, Nafa Naana distributed more than 56,930 energy-efficient equipment, including 26,000 improved stoves, 18,000 gas stoves and more than 12,000 solar lighting equipment. In terms of impacts, this represents, over the lifetime of the equipment broadcast, 114,476 tonnes of wood saved, 198,264 tonnes of CO2 equivalent avoided, CFAF 8.2 billion in savings and more than 107 million hours of lighting generated. As a result, 45,544 direct beneficiaries have seen their living conditions improved thanks to the use of this equipment.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Entrepreneurs du Monde has been operating access to energy programs since 2010. Entrepreneurs du Monde's access to energy programs aim to mitigate energy poverty in developing countries by making clean, modern and affordable energy technologies (cooking and lighting equipments) available to the poorest. The NGO operates as an incubator for social businesses which distribute LPG stoves, improved biomass stoves, solar-powered lights and solar-home-systems. With the 5 social enterprises we are incubating, more than 28,000 off-grid energy appliances – solar lamps, solar kits, LPGstoves and improved biomass stoves - were sold through 320 resellers in 5 countries in 2016. Overall, more than 90,000 off-grid energy products have been made available to an estimated 70,000 households since Entrepreneurs du Monde pioneered its energy microfranchising methodology in 2010.

Non Governmental Organization (NGO)

EXPERTS SOLIDAIRES

Development

2196 boulevard de la Lironde
Parc Scientifique Agropolis II
34980 Montferrier-sur-Lez
France

+33 6 43 56 39 94

nlivache@experts-solidaires.org

www.experts-solidaires.org

DESCRIPTION

With its network of experts, Experts-Solidaires technically supports development projects in the fields of energy, water, sanitation, food safety and waste management. The association was born from the aknowledment that access to expertise is an essential parameter for the development of the least industrialized countries. The members have committed themselves to putting their professional skills and expertise at the service of international solidarity initiatives. Experts-Solidaires creates lasting partnerships for each project which it accompanies until reaching the final result.

TECHNOLOGIES

Mini-grid · Clean cooking · Storage · SHS - solar home systems · Training platforms · Socially-oriented engineering and technical assistance

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Benin · Burkina Faso · Cameroon · Indonesia · Morocco · Madagascar · Palestine · Senegal · Togo

LEADING PROJECT ON ENERGY ACCESS

Village Energy Network (VEN)

The VEN is a space located in the center of a village which combines both economical and social development objectives, and that allows progressive growth of energy access for local populations at a apropriate cost regarding their income. Its objective is to develop employment as much as social well-being through the development of services, training and entertainment.

The VEN was created to fit into small villages, from 1,000 to 3,000 inhabitants, with assembled housing and pre-identified economic potential. The development of a VEN is accompanied by a systematic training of local actors, economical and social actors, businesses, decision-makers, who are likely to find a way to valorize thethe production ofelectricity in their activities.

The implementation of a VEN implies the development of one or two local economic sectors, identified and supported by an improvement in practices related better access to electricity. For example:

- Where rice production is important, the VEN will promote the development of electric hullers;
- Where woodworking is important, the VEN will encourage the use of electric saws;
- In fishing grounds, the VEN can start by installing an ice factory.

As for the social aspects, the VEN will have the effect of developing access to basic electrical services such as lighting, telephone charging or even office works (computer, scanner, printer). These new services will have a beneficial impacton education (lighting for homework), communication (internet access, facilitated email exchanges), entertainment (television, radio), etc. In all of these figure cases, the VEN will have to facilitate access to equipments (mill, planers, computer, etc.) for the populations, initially through demonstration and secondly through sales, in correlation with credit systems.

Construction, implementation and management are the responsibility of theoperating partner, also an investor in the system in regards of predefined financial terms. The pricing methods must comply with the rules in force in the country and ensure the financing of operations and of the capital. It can be considered that the subsidy contribution does not need to be amortized.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Ampasindava, Madagascar : Rural electrification of the village of Ampasindava, village mini-grid with 100 subscribers

Marosely, Madagascar : Rural electrification of the village of Marosely, village mini-grid of 450 subscribers.

Mangaoka, Madagascar : Setting up of the VED in Mangaoka, 10 electrified businesses in rural area

Zaffé, Bénin : Electrified training center and promotion of improved stoves in Zaffé for 500 households

© José Nicolas

Non Governmental Organization (NGO)

FONDATION ÉNERGIES POUR LE MONDE

Development

146 rue de l'Université
75007 Paris
France

+33 1 44 18 73 41

energiespourlemonde@
energies-renouvelables.org

www.fondem.ong

ÉNERGIES POUR LE MONDE

DESCRIPTION

Fondation Énergies pour le Monde (Fondem) has been promoting and developing access to electricity through renewable energies for nearly 30 years in order to improve the living conditions and income of rural populations. It concentrates most of its action where the needs are greatest, in rural areas in sub-Saharan Africa. It leads the setting up of projects, the search for financing, the coordination and/or the follow-up of the various activities in close cooperation with the local stakeholders of the projects. It has carried out 73 projects in 28 countries to this day, benefiting more than one million people who now have sustainable access to electricity services.

TECHNOLOGIES

SHS - solar home systems · Pico/micro grid · Mini grid
Solar-powered public lighting · Solar-powered pumping

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Today, the priority countries of intervention of Fondem are the French-speaking countries of sub-Saharan Africa:
Mali · Senegal · Guinea · Burkina Faso · Madagascar · Uganda · Cameroon

LEADING PROJECT ON ENERGY ACCESS

Resouth-Boréale in Madagascar

The Resouth-Boréale programs, launched in 2008 and finished in 2016, represent an ambitious challenge: electrifying two, and then simultaneously, seven localities in rural areas in the Androy and Anosy regions of southern Madagascar. In a first phase, 2 localities were electrified, one by 2 wind turbines of 6 kW and the second by 78 solar kits. In the second phase, 7 solar power plants and associated mini-grids were installed. These two successive operations were closely carried out with the Ministry of Energy, the Malagasy Rural Electrification Development Agency and regional and local stakeholders. The scale of the project required effective coordination between its different phases and partners, which Fondem was able to provide. The environmental, economic and social impact of the actions carried out is considerable: 25,000 people have seen their living conditions improved. The impact of electrification in the 9 localities was immediately felt: the daily life of households has improved and the cost of cell phone recharging, lighting and radio has decreased. Public lighting allows new activities to be carried out after dark. Finally, electrification has fostered the emergence of some fifty local entrepreneurs.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

PAMÉLA project in Madagascar and Senegal

Launched in 2016, the PAMÉLA project aims to strengthen the local economies of Senegalese and Malagasy regions where Fondem has already worked in the past by supporting income-generating activities through electrification using renewable energies. The PAMÉLA program has led to the redaction of a methodological guide that can be replicated in other regions.

PEHGUI project in Guinea

Conceived from 2015, PEHGUI is a pilot project. It helps reduce poverty for more than 3,000 people in the Labé region who directly benefit from access to clean and reliable energy. The first part of the project has enabled the locality of Kouramangui to be electrified by three mini-grids made up of hybrid solar/diesel power plants. The second part was based on the study of an electrification program for about ten other localities as well as on the training of the staff of the Guinean Rural Electrification Agency (AGER).

TREZOR project in Mali

Fondem has been asked by the decentralized cooperation services of the Departmental Board of Ille-et-Vilaine to provide its expertise in the implementation of TREZOR, a public lighting program in 10 rural localities in the Mopti region in Mali.

GAIA IMPACT FUND

Financing

20 rue Monsieur le Prince
75006 Paris
France

+33 6 80 60 74 31

contact@gaia-impactfund.com

www.gaia-impactfund.com

DESCRIPTION

Gaia Impact Fund is a French impact fund initiated by a team of seasoned entrepreneurs and philanthropists active in the renewable energy sector. Its goal is to support innovative & sustainable energy access ventures where energy is needed the most: among populations living off the grid in Sub-Saharan Africa et South East Asia. Gaia Impact Fund finances and supports the growth of start-ups and SMEs which have a positive social, environmental and economic impact on their territory. Selection and monitoring methodologies seek to promote the deployment of sustainable energy access solutions at an optimised & competitive cost. Gaia pushes for bottom-up market approaches bringing a deep and structured understanding of the local populations' needs.

TECHNOLOGIES

Mini-grid · Pico/micro grid · SHS - Individual solar systems · Pico solar light · Clean cooking · Pay As You Go solutions · Innovative means of production and agrivoltaics · Smart grids

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Sub-Saharan Africa and South East Asia

LEADING PROJECT ON ENERGY ACCESS

Enabling access to clean energy thanks to affordable solar home systems purposed for people living off the national grid in Cameroon

Headquarters: Cameroon, Grenoble (France) · Year of creation: 2014
Co-investors: Persistent Energy Capital, Aviva Impact Investing France

Context and energy challenge: According to the World Bank, no more than 57% of the Cameroonian population had access to energy in 2014. Although the potential resources of natural gas, hydropower and other renewable energies (solar, biomass, wind) are important, the energy sector in Cameroon is characterized by insufficient supply. In addition to being a basic resource, energy access is also a catalyst for counter-poverty initiatives. This makes energy access in Cameroon a social but also environmental issue.

Solution: In 2014, two French entrepreneurs based in Grenoble made the bet to render solar energy affordable to rural off-grid households in Cameroon. Based on a pay-as-you-go payment system, the Franco-Cameroonian start-up provides robust solar solutions at a very affordable cost. Thanks to its partnership with Orange money, upOwa uses mobile money to distribute its products in a lease-to-own manner across the country. The startup is now one of the main players in the distribution of solar kits in Cameroon. This investment further strengthened Gaia Impact Fund's strategic positioning in French-speaking Africa and signals its desire to support the growth of efficient energy access in a region with tremendous needs.

SHS solutions have several social environmental and economic benefits. On average users, brightness in households using an SHS has more than tripled. The purchase of an SHS, comes to replace energy sources often more costly regarding both time and money. Prior to owning an SHS, people would travel long distances to charge their phone. This purchase not only saved users money and time to individuals, it also turned some shops and homes into references point in terms of phone charging in their neighborhood. The installation of solar kits allows many homes to save money over the life of the system. Electricity has also allowed shop owners to work on a longer duration every day. The majority of upOwa customers reported an increase in their revenues, especially those that remained open later since the purchase of the kit. Solar kits also have a positive impact on the environment as they replace polluting and dangerous solutions such as kerosene.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Manufacturing and distribution of solar home systems purposed to people living off the national grid in Senegal, Mali and Burkina Faso

Headquarters : Dakar, Sénégal · Year of creation : 2015 · Co-investors: Persistent Energy Capital, Y Combinator...

Oolu's core mission is to replace dirty and expensive lighting solutions with sustainable energy alternatives for the 150 million people living without electricity in West Africa. Oolu was launched in Senegal in 2015, and has sold over 34,000 solar home systems (SHS) in less than three years to rural customers across Senegal, Mali, and Burkina Faso. As one of the fastest-growing SHS distributors in West Africa, and with over 130 full-time employees, Oolu is consistently able to adapt its customer offering to local market dynamics. Oolu's team is one of the most experienced in West African solar. From a monthly payment, paid by a mobile payment system, Oolu installs «pay-as-you-go» solar kits to power lights, various household devices such as phone chargers, radios, fans and televisions. Oolu offers its users a more reliable, less dangerous and more environmentally friendly energy access solution (unlike candles and kerosene) while sparing its customers the need to walk long distances only to charge their phones.

GÉNÉRALE DU SOLAIRE

Développement de projets · Financeurs · Construction · Exploitation et maintenance

50 rue Étienne Marcel
75002 Paris
France

+33 1 72 71 59 01

contact@gdsolaire.com

www.gdsolaire.com

DESCRIPTION

The Générale du Solaire Group is a French leading independent power producer, with more than 10 years' experience in the development, design, financing and operation of solar power plants. Générale du Solaire was founded in 2008 by Daniel Bour, its owner and chairman. The Group is operates in Europe, Africa, Middle East and Asia with local subsidiaries and experienced team in each area of presence. Our expertise in the solar PV field allow us to cover all types of projects (utility scale, commercial & industrial, mini-grids & rural electrification), making the most of various technologies (on/off-grid, storage & hybrid systems, innovative project).

TECHNOLOGIES

Mini grid · Storage · Innovative means of production and agrivoltaics

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Benin · Togo · Ivory Coast · Senegal · Zambia · Cameroon
Our company is also present in Lebanon and Sri Lanka as in Europe (France · Italia · Switzerland · Benelux · UK).

LEADING PROJECT ON ENERGY ACCESS

Solar with storage mini-grids

Benin

The company is developing solar mini-grids with storage all over Benin, for a project combining access to a clean and competitive energy in rural areas. Our project's vocation goes beyond energy access by promoting local economic development, through productive electrical services. We provide a sustainable technological solution designed to address the challenges in remote sites. The project is developed in partnership with ARESS (African Renewable Energy Systems & Solutions) and Blue Solutions.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Mini-grid projects in Bénin, Togo and Zambia

Non Governmental Organization (NGO)

GERES

Development

2 cours Foch
13400 Aubagne
France

+33 4 42 18 55 88

contact@geres.eu

www.geres.eu

DESCRIPTION

Set up in 1976, Geres is an international development NGO which works to improve the living conditions of the poorest and tackle climate change and its impacts. As a grassroots actor, the energy transition is a major lever in all its actions. In order to drive societal change, Geres promotes the development and dissemination of innovative and local solutions, supports climate-energy policies and actions and encourages everyone to commit to Climate Solidarity by taking action and supporting vulnerable populations.

