Expert Group Meeting on Promoting Energy Access for the Urban Poor in Africa: Approaches and Challenges in Slum Electrification

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Modern Energy Access in Peri-urban Areas: The case of Dakar, Senegal

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Dutline of the presentation

- Context and objective of the study
- Areas of the study
- Key findings:
 - Situation of Energy access in peri-urban Dakar
 Barriers to clean energy access in PU Dakar
- Policy recommendations
- Conclusion/Way forward



Context and objective of the Study

- Global Network on Energy for Sustainable Development (GNESD): Type II initiative from the WSSD
- Centres of Excellences (20 Centres: North and South)
- Studies by 7 Centres (Senegal, Kenya, South Africa, Brazil, Argentina, Thailand, India)
- More information on regional studies/www.gnesd.org
- Summary for Policy makers (Available)



Objective of the Study

To identify challenges and policy options in order to facilitate improved, clean and sustainable Energy services to the poor living in urban and peri-urban areas in developing countries, from the perspective of Poverty Alleviation, Productive Use of Energy and Environmental Protection.



Areas of the study in Senegal / Coverage

7 peri-urban areas

Rail, Barack L6, Yoff, Ainoumana, Ben Barack, Malika, Daliford

 On different locations with respect to the main city Center, Dakar

Ben Barak , Malika, Yoff: *Remote zones* Dalifor, Rail, Barak L6, Ainoumana: *Closer to the city center*

• Study based on survey, covered:

280 households & 70 businesses: Situation of Energy Access (Availability, Accessibility, Affordability, Acceptability/use)

Stakeholders Interviews:

Government agencies, power company, targeted peri-urban populations

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Key Findings: Energy Profile in Peri-urban Dakar

Global Energy Profile:

• Middle ground between rural profile & urban profile:

With Modern forms of energy: Electricity, LPG (cooking) And Traditional forms: Wood & Charcoal (cooking), Kerosene (Lighting)

 Generally the energy profile is characterized by a transition from traditional sources of energy to clean and modern energy type.

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The extent of the transition depends on many factors: Availability, Accessibility, Affordability, Acceptability

| Periurban Zone | Rail | Barack L6 | Yoff | Ainoumana | Ben Barack | Malika | Daliford |
|-----------------------------|-------|--------------|------------|-----------|---------------|--------|--------------|
| Electrification Rate (%) | 77.5 | 66 | 100 | 87.5 | 92.5 | 87.5 | 97.5 |
| Distance to City Centre | Close | Close | Far -R- | Close | Far | Far | Close -R- |

Access through legal and illegal connections

- No correlation between electrification rate and distance to the grid
- Correlation between financial Capacity and Access
- High rates of electrification that hide significant reliance on illegal connection

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Main reason:

Lack of financial means >> Illegal settlement >>> Illegal connection

Types of illegal connection

Suspended





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Underground

70%-

Connection fees for illegal connections

In average: 48% do not pay Vs 52 do pay Family connections/ solidarity Proportion depends on the slums surveyed

The average connection fee is around \$8 Vs \$45

Electricity use: Two types of payment

- 1- Agreed sum
- 2- By equipment: higher than the utility bill for the same service



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Average: 1200 FCFA/month >> 840 FCFA through the utility

Productive use

Average: 12.5% of households use electricity in businesses

80 % of business are informal



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Rely on Illegal connections through neighbors

Connection fees: Similar to households

Payment methods:

- 1- Agreed sum
- 2- equipment type

Key Findings: Barriers

4 Major barriers to modern energy access in peri-urban Dakar

- **Barrier I**: The lack of a proper definition and understanding of the real characteristics of peri-urban areas > institutional gap
- Barrier II: Land tenancy issues/illegal settlement >> illegal power connections
- Barrier III: The prohibitive connection cost for households located far from the grid (> 30 meters): up to US\$ 650
- <u>Barrier IV: The inappropriate channeling of LPG subsidy and its</u> progressive withdrawal by the government



Key Findings: Barrier I

• Barrier I: The lack of a proper definition and understanding of the real characteristics of peri-urban areas > institutional gap

Stakeholders' interviews >>> 7 definitions !

- 1- According to the Urban planning ministry: between the city & rural areas. At the city's periphery with agriculture and other farming activities.
- 2- Statistics agency: No definition is given for peri-urban. The areas are classified as either urban or rural. Urban: All areas that are headed by a Mayor. Rural: All that is not urban.
- **3-** According to SENELEC: The entire Dakar region is considered urban.
- 4- Former Executive Officer ENDA: «Between the two». The contact zone that lies on undetermined, hybrid or mixed spaces. Not well defined and lacks of a consensus around its definition by the different stockholders and policy makers.
- 5- Enda RUP: Zone without any urban planning and that lacks the basic infrastructure (water, energy, school, etc). It is not part of the national taxation system. It is a zone where incomes are less than \$2/per capita and where we have the development of urban agriculture.



