RURAL ELECTRIFICATION IN AFRICA

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En'R’Afrique is a leading consulting firm specializing in renewable energy (RE), Energy Efficiency (EE)

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PEDAGOGIC THERMAL PLATFORM

Thermosyphonic

Combined solar hot water
• African countries present differentiated and contrasting situations that clearly ask for historical assessment.
Two rural electrification models were developed in Africa.

**MODEL 1**
- Liberalization and opening to the private sector with or without privatization of the national company;
- Structure demultiplication: Regulation entity, rural electrification development agencies, rural electrification funds;
- The financing function is not ensured and no global analysis is conducted.
- RE conceded to private operators.

**MODEL 2**
- A reinforcement of the social role of the national operator who keeps its monopoly position in the utility sector;
- Absence of regulation entity, agency, or rural electrification fund;
- Rural electrification investments initiated with equity;
- Operator levered with government guarantee.
- RE implemented by the national electricity company.
Apply the liberalization to the private sector with or without privatization of the national electricity company

5 Examples of RE Programs (MODEL 1) sub-Saharan countries

- Burkina Faso: Fonds de Développement de l’Électrification (FDE)
- Congo: Fonds de Développement du Secteur de l’Électricité ‘FDSEL)
- Madagascar: The Fonds National d’Électricité (FNE)
- Mauritania: Planned implementation of an investment fund for rural electrification financing (FERD)
- Senegal: The rural electrification fund (Fonds d’Electrification Rurale or FER)
Mobilizing the private sector’s technical expertise and human resources

A more efficient use of public funds

Encourage knowledge transfer and introduce new management methods and technologies

Allow better management of existing infrastructures of private sector’s knowledge and management methods

Involving private companies contribute to reduced corruption

Obtaining a better price-quality ratio for other collective interest services
MODEL 1  is still very « modest »

- The credibility of electrification investment programs must be reinforced, isn’t it paradoxical to limit programs that are structurally unprofitable?

- The ambiguity of the « development » used for certain funds, What are the performance indicators? Are they social or financial?

- Implementing rural electrification programs and managing funds requires very different skills: single institution could be appropriate for the RE program in Africa

- The ambiguity regarding the ownership of financed electrification projects in rural areas, resulting in inconsistencies in the PPP contracts concluded

- The social issues regarding pricing differentiation and/or variations in the quality of services observed between a « rural concession » and the national electricity company premises

Rural electrification financing received little consideration
Find new refinancing partners improve and become full-fledged financial institutions fully operational financial engineering for optimal capital mobilization;

Attractive RE program presentations designed to convince financial decision makers, clearly distinguish between the development function and the financing function

Abandon the practice of financing institutions loaning to the government, who in turn transfers resources to a RE agency

Requires to sign credible partnership with international financing institutions and rely on a solid financial foundation on reassessment of the following:

- Funds should be able to present a planned project portfolio with different risk/reward profiles; finance not only unprofitable operations in some rural areas, but also profitable plants in larger rural communities or even decentralized green energy plants;

- Reinforce the current funds and allow them to become owners of the plants with assets on their balance sheet;

- The opportunity for a RE fund to be included in the operator’s assets, temporarily or for a definite term to securing of financial flow;

- The opportunity for RE funds to legally contract loans and act as guarantor, either directly through its by-laws or through an « agent » selected by means of invitations to tender, or through the national bank;

- The opportunity for RE funds to benefit from the government guarantee to have access to institutional lenders

WIN – WIN RE PROJECT
RURAL ELECTRIFICATION - MODEL 2

- High auto-financing capacity for investments
- Implementation solely entrusted to the national electricity company owner of the plants

2 EXAMPLES: National Rural Electrification Programs

- Morocco: PERG Programme d’Electrification Rurale Globale (Global rural electrification program) (Morocco)
- Tunisia: STEG Société Tunisienne d’Electricité et du Gaz
GLOBAL RURAL ELECTRIFICATION PROGRAM (PERG)  
MOROCCO

- PERG was approved by the Government Council in August 1995 and launched in 1996

This program intended on three levels:

- **Territory:** Global electrification of all rural households in the Kingdom in the short run;

- **Technical inclusiveness:** The program integrates all electrification techniques: Connection to the network and family-size photovoltaic kits;

- **Finances:** The PERG must integrate all financial resources available for rural electrification in the Kingdom
Program financed by three partners:

1. Local governments
2. Beneficiary households
3. ONE (National Electricity Agency) (Morocco)

- Local governments contribute MAD 2,085 per beneficiary household, payable in cash, or MAD 500 per year for 5 years. To this effect, they use equity (allocations, VAT), subsidies from the controlling department or development agencies, and loans from the Fonds d’Equipement Communal;

- Beneficiary households contribute MAD 2,500 payable at the time of subscription, or MAD 40 per month for 7 years;

- ONE (national operator) finances the balance and pre-finances investments. ONE draws 2.25% from its sales, overhead expenses (20%), and uses concessional loans and equity for pre-financing. The ONE contribution increased from 21% (PERG1) to 65% (PERG 4-2).

(53%) of these resources come from equity; financing complement, i.e. medium/long term concessional loans, was primarily contributed by AFD, EIB, BID,
Environ 3,5 ans séparent un TER donné pour obtenir le même TAR.
MODEL 2 – BENEFITS

- A strong, continuous political will until program completion

- A sound, operational national electricity company, capable of conducting a rural electrification program without prejudice to the continuity of existing electric services (urban networks)

- Sufficient own financial resources (State and local governments) to engage in this country-wide public investment while maintaining control over strategies and operational choices

- A credible State guarantee to secure international financing

- A rural population whose majority is capable of sustainably paying electric services at their true price.

- The priority to electrification through connection to the network: As the national network progressively expands

97.3% of PERG clients in Morocco are connected to the network while the others use a solar kit
The model 2 is only accessible to some countries who can support in long term the financing effort required.

Evolution of RE takes place slowly and funds are still not operational.

Present a planned project portfolio with different risk/reward profiles. They should be able to finance not only unprofitable operations in some rural areas, but also profitable plants in larger rural communities where clients also include companies that are significant electricity consumers.

RE Funds must extend their partnerships to new financial partners based on profitable operations.

Privates operators are not investing as anticipated.

The rural electrification programs must dissociate the development function (humanitarian commitment) from the financing function.

Present a business plan designed to convince financial decision-makers the profitability of investments in rural electrification and return on financial investment.

The main problem of financing RE project has been the small project size.

Funds are no more than simple bank account they must be full fledged financial institutions.
It is important to remember that countries did not (always) have the means to choose between these two models. Likewise, it is important to remember that, at similar rural electrification rates, initial situations could be very different from one country to another, depending on its political and financial situation, the condition of the public electricity operator, the geographic characteristics of the territories to be electrified, the nature of demand, and the populations’ payment capabilities for electricity. Analysis results depend on the combinations of these national characteristics.
THANK YOU