14th ANNUAL MEETING
CLUB-ER

BENIN MARINA HOTEL
Cotonou,
5th to 7th December 2018

EXECUTIVE REPORT

December 2018
A- **Preambule**

From 05 to 06 December 2018 was held at BENIN MARINA HOTEL in Cotonou, the 14th Annual Meeting of the CLUB-ER on the theme: "Decentralized electrification: mini-grid, preparing for the arrival of the national electricity grid".

On December 07, 2018, the participants visited a mini-grid PV solar installation (30kWp) in Avloh, a locality in the Rural Municipality of Grand-Popo on the Atlantic coast.

The Meeting was attended by the following members:

**Institutionnal Members:**

- Agence Béninoise de l'Electrification Rurale et de la Maîtrise d’Energie (ABERME)
- Agence de Développement de l’Electrification Rurale de la Mauritanie (ADER)
- Agence de Régulation de Régulation du Secteur de l'Electricité (ARSEL Cameroun)
- Agence Nigérienne de Promotion de l'Électrification en milieu Rural (ANPER)
- Agence Sénégalaise de l'Electrification Rurale (ASER)
- Agence Togolaise d'Electrification Rurale et des Energies Renouvelables (AT2ER)
- Rural & Renewable Energy Agency (REA Liberia)
- Rural Electrification Agency (REA Uganda)
- Rural Electrification Authority (REA Zambia)
- CI-Energies (Côte d'Ivoire Energie)
- Direction Générale de l’Energie (Côte d’Ivoire)
- Direction of Renewable and Alternative Energy (Ghana)

The following institutional members are absent: ABER Burundi, ACER Central African Republic, ADER Madagascar, AER Cameroon, AMADER Mali, Direction Générale de l’Energie Centrafricaine, REA Kenya

**Associates members :**

- ABC Contracting
- EDF (represented by ERA Senegal)
- EPS Elvi Energy
- GIZ (represented by EnDEV Benin)
- Groupe CAHORS
- IED
- SAGEMCOM
- SCHNEIDER Electric

Nexans and Vinci Energies West Africa / CEGELEC Morocco were absent.

Private and institutional partners interested in the activities of CLUB-ER were also in attendance.

The list of participants is attached in annexure.

This report is structured around 3 items:

- Opening Ceremony ;
- Deliberations ;
- Recommandations,
B- OPENING CEREMONY

The opening ceremony was marked by four statements - interspersed with artistic interludes, namely:

- The welcoming address by Mr. Francis TCHEKPO, Director General of the Agence Béninoise de l’Electrification Rurale et de la Maîtrise d’Energie (ABERME),
- Welcoming address by Mr. Patrick MUBANGA, Director of Technical Services of the Rural Electrification Authority of Zambia and representative of the President of CLUB-ER,
- Address of encouragement by Mr. Romaric SEGLA, Programme Officer at the Institut de la Francophonie pour le Développement Durable (IFDD) and representing the CLUB-ER partners
- And the opening address by H.E. Mr. Dona Jean-Claude HOUSSOU, Minister of Energy of Benin.

In his address, the DG of ABERME thanked the CLUB-ER for choosing Benin to host its 14th Annual Meeting. He noted that access to energy is an urgent necessity. But developing countries suffer from lack of electricity. Faced with this challenge, it has become necessary to find sustainable and concerted solutions. Convinced of this requirement, the countries have agreed to the creation of the CLUB-ER, which is a forum for exchanges and sharing of experience. National agencies and institutions in charge of rural electrification are working to diversify energy sources. The priority is to ensure that our populations have sufficient access to electricity in rural areas. Thus, the theme fits so well in a context where Benin is engaging in off-grid electrification. Through him, Benin and ABERME in particular are happy to welcome the participants.

After a ballet of Beninese dances, it was the turn of the Representative of the President of the CLUB-ER to make his statement. Mr Patrick MUBANGA apologized to the President, Pastor Geoffrey MUSONDA, CEO of REA Zambia, who was unable to attend. He recalled that the CLUB-ER has 43 members in 32 countries and aims at accelerating the development of access to energy in rural areas. The network is committed to strengthening capacity building. It is an important platform for designing viable projects and making recommendations to national agencies and institutions in charge of rural electrification which put them into practice. He expressed his gratitude to Benin, sponsors and Technical and Financial Partners. He wished this Annual Meeting to be constructive and invited all participants to Nouakchott (Mauritania) in 2019 for the 15th edition.