Key findings: Barrier l

- Barrier I: The lack of a proper understanding of the real characteristics of peri-urban areas that creates an institutional gap and an energy policy vacuum
- 6- According to a Pr. of Geography:

First definition:

The peri-urban is an interface between rural and urban. The peri-urban zones are the results of the evolution of cities but are unfortunately not taken into account in the urban planning policies. It is also a zone that is very difficult to define and delineate. The geographic limits are always moving because of the rapid population growth.

Second definition:

The most dynamic part of the urban area, it represents the interaction between urban and rural zones.



Key findings: Barrier l

Lack of a proper definition and a dedicated structure >>> Institutional gap:

Electricity Company: Focusing on Urban Areas

Rural Electrification Agencies / Power Sector reforms: Focusing on rural Areas

Peri-urban areas, "between the two": "Left alone"



Key findings: Barrier II

Barrier II: Land tenancy issues deriving from illegal settlement >> Illegal connections

- For legal electricity connection:
 - National or Foreign ID card
 - Address, phone number (house and work), Zip code,
 - Lease or house ownership titles
 - List of electric equipments in the house and their power requirements (Watt/KW).

Consequence: Higher tariff paid through illegal connection/neighbors

Example US\$ 2.4/month Vs US\$ 1.5/month for a 4W bulb (based on 4h/day and US\$ 0.25/Kwh).



Key findings: Barrier III

- Barrier III: The prohibitive connection cost for households located far from the grid
- The minimum connection fee required by SENELEC to establish an account is 19 000 FCFA = US\$ 45 (2008) when the household to be connected is 30 m or less from the existing grid
- For households located farther, the power utility adjusts the fee to the network extension cost.
- The extension cost can drastically increase the connection fee that can reash up to 300 000 FCFA: US\$ 650





Peri-urban area Definition & Characterization

• **Policy option 1:** Mobilization of a consultation framework/forum

Consensus of all involved actors around the definition and a proper delineation of the peri-urban zones, develop a data base and GIS (Location of Peri-urban settlements)

Remove the confusion between Urban and Peri-urban areas

Define specific needs of peri-urban with transition from rural to urban energy profile

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Help define targeted policy intervention for peri-urban



Access to electricity: Legalization of grid connections

• **Policy option 2:** to formalize, organize and upgrade the slums occupancy status in order to help poor peri-urban households have formal access through legitimate utility account.

To increase the level of access to legal electricity at the current tariff which is more advantageous than the tariff paid through illegal connection via neighbors *(Example US\$ 2.4/month Vs US\$ 1.5/month for a 4W bulb (4h/day and US\$ 0.25/Kwh).*

A good practice that is already applied in this respect consists in delivering a «Temporary Id Card» for the Peri-urban residents to make them eligible to open legitimate accounts with the power provider.

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Access to Electricity: Alleviation of high upfront fees

In the case where the periurban households are far from the grid (>30 Km) and where there is a necessity for additional extension work.

• Policy option 3: Payment of the connection fees through long term installments that can be afforded by the peri-urban poor, to be included in the electricity bill.

With allocation of Governmental budget to contribute to the additional grid extension cost.





Access to Electricity: Electricity-based income generation

Development of productive applications for electricity: Promotion of small scale productive units (Cold beverages, meat and poultry conservation, etc) to generate enough income to cover the electricity cost.

• **Policy option 4:** Financing mechanism for these applications are needed such as micro-credit arrangement where the households would get together in a micro-credit network to fund their own enterprises in turns.

supporting policy option: to develop an information campaign to show the benefit of productive applications and its possible use as a mean to afford the electric bill.





LPG: Way for targeted LPG subsidies for peri-urban poor

 Policy option 5: Creation of some specialized distribution outlet that provides 6 kg and 2.75 kg LPG bottles at a subsidized price.
 These outlets will be opened only in poor peri-urban areas but not in other wealthier areas.

Make sure the subsidy only benefits the poor: a subsidized LPG access card will be given to identified poor households of peri-urban areas. This would unable them to access LPG at the subsidized price upon proper identification.

This targeted approach will help channel the subsidy to the right target (poor) and impose market prices for the wealthier part of the population.



Policy debate

Regional workshops to present and discuss with policy makers the findings and recommendations

- Regional Workshops (Asia, Latin America)
- Sub-regional workshop for Southern and Eastern Africa (June 2009)
- Sub-Regional workshop for West, North and Central Africa (November 2009)



Areas for further research

- Possible development of small peri-urban energy producers or entrepreneurs that will generate and supply energy on site to the periurban poor at an affordable cost (?!)
- In-depth investigation of the safety aspects of illegal connections and the implications for the peri-urban poor (?!)
- Knowlegde sharing and partnership w/GENUS



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