

**ROLE OF UTILITIES IN  
SCALING –UP  
DEPLOYMENT OF OFF-  
GRID ELECTRIFICATION  
SYSTEMS**

**PRESENTED BY:  
ENG. HENRY GICHUNGI**

# Summary

- Introduction
- Private Micro Grids
- Utility's Micro Grids
- Renewable Energy in Off-grid Areas
- Village lighting using solar
- Conclusion

# Introduction

- Micro grids are established where power line extensions are not economically viable
  - Distance
  - Demand
  - Customers ability to pay?

# Private Micro Grids

- Private home systems – mainly solar
- Private micro grids – mainly diesel and small hydro around Mt. Kenya
- Major challenges in operation mainly due to cost - Current cost approx 40 US cents/kWh fuel only

# Private Micro Grids (Cont.)

- Energy losses due to poor network
- Maintenance and expansion challenges due to lack of sufficient resources
- One major diesel micro grid that was initiated by an NGO requested Kenya Power to take over due to the above challenges

# Utility's Micro Grids



# Utility's Micro Grids (Cont.)

- Currently there are 18 operational micro grids operated by Kenya Power with a total installed capacity of 19MW
- 7 of these have operated for more than 30 years
- 11 have been developed in the last six years
- 11 more are currently being developed

# Utility's Micro Grids (Cont.)

- All have diesel generators



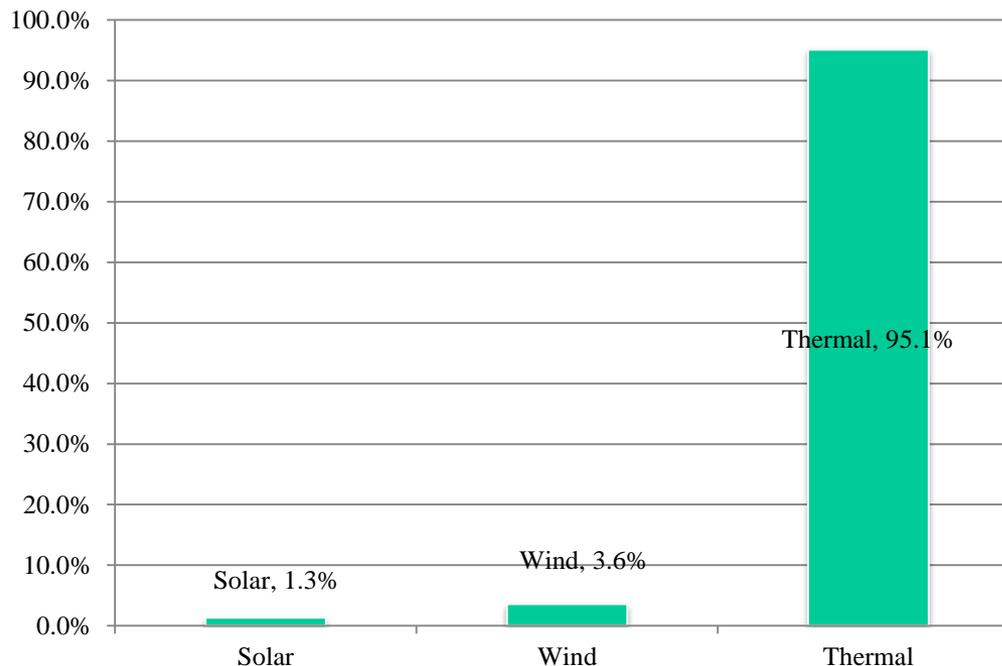
# Utility's Micro Grids (Cont.)



