RENEWABLE ENERGY INVESTMENTS IN LESOTHO

USAID/NARUC Promoting Renewable Energy Development: Introductory Workshop for Energy Regulators

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Presentation Layout

- Country Geographic Background
- Power Sector
- Available Renewable Energy (RE)Resources
- Developed and Potential electrical power generation
- Ongoing RE Investments
  - Challenges
  - Lessons Learned
- Concluding Remarks

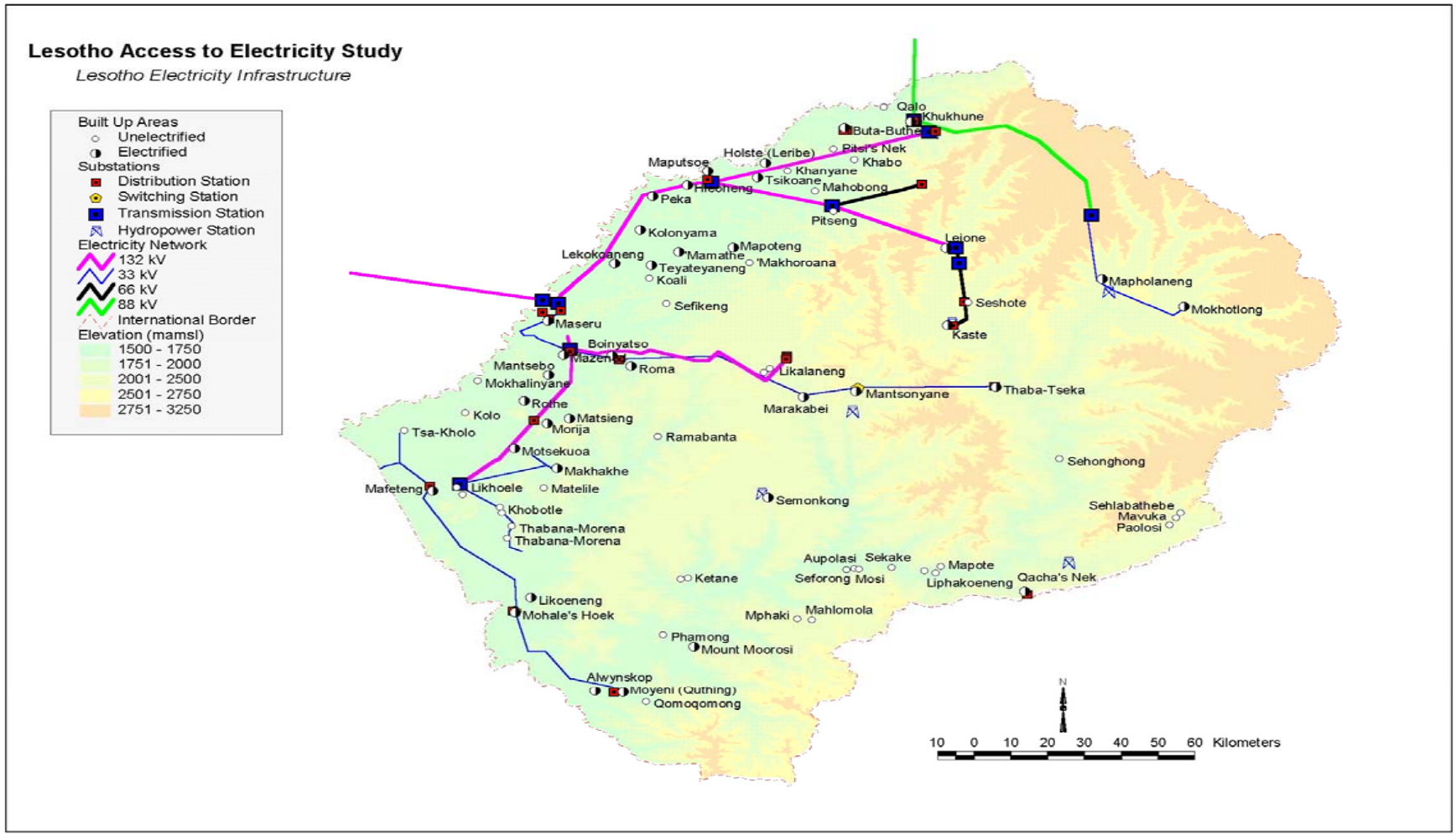
Country Geographic Background

- Landlocked and entirely surrounded by South Africa
- Area of just over 30000 square kilometres
- Minimum altitude is 1400 m and 75% of country lies above an altitude of 1750 m
- Dominated by mountain ranges and has highest peak in Southern Africa at 3482 m
- Climate relatively cold with humid, warm and rainy summers and cold winters.

Power Sector-Access to electricity

- As of December 2010
  - 18.6% electricity access
  - Domestic Customer = 93 984
  - General Purpose = 7 649
  - Large customers = 362

Power Sector – Network Infrastructure



Power Sector- Demand

Lesotho Maximum Demand Profile (MW) for Period 2004/05-2009/10

Year	Maximum Demand (MW)	Installed Capacity (MW)	Imported Capacity (MW)	Capacity Deficit (%)
2004/05	94.2	72	22.2	24
2005/06	95.2	72	23.2	24
2006/07	108.2	72	36.2	33
2007/08	115.3	72	43.3	38
2008/09	122.5	72	50.5	41
2009/10	133.4	72	61.4	46

Available Renewable Energy (RE)Resources

- Most abundant resource is water
  - Three main rivers are:
    - Senqu (orange) – total catchment of 20 847 km²
    - Makhaleng river – total catchment of 2911 km²
    - Mohokare (Caledon) – total catchment of 6890 km²
- Wind – average speeds in the range of 7.5 – 9m/s at 80 m
- Solar – annual radiations averaging 5.5 kWh/m²/day

Developed and Potential Electrical Power Generation

- Developed electrical power from the three resources is as follows:
- Hydro: large – 72 MW 'Muela plant
  : small - 2 MW Mants'onyane, 180 kW Semonkong
- Solar PV: over 1530 x 65W solar home systems by R.E.U
  : several self-installed (figure unknown)
- Preliminary results (Nov 2010) of generation master plan gave the following potential:
  - Hydro - 400 MW run-off the river
  - Wind – no estimates
  - Solar PV – 30 MW

Ongoing RE Investments

- Main ongoing RE project is 25 MW wind farm
  - MOU for wind power development signed in March 2008 between government and developer
    - ✓ 25 year concession with possibility of renewal
  - Feasibility study report completed August 2009
  - MOU for PPA establishment signed September 2009
  - Implementation agreement signed October 2010
  - Commissioning of plant scheduled for December 2011
  - Project funded by developer

Ongoing RE Investments - Continued

- Challenges
  - Meeting scheduled commissioning date highly unlikely due to the following challenges:
    - No land leases secured
    - No PPA yet signed with off-taker, national utility
    - Lack of expertise in utility delayed PPA negotiations
    - Utility engaged consultant to assist in PPA negotiations
    - Consultant advised that a technical due-diligence of the project needed to be carried out
    - Turbines size had to be reduced due to bad terrain for transportation
  - Regulatory challenges – No RE policy hence REFIT

Ongoing RE Investments - Continued

- Lessons Learnt in the Process
  - Entity dedicated to national power generation development projects needed and could have sped up the processes (entity in the process of being established)
  - RE policy and expertise in RE needed to promote development of RE

Concluding Remarks

- Imperative for Lesotho to develop its abundant RE resources in light of the diminished power generation in the SADC region
- Knowledge in regulation of RE resources development therefore vital