Conference-debate “Decentralised electrification and development” — FACTS Reports special issue

7th October 2016
Pantheon-Sorbonne University (Paris I)
Action on climate change

On 7th of October 2016, to mark the publication of a FACTS Reports special issue on the theme of decentralised electrification and development, the Veolia Institute and Ferdi, in collaboration with Pantheon-Sorbonne University (Paris 1), organised a conference-debate that took place on the Pantheon-Sorbonne University campus. The special issue featured introductions by Thierno Bocar Tall, CEO of the African Biofuel and Renewable Energy Company (ABREC) and Jean-Michel Severino, President of I&P (Investisseurs et Partenaires).

This conference-debate, hosted by Jean-Claude Berthélemy (economy professor at Paris 1 University and Senior Fellow at Ferdi), generated great interest (more than 80 participants). It was an opportunity to present and assess the various approaches to decentralised electrification implemented in recent years to improve access to electricity for off-grid populations. The event provided a forum for discussion of best practices and learning from the experiences of those in the decentralised electrification sector.

► General background on the challenges for decentralised electrification in development

- Mouhamed Diop, Director of Project Management, SABER
- Pierre Carpentier, Deputy Director-General of Investment, I&P
- Oskar Lecuyer, Energy and climate economist, AFD research division

Universal access to electricity (a component of Sustainable Development Goal 7: ensure access to affordable, reliable, sustainable and modern energy for all) will not be achieved by investing exclusively in major networks, primarily because of practical barriers to distribution in rural zones. Additionally, technological advances have opened the possibility of decentralised approaches that make use of renewable energy, which makes such projects particularly attractive to many providers. Nevertheless, these approaches must be considered as complementary to major electrification networks, rather than as a substitute.

Due to the multitude of projects and their small scale, decentralised electrification has received relatively little attention from the major funding agencies. If development banks are to increase their funding for this type of project, **it is necessary to find mechanisms for grouping projects**. In order to convince the major backers of the value of rural decentralised electrification (over education, health or roads, for example), it is equally important to demonstrate and measure its socio-economic impacts—something that is currently sorely lacking.

The rural world suffers serious inequality in terms of access to electricity. On the whole, subsidies are directed towards urban centres at the expense of rural areas. Individual electrification systems are being developed, but for many people living in rural areas, the functionality these offer is far inferior to what is available to their city-dwelling neighbours. Lighting is certainly possible, but low power means that productive uses, ones that might trigger economic development and end poverty, are not possible. **In order for sustainable electrification projects to be economically viable and expand over time, it is essential that electrification can support the development of productive use, with positive consequences for the economic fabric.**

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Economic models of decentralised electrification projects **show that the possibility of attracting private investors has improved**, with a corresponding decrease in the proportion of subsidies. Principal areas of improvement are within the regulatory environment, with the implementation of a regulatory framework for opening up to the private sector, and the economic context, with technological advances in renewable energies, notably a decrease in the price of solar panels. These improvements are paving the way for viable economic models. **Nevertheless, case studies discussed during the conference suggest that subsidies remain essential in order to achieve affordable electricity for a maximum number of households, especially for small projects in remote, sparsely-populated areas.**

Even more important than attracting the private sector is **to create a coalition of stakeholders**. Electrification requires cross-disciplinary skills (engineers and technicians, managers, economists, sociologists…) in order to identify the best approaches—which may well be hybrid—to meet the particular needs of communities. It is not possible to devise a model that is universally applicable; the specific circumstances and potential of each area must be taken into account.

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In contrast to Asia, which has seen a growth in urban populations at the expense of rural areas, Africa is on the point of experiencing simultaneous demographic growth in both rural and urban areas. **It is essential, for climatic and agricultural reasons, to do everything possible to avoid a massive rural emigration.** It is imperative to satisfy the energy needs of rural populations by all available means, whether collective or individual, as a means for stabilising rural populations.