After a cultural interlude, the IFDD Representative made his statement. In his address, Mr Romaric SEGLA, Programme Officer, forwarded the greetings of the General Secretary of OIF and the Director of IFDD. He then commended Benin and CLUB-ER member countries for their efforts to bring electricity to rural populations at a lower cost and in sufficient quantity. The statistics, although low, show that 1% progress in rural electrification is more important and has a greater impact than 1% in urban areas. He thanked the Technical and Financial Partners for their renewed commitment to support rural electrification initiatives to overcome energy poverty. Off-grid electrification solutions are competitive options, a more appropriate way to strengthen the social base and be environment friendly.
At the same time, grid operators must upgrade their systems to adapt to this off-grid electrification revolution which has now turn to be a promising opportunity. Therefore, more sober electricity consumption must be supported in order to strengthen the fight against climate change. He did not fail to recall the activities of IFDD to support sustainable development: online seminars, support from Member States, calls for projects and capacity building. Finally, he welcomed the determination of Benin to promote energy through improvement of the regulatory framework.

In his opening address, H.E. Mr Jean Claude HOUSSOU, Minister of Energy of Benin, welcomed all participants to Cotonou. He expressed his sincere thanks and deep gratitude to CLUB-ER for having chosen Benin to host the deliberations of this important continental meeting. The Minister recalled the objectives of the 14th Annual Meeting of CLUB-ER. He indicated that energy is a key factor in the economic and social development of our States. As a result, it is urgent to find a way to ensure that one-third of world population has easy and affordable access to modern forms of energy. He recommended that coordinated and sustained actions be undertaken to address current energy challenges, in particular to enable economic development and provide better living conditions for our rural populations.

In the course of his remarks, the Minister shared the development objectives of Benin energy sector, which are based on four flagship projects: (i) the modernization and expansion of thermal sector to ensure competitive access to electricity, (ii) the development of renewable energies, (iii) the restructuring of the national operator and its network and (iv) energy management.

In addition, he presented the measures taken by the Beninese government to accelerate rural electrification through regulatory acts promoting off-grid electrification, such as Decree No. 2018-415 on off-grid electrification, the implementation of a master plan on off-grid electrification and on rural electrification policy.

The Minister also renewed his thanks to the Technical Partners for Development for supporting African States in major energy infrastructure projects in rural areas.

He concluded his remarks with remarks with words of encouragement to the participants to use these days of reflection and sharing of experiences to formulate relevant recommendations and declared the opening of the 14th Annual Meeting of the CLUB-ER.

C- SEQUENCES OF DELIBERATIONS

The deliberations of the Annual Meeting was conducted by a Presidium composed as follows:
- Chairperson: Mr. Florent OROU FICO, Deputy Director General of ABERME;
- Rapporteurs:
  - M. Mamidou TCHOUTCHA, Director of Electricity at the Energy Resources General Management (DGRE)
  - M. Gislain LALY CHACHA, Head of Engineering and Regulation Department at the Energy Resources General Management (DGRE)
B.1. PRESENTATIONS AND DISCUSSIONS

**DAY ONE:** Wednesday 5 December 2018

Eleven (11) presentations were made throughout the day.

a) **Session I: Opening**

1.1. **Presentation n°1:** Missions, activities and perspectives of CLUB-ER by Mr. Hary ANDRIANTAVY, Executive Secretary of CLUB-ER

The Executive Secretary of CLUB-ER presented the Club’s missions, activities and perspectives.

The CLUB-ER is an essentially bilingual technical network of 43 members across 32 countries. These members are mainly French and English-speaking agencies and institutions in charge of rural electrification. The only Portuguese-speaking country is Mozambique. The objectives are the establishment and multiplication of horizontal exchanges between members.

The missions of CLUB-ER consist in building capacity and strengthen its international positioning. Capacity building is carried out around 5 thematic groups, including: (i) strengthening the impact of rural electrification on poverty reduction; (ii) organizational structure of rural electrification and the emergence of national private operators; (iii) tools and technologies for rural electrification; (iv) simplified technical specifications and cost reduction for rural electrification; and (v) national and international financing mechanisms for rural electrification, regulation, tariffs and taxation. The CLUB-ER positioning is strengthened through participation in international fairs and the production of reference documents.