TECHNOLOGIES

Mini-grid · SHS - Individual solar systems · Clean cooking · Others: efficient cookers, solar greenhouses

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Africa · Asia · France

LEADING PROJECT ON ENERGY ACCESS


© Geres

Green Business area (GBA)

West Africa

In West Africa, Geres has chosen to facilitate access to energy for small and medium enterprises (SMEs) located in villages with little or no access to electricity. Geres has developed the green business area (GBA) concept. It is based on four pillars:

- The construction of professional bioclimatic buildings designed for SMEs;
- The installation of a quality renewable energy source that is continuously available to all;
- The provision of support for entrepreneurship;
- An access to finance for the SMEs.

This project has been developed in Mali since 2015 in Konséguéla, and 2019 in Koury. Satisfied with the dynamics created by the first GBAs, Geres is now working on the replication of this type of project in Mali and in West Africa. Geres has started to increase the number of GBAs and accelerated the deployment of this solution through two main axes:

- The development of GBAs projects carried out by Geres, while ensuring the long-term sustainability of the infrastructures;
- Supporting partners in deploying GBAs in their area while ensuring that the main principles are respected.

Geres is also working on setting up a social enterprise to manage GBAs, which is a crucial organisation to ensure the sustainability of infrastructures financed from public funds and managed by a private operator. One of the challenges in developing such an enterprise is the need to find acceptable solutions for mobilising public and private investment.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

- In West Africa, Geres is developing the green business areas concept, which provides quality energy to SMEs in order to free their development from energy constraints.
- In Myanmar, Geres supports rural women entrepreneurs and trains them to market energy-efficient products (e-cooking, stoves, SHS, etc.). The objective of this project is to set up a network of competent women entrepreneurs and a sustainable business organisation.
- In Morocco, Geres is working with manufacturers of gas ovens to bring to market locally produced energy-efficient models that reduce gas consumption by 30-50%.


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Non Governmental Organization (NGO)

GRET

Development

Cité du développement durable
Campus du jardin d'agronomie tropicale
45bis avenue de la Belle Gabrielle
94736 Nogent-sur-Marne Cedex
France

+33 1 70 91 92 20

gret@gret.org

www.gret.org

DESCRIPTION

Founded in 1976, GRET is an international development NGO which acts from work on the ground all the way up influencing policy, with the aim of providing durable and innovative answers to the challenges of poverty and inequalities. Its professionals provide lasting, innovative solutions for fair development in the field and work to positively influence policy.

TECHNOLOGIES

Mini-grid · Cooking · Training platform · Pico/micro-grid · Social engineering and technical assistance

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Mauritania · Madagascar · Senegal · Mali · Burkina Faso · Myanmar

LEADING PROJECT ON ENERGY ACCESS

Rhyvière, mini-hydropowerplants

Madagascar

The Rhyvière programme set up by GRET has electrified 13 communes thanks to 4 mini-hydropower-plants in Madagascar with a capacity of 50 to 500 kW. GRET supports the private operator in setting up the service, supports the development of small and medium-scale business activities and has put in place environmental measures to protect the watershed.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

As global energy consumption increases, fossil energy resources become scarcer and the climate changes, more than 1 billion people lack access to electricity and 3 billion still depend on wood energy for cooking. Access to energy is, however, one of the conditions for economic and social development. For GRET, the energy transition requires a sustainable improvement in the access of people in energy insecurity to reliable, affordable and environmentally friendly energy. Since the 1990s, GRET has been working to improve access to energy for the most disadvantaged by integrating it into the public policies of the countries in which it operates. It provides long-term support for technical, organisational and financial innovation through the design and implementation of sustainable energy solutions for economic and social development. GRET promotes the implementation of balanced governance mechanisms that take into account the rights and obligations of each party (national institutions, local authorities, social enterprises, private operators, users, etc.), a necessary condition for ensuring the quality of the service and the sustainability of the resource. It favours renewable energies in a territorial and concerted approach, as close as possible to the needs, resources and constraints of the actors. GRET capitalizes on and shares its experiences, in a collective learning process, to help achieve the Sustainable Development Objectives. GRET supports the various stakeholders in the territory in the exercise of their responsibilities. It mobilizes a variety of skills: R&D, market research, technico-economic studies, support for the implementation of governance mechanisms for resources, infrastructure and services, project management and project management assistance, support for entrepreneurship, development of economic activities and sectors...

GUINARD ÉNERGIES

Development · Equipment manufacturer

38 rue Jim Sevellec
29200 Brest
France

+33 9 84 45 71 87

contact@guinard-energies.com

www.guinard-energies.com

DESCRIPTION

Guinard Energies develops autonomous power grid hybridizing its patented technology of kinetic turbines dedicated to estuaries, rivers or very low head streams (3 kW, 20 kW, 250 kW) to other renewable energy sources such as photovoltaic or wind turbine. Guinard Energies offers complete support in the development of off-grid or grid-connected projects, from the socio-economic study of demand and the valorization of existing supply chains, the evaluation of the potential of currents, the commissioning of the production system and the training of the future grid operator.

TECHNOLOGIES

Mini-grid · Pico/micro grid

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

France · Madagascar · Cameroon · French Guyana · United Kingdom · Democratic Republic of Congo

LEADING PROJECT ON ENERGY ACCESS

ERHYGE, innovative solution for off-grid energy access

Madagascar

Winner of the call for project, « Innovative solutions for access to off-grid energy » Guinard Energies and its partners Gret (operational implementation) and SM3E (local grid operator) teamed up to put together a project in 2 phases.

Phase A: A demo in Ambatolaona (Madagascar) A live demo of a hybrid production system including a P66 hydrokinetic turbine system and a 4-kWp photovoltaic set, the project Rural Electrification by Hydrokinetic turbine Guinard Energies (ERHYGE) benefited directly to 50 households, 5 companies and all of the local public services, including the communal school of Amboarakely. In a logic of local consultation and community-involvement, the inhabitants have taken the project as their own, building the shelter for the electrical equipment. The students of the master's degree in renewable energies of Ankatso University (Antananarivo) have been put to contribution as well, they helped a great deal during the installation of the distribution grid.

Phase B: Study on the hydrokinetic potential of the Island Further studies have been conducted to evaluate the electrical potential and the socioeconomical conditions of more than 80 villages from the far east coast to the great South. Guinard energies and Gret have then established a first cartography of potential hydroelectrical sites... Waiting for this new power source to be installed...

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Megawattbue Project
France, april 2019

First power grid system hybridizing a P154 tidal turbine (20 kW) and a photovoltaïc set (6 kWp) with storage connected to the french national grid.

Restauration of Pen Castel tidal mill
France, april 2018

Installation of a P66 marine turbine in the old filling conduct to supply a nano grid (self-consumption).

Electrification of the CNRS Canopy Study Center
French Guyana, november 2019

Replacement of the CNRS French Guyana generator sets with a Guinard energies hybrid set

HELIOSLITE

Equipment manufacturer

27 allée du lac d'Aiguebelette
73370 Le Bourget du Lac
France

info@helioslite.com

https://helioslite.com/

DESCRIPTION

HeliosLite provides higher performance and patented photovoltaic trackers to reduce the cost of energy and to open new market applications (isolated sites, self-consumption, hybrid genset, industrial zones, steep slopes...). Scalable, easy to install and movable, more than 300 units of HeliosLite's 1.5 axis tracker have been deployed in France, the United Arab Emirates, South Africa, and Morocco.

TECHNOLOGIES

Solar tracker for photovoltaic energy production for ground mounted installations from 20 kWp to several MWp

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

HeliosLite works with project developers – IPPs, EPC companies, distributors, and engineering consults worldwide.
France · United Arab Emirates · South Africa · Morocco

LEADING PROJECT ON ENERGY ACCESS

Supply of trackers for Enerwhere

United Arab Emirates

Thanks to an extended power production curve, HeliosLite's 1.5 axis tracker improves the global performance of a photovoltaic plant. The IPP Enerwhere (UAE) selected the 1.5 axis tracker with bifacial modules for an off-grid, hybrid diesel – PV plant under an industrial PPA.

Results = 30% more energy annually (versus a East-West structure) with 2 fold decrease in seasonal variation.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

- **Off-grid for industry and tourism**
  United Arab Emirates
- **Self-consumption for industry and tourism**
  France
- **self-consumption for industry and agriculture**
  South Africa

HYDRO POWER PLANT (HPP)

Equipment manufacturer

2 allée de Longchamp
54500 Vandoeuvre-Les-Nancy
France

+33 3 83 28 52 19

hpp@hydropowerplant.com

https://hydropowerplant.com/

DESCRIPTION

Hydro Power Plant (HPP) is a leading French manufacturer and supplier for hydro turbines and hydromechanical equipment for small to medium hydro power plants. As part of its long history of more than 100 years, HPP designs, manufactures, installs, and commissions turbines of 5 kW to 15 MW per unit. As a recognized player in small hydro, HPP works for local independant electricity producers, national electricity companies, non-profit organizations, European commission, development agency (Bank for African Development for example). HPP designs, manufactures and assembles its turbines (Pelton, Francis, Kaplan, crossflow, hydrodynamic screws), and hydromechanical equipment (stop logs, flap gates, trash rack cleaners, gates etc.) in France.

TECHNOLOGIES

Hydropower turbines

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Africa (Democratic Republic of Congo · South Africa · Madagascar · Cameroon · Guinea, Kenya · Ouganda · Nigeria · Rwanda · Comoros Islands) · Europe (France · Belgium · Ireland · Turkey · Italy · Portugal · Switzerland · Spain) · Asia (The Philippines · India · Sri Lanka · Afghanistan) · South America (Ecuador · Chili · Columbia) · North America (Canada) · Middle East · South Pacific (New Caledonia · Tahiti)

LEADING PROJECT ON ENERGY ACCESS

Hydroelectric project (project 1224)

East of Democratic Republic of the Congo

Design, manufacturing, installation and commissioning of two Pelton turbines of 8 MW. Turnkey project.

HPP is trying to ease the access to energy in very remote area, especially in Africa. This project is an optimized hydro turbine for rural electrification, it provides reliable, guaranteed, stable electricity source via a renewable energy source with possibilities of storage capacity.

This type of project brings electricity and thus enables significant contribution to the development of local communities (in terms of infrastructures, education, social life, safety etc.). The life expectancy of the asset is more than 50 years (long-term investment) with very low operating and maintenance costs. It can benefit various generations and can be easily upgraded. The life expectancy of an hydro power plant can be limitless, providing an optimised operating and maintenance plan and specific equipment refurbishment when necessary.

HPP has designed, manufactured and pre-assembled in France the electromechanical equipment. The hydro power plant has been built by local teams. They have supported HPP for the installation and commissioning of all the equipment in the hydro power plant.»

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Project 1504 : hydro power plant
Madagascar, Haute Mahatsiatra region

Design, manufacturing, installation, and commissioning of a 400 kW Francis turbine, in isolated grid to supply a rural community in a remote area.

Project 1562 : hydro power plant
Madagascar, Sofia region

Design, manufacturing, installation, and commissioning of a 635 kW Francis turbine, in isolated grid to supply a rural community in a remote area.

Project 1439 : hydro power plant
East of the Democratic Republic of Congo

Design, manufacturing, installation, and commissioning of a 1,400 kW Pelton turbine (Horizontal axis, 2 jets), in an isolated grid in a remote area, to supply electricity to a rural community and to local industries in a remote area.

INFINERGIA CONSULTING

Development

17 rue de la Frise
38000 Grenoble
France

+33 4 76 96 00 68

contact@infinergia.com

www.infinergia.com

DESCRIPTION

Infinergia is a B2B consulting company specialized in clean energy markets and technologies. We provide strategy consulting, market research, marketing consulting and business development services. We have been working on off-grid markets for 10 years on technological aspects (PV, battery, hydrogen...), and end-markets (rural electrification, C&I, emergency...). We help innovators (Technology manufacturers, system integrator...) to find their market and decision-makers (NGO, development banks, governments) to make the right choices for the solutions they finance.