► Round table on collective approaches (mini-networks, energy kiosks)

- Loïc Owatta, independent electrical energy consultant
- Marc Gratton, Chief Delegate for Electricians without borders
- Samy Chalier, Director for Development at HERi Madagascar

In recent years, there has been a growing interest in mini-networks as a means for electrification in Africa. Using mini-networks for electrification is not in itself a new concept, since all networks in developed countries originated as mini-networks that became interconnected and homogenised over time. Nor are they a novelty in Africa: in countries such as Senegal, mini-networks have long been used to supply electricity to zones of activity far from the principal network.

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However, recent developments explain the current proliferation of such projects. The most important is the significant drop in the price of solar panels. A second is the large number of economic models which can make such projects viable.

But **the large number of options makes the development phase difficult** in terms of choosing the best model for particular local conditions. For a long time, project developers have not had the necessary resources to optimise these systems, but today they have numerous modelling tools at their disposal, allowing them to trial and rank technological options. Furthermore, they can search for information about methods employed in other geographical areas with similar local conditions.

It is essential to estimate and anticipate the potential demand, for usages ranging from domestic lighting to productive use requiring higher power consumption. **Adaptation to local conditions is thus a highly important contributor to success, and precludes the use of standardised models.**

It is difficult to establish a pricing structure that is both acceptable to users and renders the system economically viable. **The pilot phase should include extensive consultation to develop a pricing structure that is both acceptable to users and compatible with financial constraints.** The issue of tariff modulation should also be addressed: a tiered pricing structure based on power consumed and whether or not it is for productive use is more adaptable to users' budgets, but a flat pricing is simpler to put into place. **The pricing policy must also take into account the objective of making electricity accessible as widely as possible.**

It is imperative that the process involves local government structures, particularly traditional structures, to develop a climate of trust between service providers and clients, and to assist in resolution of the inevitable conflicts associated with this type of project, for example property disputes.

Finally, the wide range of local needs means that both individual and collective approaches can be used simultaneously. The challenge is to create an optimal electrical system by integrating all the available options.

► Round table on individual solutions (kits and solar lamps…)

- Gilles Vermot-Descroches, Director of sustainable development, Schneider Electric
- Renée Chao-Béroff, Director General, PAMIGA
- Ada Marmion, Business Development Manager, Energy4Impact

Within local populations, there is high demand for individual electricity systems, principally solar, but **progress is hampered by:**

- **physical accessibility** to such options, when the equipment suppliers are not located in rural zones,
- **unreliable information** on which to base a choice,
- **financing** possibilities.

In order to overcome these obstacles, it is essential to create trust by involving all stakeholders in the process. The appearance on the market of poor quality products has led to consumer distrust of individual solar systems. Creating partnerships between stakeholders from different backgrounds, with different mindsets, is a long process, because prejudices and distrust must be overcome before progress can be made.

When a large number of stakeholders—whether partners or competitors—are involved in seeking decentralised electrification solutions, the number of possibilities for households and businesses multiplies, and a network of last-mile distribution can be created, rendering models viable and upscaling possible.

Financing options are being expanded. The introduction of “pay as you go” based on mobile phone payments was essential to the success of solar home systems in East Africa. It is high time that West Africa also adopt them, in order to make up for lost time where rural electrification is concerned.

Training is crucial, at all stages of the process. On one hand, businesspeople and technicians must be trained to handle product sales, installation and maintenance. On the other hand, consumers must be trained in product utilisation and payment systems, so that they get the most out of the solutions on offer.

► Conclusion

This special issue of FACTS Reports is the first step. We now need to develop better understanding of these decentralised electrification projects, in order to scale them up. **Upscaling will not be possible without more specific firsthand understanding of what does and doesn’t work.** For this reason, Ferdi plans to follow up on this special issue by setting up an information bank for decentralised electrification. This information bank will address all the constitutent parts of a project, not only technical elements but also organisational, training, financing, etc.; and will gather as much information as possible on the socio-economic and environmental impacts of these projects.

Finally, both public and private development partners seek investments that will have an impact, and to this end **there is still a lot of work to be done to bring to light the various potential impacts**.