



Workshop 4 – Renewable energy and energy efficiency

Climate Chance Summit 2019 – Africa

Africa, which is undergoing rapid demographic and economic growth, has an ever-increasing demand for energy. 600 million people still do not have access to electricity and the problems encountered on this continent are very specific. In addition to the imperative of access to energy in rural areas, particularly for cooking, the issue of renewable energy to support the continent's growth is imperative. However, the best energy is that which is not consumed, so we must think about energy savings and propose solutions to improve energy efficiency.

Summary of good practices presentations:

>>> **OXFAM** aims to develop access to renewable energy in Africa. One of its projects in Sierra Leone has shown several results: improved living conditions, better quality of public services, the use of renewable energy by at least 16,000 households with a reduction in lighting costs and 850,000 people benefiting from the production of renewable energy.

>>> The **GHACCO** programme proposes the development of "clean cooking" i.e. cooking methods that respect the environment and the health of African populations, especially women and children. This organization promotes, among other things, the use of briquettes and biomass from reeds.

>>> **ADEME** is committed to providing access to energy to all populations in Africa where 600 million people have no access to electricity and only 17% of the population has access to clean cooking methods. Example of the project in Madagascar to install a hybrid energy production system with a wind turbine.

>>> **Schneider Electric** wishes to develop "mini grids" in Africa, community-wide grids based on a clean source of energy, in order to ensure access to electricity for all in Africa and improve the resilience of infrastructure at a lower cost.

>>> Leads emerging from the work session

1. Introducing climate change concepts in school curriculums and e

Several speakers from different countries stressed the need to better teach children about issues related to global warming, i.e. to explain its causes. This is a wager on the future but also an opportunity because the African population is young and insisting on training can be a decisive lever for the future. However, beyond words and the inclusion of these concepts in the curricula, we must strengthen the means related to education. Indeed, teachers work in sometimes precarious conditions, which does not facilitate the transmission of knowledge to children.



Likewise, many people stress the importance of educating not only children but also adults on how to use energy. Explain in particular its source, how it works and also how to save energy.

2. Which energy for cooking ?

In rural areas, but also in urban areas, much of the cooking is still done on wood fires, mostly indoors. This traditional practice, an important cultural element of gastronomy because it gives the food its taste, is however the cause of many respiratory diseases due to the inhalation of toxic fumes. Several actors have committed themselves to offering low-tech and inexpensive solutions. A Ghanaian NGO proposes a metal briquette system to improve wood combustion. GHACCO proposes to mutualize cooking spaces by offering clean collective cooking solutions. Finally, the promotion of other energy sources such as reed, where biomass is a source of innovation because it prevents deforestation and reduces the risk of respiratory diseases.

3. Development of smart and mini grids

In the search for a model to electrify Africa, African countries and the private sector seem to favour mini-grids and smart grids, which are smart grids of modest dimensions, more resilient and above all less costly to set up than the large integrated grids adopted by Western countries. These networks are based in particular on renewable energy sources, such as solar energy. However, the share of fossil fuels in the African energy mix cannot be ignored, especially in countries with an oil advantage. While mini grids can be an answer to development problems, particularly in rural areas, they cannot meet the energy demand of the major cities in the making and of industries.

4. Solar, the solution facing energy access issues

Many insist on the advantages of solar energy: inexpensive, easy to set up and to insert in micro-grids, and above all a tremendous potential for development given the rate of sunshine in Africa and the available land space. However, several parameters have to be taken into account in order not to blindly plunge into this energy source. Firstly, the difference between supply and demand. Putting large solar power plants in the middle of the desert to ensure access to electricity for all may seem to lack lucidity, as local populations do not need a significant amount of energy. Secondly, their environmental impact must be taken into account, especially the end of life of photovoltaic cells.