1.2. **Presentation n°2:** Focus on objectives, Gouvernement approach on access to energy in Benin by Mr. Francis TCHEKPO, DG of ABERME

The DG of ABERME mainly presented the history of rural electrification in Benin, the main projects and the regulatory framework for off-grid.

The history of rural electrification in Benin is divided into three phases, defined by the following periods: 1996-2004, 2004-2015 and 2015 to date. The first period was marked by the activities of a unit which was in charge of rural electrification, the second by those of ABERME’s timid activities and the third by the agency’s full development.

The mini-grid projects in Benin have resulted in 80 power plants financed by WAEMU and the Beninese State but not yet commissioned.

The regulatory framework for off-grid is marked by the adoption of Decree No. 2018-415 regulating off-grid electrification in the Republic of Benin. It specifies, among other things, the conditions for implementing off-grid projects, the regime for regulating off-grid electrification and the conditions for connecting the off-grid electrification system to the interconnected grid.
Today, Benin electrification model is not based on any particular form of energy and is governed by the decree on off-grid electrification, a master plan on off-grid electrification and a rural electrification policy.

Following Mr. Tchekpo's presentation, the Senior Technical Assistant in charge of policies and reforms of the Minister of Energy was keen to clarify the current progress in Benin's energy sector since April 2016. These have made it possible to combine load shedding in the past thanks to: (i) an increase from 80MW of rental to 180MW and (ii) an increase from 0 to 30MW of functional thermal power plants for the national electricity company. In the short term, these initiatives will be reinforced by: i) the completion of the construction of a 120MW dual fuel thermal power plant for the State (Maria Gleta), ii) the construction by an IPP of another 120MW thermal power plant, iii) the construction by AFD of a 25 MW solar power plant and iv) the construction of 4 solar power plants with a combined capacity of 45MW by the Millenium Challenge Account Benin II project. In the long term, the construction of three hydroelectric power plants will be added to the Government's list of achievements.

1.3. **Presentation n°3: National Rural Electrification Programme of Togo** by Mrs. Amy NABIROU, Electrical Engineer in charge of renewable energies at AT2ER

Mrs. Amy NABIROU presented the institutional, legal and regulatory framework, the current situation, the ambition of the Togolese government, the electrification strategy and the ongoing programmes in the sub-sector.

Togo established its rural electrification agency in May 2016 and has been operational since September 2017. In 2018, it adopted a law on renewable energies. The rural electrification rate is 8%. The electrification strategy is based on the lowest technological cost adapted by locality. The country aims at building 317 mini-grids and electrifying 960 localities by extending the grid. About 2,000 villages will be electrified by solar/hybrid mini-grids. Public support to attract private investment is based on technical assistance and direct support: financial instruments for public investment. Technical assistance and indirect support includes tax exemptions. Financial instruments for public investment are channelled through lines of credit, concessional equity and guarantees on default. Public investments are national parities followed by sustainability and targeted subsidies for public services and national priorities. The mini-grids will be deployed in PPP mode. In the event of an extension of the national electricity grid, there will be either the purchase of the licensee's installations or the signature of a purchase and sale contract conditional on the signature of a concession agreement between the State and the licensee.

Finally, the speaker listed the key measures of the fiscal and customs policy for renewable energy, as well as ongoing programmes and projects.
b) **Session II: Overview of some Rural Electrification Programmes**

1.4. **Presentation n°4: Overview of mini-grids sector in Senegal in the area of Rural Electrification** by Mr. Malick GAYE, Technical Advisor to the DG of ASER

The objective of the Senegalese Government is to achieve 60% of rural electrification by the end of 2019 and universal access by 2025. To this end, the strategy of ASER consists in issuing rural electrification concessions, granting investment subsidies, involving the private sector through PPPs, providing tax incentives, adopting technological neutrality, building structural infrastructure, using innovative financing, communicating and raising awareness. This has enabled ASER to complete the electrification of 984 villages and the process is in progress for 760 other villages. In addition, the electricity tariff has just been standardised in the country and involves compensation essentially based on the Energy Sector Support Fund in Senegal.

