World Bank – Innovative models for scaling up off-grid access in Sub-Saharan Africa

Meeting of the MEDEF International's office in Washington, in partnership with the French Environment and Energy Management Agency (ADEME) and the French Renewable Energy Trade Association (SER), with

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chaired by

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Virtual meeting – Webex

M I N U T E S

MEDEF International, France's leading private international business network, aims to promote the know-how of French companies abroad through collective actions. In this context, a representative office in Washington has been established in 2019 to support and strengthen the access of French companies to markets financed by the International Financial Institutions (IFIs) based in Washington (the World Bank Group, the Inter-American Development Bank (IDB) and the US development agencies). This "expert webinar" is part of its actions.

I. Off-grid in Sub-Saharan Africa: an overview by the World Bank

Power access in the region is an emergency resulting in close to 600 million people still lacking electricity access across the continent in 2021. The solutions put in place so far are still missing the target of reducing drastically energy poverty while the demographics and urbanization rates of the continent are growing at a fast pace, hence reflecting issues faced by energy providers to face this urgency.

The lack of electricity is harming economic development of societies with every country losing on average 4% of their GDP due to a lack of good quality access to electricity. Out of 48 countries in Sub-Saharan Africa, 10 of them are on track to achieve universal access to electricity by 2030.

In that scope, the World Bank has strengthened its activity and efforts in the region to encourage electrification progress:

- The funds invested in the region rose from $1 billion per year in the last 5 years to **$3 billion** this year.
- Electrifying the continent merely with on-grid expansion would have an estimated cost of **$620 million.**
- The optimum technology mix (off-grid and on-grid together) has been estimated at **$195 billion:**
    - **$155 billion** to connect about 200 million households;
    - **$40 billion** to connect schools, health clinics and essential services providers as well as to provide clean cooking solutions and strengthen the enabling environment.
- The $3 billion funds are expected to be divided into **60% of on-grid** investment and **40% for off-grid** solutions to reach universal electricity connections by 2030.
- The on-grid investments will mainly be applied to densely populated urban areas.

For that matter, the World Bank strongly believes in technological innovation in the energy sector and the use of batteries to achieve such objectives. However, all the funding cannot be public, and the support of the private sectors and donors is essential and especially synergies and coordination between both.

II. The World Bank's approach to investing in off-grid electrification

Both mini-grids and off-grids systems represent a significant area of increased lending from the financing institution. They work together with the governments to ensure that the end utilities are viable both from an operational and financial viewpoint and hence don't discourage energy providers to execute their projects.

They lend funds upstream to governments in exchange for them to follow a strategy that will help the energy sector to become more sustainable overall. To companies stepping in on these projects in conflicted or instable areas, **the World Bank provides financial guarantees to promote investments.**

Taking a closer look at their investment approach, the World Bank has been working the following way:

- They help governments **develop better enabling frameworks** for them to attract investments, including technical systems activities to work on improving policies and the regulatory environment for mini grids. They reckon it is important to work with the regulator agency to set-up a comprehensive but light-handed regulation for mini grids to give protections to the investors.

- For off-grid solar solutions, they work with governments to adopt and implement quality standards. They help governments **set up enabling tariffs regimes** in terms of custom duties and taxes intending to avoid passing on these taxes to the poorest.
- They work with the government to help run an **awareness campaign** so that the households know how to switch to qualitative products.

A. Debt instruments

The World Bank also highlights the **need to involve debt equity for the private sector** although they do not finance it themselves. Nevertheless**, they have set up debt facilities** in many countries that channel funds often through the local commercial banks or through specialized funds managers. Such **facilities provide working capital to the off-grids companies in local currencies** to avoid any mismatch between revenues that companies are collecting and their debt obligations and enable access to foreign currencies.

The approach of mix instruments will depend on the following:

- Local conditions;
- Status of the market;
- Liberalization of the country;
- Degree of focus on scalable approaches.

Access to finance is fundamental across the process both for off-grid solar and mini-grid companies:

- Debt will be critical for companies entering accelerated growth to finance receivables/working capital for OGS: long-term debt needed for mini grids (local currency), while equity (and grants) will enable companies to rapidly expand to unserved markets.
- Foreign currency lending is critical to unlock sustainable and steady product supply in foreign capital constrained markets.

B. Results-based financing

The World Bank sets up financing facilities that the private sector can take advantage of. One instrument that they have found very useful, promising and successful is **results-based financing** mostly for mini-grids and solar home systems.

- The World Bank pays a certain amount of funding to the private sector once they have established a connection to the households.
- Results-based financing mechanisms is usually focused on incentivizing the private sector to service last-mil segments, but could also be providing vouchers to eligible population, allowing them to participate in the market covers viability gap for mini grids.

- It works well both for the private sector that have the certainty once they deliver the results to get funded, and for the government because it allows them to use this as an innocent policy choice to target the areas through different amounts.
- Allows to bridge affordability to provide a subsidy to households that can be channeled through results-based financing.