5. Questioning the private sector's place in accessing energy in Africa

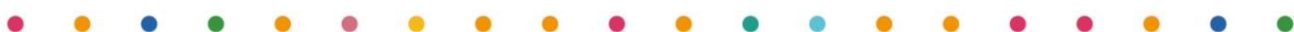
The various statements highlighted a fundamental debate: what economic model do we want for access to energy in Africa? Indeed, if private actors are now taking a predominant place, it is important to regulate it. Speakers insisted on the importance of this aspect, of having strong and clear governance, as well as legal security at the state level to protect the public interest on the one hand, but also to attract private investors on the other.

6. Energy saving: a false priority?

The urban, economic and demographic development that awaits many African countries requires energy savings to be taken into account in the construction of buildings today. However, several realities are intertwined: while wealthy populations in cities must think about extending or limiting air conditioning, other poorer citizens living in traditional habitats do not have this concern at all.

→ PROPOSALS:

Speakers stressed the need for the networking of all actors, private, public and non-State actors to encourage synergies. Indeed, it happens that different projects are intermingled in the same territory



or, conversely, that project leaders are discouraged by the lack of interlocutors. To this end, it was proposed to establish a map or directory of energy actors in Africa.

The following are the transcripts of the workshop.

RENEWABLE ENERGY AND ENERGY EFFICIENCY IN AFRICA

Africa has experienced rapid economic growth, which was followed by increase in energy demand. This created issues in Africa about electricity. In sub-Saharan Africa, 600m do not have access to electricity. Even if Africa is generated only 4% of emission gas, it would be the biggest victim of climate change. The access to energy on one side and the mitigation of climate change and adaptation on the other side.

Africa does not have the means to develop large electricity grids. It is, therefore, essential to think about the most cost-effective way to access them, such as mini grids and solar kits. Solar energy has become an important part of daily life. Nevertheless, cooking in the home accounts for 80% of the energy consumption, which remains central issue on the continent.

It is important to decentralize and liberalize the energy sector in a way that increases capability of local authorities to meet the energy demand created by urban and rural populations, as well as to create incentives for private entities and youth engagement.

Role of public policies:

There is a general reluctance of the governments to provide greater access to energy, while the private sector and NGOs are actively working with local populations. For example: AKON lighting for Africa (NGO created in 2014), has launched an electricity projects based on solar technology, which aims to provide access to energy for several million households in 40 African countries by 2030.

Nevertheless, ENGIE continues to promote decentralized energy and prioritize the supply and use of grid renewable energy in Africa, using solar home installations and mini grids. These activities are in line with ENGIE's objectives to give more than one million people in Africa access to low-carbon and decentralized energy by 2020.

In fact, moving from planning to concrete projects is a multifaceted challenge in Africa. The guidelines are often well done, but the transition to the implementation of these projects seems to be much more difficult.

Intervention:

- Mrs Sarah NAA DEHEI AGBEY about clean cooking

Ghana Alliance for clean cookstoves and fuels is contributing immensely to climate change adaptation and mitigation effort in Ghana. GHACCO is involved in development of clean cooking solutions, advocacy and national sensibilisation campaign.

The alliance has over the last six years deployed nearly 1 million improved and energy efficient cookstoves to Ghanaian households, that collective reduced household cooking fuel consumption by 20%-30%.

Key members of the alliance are engaged in the production of different brands of improved cookstoves (ICS), popular among high are Gyapa, Holy-stoves, cook-mate, toyola, envirofit and Obaahemaa. These ICS are efficient and using 20%-30% less.



The alliance is also promoting the adoption of alternative fuels, pellets and briquettes, produced from agricultural waste, such as sawdust, coconut and rice husks and palm kernel shells.

The alliance further undertakes public awareness campaigns, sensitizing the population on the environmental and climate impacts on our traditional cooking practices.

This programme also promotes the adoption of efficient cooking technologies and practices. Charcoal and firewood producers are sensitized to adopt more efficient and sustainable methods, practices and oodles development to ensure environmental sustainability.

- Abibiman foundation: Breaking the walls of wood fuel

The Foundation's findings are as follows: 70% of Ghana's total land area is wooded, and every year some 4.4 million deaths are due to the use of wood as fuel for cooking.