1.5. **Presentation n°5: Focus on Ghana mini-grids** presented by Mr. Wisdom AHIATAKU-TOGOBO, Director of Renewable nergies at the Ministry of Energy of Ghana

Today, 84.4% of the Ghanaian population has access to electricity with 4400 communities connected. Another 350 communities will be connected to the grid before the end of the year. The Government of Ghana is committed to achieving universal access to electricity by 2020. Localities with difficult access will be electrified by decentralized solutions such as hybrid mini-grids or with individual kits until the national grid arrives. In addition, the policy of electrification by mini grid in Ghana is based, among other things, on free connection of subscribers and standardised tariffs. As for the financing strategy, it is based, among other things, on the renewable energy fund and internally generated funds, including the tax liabilities on all invoices issued to hotel guests.

1.6. **Presentation n°6: Rural Electrification in Libéria, progress achieved in the area of mini-grids** presented by Mr. Augustus V. Goanue, Executive Director of RREA

The Renewable and Rural Energy Agency is the institution in charge of rural electrification in Liberia. To this end, the master plan aims at achieving 35% rate of rural electrification by 2030 through mini grids through five main programmes based on specific criteria of resource availability and people's ability to pay. In this context, ten (10) pilot projects have been deployed since 2013 with a fairly open method of financing from both the public and private sectors and NGOs. The challenges are mainly the lack of financing, the difficulty of customers to pay monthly and the irregular maintenance of the grid. But experience has shown that in Liberia, mini grids are the cheapest way to electrify localities far from the national grid.
b) Session III: Overview on financing programmes for access to energy

1.7. **Presentation n°7: Belgium financing for Rural Electrification Projects** by Mr. Raphael MARCHANDISE, Marketing Director of ABC Contracting

ABC Contracting has three main areas of activity; Grids, thermal and hybrid power plants and hydroelectric power plants. In this context, it provides support at all stages of projects thanks to its know-how that it has already demonstrated in several African countries such as the Democratic Republic of Congo. ABC also rehabilitates all types of power plants to make them more efficient and modern.

ABC Contracting is ready to offer its services in any energy project, a loan of nearly 150 million euros is available within 30 days, at a rate of between 2.5 and 5% per year, for a period of 5 years and a grace period of 9 months with a guarantee from the Ministry of Finance.

1.8. **Presentation n°8: Results, lessons learned and steps for « Beyond the grid fund for Zambia » fund** presented by Mr. John Tkacik, Director of Energy Information Analysis

The Vienna-based Renewable Energy and Energy Efficiency Partnership (REEP) is a multilateral partnership with a mandate to accelerate the market for renewable energy and energy efficiency in emerging and developing countries and has already invested over US$1.2 billion in collaboration with UNIDO.

REEEP created “beyond the grid fund for Zambia” BGfZ to help achieve SDG 7, develop the market and encourage innovation and investment. BGfZ plans to invest EUR 11.5 million between 2017 and 2021 in incentives. In October 2018, 335,909 Zambians were connected through this fund. The impact of the fund in terms of financing and employment is significant when considering gender aspect. The lessons learned are mainly related to the lack of information on the rural world. Incentives are based, among other things, on the sustainability of services and a coherent business plan.

The "Beyond the grid fund for Africa" targets countries with a larger market in Sub-Saharan Africa and will invest between US$60 and 180 million over 6 to 10 years to reach 5 to 15 million people in rural areas in 3 to 6 countries.

1.9. **Presentation n°9: Odyssey Energy Solutions, plateform for promoting programmes and projects** by Mer Eitan HOCHSTER, Vice-Président for Development

Odyssey is a secured web-based data platform that facilitates rapid deployment of mini-grids in emerging markets.

For financiers, sellers and governments, Odyssey's web platform streamlines the workflow for building and financing mini-grid projects, by seamlessly connecting all stakeholders in the sector of energy access. For developers, Odyssey helps them design projects, build and operate rigorous data-based mini-grids - and connect directly to investors and suppliers.
In Nigeria, the REA and the World Bank launched Nigeria’s $350 million electrification programme. The challenge is how to manage three different funding windows, collect data on websites and share them with applications, track results for results-based funding, make data publicly available and do so on a scale of thousands of projects. To meet this challenge, Odyssey created a central NEP hub, which enabled data-based decision-making and an efficient project evaluation process. Odyssey created the data management and management tool for 250 feasibility studies. Odyssey will track all project connections and performance while reducing program execution costs.