C. Examples of projects

Very recently the Board approved a $500 million project for Ethiopia, "Access to Distributed Electricity and Lighting in Ethiopia (**ADELE**)":

- $400 million used for off-grid electrification to expand mini-grids, working with national utilities;
- Help for governments to set-up PPP for mini grids to bring in the private sector;
- Working capital facilities and results-based funding for off-grid program.

Similar projects in Nigeria called "Nigeria Electrification Project (**NEP**)":

- $350 million focusing on helping the private sector deliver mini grids;
- Support of results-based financing also being used to scale up access to off-grid solar solutions in this case with a component to use distributed renewable energies to electrify universities and hospitals.

Aside from many national projects that they have, they established a regional program **"ROGEAP"** (under implementation) that provides funding both in terms of credit lines and grant facilities in the countries of West Africa. It is designed to incentivize and help private sector develop solutions.

III. Challenges faced by companies

The World Bank is aware of the difficulties faced by companies that invest in Sub-Saharan Africa and have identified the following:

- Tariffs are non-cost reflective which makes utilities financially non-viable;
- Even when tariffs are cost reflective, utilities have low performance rates with very high losses on the systems due to technical issues and theft;
- No payments by the State on entities are very high making billing an issue and pressure on the utilities;
- Need to improve on planning: the World Bank tries to work upstream in order to have a long-term low carbon planning for the future, working around the long-term strategies, making sure that decarbonization plan and access go together because they believe in the combination of access and clean energy.

The case studies have brought forward the additional elements:

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- ⇨ Inexistence of logistical solutions for transportation across Africa, e.g. very difficult to ship end products across regions of the continent;
- ⇨ Local manufacturing is hardly supported by local governments and international institutions;
- ⇨ Tax exemption schemes do not consider local manufacturing: it is easy to benefit from when they import end products from abroad but harder when importing components that will be used to manufacture products locally.

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- ⇨ Source of subsidies: all the programs are highly subsidized, but State utilities are reaching crisis points with Covid-19 and in parallel, most African countries are reaching debt ceiling borrowing levels and mini grids require a large level of subsidies:
    - Potential solution: try to reinstate the subsidies that are today on diesel and fossils to mini grids;
    - Multiplication of more results-based financing could help the sector.
- ⇨ Reliability of demand assumption and the challenge of end-user's credit risks:
    - In most projects they are missing data on consumption patterns and income levels, so they need tools in case demand is lower than expected;
    - Absence of tool for risk-pulling and guarantee flexibility to address mini-grid revenue risk program;
    - Need to enhanced capabilities of countries to carry out sector reforms and improve utility performance in terms of tariff and quality services;
    - There is a strong need to create more synergies between energy utilities and other service providers (e.g. health, post services, administration) that could help develop these programs.
- ⇨ Desire to see larger electrification programs including mini-grids seeking to include them for instance with the disco and we are looking at geographies that put the necessary security and protections for mini-grids to protect their cashflows through appropriate compensation closes.

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- ⇨ The relationship with the development banks is sometimes difficult as it is hard to change the rules to promote innovation.
- ⇨ Financing hardly accessible in direct.
- ⇨ It would be appreciated to get connections to the engineering offices in charge of the projects, their design, and tender documents (in the technical and economic interest of all parties).

IV. Multilateral dialogue between the World Bank and the panelists

What is missing and how can the World Bank help this innovation reach millions of people as needed? If you were to develop your activities in a country in which the World Bank has a program, what would companies like to see form the World Bank? Ho to get it to scale and make it sustainable over time?

Answers from companies:

- ⇨ **Incentives for government to help local companies** would make a difference compared to imported products.
- ⇨ Give new major innovations the possibility to get an access to a technical division to give a chance for these technologies to be promoted, not only for the commercial aspect, but also for it to make sense to funding entities. In some cases, it is easy to prove that some solutions have a technical benefit but there is also a financial benefit to what is existing. It would additionally be helpful to **speak with the people in charge of the design of the program** to have a chance to present these solutions.

The World Bank's applied strategy to enhance the investment ecosystem

It is well acknowledged that electrifying rural parts of Africa is quite costly and in major cases, national utilities are highly subsidized, resulting in the actual price of electricity not covering its real cost. The World Bank emphasizes on the opportunity to develop business models and cost estimates that enable coherent comparisons.

The World Bank's advice to the government is to be technology neutral and focus on ensuring that everyone in the country has access to electricity and clean cooking. The objective should be to do it in such way that available will satisfy the demand.

For that purpose, the World Bank has put a lot of emphasis on starting by developing the **geospatial electrification plan** to see how far and where the grid can expand and how quickly. Governments usually having unrealistic assumptions of what can be achieved, geospatial mapping will provide a way to show them time and cost elements of projects as well as grid alternatives.

Involving the government in the off-grid decisions making is pushed through the following elements:

- The World Bank encourages public authorities to have a dynamic vision in a timeframe **and stop thinking of least-cost solution** in too long of a timeline. In that scope, they ought to sign off grid projects that will deliver households with electricity through immediate solutions.