The foundation has therefore developed a model of a metal insert, to be simply placed in the kitchen fireplace, allowing for better combustion. This system, with a production cost of 1\$, would allow a 63% reduction in wood consumption as well as an 89% reduction in harmful gases. Thus, this insert would allow a better preservation of the forests as well as an improvement of the sanitary conditions.

The foundation is now working on two axes of development of this solution: a viable business model and export to other countries.

- **OXFAM**

Accelerating the fight for climate justice in West Africa

Promoting renewable energy services for social development in Sierra Leone project: location of the action: Sierra Leone across 6 districts.

Four partners directly implemented the project: OXFAM/IBIS, WHH, ENFO and COOPI. 48 months (MAY 1st, 2014).

Overall objective: contribute to poverty alleviation through enable energy services while promoting low-carbon development.

Specific objective: improve and increase access to renewable, affordable and substance energy services, for rural poor in Sierra Leone focusing on productive use and scale-up effects.

> Results:

Result 1: Improved living conditions and increased economic revenues for rural poor due to access to electric energy.

Result 2: The **quality of public services** is enhanced by electrification of public infrastructures.

Result 3: Awareness and capacity in respect to renewable energy systems in the private and government sector exist and is sufficient to sustain / scale up the renewable energy sector in Sierra Leone.

Result 4: A minimum of 16,000 households are either directly connected to renewable energy grid or possess solar home systems thereby reducing costs **for light by 30%**

Result 5: **850,000 people have access and benefit from renewable energy electrification /production or social infrastructure.**

- **ADEME: innovation for off-grid energy access**

In Sub-Saharan Africa, 600m have no access to electricity. And only **17% have access to clean cooking methods.**



Innovation task: France and India lead the fight in the access to energy for 'off-grid' populations. 9 projects are taking place in Africa. Innovation concerning all social questions as well as development.

3 project examples:

AMBATOLONA project in Madagascar supported by Guinard: Hybrid energy production system with wind power.

Social innovation + business model: solar kiosk > involves digital with an application to manage the energy agency allows for surveys to find out if new kiosks should be put up.

- SCHNEIDER Electric (Paul François Cattier)

According to Schneider Electric, for sub-Saharan countries, the majority of electricity is generated from diesel power plants. Moreover, in the projections for the population without access to electricity, 20% will be connected quickly, 60% are decentralized but will be connected, and 20% are too isolated to imagine a conventional connection.

This is why Schneider is aiming at the development of mini grids, mini production and local distribution networks, based on the companies present in the area.

Dialogue and discussions:

Speaker 1: (...) We have a **value chain** in the coal industry, we can use the same channel. That will reduce the funds we can use small funds that are available that can be used for this project.

Speaker 2: I want to talk about what we do for **women**. They work with coal and wood, and is it possible to improve these stoves? You didn't come to Nigeria, you say it costs \$1, but I don't know how women are going to use wood for cooking, there is the impact of smoke on health. We have to take that into consideration.

Answer 1: (...)

Answer 2: You are right, the use of wood is because it brings a certain aroma, there is the quantity, and these women are used to it, we have tried to improve the work by improving the quantity, it goes through new technologies, in terms of collaboration, we can talk about it in more detail after this meeting.

Answer 3: Time and costs are important

Answer 4 (ADEME): I have a comment, it's very important to develop equipment, it's not a question of forgetting, it's a question of helping partnerships between NGOs and the private sector because I think there are a lot of things we can do together, it's not just about technological innovation.

Speaker 3 (Cecilia): It is important to use biodegradable waste in the production of electricity, there is a lot of plastic waste in Africa. We could use that, some have decided to use batteries, titanium acid (low rate and low price).

Speaker 4 (Celia from Togo): There is certainly training to train the people, but I wanted to know if we could not tackle the roots of the programme: if we could not enter the African **educational systems to change their education**, insert in education the use of renewable energies, insert programmes on how to enhance recycling systems and offer young people opportunities, teach women how to use the products,... It is said that the use of wood causes a lot of smoke and now there is a lot more gas, there is methane, I wanted to know if the CO2 that comes out of the combustion does not act on the environment either?