As for Niger, the Agence Nationale de Promotion des Energies Renouvelables (ANPER) is considerably expanding its mini-grid activities, with several financing programmes. The challenge is that with four different donor programs to manage, how to create a central platform to interact with developers and track data, while allowing results and projects to be displayed through the funding program. To meet this challenge, Odyssey has developed tools to visualize pipelines, project portfolios and performance dashboards by category, including by funding program. ANPER has already started the process of sorting the sites and adding this data to Odyssey for the tendering process.

1.10. **Presentation n°10**: Africa LEDS Partnership (AfLP), a network of governments and practitioners who share their experiences, information and expertise through the New Africa Mini-grids Community of Practice by Jessy APPAVOO

AfLP is a network of more than 600 members including 31 African countries and works closely with groups on energy and finance in particular. Its mission is to promote low-carbon development for climate change resilient development, in support of poverty alleviation, job creation and environmental management in Africa. In this context, AfLP works on capacity building and has two communities of practice in Africa for the development and financing of mini-grids. Among other things, these communities build capacity, organize exchange visits and provide technical assistance to governments.

1.11. **Communication n°11**: Deepbloo, platform for access to energy for seeking commercial / financial partners, to access opportunities, presented by Mr Alexandre GUILLEMOT, CEO of Deepbloo,

This online platform allows project developers to share and benefit from tendering and event opportunities.

In particular, the area dedicated to CLUB-ER is reserved for access to energy. The Club members can register and benefit from the platform's opportunities free of charge. Each member can also share opportunities on this platform.

**B.1.2 Summary of discussions**

Following the presentations, participants expressed concerns to which solution attempts were developed. The summary of these concerns is presented in the form of recommendations. These include, among others:

- to organize itinerant training sessions by country or zone;
- to organize study and exchange trips between rural electrification agencies and structures;
- to favour hybrid solutions when the national grid arrives;
- to build the capacities of actors in charge of rural electrification to mobilize financing.
B.1.3 TROPHY AWARD CEREMONY BY THE INSTITUT DE LA FRANCOPHONIE POUR LE DÉVÉLOPPEMENT DURABLE

At the end of the first day, three start-ups were awarded prizes by the IFDD following the "jeunes entreprises durables" competition that took place throughout 2018. The award-winning nominees are:

- The company IGE (Ingénierie de Gestion de l'Energie) of Guinea represented by Mr. Bary Mamadou SAIDOU, which supplies solar kits to rural areas of Guinea.
- The company "EP Groupe" (Energies Propres Groupe" of Togo represented by Mr. Cossi DOLAGBENOU. This company supplies solar chargers to some rural areas in Togo.
- INT (Ivorian New Technologies Company) of Côte d'Ivoire represented by Mrs. Aminata FOFANA, which produces and sells biomass briquettes to provide cooking energy
- The company IGE (Ingénierie de Gestion de l'Energie) of Guinea represented by Mr. Bary Mamadou SAIDOU, which supplies solar kits to rural areas of Guinea.

**DAY TWO: Wednesday 6 December 2018**

Eight (08) presentations marked this second day around the theme "Decentralized electrification: mini-grid, preparing for the arrival of the national grid".

B.1.2. SUMMARY OF THE PRESENTATIONS

a) Session IV: Innovative approaches

2.1. **Presentation no°1**: Nanoé, "lateral electrification" and "nano-grid", a new model of progressive energy access by Mr Nicolas SAINCY, Co-founder

Current grid-based electrification solutions are slow to deploy and unreplicable, while individual solutions have no sustainable impact on development. To overcome these shortcomings, the lateral electrification model, which reconciles energy access and sustainable development aspects, is a progressive and collaborative process of building 21st century electricity infrastructure in Africa.

This technique is essentially based on renewable energies, digital technologies and local entrepreneurship and is based on three pillars. The latter are based on the gradual evolution of very low-power nano-grids, which then move on to microgrids, mini-grids and grids.

To achieve this, hardware, software and business model innovations are required. To this end, Nanoé facilitates access by local electrification entrepreneurs to technologies, markets, skills, methods, tools and financing.