TECHNOLOGIES

SHS - solar home systems · Pico/micro grid · Mini grid · Solar kiosk · Public lighting / solar outdoor light · Commercial and industrial facilities

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Global coverage

LEADING PROJECT ON ENERGY ACCESS

Market report on mini-grids for rural electrification in Africa and Asia

We released a market report on mini-grids for rural electrification in Africa and Asia covering the main actors along the value chain, analyzing the existing and planned projects in 30 different countries, and analyzing the regulatory and political framework in those countries.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

- **Support of a battery manufacturer in quantifying the off-grid market for its applications. Identification of commercial leads**
- **Benchmark of containerized mini-grid solutions**
- **Analysis of the Energy Management System (EMS) market for hybrid plants**

INNOVATION ÉNERGIE DÉVELOPPEMENT (IED)

Development · Financing · Construction · Operation and maintenance · Support profession · Consulting & Strategy · Training · Software publishing

2 chemin de la Chauderaie
69340 Francheville (Métropole de Lyon)
France

+33 4 72 59 13 20

ied@ied-sa.fr

www.ied-sa.fr

DESCRIPTION

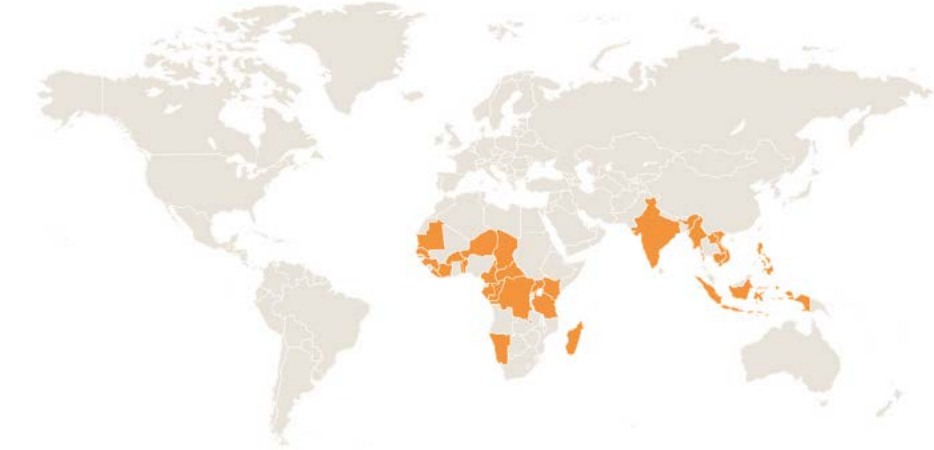
IED - Innovation Energy Development - is a company engaged in international cooperation since 1988, specializing in renewable energy projects (photovoltaic, biomass and hydroelectricity) in Africa and Asia. Inspired by sustainable development, IED carries out with international funding, electrical and socio-economic engineering studies, advises public decision-makers, designs and supervises construction of production, transport and distribution infrastructures, and support energy players.

TECHNOLOGIES

SHS - solar home systems · Pico/micro grid · Mini grid · Public lighting / solar outdoor light · Production PV / Mini hydro / Biomass

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Africa (Benin · Burkina Faso · Cameroon · Central African Republic · Chad · Comoros · Congo-Brazza · Democratic Republic of Congo · Gabon · Guinea · Ivory Coast · Kenya · Liberia · Madagascar · Mauritania · Namibia · Niger · Senegal · Tanzania · Togo · Uganda) · Asia (Burma · Cambodia · India · Indonesia · Laos · Philippines · Vietnam)



LEADING PROJECT ON ENERGY ACCESS

Decentralized electricity generation units by biomass gasification technology

Cambodia

The project consisted to supply two isolated mini-grids in Cambodia by electricity production from gasifier plants using rice husk, residues surrounding plantations and wood, as well as strengthen associated distribution networks.

IED group finances and operates the gasification system via its subsidiary in Cambodia, mobilizing funds through equity, loans and grants (French Fund for the Global Environment and UNIDO). IED sells all of its electricity production to Rural Electrification Companies, but at a better price for their customers and with an improved quality supply. The IED group is carrying out on this project:

- Financial engineering and institutional/legal arrangements;
- Concept design, consulting and contract settlement with providers;
- Construction, installation, testing and commissioning of power plants, Electrical work;
- Training and implementation of the teams;
- Operations management and monitoring of the decentralized power generation units.

Power plants currently operating on the Sraem (800 kW) and Charchuk (210 kW) sites have already created more than 50 sustainable jobs, and are helping to achieve nearly 3,000 tonnes of CO2 savings per year. This project promotes income-generating activities by producing more than 50 tonnes of charcoal briquettes per month sold for economical cooking of foodstuffs. IED group is currently developing the transfer of these biomass gasification technologies in Benin and Ivory Coast.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

- **Engineering studies:** Solar power plants from 100kWc to 42 MWc (Burkina Faso, Cameroon, Comoros, DRC, Ivory Coast, Niger) - Interconnexion of supra-national HV Grids (Cameroon), extension of MV/LV grids (Benin) - Hydroelectric power plants from 0,5 to 2MW (Cameroon) - Social intermediation, implementation of energy productive uses (Benin, Cameroon, Kenya, Senegal)
- **Energy strategy consultancy:** Energy development plan until 2040 (Cambodia) - 2020-2040 national master plan for production, transport and distribution (Gabon) - National geospatial electrification plan (Namibia) - National Electrification Strategy (Uganda)
- **Development and building of infrastructures:** Hydroelectric power plant (1MW) built and operated by IED (Cameroun) - Site supervision for dozens of localities : solar hybridization of thermic plants on mini-grids (Ivory Coast, Niger), construction of MV/LV grids and connection on national grid (Congo), rehabilitation of MV/LV grids and public lighting in main cities (Central African Republic)
- **Energy professionals support:** technical assistance to private operators for green mini-grids facilities (Kenya) - Due diligence for green energies projects and financing files setting up support for Sunref program facilities (Cameroon) - R&D and selling of engineering design software, capacity building courses for professionals (Benin, Cameroon, Guinea, Madagascar and Senegal)

Association

INSTITUT SMART GRIDS

Training · Innovation · Project achievements in France and abroad

288 rue Duguesclin
69003 Lyon
France

+33 6 71 57 22 04

contact@institutsmartgrids.com

www.institutsmartgrids.com

DESCRIPTION

Smart grids combine digital and energy technologies to support the energy transition (renewable energies, sustainable mobility, energy efficiency,) and territories' economic development, by offering new solutions and services to communities and citizens. Founded in the spring of 2018 in the Auvergne-Rhône-Alpes Region, the Smart Grids Institute gathers smart grid key players to maintain our regional leadership. Our association brings together more than 25 entities, companies & smart grids experts, start-ups & manufacturers, research specialists, and academics, around the 6 founders: Enedis, RTE, UGA, Académie de Grenoble, Université de Lyon, and CEA. Smart Grid Institute's main goals are to develop Smart Grids projects in 3 areas: academic education and professional trainings, innovation and projects, industrial development in France and abroad.

TECHNOLOGIES

Smart Grids: digitalized energy networks, renewable energies, energy efficiency, sustainable mobility, new energy services

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Europe · Africa · Asia

LEADING PROJECT ON ENERGY ACCESS

Africit-e Project

Burkina Faso

Africit-e Project is smart grids demonstrator in Burkina Faso, coordinated by Smart Grid Institute with 3 partners: Odit-e, SmartSide & GridPocket, beginning in March 2020. The project consists in rolling out smart meters, with advanced software to make remote data collect, grid modelling, providing grid operation anticipation and energy sharing between clients as well as reducing power shortages. This project is already followed by Agence Française de Développement (AFD), Association of Power Utility of Africa (APUA) and several african countries.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

- **Smart grids training courses for universities, private company experts, and international utilities**
- **Training tours for international decision makers**

ISL INGÉNIERIE

Développement de projets · Construction · Exploitation et maintenance · Profession support · Stockage

75 boulevard Mac Donald
75019 Paris
France

+33 1 55 26 99 99

info@isl.fr

www.isl.fr

DESCRIPTION

As a major player in our market, we bring to our clients engineering services for energy and environment projects. With over 30 years of experience in the development and design of Renewable energies from a few hundred kilowatts to several hundred megawatts, our experts provide comprehensive services in planning, feasibility studies, design and project management to all players in the energy sector.

TECHNOLOGIES

Mini-grid · Pico/micro-grid · Storage · Hybridization

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Africa · Asia · Europe · Oceania

LEADING PROJECT ON ENERGY ACCESS

Solar-hydro hybridization

Ivory Coast, Mali, Burkina Faso

For the World Bank ISL Ingénierie conducted a study on solar-hydro hybridization concept in West African countries with a focus on 5 existing hydropower plants (HPP) – Manatantali and Selingué in Mali, Kossou and Taabo in Ivory Coast and Bagré in Burkina Faso. The Solar-hydro hybridization concept aims at enhancing both solar and hydropower production on existing reservoirs. The concept combines new floating solar cells with an existing HPP and its reservoir. The hydropower plant is used to compensate the solar variability, at the minute, daily and yearly scale. The solar production is smoothed before injection in order to remove / decrease the pressure on the dispatch to stabilize the grid. Under certain conditions, the addition of solar can even help optimizing the water use and increase the hydropower generation – or allow new uses of the water. A prefeasibility study has been performed on each dam to estimate the maximum solar power that could be installed without any drawbacks on existing powerplant and electrical grid.

- Development of a hybridization tool for existing dams;
- Assess the maximal PV capacity that can be 100% hybridized for each existing HPP;
- Floating/ground solar power production computation;
- Compute the gain on hydropower production due to hybridization;
- Assess land availability;
- Grid capacity analysis;
- Environmental and Social impacts assessment;
- Cost estimate of solar farm and adaptation of existing HPP and E&S impacts.

LAGAZEL

Equipment manufacturer

Route de Rivas
42330 Saint-Galmier
France

+33 4 27 64 30 51

contact@lagazel.com

www.lagazel.com

DESCRIPTION

Lagazel is the first company to manufacture solar lamps and kits in Africa in order to bring high-quality local solutions to the 650 millions of African people who live with no access to electricity. With two production workshops in Burkina Faso and in Benin, we offer resistant and reliable products for energy access while contributing to economic development and job creation within the areas in which we operate. Also, we stand by consumers and project-leading organisations by proposing proximity services to ensure the durability of our equipments : installation, after-sales service, maintenance...

TECHNOLOGIES

Systèmes solaires individuels · Pico lanterne et kit solaire

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Burkina Faso · Benin · Mali · Senegal · Togo · Niger · France

LEADING PROJECT ON ENERGY ACCESS

Innovative economic model for solar lamps manufacturing

The key innovation in Lagazel's activities mostly corresponds to its manufacturing model. Products are concieved with French high-quality components, and then produced in Africa by a trained staff. More than 70,000 solar lamps have been manufactured in our first facility in Dédougou, Burkina Faso, since 2016 by a local team of 15 people, and distributed within the subregion. In 2021, a second facility saw the light of day in Porto-Novo, Benin, and some recent projects have been delivered in the country. Lagazel also offers subcontracting manufacturing services for other players from the industry sector. This innovative economic model contributes to job creation and local economic development while also reducing the value chain's carbon footprint. Within 5 years, we aim for the implementation of 5 production workshops and the sales of more than a million solar equipments in Africa.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

School of Kierma · *Burkina Faso, december 2018*

Outfitting of the school of Kierma in Burkina Faso with 8 collective charging stations and 310 solar lamps in order to allow pupils to walk back home and to do their homework after the daylight has faded, in collaboration with Electriciens sans frontières.

Women's groups · *Burundi, december 2019*

Provision of 120 collective charging stations managed by various women's groups in 5 provinces in Burundi within the framework of a UNPD (United Nations) project: implementation of a subscription system to disseminate the 6,000 solar lamps to the households.

Schools of the town of Aneho · *Togo, january 2021*

Outfitting of 10 schools of the town of Aneho, Togo, with 40 collective charging stations and 1,600 solar lamps, associated with awareness campaigns about waste management, in collaboration with the association Moi Jeu Tri.

Non Governmental Organization (NGO)

LE PARTENARIAT

Cooperating projects development

71 rue Victor Renard
59000 Lille
France

+33 3 20 53 76 76

contact@lepartenariat.org

http://lepartenariat.org

DESCRIPTION

Le Partenariat is an international NGO based in the North of France whose purpose is to carry out development cooperation projects and to foster international solidarity. The organization has developed an expertise in the implementation of development cooperation projects. The organization has four main working axes: strengthening of local governance; provision of basic services such as education, health, water, sanitation or hygiene; vocational training & professional insertion and sustainable development and environmental issues. For the latter, le Partenariat has started developing projects on the promotion of renewable energies with a specific focus on biogas & solar energy.

TECHNOLOGIES

Mini grid

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Senegal · Guinea · Morocco · France

LEADING PROJECT ON ENERGY ACCESS

Biogaz project

Senegal

Lack of energy access is a major issue in Senegal where wood and coal for cooking purposes represent nearly 87% of energy consumption in households which have detrimental consequences on deforestation, loss of natural resources and desertification.

To simultaneously tackle these issues, provide a solution to households in the City of Saint-Louis (northern Senegal) and contribute to the 15% target of renewables in the energy mix fixed by the Senegalese government (sectoral policy), the biogas project (phases 1 & 2) was carried with the help of the City and District of Lille, the French Ministry of Foreign Affairs (MEAE) and the support of the National Biogaz Program (PNB). The main purpose of this project was to promote the use of methanization as access to energy solution for cooking in the framework of circular economy (input of organic wastes).

75 biodigesters have been built in Saint-Louis so far preserving more than 600 kilograms (1,322 pounds) of wood and 180 kilograms (397 pounds) of coal each day. More than 2,000 people have also benefited from our awareness rising campaigns. More actions are nevertheless still much needed to ensure a larger access to sustainable sources of energy for Saint-Louis' citizens.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Access to Sustainable Energies Program (ASEP/PAER in French)

In the Northern Region of Senegal (Saint-Louis), the NGO le Partenariat works in partnership with local authorities (Regional Development Agency - ARD) and a French NGO specialized in sustainable energies (Geres) to promote the use of renewable energies, especially biogas and solar energy, and the fight against deforestation. The Access to Sustainable Energies Program (ASEP/PAER in French) is primarily targeting economic operators working in the agricultural sector which need support for their energy transition or which lack energy access due to their remote localization. ASEP is based on 5 pillars that constitute a "sectoral approach", its core methodology: stimulation of local demand; structuring of local supply; support to public policies; research, development and capitalization and implementation of demonstrative projects (solar platforms, energy mix platforms, biogas solutions).Since 2017, ASEP I has led to the creation of the institutional conditions to improve the steering of the energetic sector (diagnostic and cartography of needs, identification of local entrepreneurs, revitalization of energy steering committees - CIMES), enhance South-North exchanges and carry out demonstrative projects.

