

Rural Household Electrification in Lesotho

-Review-

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Rural Conditions Overview

- Rural electrification is seen as a catalyst for rural development
- Access to finance is a challenge
- Enabling policy reforms...incentive and conducive environment for private sector involvement
- 2015 in Lesotho
 - Grid-electrification rates: National 35% - Urban 72% - **Rural 5.5%**
 - Population spread: Urban 34% – **Rural 66%**



*Dispersed settlements...dispersed energy demand
⇒ Significant capital costs with limited returns*

Availability of data – crucial impediment!

Transition to modern fuels....wood smoke deaths >> (malaria+HIV) deaths

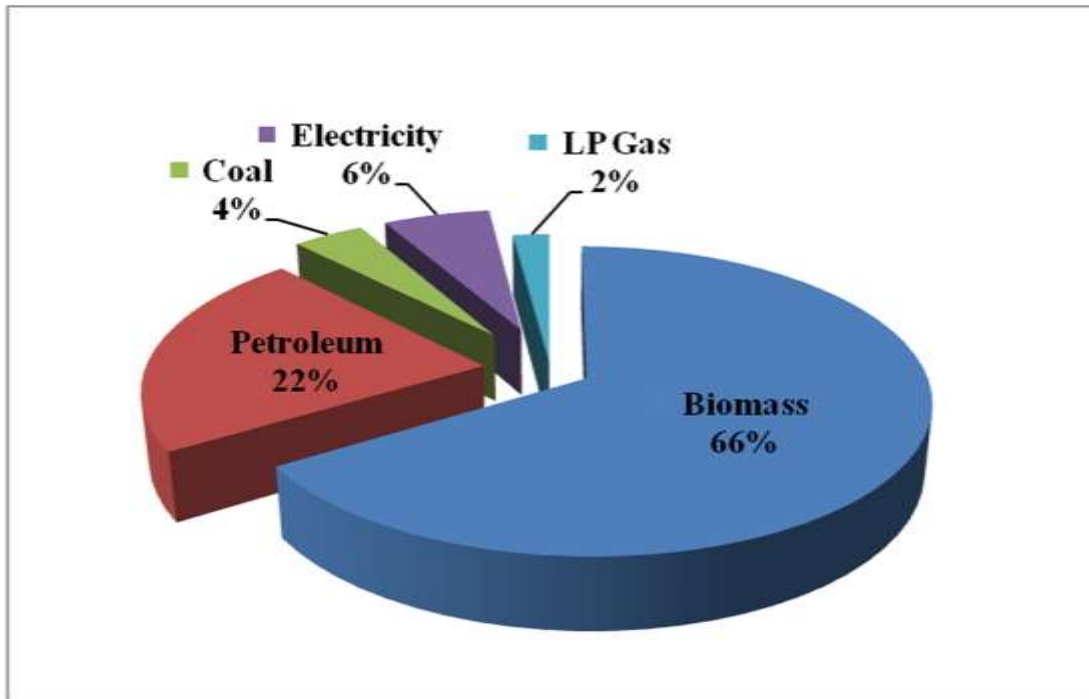
The World Bank Group. The cost of Indoor Air Pollution, Strengthening the Economic Case for Action, 2016.

Other Challenges

Households in Lesotho, especially in rural areas, use biomass (i.e. fuel wood, agricultural residues and dung) predominantly

Major interdependent issues in Lesotho:

- Mountainous terrain...1,500 m to 3,482 m
- Conducive policy environment...plan?
- Change of attitudes towards cleaner energy