Currently, Nanoé is based in Madagascar in the DIANA region (Ambanja and Ambilobe Districts). Franchised nano-entrepreneurs deploy the systems (a solar kit sized according to the needs of 4 to 6 households. The latter pay for the investment and service through the Orange mobile money).
2.2. **Presentation n°2: Sunkofa Energy, the customer-focused company providing energy services through sustainable smart mini-grids** by Mrs Irène CALVE, Co-founder

Sunkofa Energy provides energy services through mini-grids based on renewable energy. It is a young company built with a team that has already accumulated more than 35 years of experience. The team intends to use their extensive past experience to provide the best proposals to their clients. For the moment, this young company is focusing on the French-speaking countries of West Africa and focusing its activities on the customer. Its ambition is to reach at least 150,000 customers in at least four countries.

2.3. **Presentation n°3: HEME GmbH: Services and tools provider for the management of energy production products** by Mrs. Marina RAMAROSON, Co-founder

HEME is a consulting firm specialising in project, product or service life cycle management. To this end, the proposed tools help in the decision-making process for the organisation of support for the various components of electricity production and also make it possible to study environmental and social risks. Among other things, it helps to ensure compliance with the requirements of international donor standards.

2.4. **Presentation n°4: ANDRITZ HYDRO and mini-grids package** by Mrs. Viviane VERNON, Mini-Grid Manager

Andritz is a global company with more than 175 years of experience in the field of manufacturing and service provision in electromechanical systems for hydroelectric power plants. In this context, it has installed a micro hydroelectric power plant in Madagascar to supply 8,538 customers. Indeed, Andritz offers a range of turbines from Kaplan to Crossflow and Pelton. In general, Andritz can install, supervise or provide capacity building for mini-hydropower grids and is open to collaborate with rural electrification agencies and companies in Africa.

2.5. **Presentation n°5: Mini-grid partnership** by Mrs. Ruchi SONI programme manager

The Mini-Grid Partnership, created in 2014 by SE4ALL, brings together financiers, developers, facilitators and decision-makers to share information, ideas and guide policies and markets towards a movement of clean energy mini-Grids. Its goal is to create a market for clean energy mini grids. In this context, it proposes, inter alia, to assist in the formulation of policies for the public and private sectors and to coordinate the knowledge and actions of the sector.

2.6. **Presentation n°6: Introduction to the Association of Mini-Grid Developers in Africa (AMDA)** by Mr Aaron LEOPOLD, CEO

AMDA was created by developers to improve political and financial understanding and support for the mini-grids and rural communities they serve.

Its mandate is to create a set of benchmarking data for the sectoral key performance indicators of hundreds of mini-grid sites and provide advice to financiers and decision-makers on creating the best environment to achieve clean energy access objectives.

In this context, AMDA makes each connection at an average cost of US$938 and finances 86% of its activities from its own funds. Its mini-Grids can be installed in six weeks. In terms of recommendations, AMDA advises appropriate regulation and subsidies because the costs of energy connections and services are higher than the income of rural customers.
b) Session VI: Legal and financial aspects

2.3. **Presentation n°7: Off-grid, how to prepare for the arrival of the national grid, the case of Benin**

by Me Mahoussi AMOUSSOU Conseiller juridique du Ministre de l’Energie du Bénin

When the grid arrived, three solutions were envisaged:

- The first solution is that the holder of the security has the possibility to continue his activity. It will be able to purchase electricity from the national grid to complete its own production. The tariff will be negotiated with the concessionaire of the distribution grid and approved by the French Electricity Regulatory Authority (ARE).

- The second solution is that the holder of the title may also abandon its off-grid electricity distribution and sale activity in favour of the concessionaire and keep its activity as an independent electricity producer. In this case, it may request compensation and a production concession agreement and a purchase contract will be negotiated with the approval of the ARE.

- Finally, in the event that connection to the grid causes an irreversible deterioration in the financial management conditions of the holder of an operating security, he may request the termination of his obligations and seek compensation from the granting authority.

In the last two cases, the compensation is negotiated between the parties and is based on the value of the assets at the time of connection, the expected revenues and the subsidies granted, if any, when the system is installed.