Answer 1: Indeed, when you cook with wood, you spread CO2 but with renewable energies, you reduce by 50%, you pollute less. But you must also bring electricity to the population, **Africa has the right to energy, it is a right**, but if we can bring it under renewable energy, it would make it the cleanest continent on the planet. These are the two aspects we must work on: improving efficiency and giving the population access to energy.

Answer 2: We don't have the education and if we talk about the education we need to give, we can develop the knowledge so let's start the program and change our attitude. Children are informed long before, it is part of the social development of a country. It is more of a **social problem**, you are right, we have to change our education system.

Speaker 5 (Ministry of Ecology France): The need for energy is **growing very fast in Africa and more than elsewhere**. Demand is growing rapidly, faster than the capacity to develop renewable energies. IEA projections say that if we want to limit global warming to +2 degrees, at most, half of the way is through renewables and the other half through energy efficiency. **There is no point in building solar energy if we create buildings with the massive use of air conditioning:** it is the world's fastest growing demand. There is no sustainable Africa without energy efficiency and particularly sustainable. We need to multiply by 4 the surface area in Africa to satisfy urbanization. In the race for the future, when energy will be increasingly scarce, **the continents that will win will be those that have bet on the optimum energy**, the renewable energy to finance the economy and new technologies rather than to cool or heat the air outside. If you're interested, meet us tomorrow for a workshop.

Speaker 6 (Solange from Cameroon): In Cameroon teachers have not been trained. In 25 years, I have never learned anything about the environment, ecology, SD... Today **these words are transversal**, they are found in all areas, but we have not been prepared for that and we pass on false information to the children and when they discover other information, it creates conflicts. Introducing into the solar programmes is good but **building the capacity of school staff** is better.

Thanks to community projects introduced in our schools, we have been equipped. However, there is a problem at the level of the hierarchy: people who have not known about this topic: the committed teacher is confronted with this '> all organizations that want to organize things in this way receive rejections. In fact, if this happened assuming that I didn't understand what I was being talked about, I could only say no, so it's in the curriculum, but tacitly, there is a problem of method that would make it impossible to achieve this result.

Answer 1 CC: The objective of this workshop is to formulate a roadmap. It is an excellent example of what we have to do with our modest means: **change our political culture, education and training issues**. It seems to me that, as in France, **a certain number of problems are the same**. Indeed, France is wondering how to integrate these climate issues into the programmes. This can be part of a roadmap, and your speech was very interesting.

Answer 2: I think that, yes, let's react more in terms of our approach. The problem is there, and we must do something about it. We need time, we need to change the practice, but we also need to change the policy. Speaking of the programme, if we are faced with a barrier, you can make the change, but do you have the level? We've had the road map developed, you need to be more responsive, I just want to add my voice in saying that we need to take a holistic approach in our processes.

Speaker 7 (Nigerian woman): If rural women are asked to switch to wood fire in the production of "gari", is there no health benefit for them since we use it to convince them then how can we make them believe that fire does not have a health disadvantage?

Speaker 8: I am a student of renewable energy and this is a very important issue for the introduction of new technologies in Africa. I think it's important to establish mini grids, I mean if OXFAM could collaborate with CSOs, I want to know, do you need to have partnerships? Not all countries have the



same conditions, it's more difficult to work in other countries like in sub-Saharan Africa, it's important to be in collaboration with these groups to develop these tools, to access a community, and you face the difficulty. How to form partnerships and how to get funding, I would like to know if you are open to discussion.

Answer 1: We are, we are investing in renewable energies, in efficiency, we are working on the conditions of cooling, conservation of products. Depending on the product you are working on, we can make different arrangements. We are open to discussion and at your disposal.

Answer 2: We identify the solutions and one of the solutions is to work on the energy aspect, there are obstacles because there have to be competences, we have to have a much bigger vision and introduce the capacity of NGOs which is very relevant. You have to work in partnership, mentalities have to change, especially on climate change. We are open and have the pleasure of working with civil society, we try to help you build your capacity.

Speaker 9: I think we have to confer the social impact, last year I was on a panel, and in my opinion, this is an aspect that is often taken lightly, (...)