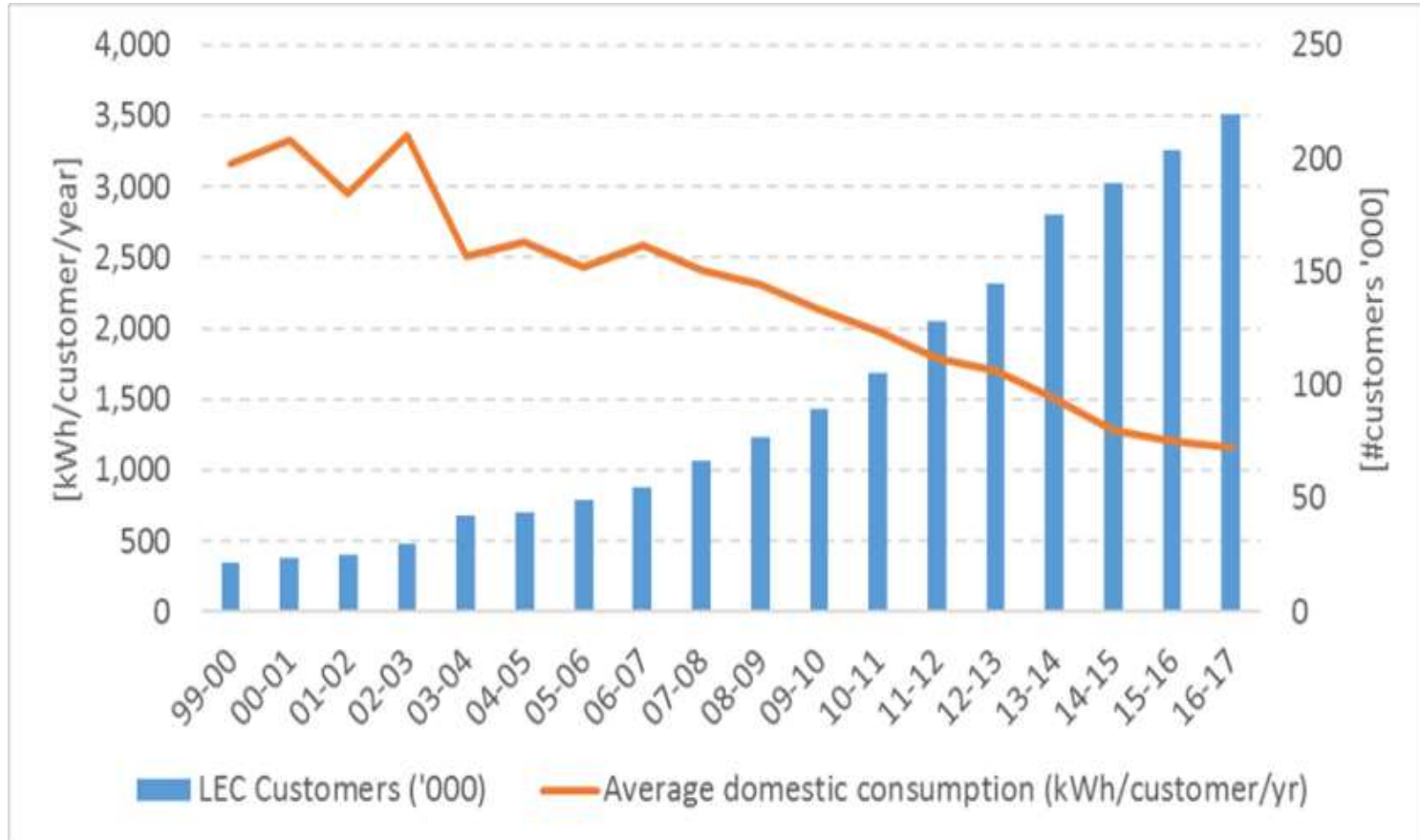


Source: Taele B.M., Mokhutsoane L., Hapazari I., Tlali S.B. and Senatla M. Grid electrification challenges, photovoltaic electrification progress and energy sustainability in Lesotho. *Renewable and Sustainable Energy Reviews* 16: p. 973– 980, 2012.



Other Challenges...

- Even in regions covered by the grid, not all households are connected to the grid
- Households connected to the grid are often reluctant to make use of electricity intensively



Lesotho Electricity and Water Authority. Electricity supply cost of service study: load forecast report. LEWA, Maseru, 2017.

∴ **Access** is not the only challenge... **affordability** plays a significant part too

Customer base: ~25,000 in 2001 to ~210,000 in 2016 ⇒ ~10x ↑
 Average Consumption: 2,951 kWh/year/hh to 1,157 kWh/year/hh ⇒ ~60% ↓

Solutions

Rural electrification programmes

- Brings electrical power to rural and remote areas
- Lesotho established Rural Electrification Unit (REU) within DoE
 - Serves areas more than 3.5 km away from the utility lines
 - Backlog of schemes seeking services, i.e. 135 new schemes in 2016/17 \Rightarrow 680 schemes...only 26 schemes served

Project	Bulk Power Purchased	O&M Costs	Electricity Sales	Deficit (M)
Qholaqhoe / Makhunoane	379 810.27	60 000.00	186 634.38	-253 175.89
Dilli-Dilli / Sinxondo	236 361.50	63 600.00	215 412.83	-84 548.67
Mpiti-Sekake	1 032 085.06	96 360.00	877 422.90	-251 002.16
Total	1 648 256.83	219 960.00	1 279 490.11	-588 726.72

Rural Electrification Unit. Annual Report for 2016/17. REU, Maseru, 2017.