Based on this experience, the start of ASEP II will help consolidate and increase the efforts made since 2017 in the energy sector:

- Institutional anchorage of sectoral steering committees in Northern Senegal;
- Development of demonstrative projects improving renewable energy access for remote populations;
- Capacity-building of the civil society on the use of renewables;
- Support to local entrepreneurship and professional training to provide adapted and reliable energetic supply to remote communities.

ASEP I was carried out with the help of the French Development Agency (AFD), the Hauts-de-France Region, the EDF, Raja & Air Liquide Foundations, Watt for Change Foundation and the SYDESL. The main targets of the ASEP are local inhabitants in need of energy sources, especially households, small farmers and companies working in energy-consuming sectors.

LEROUX & LOTZ TECHNOLOGIES

Equipment manufacturer

10 rue des Usines
44100 Nantes
France

+33 2 40 95 96 97

contact@lerouxlotz.com

www.lerouxlotz.com

DESCRIPTION

Leroux & Lotz Technologies (LLT) is a designer, supplier and installer of industrial furnace/boiler sets from 10 to 150 MW. LLT relies on more than 36 years of experience to offer optimal solutions combining energy performance and reduced environmental impact. Thanks to its own combustion and gasification technologies, LLT can recover any type of local waste: biomass, CSR and RDF, household, industrial and hospital waste, and mix of them. LLT's activity is divided around new projects and upgrades to existing facilities, to optimize their performance and replace fossil fuels with less carbon-intensive fuels.

TECHNOLOGIES

Water tube boiler · Grate and fluidized bed combustion

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Priority countries: United Kingdom · Benelux · Germany · France · Spain · Italy · Poland · Central and Eastern Europe
Other countries of intervention: Colombia · Ivory Coast · Reunion Island

LEADING PROJECT ON ENERGY ACCESS

Biomass power plant

Brignoles, France

Winner of the CRE4 call for tenders launched by the Energy Regulation Commission in July 2010, the power plant fully meets the renewable energy development objectives that France has set for itself and the complementary production needs on the network in the Provence-Alpes-Côte d'Azur region.

The plant consumes 180,000 tons of wood per year, 78% of forest wood and 22% of waste wood, collected within a 100 km radius around Brignoles. It produces 168,000 MWh of electricity and saves 138,600 tonnes of CO_2 released to the atmosphere.

Leroux & Lotz Technologies designed, manufactured and installed the boiler, with a combustion technology spreader stoker. The heat output of the boiler is 61.5 MWth and produces 86 t/h of superheated steam.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

SRF power plant Séché Éco-Industries · *Laval, France*

The objective of the plant is to supply 82% of the heat network in Laval, France, with recovery energy from waste recovery. The local player Séché Environnement thus recovers its final waste called Solid Recovery Fuels (SRF) from the sorting center located on its site. The boiler solution proposed by Leroux & Lotz Technologies is a circulating fluidized bed, the only technology that can recycle this type of high-calorific waste. This plant is the first SRF heating plant built in France.

Biomass 2 x 23 MW electric power plant Biovea · *Ivory Coast*

Located in Aboisso, in Ivory Coast, BIOVEA is the largest biomass power plant in West Africa, powered by agricultural waste. It will supply 1.7 million people a year with renewable electricity. The project is led by Biovea Energie, a consortium among EDF, Meridiam and SIFCA. Leroux & Lotz Technologies supplies the boiler. Construction work will begin in September 2021 and commissioning is planned for 2024. This plant will contribute to reduce the country's greenhouse gas emissions by 4.5 million tonnes of CO_2 over the course of the 20-year concession. Beyond the positive effects on the environment, it will contribute to the local circular economy.

MASCARA

Equipment manufacturer · Development · Construction

28 avenue Gustave Eiffel
28630 Gellainville
France

+33 2 37 34 30 75

contact@mascara-nt.fr

www.osmosun.com

DESCRIPTION

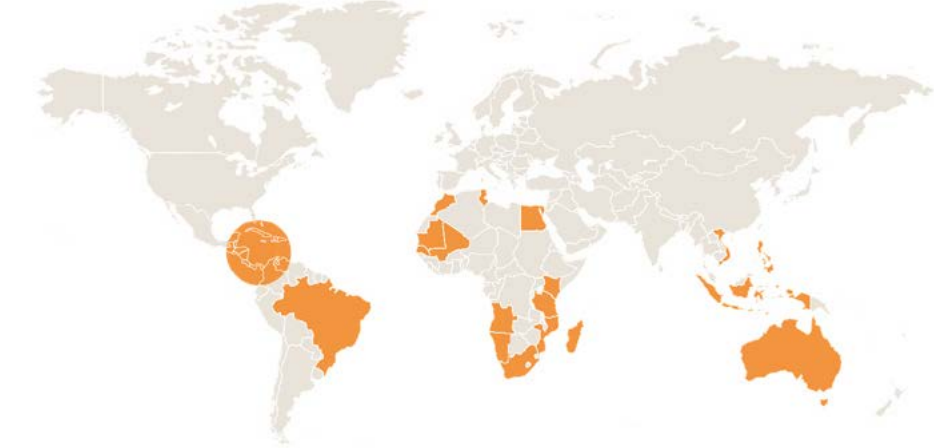
The company Mascara specializes in innovative water treatment solutions with the use of renewable energy. The first development phase resulted in the industrialization of OSMOSUN®, the world's first industrial product range of seawater and brackish water solar powered desalination plants, with a daily production capacity ranging from 1 to 5,000 m^3. This major patented innovation is allowing communities, utilities, and private organizations across the world to produce fresh water at an unprecedentedly low cost with no greenhouse gas emissions. The OSMOSUN® units supply more than 70,000 people in more than 50 installations facing critical problems of access to drinking water.

TECHNOLOGIES

Mini-grid · Other: water access solution provider

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Southern Africa (South Africa · Namibia · Mozambique · Angola) · Eastern Africa (Kenya · Tanzania · Madagascar · Mauritius)
Western Africa (Senegal · Mauritania · Cape Verde · Mali) · North Africa (Morocco · Tunisia · Egypt) · South America (Brasil) · Caribbean · Pacific (Australia · Indonesia · Philippines · VietNam · Fiji · Polynesia)



LEADING PROJECT ON ENERGY ACCESS


© Mascara

Solar powered desalination units

Mozambique

The drinking water access program in this region of southern Mozambique, which only has access to underground brackish water, provides access to water for isolated rural populations. A set of more than 15 OSMOSUN®3 BW solar desalination units offers access to 20 m³ of drinking water per site in total autonomy. Each installation allows for the daily consumption of nearly 3,000 people, so that today nearly 40,000 people benefit from this access.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Solar powered desalination unit · *South Africa*

More than 3,000 inhabitants benefit from the 100 m³ of fresh water produced by the solar-powered OSMOSUN® 16 SW seawater desalination unit. The unit was installed to alleviate the severe drought affecting the Western Cape Province in South Africa, and is operated by Impact Water Solutions.


© Mascara

Solar powered desalination unit
Caverne Bouteille, Island of Rodrigues

The OSMOSUN® 13 SW desalination plant, based in Caverne Bouteille on the island of Rodrigues, Republic of Mauritius in the Indian Ocean, is operated by the Rodrigues Regional Assembly Water Authority, to supply the local fresh water network with 240 m³/day. The unit is supplied with raw water with a salinity of 35g/L by a marine drilling made in a coral subsoil. The unit produces, with the sun, 80 m³/day in complete autonomy, then 160 m³ each night, fed by the energy of the local network when the need for water requires it.


© Mascara

MOON

Rural electrification operator

87 Quai des Queyries
33100 Bordeaux
France

info@moon.community

www.moon.community

DESCRIPTION

Moon empowers African rural communities with innovative clean energy and digital products. Moon's mission is to achieve universal digitalized electrification for all rural sub-Saharan households.To achieve this, Moon distributes tailored and value-creating products and services, such as its pay-as-you-go solar home kits. Moon also leverages its R&D in France and its know-how in project development and financing structuring to design and deploy innovative energy projects with institutional and private actors committed to improving the lives of people in rural areas.

TECHNOLOGIES

Solar Home Systems (SHS) · Solution «pay as you go»

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Senegal · Togo · Mali · Western Africa

LEADING PROJECT ON ENERGY ACCESS


© Moon

Electrification

Togo

Moon has won the CIZO tender in Togo, becoming a licensed solar home systems operator. Moon aims to electrify 200,000 homes by 2025, providing products, technology, local operations and financing.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Promote the inclusion of refugees in Mali

In partnership with UNHCR, the United Nations Refugee Agency, this project aims to promote the energy and digital inclusion of refugees, internally displaced persons or at risk of statelessness, through domestic solar kits including a smartphone and training in digital literacy.
For UNHCR and its partners, it is also a way of facilitating feedback from the communities part, improving the protection of individuals and fostering community engagement.
By making it available, more affordable and accessible, this project aims to use technology as a real lever for development and positive change for people forced to flee.


© Moon


© Moon


© Moon

MYJOULEBOX

Development · Equipment manufacturer

40 rue Lafitte
75009 Paris
France

+33 6 84 51 27 42

paul.berthomieu@myjoulebox.com

https://myjoulebox.com/

DESCRIPTION

MyJouleBox develops hardware and software solutions to facilitate access to energy in Africa.

TECHNOLOGIES

SHS - solar home systems · Solar kiosks · Pico/micro grid · Mini grid

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Benin · Togo · Niger · Senegal · Burkina Faso

LEADING PROJECT ON ENERGY ACCESS

Paygo & microfinance, shs leasing

Benin

Installation of leased solar systems in Benin with our partner ARESS Benin. Together with our partner we were able to bring electricity to more than 120,000 people in Benin.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Microfinance · *Benin*

In 2018, MyJouleBox was laureate of the ADEME project - Off-grid access to energy via the Pay as you go and microfinance project in Benin where MyJouleBox was in charge of developing hardware and software tools to enable Micro Finance Institutes to sell solar kits in pay-as-you go.

Decentralized solar systems · *Benin*

In 2019, we won a project initiated by the United States for the installation of 5,000 decentralized solar systems in Benin.

NANOÉ

Development

10 rue Littré
75006 Paris
France

+33 6 17 77 01 09
+261 32 71 499 20

nicolas.saincy@nanoe.net

www.nanoe.net

DESCRIPTION

Nanoé is a young French social venture, designing, developing and deploying innovative energy access solutions for rural Africa intended to pave the way for a new power infrastructure path named "Lateral electrification". This model, based on the diffusion and successive interconnection of smart solar nanogrids by a multitude of small local franchized entrepreneurs, aims to offer a more affordable, flexible and sustainable energy alternative than solar home systems and centralized micro or mini-grids.

TECHNOLOGIES

Pico/micro grid

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Madagascar

LEADING PROJECT ON ENERGY ACCESS

Lateral electrification

Madagascar

Thanks to a full set of proprietary hardware, software, organizational and financial innovations, Nanoé has been deploying this unique electrification model since 2017 in the North of Madagascar. As of today, the company has deployed two training and support platforms in the Diana region and franchised around 50 local entrepreneurs who have connected over 2,000 users to over 400 decentralized nanogrids.

Sponsored by robust technical and financial partners, Nanoé aims to empower several tenth ou thousands new users by 2023 and to support several hundreds new local entrepreneurs in the progressive building of lateral grids (smart, decentralized and 100% renewable-based).

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Nanoé and its lateral electrification model have received numerous international energy access innovation awards in the last few years, including:

- 2nd Orange Prize for Social Entrepreneurship in Africa and the Middle East in 2016;
- Call for project "Innovative solutions for offgrid renewable energy access" from ADEME and the French Ministry of Environment in 2017;
- Special prize of the EDF Pulse Africa competition in 2018;
- Grand winner for Africa of the "Empower a Billion Lives" competition organized by the IEEE in 2019;
- Call for project "Innovative solutions for offgrid renewable energy access" from ADEME and the French Development Agency in 2020.

Non Governmental Organization (NGO)

PAMIGA

Development · Financing · Support profession ·
Technical assistance to microfinance institutions to distribute solar products

7 rue Taylor
75010 Paris
France

+33 1 42 01 91 38

contact@pamiga.org

www.pamiga.org

DESCRIPTION

Pamiga (Participatory Microfinance Group for Africa) is a non-profit organisation created in 2006, which aims to unlock the economic potential in Africa by promoting the growth of existing financial institutions that service rural areas.

TECHNOLOGIES

SHS - solar home systems · Pico/micro grid · Mini grid ·
Financing access to solar solutions through microfinance

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Benin · Senegal · Cameroon · Kenya · Madagascar

LEADING PROJECT ON ENERGY ACCESS

Paygo & microfinance, SHS leasing

Benin

The programme was launched in January 2018 with the support of the Environment and Energy Management Agency and other Pamiga donors.