Speaker 10: I have a question on the liberalisation of the energy sector. It concerns the quality of distribution. In Africa it is different, people perceive it as privatization, how can the government provide electricity to rural and urban areas? How do you see the **private / public balance**?

Answer 1: Policy makers in Africa are important, they are the key to development in Africa. Most African governments don't have the funding to build schools or hospitals but there are banks like the World Bank that are not enough to solve the problem. **The way of financing is often very important. The objective is to activate the private investor.** In the beginning there was no problem to cover all Africa with the telephone network, the problem was the private sector. We understood that there was a market and a demand, everybody could make a profit and in 10 years Africa had a good connection. A lot has been done through investment and you can do the same with liberalization. In Nigeria, we have to solve the electricity problem, but they don't have the financing and it is important to involve the private sector. There have to be activities to attract these investments. The approach is different in different countries to convince different governments. 1/3 of African countries have decided to solve this problem by involving the private sector.

Answer 2: There are problems in Africa, yes, the approach must be different. I think that in terms of the services provided, there is a significant amount of justice in society, a very small group has all the wealth in the world, so even if we want to engage the private sector, we have to monitor, we have to advocate for funding. Developing countries have these private companies but there is another problem: the cost of production they give us is too high and we are working at a loss. **I am not saying not to work with the private sector, but we have to do it in the right way.** Let's include the right people at the right times. If you have to pay millions of dollars for maintenance, those are additional costs that we have to work on before we agree to work with the private sector.

Answer 3: **We need the private sector, we cannot develop without partners,** we understand that we have a perfect necessity. **The world is changing,** our regulators have to upgrade, when you talk about additional costs, **if the regulators were doing their job well,** it would be different. We need the private sector.

Speaker's answer: In the USA, the work is done by the State, the problem is the physical space which is very small in Africa. We need a solution; we see natural disasters but I don't see how the private sector can intervene in this case. In 20 to 30 years we will need physical space, I think the issue of mapping is important to build the infrastructure.



Answer 4: I think historically the first connection was made in the US by Edison. In Europe, most of the private companies in the industry started privately. We have thermal power plants that produce energy and all the other grids are connected to these plants. Climate change is asking us to change our energy production, forcing us to reduce the traditional model that we have, which is the central grid.

Answer 5: The contexts are different. Sometimes the private sector is motivated by profit and sometimes it can return products that are not of quality. When you work with the government or with the Chinese there are constraints. You must be aware of them in an appropriate way. I think the private sector is motivated by profit.

Speaker 11: I come from the private sector and I feel concerned. We have to look at the problems that these sectors face. In Niger, for example, it is a very sunny country: **we have the capacity to build these renewable energies, we have enough sun, but the local reality is that the capacity of the local population to access these products is very difficult.** They don't have the resources. In Niger we only have 20% electricity coverage. If we tell them to use fossil fuels, we have to find solutions to that.

Speaker 12: It seems to me that industrial development has been synonymous with climate degradation. We've lost to nature. When we talk about renewable resources, we all know that transport, factories produce a lot, but we continue to buy cars, motorcycles... It is not an opportunity for big companies to think as if there is no possibility of creating cars with reduced GHGs.

Answer 1: You have rules in most major cities in Europe such as no longer being allowed to have vehicles more than fifteen or twenty years old, soon diesels will be banned in cities. There are more and more electric cars and they are not necessarily the greenest. But we need to produce clean energy, which is not yet the case. 50% are still in fossil fuels and electric cars are more expensive.

Answer 2: **The champions of the electric car are the Chinese but almost all their electricity comes from coal so it doesn't create big differences,** but it does make a difference in terms of public health in terms of particulate matter.

>>> Conclusion of all reactions:

- Need to introduce climate change concepts into school curricula and to train and instruct teachers in this regard.
- Need to introduce more renewable energy especially in the kitchen (clean cooking) which is very toxic especially for women who spend more time in Africa cooking but also in all energy services in general.
- Need to develop more partnerships between the private / public / NGO sector.
- Disagreement on whether or not to use the private sector to enable the development of renewable energy in Africa