In addition, in order to mitigate the effects of the advent of medium voltage, the required concession standards must be compatible with the national grid.

c) Session VII : Technical Aspect et clients management

**Presentation n°8: The interconnected mini grids, the future of the energy system,** presented by Mr Sam SLAUGHTER, Co-founder and CEO, PowerGen Renewable Energy

PowerGen was founded in 2011 and is a microgrid company in Africa, managing 10,000 customers and having offices in four African countries. It is available to carry out national mapping of mini-Grids for any African country.

Indeed, for PowerGen, the future global grid is a grid of interconnected mini-grids. As mini-grids can and should be connected to the main grid, the discussion should focus more on private utilities and utilities (rather than the main grid and mini-grid). Whether it is consumers (through higher tariffs) or governments (through taxpayer or donor revenues), someone has to pay for rural electrification. Private services can offer governments better value for money: cost reduction, better service, future technology.
**Presentation n°9: How some off-grid renewable energy projects have adapted to the arrival of the grid**, presented by M. Chris GREACEN, PhD, Consultant, Banque mondiale, ESMAP

Generally, there are six options available to mini-grid developers when the national grid arrives. Either they become small distributors, or they redistribute the energy purchased at an affordable price via the grid, or they become producers, or they are bought back or in the end they give up.

Cases of abandonment are the most common, but some still manage to survive the arrival of the national grid. Finally, Mr GREACEN pointed out that by abandoning a site, developers often move their equipment to other territories.

**d) Session VIII: Millenium Challenge Account (MCA) Benin II**

**Presentation 10: Call for mini-grid projects**

The MCA Benin II project is funded by the United States for the period 2017-2022. Its mission is to improve electricity supply and infrastructure in the country through four components: policy reforms and institutional strengthening, off-grid production, distribution and energy supported by gender and social integration and environmental and social performance.

The mini-grids are part of the off-grid component, which has two components: the creation of an enabling environment for Off-Grid Electrification and the Off-Grid Clean Energy Facility (OCEF), intended to serve as a lever for mobilising the private sector, and whose first call for projects was launched on 22 February 2018.

The 2nd call for projects aims to support activities that provide electricity off-grid, are profitable and sustainable. To do this, OCEF requires a business plan, another financial plan, the treatment of cross-cutting issues (gender and social inclusion, simplified environmental study) and a responsible commitment. In exchange, if necessary, it offers a donation of between 25 and 75% of the initial investment. The total amount of the OCEF envelope is US$20 millions.

Within this framework, four windows are open, ranging from essential public infrastructure to energy efficiency measures, decentralized production and electricity distribution via mini grids to domestic energy systems.

However, projects with physical resettlement of people, negative impact on natural habitat and thorough environmental impact assessment or which do not comply with the objectives of MCA Benin 2 or which have an Economic Profitability Rate below 10% are not eligible.

**DAY THREE: Friday 7 December 2018**

A field trip was organized for participants to a solar power plant power generation site in the town of Avloh in the rural commune of Grand-Popo.

The total power of the installations is 30kWp with a storage capacity of 5,800Ah / 48V. The 3km distribution grid in 400V with the neutral distributed is made with twisted 3 * 70² + 1 * 54.6 + 2*16² Almélec cables (for public lighting).
The investments were made with the support of the African Biofuels and Renewable Energies Company (ABREC) which mobilized the financing for the State of Benin from commercial banks for an amount of 40 billion FCFA for 80 central solar power including that of Avloh.

The work was entrusted to the company GAGE - Groupe Africain de Génie en Energie (a subsidiary of Africa Power Group and AGETUR International).

The solar power plant was delivered on June 25, 2017 However, given the legal vacuum on the management of off-grid operations, (until September 12, 2018, the date of the adoption of the decree regulating off-grid electrification in Republic of Benin, exploitation is still not functional.

A call for applications will soon be launched to identify a farmer to operate the plant.

To close the day, the participants visited:

- the 6 stages of the "Route des Esclaves" and in particular the "Porte des non-retour". When they arrived on the coast, the slaves were exhausted. No one had the physical capacity to retrace their steps. Today, on this road, there are many statues. They carry messages and remind Beninese culture and the reigns of the various kings. We learn that Ouidah is the second departure point for slaves behind Pointe Noire (Congo). It is ahead of those of Gorée (Senegal), Cape Coast (Ghana) and Zanzibar (Zanzibar Island).