The project will enable the establishment of an innovative partnership between ARESS, MyJouleBox and local microfinance institutions, allowing each partner to focus on its area of expertise: access to renewable energy for ARESS, research and development for MyJouleBox and financing for microfinance institutions. The financing of the solar solutions will be provided by the microfinance institutions rather than by the distributor PAYGO, which will lighten the burden on its cash flow and its responsibility for credit management. ARESS will ensure the marketing, distribution, installation and after-sales service of PAYGO's solar solutions, through the development of a rural network of energy entrepreneurs to solve the «last mile» challenge.

The PAYGO meter developed by MyJouleBox is based on a digital platform for monitoring customers, payments and consumption in real time. It offers a technical flexibility allowing a progressive increase of the system's capacities and a financial flexibility: pay-per-view, via mobile phone services and microfinance networks, while securing credit thanks to the remote deactivation of the system.

Within the framework of this mission, Pamiga provided the following services:

- Assessment of the energy and financial services needs of rural populations;
- The establishment of partnerships between MFIs and PAYGO solar solution providers/distributors;
- The design of financial products and adapted procedures for energy access in partnership with PAYGO;
- Technical training for MFI staff;
- Strengthening the supply chain of solar solutions through the development of networks of local technicians.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Access to renewable energy through microfinance
African Development Bank · Benin, Madagascar, Senegal

The programme was launched in January 2018 with the support of the African Development Bank and other Pamiga donors. The programme aims to facilitate access to solar energy for rural households and micro, small and medium enterprises (MSEs) through the provision of appropriate financial services.

Cluster / Centre of excellence

PÔLE MEDEE - MOTORS AND ELECTRICAL DEVICES FOR ENERGY EFFICIENCY

Support profession

8 boulevard Louis XIV
59000 Lille
France

aasselin@pole-medee.com

www.pole-medee.com

DESCRIPTION

The Cluster MEDEE – Motors and Electrical Devices for Energy Efficiency – brings together companies and academics around collaborative Research & Development & Innovation (R&D&I) projects in electrical engineering. Our topics are related to several sectors and target markets: Industrial processes energy efficiency; Electricity generation from renewable sources; Smart Transmission System; Transportation (rail, More Electric Aircraft, electrical vehicle...). Since June 2017, we support the development of our community in Africa. We deliver supports for access to funding and financing solutions, identifying economic, academic or institutional partners in Africa and France, technical evaluation and improvement of projects, international promotion of innovative solutions from partners.

TECHNOLOGIES

Mini grid · Solar kiosk · Maintenance and energy efficiency · Storage and connection · Electrical systems (transmission and interconnection)

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Africa

LEADING PROJECT ON ENERGY ACCESS

Sèmè City – sustainable and inclusive city

Benin

In Benin, Sèmè City will be a campus dedicated to innovation, training and entrepreneurship. MEDEE is part of a project financed by the French Government, with the Hauts-de-France Region, the Sèmè-Podji city, and the Sèmè City Development agency.

The main actions are:

- Concrete collaboration and exchanges between MEDEE and the Energy Cluster in Benin, to foster development of both communities;
- Organization of a call for projects for innovative solutions in renewable energy to be tested in the campus;
- Organization of an event on «training and innovation in the energy sector in Africa» in Lille, with the Beninese partners as honor guests in December 2019.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Ongoing projects:

- Creation of a Hauts-de-France directory of energy companies in Africa;
- Support for the creation of the Beninese Cluster «Energies et Applications» and definition of a collaborative roadmap;
- Delivering a methodology for strategic alliances between entreprises.

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References:

- Co-organisation of the «Energy for Africa» forum on 12 October 2018 in Lille and various events with the Hauts-de-France Region
- Support to more than ten collaborative projects with Africa (innovation and formation) since 2017
- Jury member for the co-experimentation call in renewable energies organized by the Sèmè City Development Agency
- Partner of the «ProForElec project: Professionalizing training in Electrical Engineering in Guinea to foster the employability of young people and the competitiveness of companies» with the University of Artois, the SME Flipo-Richir and the Superior Institute of Technology in Mamou (Guinea)

© Sèmè City

QOTTO

Development · Operation and maintenance

176 avenue Charles de Gaulle
92200 Neuilly-sur-Seine
France

+33 6 70 81 17 77

contact@qotto.net

www.qotto.net

DESCRIPTION

Qotto sells, distributes, install and manages Solar Home Systems in West Africa. Qotto group employs over 150 people and provide access to electricity to thousands of people in rural areas.

TECHNOLOGIES

SHS - solar home systems

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Benin · Burkina Faso

LEADING PROJECT ON ENERGY ACCESS

Modular solar home systems

Benin

In Benin, Qotto deploys modular solar home systems, connected and supervised by a «MaChina to Machina» system. Customers pay in Mobile Money in a leasing system. Our kit is unique in its modularity, connectivity and financing. Today, more than 12,000 people benefit from access to electricity thanks to Qotto. Thus we avoided the use of kerosene lamps and generators for all these people. To operate on the spot we have created a subsidiary and hired a Beninese team.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Modular solar home systems · *Burkina Faso*

We are in the process of duplicating in Burkina Faso what we started in Benin and we have the ambition to deploy distribution, storage and after-sales service centres throughout the territory of the two countries. Our ambition is to equip 30,000 households within 3 years.

RÉGION HAUTS-DE-FRANCE

Support profession

Direction des relations internationales
151 avenue du Président Hoover
59555 Lille Cedex
France

+33 3 74 27 39 26

christine.pavot@hautsdefrance.fr

www.hautsdefrance.fr

DESCRIPTION

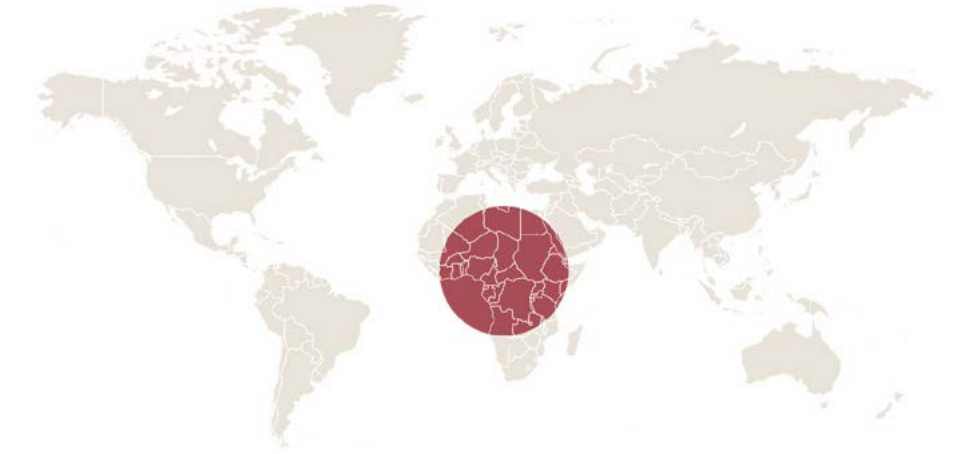
The Hauts-de-France regional council is working on improving access to electricity in Africa since June 2017, inspired by former Minister Jean-Louis Borloo's work in this field. The aim is to demonstrate the high potential of renewable energies in helping left-behind areas improve their living standards, create jobs and help communities sustain themselves.

TECHNOLOGIES

Cooperating and energy access · Energetic transition

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Africa



LEADING PROJECT ON ENERGY ACCESS

Sèmè City, Sustainable City

Benin

The Sèmè City project aims to create a city dedicated to innovation and knowledge, part of which is located in the territory of Sèmè-Podji commune. The Ministry of Europe and Foreign Affairs, within the framework of the call for projects «Sustainable City in Africa», has selected the proposal made by the Regional Council of Hauts-de-France, in partnership with the Sèmè City Development Agency and the MEDEE cluster, for collaboration with the Municipality of Sèmè-Podji.

This project has 3 lines of action:

- A close collaboration between MEDEE and the Energy Cluster in Benin of Sèmè City, currently being created, in order to promote exchanges between entrepreneurs and universities;
- The organization of a competition for innovative solutions on renewable energies and eco-construction that can be tested directly on the future Sèmè City campus;
- The organization in February 2020 of a Forum of Energy Stakeholders for Africa which brought together 350 participants and many exhibitors from academia, industry and associations.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

- **Call for Projects «Energy Actors for Africa»**
- **2019-2020 «Sèmè City, sustainable and inclusive city» project led by the Hauts-de-France Region and the city of Sèmè-Podji, supported by the Ministry of Europe and Foreign Affairs within the framework of the call for projects «Sustainable City in Africa»**
- **Project under study with three departments in Northern Senegal and with the Regional Development Agency within the framework of a FICOL of the French Development Agency**

REYES GROUPE

Equipment manufacturer

8 allée Charles Baron
ZI Les Auréats
26000 Valence
France

+33 4 75 75 26 00

contact@reyesgroupe.fr

www.reyesgroupe.fr

DESCRIPTION

Reyes Groupe is specialised in design, manufacturing and HV/LV electrotechnical equipment integration. Our solution can be used as back up for isolated electrical networks, minigrids or offgrid sites. We are able to manage storage and distribution of energy in the same container. We can work on hybrid project for solar or wind farm with mixed of energy by diesel generators and storage solutions. We can provide also outdoor PV Solar panels or switchboard for harsh environments.

TECHNOLOGIES

Mini grid · Off grid · Solar kiosk · Energy storage container
Hybridization solution · Solar / hybrid power plant · Backup

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Africa · Europe

LEADING PROJECT ON ENERGY ACCESS

Energy storage containers

Development of energy storage containers in connection with ENR projects (Africa / Europe / Overseas (Guadeloupe, Martinique, La Réunion, Mayotte, Nouvelle -Calédonie).

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

- **Solar power plant**
- **Solar container + storage**

SABELLA

Development · Construction · Equipment manufacturer · Operation and maintenance

7 rue Félix Le Dantec
29000 Quimper
France

+33 6 38 68 34 07

jc.allo@sabella.bzh

www.sabella.bzh

DESCRIPTION

Sabella has designed and developed a tidal technology that allows to produce renewable electricity by harnessing marine currents: a clean and predictable energy. The turbines are installed on the seabed below the ocean surface. The blades are spun by the action of the marine current. This mechanical energy is then transformed into electricity through an electric generator. Sabella differentiates its positioning in the marine energy sector by an approach of simplicity and ruggedness in order to avoid costly and risky offshore maintenance operations. In addition, to fit with characteristics of concerned territories, Sabella offers tidal turbines from 100 to 2,000 kW. The origin of marine currents (astronomical phenomenon depending on the position of the Moon and the Sun) gives this mean of production a perfect predictability and a strong synergy with energy storage systems for off grid areas.

TECHNOLOGIES

Mini grid through tidal technology

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Canada · Chile · Indonesia · Philippines · Australia · France

LEADING PROJECT ON ENERGY ACCESS

Tidal turbine In the Fromveur Passage, Ushant Island

In the Fromveur Passage of Ushant Island, France, Sabella installed its first tidal turbine in 2015, which was connected to the island's remote grid. This first turbine made it possible to reduce by 10% the consumption of the Diesel generators that supply this territory with electricity. In 2022, two new tidal turbines will be deployed by Sabella, in partnership with Akuo Energy, as well as one wind turbine, PV solar panels and an energy storage capacity. This hybrid project will cover 80% of Ushant's energy needs, cutting annual Diesel consumption by 1.5 million litres.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Capul · *Philippines*

In the Philippines, Sabella is leading a project together with the local project developer H&WB to provide a solution for the Capulinos. Today, Capul Island has an electrification rate of 60% and access to electricity through Diesel generators is only granted for a few hours a day. In order to enable this island an economic and social development, particularly through the fishing industry (possibility of a ice production for the conservation of seafood products) and tourism, H&WB and Sabella have the ambition to deploy two hydro turbines in the San Bernardino Strait, combined with energy storage capacity, in order to guarantee access to continuous energy for all inhabitants.

SAGEMCOM ENERGY & TELECOM

Equipment manufacturer · Construction · Operation and maintenance

250 route de l'Empereur
92500 Rueil-Malmaison
France

+33 1 57 61 16 31

switchboard@sagemcom.com

www.sagemcom.com

DESCRIPTION

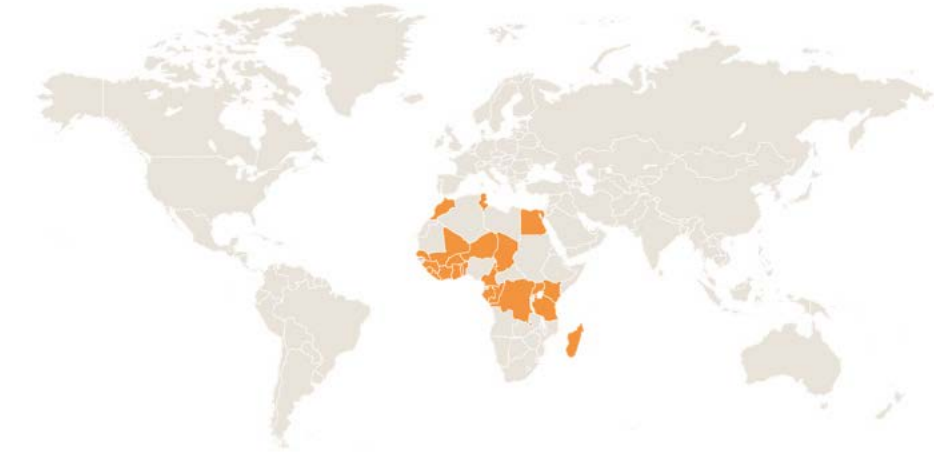
Sagemcom is a leading European group present in more than 50 countries including 22 countries in Africa. Thanks to the talents of its R&D and its industrial capacities, Sagemcom Energy & Telecom acts on a daily basis to develop smart grids in the service of the smart city, through end-to-end solutions, smart metering and management solutions for on and off grid sites. The combination of these activities makes it possible to meet the growing needs of the Smart Grid and Off Grid markets and allows it to offer effective solutions such as the implementation as EPC of solar energy production solutions and electricity grids to supply isolated villages and C&I facilities.