REU owned and operated grid extension pilot access projects

High deficits....high disconnection rates (16% and 23%)

Just an extension of the utility company?

To achieve **100%** rural electrification, two key factors need to be met:

- National electrification rate above 50%
- Per capita income higher than US\$3,000 (~ M35,000)

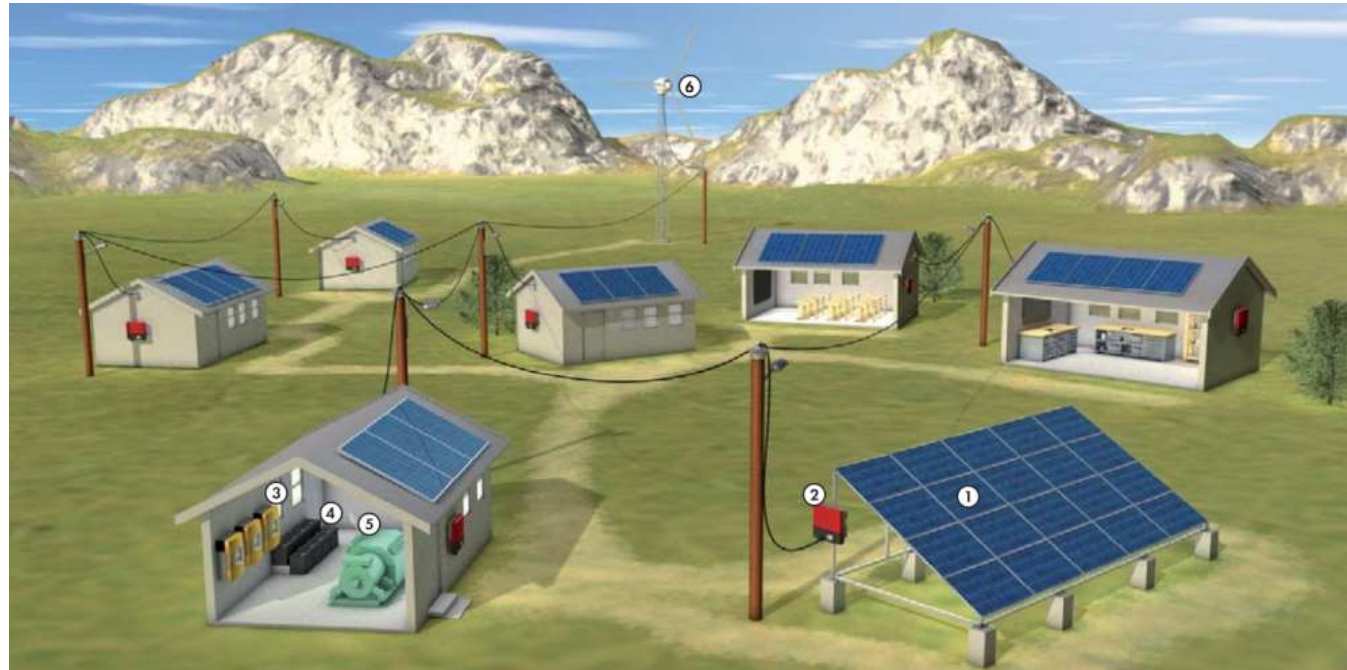
Mostert, W. Review of experiences with rural electrification agencies: lessons for Africa. European Union Energy Initiative Partnership Dialogue Facility, Eschborn, 2008.

No single successful approach to rural electrification...the major condition is **high degree of autonomy** to the implementing agency.

Barnes, D.F. Meeting the challenge of rural electrification in developing nations: the experience of successful programs. In: Energy Sector Management Assistance Program. World Bank, Washington D.C., Conference Version, March, p. 1-16, 2005.

Address both **accessibility** and **affordability** sustainably:

Utilisation of Renewable Energy Technologies standalone and/or mini-grids systems



www.esi-africa.com/news/rwanda-adopts-green-mini-grid-technology

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Maletsunyane Falls

Thank you!

Kea leboha!!



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