- **Reinstate the idea of subsidies**: authorities might sometimes think that a product is so cheap that it does not need subsidies but targeting the least wealthy implies recognition of their hard accessibility:
    - The World Bank aims at bridging this affordability gap by engaging with governments on the topic of subsidies for solar gird systems 'end users;
    - They also provide support for the mini-grids where they have seen success in results-based financing.
- Reinforce the consideration of innovant off-grid technologies by governments: subsidies for off-grids work in a nontraditional way and it is harder and longer for government to endorse it.

The World Bank now provides an off-grid energy dedicated platform / planning model to display the electrification options and electricity demand based on income and poverty status. The platform is a strategic tool enabling governments and other actors to visualize the needed solutions in a geospatial way. This tool assists in understanding how the different technologies can interact together and whether it is realistic to allow for unconstrained grid expansion if it is deemed to be the least cost solutions.

The platform enables to see the following summary:

- Part of the population that would be connected at least costs through these different technologies' options;
- The associated investment required for every technology;
- Capacity added for each type of technology.

What is the position of the World Bank regarding autonomous solar streetlights? It is a very good solution to have mini grids but is seems hard to develop it in large metropolis across Africa. Is the World Bank interested in funding this type of development program? There are many solar streetlights in the world that malfunction mostly because of lack of maintenance, and it could be easily managed if we were pushing solutions to remotely manage the lights

The World Bank has been supporting solar street lighting, but they have failed making it sustainable. Technical maintenance is part of the sustainability model of solutions, but the question remains to decide who will pay for it over time. This is a recurring issue with systems designed for public use such as the lighting of a municipality.

Companies with innovative stand-alone projects are encouraged to develop a business model that will address the electrification needs in schools and health centers along with other essential services providers. Such projects are subject to the budget of public bodies and hence timely become a risk.

⇨ The World Bank has engaged in discussions with governments on how to **address this risk of payment** that prevents electrifying sectors that are essential to socio-economic development. Financial risk mitigation must be considered to go further with public goods investment.

If the World Bank comes up with an instrument providing a form of risk mitigation for the payment of the government for these facilities, would companies be interested to explore electrification of public goods if there is a guarantee for the payments ? How can we get more partnerships with international companies and local ones, collectively strengthen collaboration with local companies?

The Chairman underlines that there are a few African large companies in the sector, but they **fail to team-up at a large scale** if there is not some financial interest to it. Partnerships are more likely to occur through a greater share of Western African staff. All the commercial and the logistics is a concern for which local staff is very needed. The financing appears as a less constraining issue compared to the feasibility and affordability of business models across companies operating in Sub-Saharan Africa, both when they are local or foreign owned.

- ⇨ A possibility would be on the usual EPC (procurement framework) where the authorities borrow from the World Bank to pay for the lighting, and they reimburse them instead of going for a PPA which would be bought back by the World Bank.
- ⇨ The PPA makes a lot of sense when there is a private consumer or household that would pay utilities to the company but if there is not such a scheme, an EPC where the ministry is the owner of the asset and lenders take the risk would be preferred.

The World Bank highlights that as of now, they are providing loans and credits to governments, and they are procuring contractors who are installing the solar systems in the schools and health centers. When governments own them:

- In a grid treaty, even though there is a power connection in the school or health center, there is a monthly bill that the government must pay, and it is the holder of the utility who takes care of the heavy maintenance.
- It is different with the solar home system because the whole generation transmission distribution is within the school / health center, and we cannot expect all the schools to have the right skilled staff to maintain it.
- When batteries, solar panels or fuse are not looked after and well maintained, those projects are not successful after a couple of years as public authorities fail to allocate the budget to maintain these things on a regular basis because there is a nobody submitting an invoice or bill.

The operations and maintenance should be taken care of by the governments but what we often find is that in absence of appropriate monitoring, governments relax on that aspect, and they let go of the replacement and maintenance of the systems and the systems fail, then they come back to the donors for re-financing of capital for the same schools and health centers.

If we only follow the approach that the World Bank pays for capital costs and the local administration continues to take on the O&M, the major problems are:

  - The level of pace of growth achieved is only the level of financing the owners bring into the table;

- But the need to bring electricity to schools or health centers in sub-Saharan Africa is more than $10 billion and such funding can not only come from the World Bank or donors.

⇨ Public electrification will never be achieved unless we can bring in private investment of the capital into the mix.

⇨ The World Bank is very interested in bringing in the private sector investment to the business plan where the World Bank guarantees payment protection and a close relationship with governments to offer a mitigated risk of payment for international investors and a larger portfolio of investments for the region.

⇨ The donors could condition their donations to the contracting of an O&M good contract with the reliability of components that will incentivize the contractor to deliver and will slightly force the authorities to be careful.

The challenge remains **to bring all the individual stakeholders together in order to upgrade the scale of projects** as constantly having few pilot projects scattered across the region does not help in moving forward with the electrification of the continent. The ambition is now to design mechanisms that really allow companies in the off-grid space to move faster and reach millions of households to achieve SDGs target in 10 years.