TECHNOLOGIES

Mini-grid · Smart grid · Solar power plant · LV/MV Grid extension

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Sagemcom subsidiaries in Africa: Tunisia · Morocco · Egypt · Senegal · Sierra Leone · Liberia · Ivory Coast · Mali · Burkina Faso · Niger · Guinea Conakry · Ghana · Togo · Benin · Gabon · Cameroon · Chad · Congo · Democratic Republic of Congo · Kenya · Uganda · Tanzania · Madagascar · Mauritius



LEADING PROJECT ON ENERGY ACCESS

SHER (Hybrid Rural Electrification Systems) project

Mali, 2017-2021

As part of the SHER (Hybrid Rural Electrification Systems) project launched in Mali by the Malian Agency for the Development of Domestic Energy and Rural Electrification (Amader), Sagemcom Energy & Telecom has provided and implemented 27 hybrid solar/diesel power stations with a cumulative solar power of 4 MWp with 18 MWh of storage. This project enables the electrification of 27 communities in decentralized rural areas in the regions of Koulikoro, Ségou, Kayes, Sikasso, and Mopti and will benefit at thousands people.

- Number of plants: 27
- Total PV: 4 MWp (50 à 400 kWc) & 18 MWh (212 à 1.9 kWh)
- Total diesel power: 5.5 MVA

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Smart end-to-end rural electrification · *Madagascar*

Sagemcom is implementing 34 solar and mini-hydro mini-grids based on its smart end-to-end rural electrification solution that provides 24/7 energy for the benefit of more than 30,000 people.

ECLER IVOIRE project · *Ivory Coast*

As part of the ECLER IVOIRE project, Sagemcom is selected to build 15 solar mini-grids for CI Energie and supplying 1,600 households in rural areas.

Rooftop solar station with storage · *Benin*

Construction of a rooftop solar station with lithium ion storage, to supply the Malanville border checkpoints between Benin and Niger.

Ground-based solar power plant · *Cameroon*

Construction and maintenance of a ground-based solar power plant of 1.3 MWp to supply energy to Douala airport.

Non Governmental Organization (NGO)

SCALE

Development

7bis rue Diderot
92103 Issy-les-Moulineaux
France

+33 6 64 39 97 23

catherine.mantel@scale.ngo

www.scale.ngo

DESCRIPTION

Heir to Terrawatt Initiative (terrawatt.org), project manager of the «affordable finance at scale / well below 2 cents» program of the International Solar Alliance, Scale aims to implement the UN 2030 Agenda for Sustainable Development and the Paris Agreement, the fight against climate change, the preservation of the environment through the deployment of sustainable infrastructures; the development of political, technological, economic models... making it possible to systematically make sustainable infrastructures an economically rational and politically desirable choice. Scale supports concrete initiatives based on innovative and replicable market mechanisms.

TECHNOLOGIES

Mini-grid · Storage · Training Plateforms · Smart grids · Socially-oriented engineering · other: multidimensional assistance to sustainable and affordable access

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Sub-Saharan Africa

LEADING PROJECT ON ENERGY ACCESS

YOU-TILTIES®: affordable, reliable and sustainable decentralized service delivery solution

YOU-TILITIES® aims to provide hospitals in Africa and around the world with a set of essential services, as part of an innovative service contract, the IDEE contract (Energy, Internet, Waste, Water).

The scalability of the mechanism offers a unique opportunity for low-income communities to access essential services in a rapid, affordable, reliable, and sustainable manner. Integrated and decentralized infrastructure management will strengthen local and global coordination, preparedness and response to pandemics and other disasters. A particular form of PPP, the YOU-TILITIES® structure integrates financial and technical dimensions, in order to provide essential services «as a service».

France has a very long tradition of public service and of essential services. It enjoys a reputation of technical, legal and financial excellence in this field, welcoming companies among the world leaders in the sectors concerned and by combining the know-how of its large companies, the dynamics of its start-ups, SMEs, competitive clusters, its culture of public service and its taste for innovation in the service of sustainable development objectives. This is the clearly assigned objective of the French initiative for essential international services (IFSEI).

But beyond the individual strategies, the YOU-TILITIES® project is a formidable federator and aggregator of the energies of all on a concrete object likely to constitute a demonstrator very quickly for a new business model and common opportunities for development and cooperation. This is obviously a very powerful engine of innovation and development at the service of the general interest of the SDGs. It is in the hospital sector of Cameroon that the feasibility study (both technical and economic) and the first pilot should be carried out.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

- The results of the technical and economic feasibility study and the launch of the project's first pilot in Cameroon will then make it possible to replicate the YOU-TILITIES® project on a large scale.

SCHNEIDER ELECTRIC

Equipment manufacturer

35 rue Joseph Monier
92500 Rueil-Malmaison
France

+33 6 49 33 66 08

emilienne.lepoutre@se.com

www.se.com

Life Is On | Schneider Electric

DESCRIPTION

As a leader in the digital transformation of energy management and automation, we believe that access to energy and digital are fundamental human rights. That's why more than 10 years ago we have set up an ambitious program called Access to Energy, which combines technology solutions, investment funds, training and entrepreneurship support. Between 2009 and 2020, we have provided energy access solutions to 30 million people, invested in 25 ventures, trained more than 281,000 people, and supported more than 2,800 entrepreneurs.

TECHNOLOGIES

Mini-grid · Picro/micro-grid · Solar Home Systems (SHS) · Pico solar light · Pay As You Go solutions · Training Plateforms · Smart grids · Socially-oriented engineering, Technical assistance

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Worldwide, with special focus in Africa, South-East Asia, India, Middle East and South America.

LEADING PROJECT ON ENERGY ACCESS

© Schneider Electric

«Multi-energy» power station

In West Africa, in partnership with the African Biofuel and Renewable Energy Company (ABREC) and on behalf of the West African Economic and Monetary Union (WAEMU), Schneider Electric provided a «multi-energy» power station, based on Villaya Agri-Business brand technology, delivering electricity and heat from solar energy.

The station feeds an integrated agricultural platform for the production, processing and conservation of products. Ultimately, around 100,000 people should use the solution through the 8 pilot sites in WAEMU countries: Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo. The first pilot was delivered in 2020 in the north of Senegal, State of Saint-Louis.

Each station includes photovoltaic panels that produce electricity, while thermal panels produce heat that can be used in particular for fish farming, steaming rice or even drying fruit. A set of 20-foot sea containers integrate energy conversion and storage functions with sodium-nickel batteries, less harmful at the end of their life, very resistant to heat and having a lifespan of at least 10 years. The plant is expected to be capable of producing 60 MWh of electricity per year, and around 40 MWh of thermal energy per year without emitting CO_2. It is easy to handle, adapted to its environment for its robustness and flexibility. The beneficiaries will only have access to boxes made up of a button to turn on and off, then a system for protecting the installations.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Schneider Electric's portfolio of energy access products and solutions

Portable solutions	Domestic electrification	Collective electrification	Training
			
Mobiya	**Homaya**	**Villaya**	**Training**
Mobiya Original **Mobiya Lite** Solar powered portable LED Lamp with mobile charger **Mobiya Front** Head lamp	**Homaya Family** Solar Home System including a solar panel and lamps **Homaya PAYG** Including Pay As You Go **Homaya Hybrid** AC and DC, Solar and Grid Home System	**Villaya Microgrid** Solar microgrid to power off-grid sites **Villaya Community, Villaya Emergency** Customized, Packaged, Containerized **Villaya Water** Solar Water Pumping System **Villaya Lighting** Solar Street Lighting **Villaya Recharge** Entrepreneur USB charging station **Including**: EcoStruxure for Energy Access, remote monitoring of microgrids	Didactical benches; Course contents; Training of electricians, installers, facility managers, entrepreneurs, trainers

Life Is On Schneider Electric

SETEC ÉNERGIE ENVIRONNEMENT

Development · Assistance in project management

Centrale Seine
42 quai de la Râpée
75012 PARIS
France

+33 1 82 51 63 15

michel.combe@setec.fr

www.setec.fr

setec
énergie environnement

DESCRIPTION

Setec energy environnement belongs to the setec group, present in Lille, Paris, Lyon, Nantes, Marseille, Monaco Setec Energy Environnement's businesses concern waste management, energy production, distribution networks, hydropower, marine engineering and environmental studies related to facilities. Assistance to the Client, project management, feasibility studies, technical assistance, contract research, and generally all engineering, consulting and engineering services or control in the fields of the professions of production and control of energy, environment, sustainable development.

TECHNOLOGIES

Smartgrid / energy production · Distribution grids

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Africa · Middle East · South Amercia

LEADING PROJECT ON ENERGY ACCESS

Process and civil engineering for the Das Island Power Plant

United Arab Emirates

The Project As part of the construction of a new 36MW power plant on Das Island (United Arab Emirates), a major Oil & Gas compagnie entrusted setec énergie environnement with the realization and supervision of the project civil engineering as well as with a number of missions related to the process. This outdoor power plant has the «black start» function with a GE Frame 4 turbine. It is operated with sweet or sour gas. Focus Thanks to its powerful tools in the fields of thermondynamics, setec énergie environnement can realize or check designs of thermal installations in combined cycles and initiate equipment consultations. Engaging performance (guarantees) are provided by the equipment manufacturers, but setec énergie environnement can control and ask the right questions, so as to secure its customers' procurement.

Our Services - setec énergie environnement expertise was solicited for the following missions in the process making:

- Optimization of the plant arrangement in a very constrained zone;
- Verification of the plant's mass and energy balance, with and without the combined cycle option;
- Piping synthesis review in interface with the turbogenerator group;
- Consistency review of the gas booster utility design;
- Design, checking and validation of the industrial HVAC of the electric building.

Setec énergie environnement expertise was solicited for the following missions in civil engineering:

- Optimization of concrete formulations in aggressive environments and very hot climate;
- Definition, monitoring, and interpretation of the geotechnical campaign;
- Project design in the tender phase, update of the civil engineering specifications to the offshore and American (ACI, ASCE) standards, assistance with drafting the contract with local companies;
- Onsite follow-up of works for 18 months;
- Basic and civil engineering details studies of the plant (about 300 documents);
- Dynamic calculation of the turbine foundation.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Isolated mini-grids · *French Guyana*

AFD wishes to bring forward proposals and financing to accelerate the implementation of Energy Transition (TE) investments in its intervention areas, particularly in French Guyana.

Electricity Production and distribution · *Ivory Coast*

As part of its Production-Transport (energy) master plan, Ivory Coast has set a target of 42% renewable energy by 2030, including a sharp rise in biomass.

SOLTYS

Equipment manufacturer

24 rue Louis Blanc
75010 Paris
France

+33 9 70 40 63 21

a.chavanne@soltys.fr

www.soltys.fr

DESCRIPTION

Soltys is a manufacturer of solar lamps for remote areas and people without access to electricity. Solar lamps are designed for home tasks, studying and moving safely, instead of using kerosene lamps. Soltys has designed individual solar lamps and collective solar lamps stations since 2007, to adress villages or schools needs for example.

TECHNOLOGIES

Pico solar light

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Africa: Senegal · Mali · Burkina Faso · Guinea · Niger · Benin · Togo · Ivory Coast · Cameroon · Madagascar

LEADING PROJECT ON ENERGY ACCESS


© Soltys

Supply of solar lamps for the Fondem Micrésol project

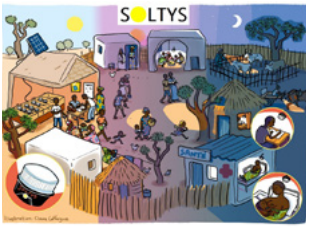
Burkina Faso

Supply of 1500 solar lamps for the Fondem Micrésol project in Burkina Faso, in partnership with local finance agencies. Hundreds of families in Burkina Faso could replace kerosene lamps by solar lamps and benefit from all advantages at lower cost : clear, safe and clean lighting for all family members.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Collective solar lamps stations · *Senegal*

Supply of collective solar lamps stations for villages in Casamance, Senegal, including implementation of users fees to allow long-lasting of equipments. Supply of collective solar lamps stations for villages or schools in Mali, Senegal, Benin, Burundi, Liberia, Madagascar.



© Soltys

SUN'AGRI

Development · Construction

7 rue de Clichy
75009 PARIS
France

+33 1 53 81 03 15

pierre.genin@sunr.fr

www.sunagri.fr

DESCRIPTION

Dynamic agrivoltaism is an innovative technology for farmers facing climate change. Photovoltaic panels, positioned over the crops are monitored based on complex algorithms, in order to optimize the well-being of the plants.