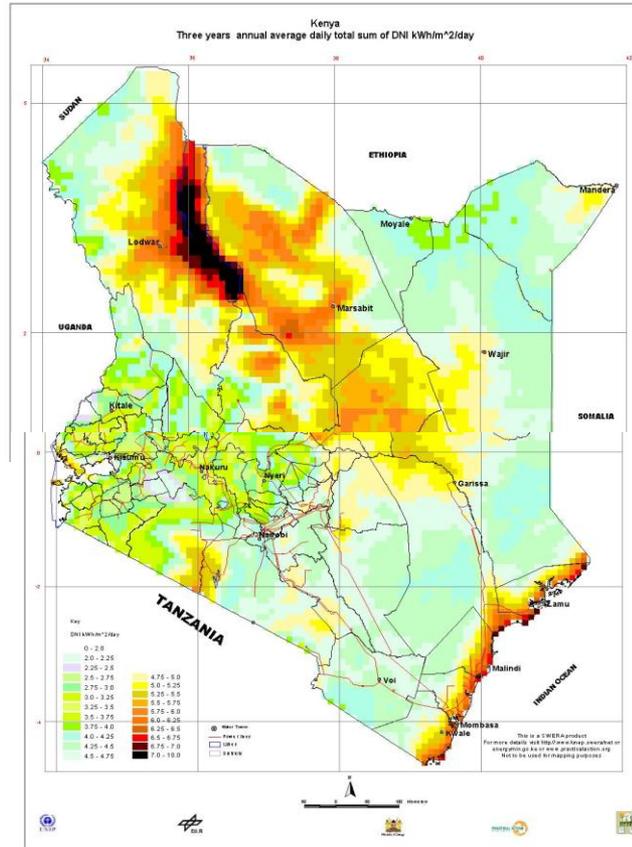
# Renewable Energy in Off-grid Areas

- Two sites have wind generation and six have solar generation

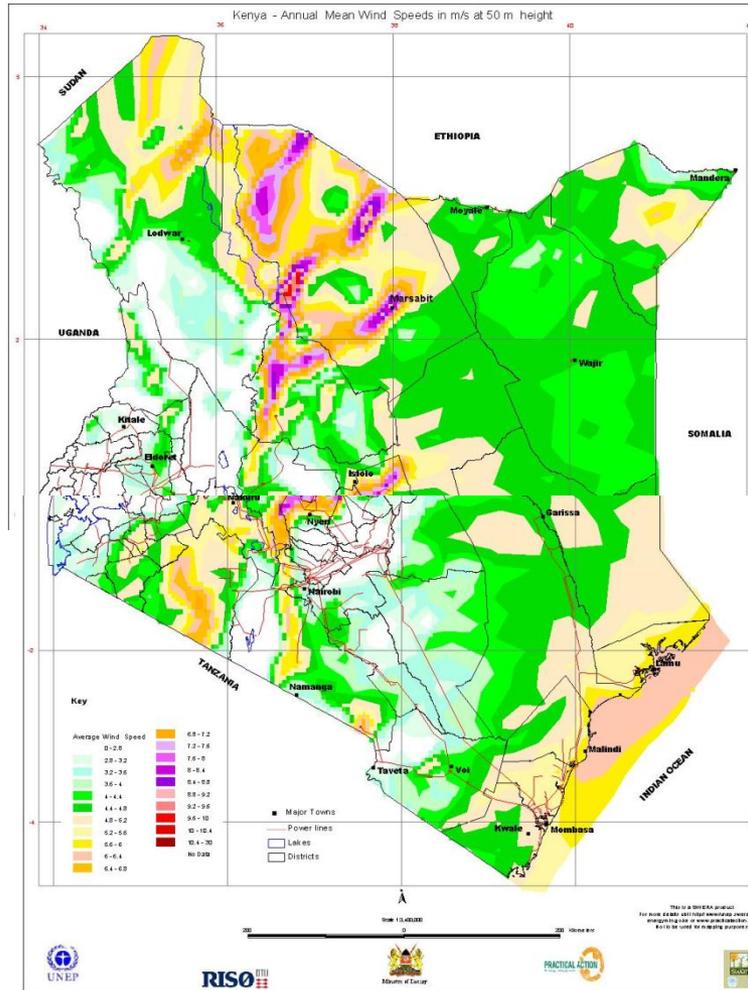
**Off-grid Renewable Energy Generated in  
September 2012**



# Kenya Solar Map



# Kenya Wind Map



# Off-grid Renewable Energy Projects



# Off-grid Renewable Energy Projects (Cont)



# Off-grid Renewable Energy Projects (Cont)



# Off-grid Renewable Energy Projects (Cont)



# Off-grid Renewable Energy Projects (Cont)





# Off-grid Renewable Energy Projects (Cont)



# UNEP Solar Plant in Nairobi



# SOS Mombasa Solar Plant



# Village Lighting Using Solar



Nasigel Solar Village Lighting

# Village Lighting Using Solar (Cont.)



Nasigel Solar Village Lighting

# Village Lighting Using Solar (Cont.)



Lagbogol Solar Village Lighting

# Village Lighting Using Solar (Cont.)



# Village Lighting Using Solar (Cont.)



# Village Lighting Using Solar (Cont.)



# Conclusion

- *Plenty of sunshine all year*
- *Plenty of space for installation of solar panels*
- *Good wind speeds in off-grid areas*
- *Funding from the government*
- *Uniform energy tariff for the whole country*

**Q&A**

**THANK YOU**