- and the "Temple des Pythons", it is a voodoo sanctuary located in Ouidah, in a place where the existence of a cult of the Serpent - a particular form of voodoo - is attested since the end of the XVIIe century. These living sacred pythons are one of the city's major attractions.
The participants were able to take advantage of the different moments offered during these 3 days to expand their network. A welcome cocktail (Wednesday 05.12) and a gala dinner (Thursday 06.12) offered by ABERME were the opportunities to strengthen the ties between CLUB-ER members and its partners.

Participants were able to taste Benin's culinary delicacies and had a glimpse of the local cultural richness through the various paintings offered by the ballets.
ACKNOWLEDGEMENTS:

Through their representative, the participants in this 14th Annual Meeting of the CLUB-ER held in Cotonou delivered a motion of thanks to the Beninese authorities through H.E. Mr Jean Claude HOUSSOU Minister of Energy. The recognition also goes to the Director General of ABERME Mr. François TCHEKPO and all his collaborators.

B.4. GENERAL CONCLUSION AND RECOMMENDATIONS

➢ At the end of the deliberations of the said meeting and after the synthesis of the recommendations formulated, the participants adopted the following main recommendations:

With regard to the subject "mini-grid, prepare for the arrival of the national grid":

The general context is:

- African states have different approaches to rural electrification and at different stages of maturity, and in which the approaches of mini-grid project developers are open (different production and distribution models coexist in the field).

- On the other hand, the mini-grid is a technical option that is not very well developed by national electricity companies. The mini-grid is more developed by rural electrification concessionaires, with a diverse and varied economic model, often startups.

- Finally, legislation and contracts must allow all actors (national companies and private concessionaires) to be secured in their investment. The case of the arrival of the national grid near centres supplied with mini-grid must be taken into account in regulatory texts and/or contracts.

In this context, it does not seem possible to resolve this dilemma in a global way, nor in the time of this meeting. However, it seems necessary to bring together the public authorities of the various countries and project leaders on the issue. It therefore seems appropriate to mandate the CLUB-ER for the production of a study highlighting the opportunities of the model according to the geography of the development of rural electrification regulatory frameworks, but also the need for project developers to provide the essential guarantees linked to sustainable public electricity service in order to benefit from more support and guarantee.

➢ More generally, on other possible areas of intervention of the CLUB-ER:

Advice: many consultants travel across the continent and conduct studies that are often inaccurate, inaccurate or based on outdated information. The CLUB-ER could therefore monitor the development of rural electrification by publishing an annual inventory of the situation and an updated atlas, to be published on the occasion of the annual meetings. These documents will have greater credibility, particularly with donors.
**Training:** electricity distribution in rural areas is an activity that national electricity companies are not aware of and that many rural electrification operators are discovering. The professions related to this activity are not fully covered by the traditional training courses, particularly on the operational aspect. But training needs differ from country to country and their progress in rural electrification. The CLUB-ER offers planning and design training courses that are generally targeting managers and held in Abidjan. But in the field of exploitation, the supply is less important; it is however necessary for the sustainability of rural electrification efforts, they are aimed at a larger number of staff (generally non-executive), and cannot be held in a single place. A mobile training centre could be set up, in conjunction with the agencies in charge in the States, to offer training related to the implementation and operation of rural electrification.

**Regulatory framework**

In view of the growing interest in off-grid electrification, it is imperative that the CLUB-ER countries adopt regulations for the subsector, following the example of Benin, the host country of the 14th meeting of the Association.

**Travel for exchange of experiences**

In view of the progress made by some countries in rural electrification, it is strongly recommended that the agencies and structures in charge of rural electrification initiate partnerships between them in order to boost the sub-sector.

**D- CLOSING CEREMONY**

The closing ceremony was presided over by Mr. Hary ANDRIANTAVY, Executive Secretary of the CLUB-ER who thanked the participants for their active participation and wished them a safe return home and hoped to see even more of them in Nouakchott (Mauritania) in 2019.

Signed by
Rapporteurs,

**Mamidou TCHOUTCHA**
**LALY CHACHA**
DGRE
DGRE

President,

**Florent OROU FICO**
ABERME

**Annexures :**

- Attendance sheet
- presentations