TECHNOLOGIES

Agrivoltaism

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Morocco · Tunisia · Senegal · United States · China · Spain

LEADING PROJECT ON ENERGY ACCESS

Nidolères winery

Tresserre, Pyrénées-Orientales, France

In November 2018, the first agrivoltaic system has been installed in Pyrénées-Orientales, in Tresserre, France. The agrivoltaïc structure has helped recover an unused plot of the winery. The panels, positioned at 4,5m high, provide a protection to the vines. Remotely monitored, their orientation is always done to favor the plants' well-being.

Innovation :

- Mobile photovoltaic panels are monitored to adapt their orientation depending on the need of the plant;
- The panels are monitored in real time based on complex algorithms that use growth models, weather forecast and cultural itinerary of the plant;
- The structure is a solution to protect the crops against destructive climate events, by combining agricultural practices with an agrivoltaic structure (anti-hail nets).

Economic and social: The major societal benefits of the project are:

- An answer to the problem of «how to feed 10 billion humans»;
- Adaptation of agriculture to climate change;
- Preservation of resources, especially water;
- A solution for a massive, total, and competitive energy transition;
- Creation of jobs.

Environment: Dynamic agrivoltaism enables a decrease on water consumption of the plants of 20%, which means a decrease in irrigation. Moreover, the production of renewable energy avoids using limited fossil resources.

Application and valorization: The Sun'Agri technology is an agricultural tool addressing climate change harmful effects on crops. This innovation offers to farmers from the wine, tree growing and market gardening sectors a solution to adapt and protect. As to address the problems met on the parcel, the Sun'Agri technology adapts to each specificity of the studied crops. This answer to the emergency of climate change is particularly adapted to the French territory but also all over the world. Sun'Agri is a solution that could bring protection to crops suffering from more and more violent heat waves or drought (for example in Africa, California, South America, ...).

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

- **La Pugère experimental system on arboriculture** · *Mallemort, Bouches-du-Rhône, France*
- **Piolenc experimental system on vines** · *Vaucluse (84), France*
- **Project in Morocco**

SUNKOFA ENERGY SAS

Development · Construction · Operation and maintenance

5 rue des Marronniers
75016 Paris
France

+33 6 77 77 32 44

antoine.veyre@sunkofa-energy.com

https://sunkofa.energy/

DESCRIPTION

Sunkofa Energy provides energy services through smart mini-grids powered by renewable energy. The focus of Sunkofa is to provide people with the means to climb the energy ladder via innovative solutions related to electricity (refrigeration, milling, internet...). Through its presence in Europe and roots in Africa, Sunkofa becomes a bridge between investors and local talent, unlocking the potential of the continent.

TECHNOLOGIES

Mini-grid

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Benin · Zambia · Mozambique

LEADING PROJECT ON ENERGY ACCESS

Mini-grids under the OCEF program

Benin

We are currently implementing a project for 40 mini-grids co-financed by MCA-MCC under the OCEF program. The overall project capacity is 1.4 MW. The project will be carried out by Mionwa SA, the joint venture created by PowerGen and Sunkofa in Benin. It will build 40 off-grid solar power plants to provide 84,000 Beninese with access to electricity. These mini grids will power households, businesses, industries and entrepreneurs. They will be built in the next 2 years and operated during 25 years under a concession contract.

Together with stakeholders, institutions, associations and inhabitants in rural areas, Mionwa has identified an innovative value proposition that best meets user's needs. Now local population will increase their incomes thanks to mechanization, to the relocation of good-transformation processes and to a better conservation of perishable products. Access to electricity will also increase the attractiveness of villages, reducing rural exodus and enabling electricity usage for medical centers and schools.

We have other projects ongoing in Benin at a different level of maturity. Besides Benin, we currently work on similar projects in Zambia and Mozambique.

SUNNA DESIGN

Projects development · Equipment manufacturer · Operations and maintenance · Support · Storage

17 rue du Commandant Charcot
33290 Blanquefort
France

+33 5 47 74 86 03

info@sunna-design.fr

www.sunna-design.com

DESCRIPTION

Sunna Design is a pioneer and leader in solar street lighting and energy management for stand-alone connected applications. Our state-of-the-art technology platform allows to Power & Connect™ smart and clean outdoor applications. We deliver solutions that stand out for their robustness, recyclability, superior performance and unmatched lifespan across all climate conditions thanks to our built-in electronics and mastery of the latest generation battery technologies. Combining the power of solar energy with connectivity, we invent future uses: in the field of street furniture to offer more services to citizens; in the field of security to protect them; in the field of telecoms to deploy wifi access using our solutions. The company, the holder of 14 patents and winner of 11 international awards, has deployed more than 100,000 intelligent solar solutions in more than 45 countries thanks to its network of high value-added partners.

TECHNOLOGIES

Solar public lighting

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

France · United States of America · Africa · Middle East

LEADING PROJECT ON ENERGY ACCESS

Public Lighting

Cameroon

In Eastern Cameroon, at the border with the Central African Republic, tens of thousands of people have found refuge after fleeing the war that has been raging in the CAR for several years. In Gado, NGO Solidarités International looked into the living conditions of people in the village and neighbouring refugee camp. In light of the security problems faced by the population, the NGO issued a call to tender to meet the significant lighting needs in high-traffic areas such as the main roads, intersections, market square, health centres and sanitary facilities in both the village and the camp.

There is no area-wide electricity generator in the village and installing an engine-generator was not a viable solution given how difficult sourcing diesel fuel is in this remote area. Moreover, it is impossible to install a grid-connected lighting circuit in this extensive off-grid region. Hence, the NGO Solidarités International chose to turn to renewable energies and to use standalone solar solutions to light the designated areas.

In order to ensure the durability of the infrastructure, particular attention was paid to the quality of the equipment, while remaining within budgetary constraints of funding. Technical specifications included: lighting performance; year-round availability of lighting, including after the rainy season when sunlight is limited; product adaptability according to application; little or no maintenance within the first 10 years.

The ISSL+ street light with a road optics was selected for the lighting of pathways, while the Maxi4 with a wide optics was selected for the lighting of larger areas. An autonomy study was carried out to reproduce how these two products would perform in Gado, taking into account data relating to solar irradiance of the last 10 years. Our products showed perfect performance results for that geographical location. HELIOS ENERGY, a company based in Cameroon, partnered with Sunna Design to deploy the products and explain to the local population how they operate.

All in all, more than 30,000 people have now access to street lighting on vital roads and pathways, as well as in places where they can gather and interact with each other. Insecurity reduced dramatically and economic activities developed in those areas, including in the evening with shops and street food stalls that stay open later.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Public Lighting · *Democratic Republic of Congo*

Sunna Design also operates in the Democratic Republic of Congo (DRC) through its local partner Congo Energy. In Lubumbashi, Sunna Design's iSSL Maxi 4 and iSSL+ stand-alone solar street lights have been installed at Square Forrest to light and improve the security of the park, alleys and sports grounds, and an additional 208 street lights are in the process of being deployed on Kasa-Vubu Avenue.

SUPERGRID INSTITUTE

Energy transition institute

23 rue Cyprian
69100 Villeurbanne
France

+33 4 28 01 23 23

accueil@supergrid-institute.com

www.supergrid-institute.com

DESCRIPTION

SuperGrid Institute est dédié au développement des technologies pour les systèmes de transmission et de distribution des réseaux électriques du futur, basés sur les technologies DC interconnectées aux réseaux AC. Ils permettront de transporter de grandes quantités d'électricité sur de longues distances et contribueront à l'intégration massive des énergies renouvelables ainsi qu'à la stabilité des réseaux. Leader des innovations au service des industriels du réseau électrique de demain, notre mission est de créer de la valeur pour nos clients à travers des technologies et des services innovants.

TECHNOLOGIES

Réseau de transmission électrique MT/HT

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Europe and rest of the World

LEADING PROJECT ON ENERGY ACCESS

CNR - Compagnie Nationale du Rhône

Réalisation pour le compte de la CNR d'une étude de faisabilité technique et de design d'une architecture de réseau électrique à courant continu dans le cadre d'un projet de centrale photovoltaïque le long du Rhône (France).

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Projet LISORE

Contribution au projet LISORE, coordonné par France Énergies Marines. Fédérant 9 partenaires, ce projet de 15 mois vise à explorer la viabilité de sous-stations innovantes en mer (flottantes ou sous-marines) pour l'intégration des énergies marines renouvelables.

General Electric Grid Solution

Design et caractérisation de gaz isolants de type g3, alternative au gaz SF6 traditionnellement utilisé dans les appareillages électriques haute et moyenne tension.

Projet PROMOTioN

Partenaire clé du projet européen H2020 intitulé 'PROgress on Meshed HVDC Offshore Transmission Networks', lancé en 2015 et destiné à étudier les bénéfices d'un réseau de transmission offshore à courant continu pour la collecte et le raccordement de parcs éoliens offshore.

Alstom Transport

Etude de design d'un transformateur de type « Solid state transformer » utilisant une technologie innovante de conversion AC/DC, destiné au secteur du ferroviaire embarqué.

Autres projets

Merci de consulter notre liste de références sur notre site internet www.supergrid-institute.com

Non Governmental Organization (NGO)

SYNERGIE SOLAIRE

Financing

Arteparc de Meyreuil - Bâtiment A
13590 Meyreuil
France

+33 4 42 28 59 49

contact@synergiesolaire.org

https://www.synergiesolaire.org/fr/

Synergie Solaire
Les énergies durables au service de l'Homme

DESCRIPTION

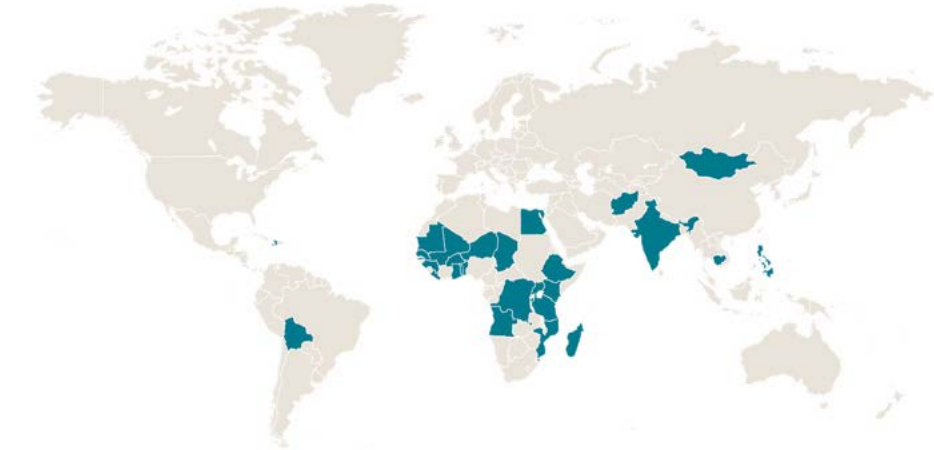
Endowment fund for the European renewable energy sector. Synergie Solaire centralizes not only funds, but also the skills of companies in the sector, to technically and financially support selected NGOs, carriers of humanitarian energy access projects all over the world. A strong ambition for the future: To contribute to a better world for people and the planet. Synergie Solaire acts in the form of donations exclusively to selected NGOs and does not intervene in endowing the private sector.

TECHNOLOGIES

SHS - solar home systems · Pico/micro grid · Mini grid · Solar kiosk · Solar pumping
Solar cooking stove · Small wind turbine · Passive ecological building techniques

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Afghanistan · Angola · Benin · Bolivia · Burkina Faso · Burundi · Cambodia · Egypt · Ethiopia · Ghana · Guinea Conakry · Haiti · India · Kenya · Liberia · Madagascar · Mali · Mauritania · Mongolia · Mozambique · Niger · Uganda · Philippines · Democratic Republic of Congo · Senegal · Tanzania · Tchad · Togo



LEADING PROJECT ON ENERGY ACCESS

Rental and Sale of lighting kits in Manila's slums

Philippines · ONG partner: Entrepreneurs du Monde (EdM) · Local partner: ATE Co.

Context & energy issues: In 2015, 26% of of Filipinos lived below the poverty line in underprivileged urban areas without access to basic services (drinking water, energy...). Edm decided to address the issue of fuel poverty by creating the ATE Co program.

Selected solutions: Since 2016, ATE Co has developped a innovative solution : to enable the poorest families in the slums of Manila to benefit from good quality, economical and safe solar lighting and to become owners of it. This is a solar kit with 3 light points that also allows to charge small electrical appliances for less than 3USD per week. The innovative pay-as-you-go approach allows them to acquire the solar system smoothly, over 18 months, by paying daily and at their own pace for its activation. Payments are made to ATE Co agents who train each customer. Thanks to software connected to the battery of installed kits, the kit is deactivated if the customer is not up to date with his payments. This makes it possible to reach poorer households who would not have access to credit.

Impacts :

- Improvement of the living conditions of very vulnerable people;
- Reduction of health hazards and risks of explosion or fire;
- Reduction in energy expenditure on the family budget (the average amount of savings is 9USD/month, about 45% of the energy budget);
- Climate protection (reduction in the use of kerosene lamps).

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

- **Electrification of schools by a solar and wind Energy mix in Boromo** · *Burkina Faso*
- **Energy mix for the energy empowerment of a remote village** · *Ethiopia*
- **Diffusion of solar cookers and drying kit** · *Bolivia*
- **Installation of a solar pumping station for market gardening in an agro-ecological seed farm** · *Mali*
- **Construction of a solar-powered refrigerated chamber for tuber conservation** · *Mali*
- **Complete electrification of the new Boromo high school by a solar and wind energy mix** · *Burkina Faso*
- **Economic development in rural areas through access to energy** · *Mali*

TOTAL EREN

Development · Equipment manufacturer · Financing · Construction · Operation and maintenance · Support profession · Storage

37 rue La Pérouse
75016 Paris
France

+33 6 18 23 76 99

solange.debantel@total-eren.com

www.total-eren.com

DESCRIPTION

Founded in 2012, Total Eren is an Independent Power Producer (IPP), which develops, finances, invests in, builds, and operates renewable energy power plants (solar, wind, hydro) over the long-term at a global level. The Company owns more than 3.5GW either in operation or under construction worldwide and is currently developing over 4GW of renewable energy projects. Total Eren is also active in rural electrification through its investment in Winch Energy, which designs, develops, finances, builds, installs, and operates solar plus storage mini-grids across Sub-Saharan Africa. Since December 2017, TotalEnergies, the major energy company, has been participating as a shareholder of Total Eren.

TECHNOLOGIES

Mini grid · Storage

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Angola · Benin · Ethiopia · Mauritania · Nigeria · Uganda · Senegal · Sierra Leone · Togo

LEADING PROJECT ON ENERGY ACCESS

Electrification of remote villages

Uganda and Sierra Leone

At the beginning of 2021, Winch Energy, together with its partner NEoT Offgrid Africa, closed the largest mini grid financing portfolio to date. The project, which is expected to equip 49 villages in Uganda and in Sierra Leone, is currently under construction and will be operational within a year. The technology deployed by Winch Energy consists in containerized solar solutions which are remotely controllable (Remote Power Unit or "RPU"). These facilities, which will be used for these mini-grids, will supply more than 60,000 people.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

- **2 mini-grids installed (52 kWp plus storage) providing electricity and Wi-Fi to about 1,000 people** · *Mauritania*
- **1 mini-grid installed** · *Benin*
- **1 mini-grid installed and 4 mini-grids under construction totaling 128 kWp with storage to electrify the Bunjako island, mainly populated by fishermen and supply 2,500 people** · *Uganda*
- **25 mini-grids (GIZ tender, awardee) under construction (2,300 connections)** · *Uganda*
- **24 mini-grids (UNOPS/DIFID tender, awardee) under construction to reach more than 4,100 connections** · *Sierra Leone*
- **2 mini-grids installed to electrify schools in particular** · *Angola*

TOTALENERGIES ACCESS TO ENERGY SOLUTIONS

Projects development · Equipment manufacturer · Support profession · Solutions Distributor

2 place Jean Millier
La Défense 6
92 078 Paris La Défense Cedex
France

www.accesstoenergy.totalenergies.com

DESCRIPTION

TotalEnergies Access To Energy Solutions is developing a range of decentralized solutions that meet the energy needs of people in emerging countries while helping to combat climate change. From kits to solar street lights, our solutions meet the ever-changing needs of individuals and communities. In this sense, TATES offers an evolving range of products and partners with local actors to propose financing solutions adapted to each individual's resources. Since 2010, more than 3.5 million solar solutions have been distributed in 40 countries through commercial channels involving social entrepreneurs and NGOs, improving the daily lives of more than 15 million people.

TECHNOLOGIES

SHS - solar home systems · Pico/micro grid · Solar kiosk · Public lighting / solar outdoor light

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Cameroon · Kenya · Nigeria · Burkina Faso · Uganda · Ivory Coast · Mali · Senegal · Zambia · Niger · Malawi · Zimbabwe · Ghana · Mozambique · Ethiopia · Chad · Puerto Rico · Pakistan · Papoua-New-Guinea · Cambodia · Haïti · South Africa · Congo Brazza · Tanzania · Namibia · Botswana · Swaziland · Democratic Republic of Congo · India · Equatorial Guinea · Guinea Conakry · Liberia · Gabon · Togo · Mauritania · Argentina · Mexico · Dominican Republic · Angola · Sierra Leone

LEADING PROJECT ON ENERGY ACCESS

Supply of 200 solar kits to farmers

Uganda · Local partner: Amigos Farm

In rural areas, few farmers have access to energy and prefer kerosene lamps. In collaboration with Amigos Farm, an agricultural training centre, 200 solar kits have been provided to apprentices. These kits, composed of a solar panel, a battery, two light bulbs, a neon light, a torch and a radio, offer a sustainable and economical solution.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Deployment of electric mobility solutions · *Kenya*

Partnership with ASOBO to accelerate the deployment of electric mobility solutions on the Kenyan shore of Lake Victoria.

Distribution of solar lamps following the earthquake · *Puerto Rico*

500 solar lamps distributed in partnership with Total Puerto Rico and Mercy Corps for families without electricity following the earthquake in Puerto Rico.

Installation of a tidal turbine on the Congo River

Partnership with Hydro-gen for the installation of a tidal turbine on the Congo River to provide a unit of essential services for villages: lighting, refrigeration, water purification and processing of agricultural products.

Implementation of solar nano-grid in pay-as-you-go

Partnership with the company Solergie for the implementation of solar nano-grid in pay-as-you-go, which aims to provide electricity to 5 to 8 households per system: 420 systems installed and 15,000 people impacted.

TRYBA ENERGY

Development · Operation and maintenance

ZA Le Bosquet - B
67580 Mertzwiller
France

+33 3 88 90 52 56

contact@tryba-energy.com

www.tryba-energy.com

TRYBA® ENERGY

DESCRIPTION

Since 2008, the ATRYA Group has been committed to energy transition with the creation of its Tryba Energy division. Tryba Energy develops, finances, constructs and operates photovoltaic power plants in France and internationally. We guarantee the quality of our projects, and the long-term operability and performance of all our power plants thanks to our dedicated internal operation/maintenance service. As an IPP, Tryba Energy develops and invests in photovoltaic power plants in emerging markets with significant renewable energy requirements.

TECHNOLOGIES

PV power plants

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

France · Europe · Africa

LEADING PROJECT ON ENERGY ACCESS

Ground-mounted power plant on tracker of Bufulubi (10 MW)

Ouganda

The BUFULUBI solar power plant is a flagship project as it cements Tryba Energy's expertise in the development of large complex projects in an international context. It would take Tryba Energy almost 5 years of development to commission this solar power plant, located in the village of Bufulubi in the Busoga Kingdom of Uganda.

In addition to development of the project, Tryba Energy successfully rose to the technical challenge of using an innovative tracker system. This solution consists of tracking the daily path of the sun to increase the overall efficiency. Using this technology is all the more justified by the power plant's geographical location at the equator. The Bufulubi site is currently the largest tracker solar power plant in East Africa. Tryba Energy is also delighted to have been able to contribute to local economic development. Its construction provided an opportunity to hire several hundred local workers. It is also a source of employment now it is operating.

Always committed to its social and environmental values, the project has allowed for the renovation of various infrastructures, a well and a school, and the planting of several thousand trees.

Key data: Date commissioned: 2019; Surface area: 20 ha; Installed capacity: 10 MWp.

Our services: Complete development of the project (authorisation, electricity purchase agreement, connection to the grid); Financing; Construction of the power plant and the network infrastructure (10 km of overhead line); Operation and maintenance; Asset management.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Ground-mounted power plant Shyroke in Dnipropetrovsk Oblast
Ukraine

This 7MWp ground-mounted project commissioned at the end of 2020 is the result of a collaboration with a historic Czech partner. Located close to one of the country's largest cities, the plant produces electrical power equivalent to the consumption of approximately 6,000 households. Tryba Energy has once again risen to a complex challenge in a multicultural context. The success of this project lies in good coordination, the management of different cultures, and the close management of the financing provided by the investors and the European Bank for Reconstruction and Development (EBRD).
Key data: Date commissioned: 2020; Surface area: 9 ha; Installed capacity: 7 MWp
Our services: Complete development of the project (authorisation, electricity purchase agreement, connection to the grid); Financing; Construction; Operation and maintenance; Asset management.

UPOWA

Development

375 route de la Croix
38560 Jarrie
France

+33 6 37 25 13 61

contact@upowa.org

www.upowa.energy

DESCRIPTION

upOwa develops and distributes solar solutions tailored to meet African countries' challenges, based in Yaoundé (Cameroon). Its mission is to resolve the energy access gap by providing people with affordable electricity and high-quality associated services in off-grid villages. According to the World Bank (2019), 10 million Cameroonians still do not have access to electricity, the majority of whom live in rural areas. Mid-2021, upOwa has more than 400 employees, half of whom are technical and sales agents working in the field, hired in the villages and trained to acquire new skills, in order to collectively succeed in this mission.

TECHNOLOGIES

Solar Home Systems (SHS) · Pay As You Go solutions

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Cameroon

LEADING PROJECT ON ENERGY ACCESS


© UpOwa

Solar home systems

Cameroon

Since its creation, upOwa has developed a range of products and services to match consumers' needs by a strict and ongoing selection of suppliers. All distributed products comply with VeraSol (previously Lighting Global) quality standards. upOwa currently mainly offers low-power solar home systems (up to 50 Wp) in various bundles (including ceiling light points, telephone chargers and accessories like a television or a radio).

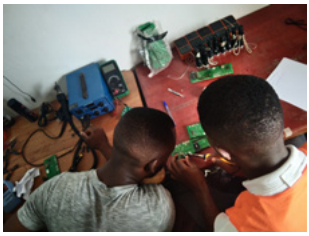
upOwa has completed more than 30,000 installations in Cameroon, representing close to 200,000 people who benefit from reliable electricity on a daily basis. The majority of upOwa's clients are households working in all sectors of the economy, mainly in agriculture, but also representatives of services such as health centers, town halls or small businesses. Concretely, salespeople and technicians are field-based in 6 regions of Cameroon: they support customers during the process which includes the solar system installation. Customers then benefit from a dedicated call center 7 days a week and a 2-year warranty on their installation, which they own once repayment is achieved.

upOwa relies on high quality services to provide reliable, affordable and sustainable energy to all of its customers. upOwa now aims to multiply its social, economic and ecological impact through the pursuit of its geographical extension and the development of its products and services range. upOwa also promotes gender inclusion, both at the employee and the customer levels, and is looking for partners eager to support the distribution of products that will be predominantly female in use.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

E-waste

upOwa and Solidarité Technologique, an electronic waste treatment association, associated for an end-of-life management project for its solar systems. In total, more than 3,500 components were processed with a final reconditioning rate increased from 12% to 22% thanks to operational and technical improvements. upOwa also aims to test the collection process for end-of-life products from the field and thus improve its internal repair rate: a challenge for players in the off-grid sector!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Gender inclusion

In line with its mission and social impact, upOwa launched in 2020 its Gender Inclusion project to improve the place of women and gender equality in its activities. After an analysis phase, a Gender Action Plan including 7 key objectives to be achieved was defined. A project well received by the employees who see diversity as a positive factor for creativity, dynamism and collective performance.


© UpOwa

ZEMBO

Sustainable mobility · Operation and maintenance · Storage

7 rue des Chaufourniers
75019 Paris
France
+33 6 28 25 24 96
etienne@zem.bo
www.zem.bo

DESCRIPTION

Millions of motorcycles taxi drivers are present in sub-Saharan Africa. This is a revenue generating activity for young people and their family, and an affordable transport solution for low-revenue people, adapted to African roads and often the single available solution. The problems are that drivers rent their vehicle, putting a strain on their revenues, and that this activity causes a high environmental pollution. Zembo focuses on 2 complementary activities: the leasing (rent to own) of electric motorcycles to taxi drivers, and the battery charge through a network of solar stations. The advantages of our electric solution are the following: Improvement of drivers' revenues (who become owner of their vehicle after 2 years); Environmentally clean solution (lowering CO2 and particles emissions, reducing noise); Better service, including security training and gears for drivers and passengers. After the successful pilot in Uganda and 40,000 km driven, Zembo starts the commercial phase with the objective to reach 2,000 vehicles in 2020.

TECHNOLOGIES

Sustainable mobility

COUNTRIES OF INTERVENTION, PRIORITY COUNTRIES

Uganda

LEADING PROJECT ON ENERGY ACCESS

Solar recharge of electric motorcycle-taxis

Kampala, Uganda.
Local partners: KCCA (Kampala Capital City Authority)

Environmental impact: reduction of CO_2 and fine particles emissions, noise reduction.
Social impact: improvement of drivers revenue.

REFERENCES AND/OR ONGOING PROJECTS ON ENERGY ACCESS

Hybrid solar recharge

250,000 km driven and 6,500 battery swaps (hybrid solar rr-charge) in real conditions in Uganda. Commercial launch in October 2019.

ADEME - Agency for Ecological Transition
Immeuble FairWay
155bis avenue Pierre Brossolette
92120 Montrouge
Tel: +33 (0)1 47 65 20 00
www.ademe.fr

French Renewable Energy Trade Association
13-15 rue de la Baume
75008 Paris
Tel: +33 (0)1 48 78 05 60
contact@enr.fr
www.enr.fr

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Liberté
Égalité
Fraternité

ADEME
AGENCY FOR ECOLOGICAL TRANSITION

ser French Renewable Energy trade association