

SREP Pilot Countries Meeting

THE UNIQUE CHALLENGES OF SCALING UP RENEWABLE ENERGY TO RURAL AND REMOTE COMMUNITIES IN KENYA

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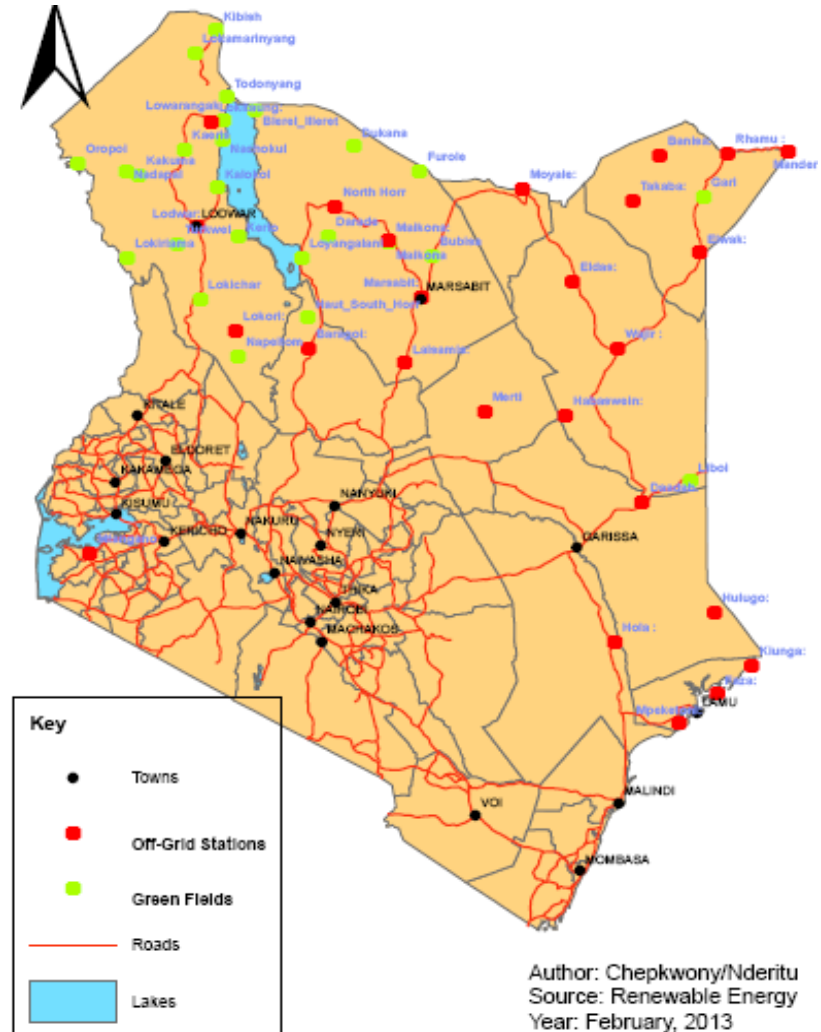
Introduction

- Mini grids built where main grid extension is not economically viable due to distance, low demand, low ability to pay, etc.
- Some private micro grids exist, mainly diesel, solar and micro hydros around Mt. Kenya
- A government programme has also seen installation of solar PV systems in remote public schools, health centres, boreholes and admin centres

Existing Mini-grids

- Currently there are 18 operational mini grids operated by Kenya Power with a total installed capacity of 19MW
- 11 more are currently being developed
- Modern energy supply in these areas transforms livelihoods

Existing Mini-grids



Hybrid Mini-grids

- Government decided to introduce renewable energy in mini-grids
- So far, 7 have been made hybrid
- 2 plants have wind generation with installed capacity of 50kW and 500kW
- 6 plants have solar generation with installed capacities of 10, 30, 50, 60, 60 and 300kW
- Retro-fitting and construction of new hybrid mini-grids is ongoing

Off-grid Renewable Energy Projects



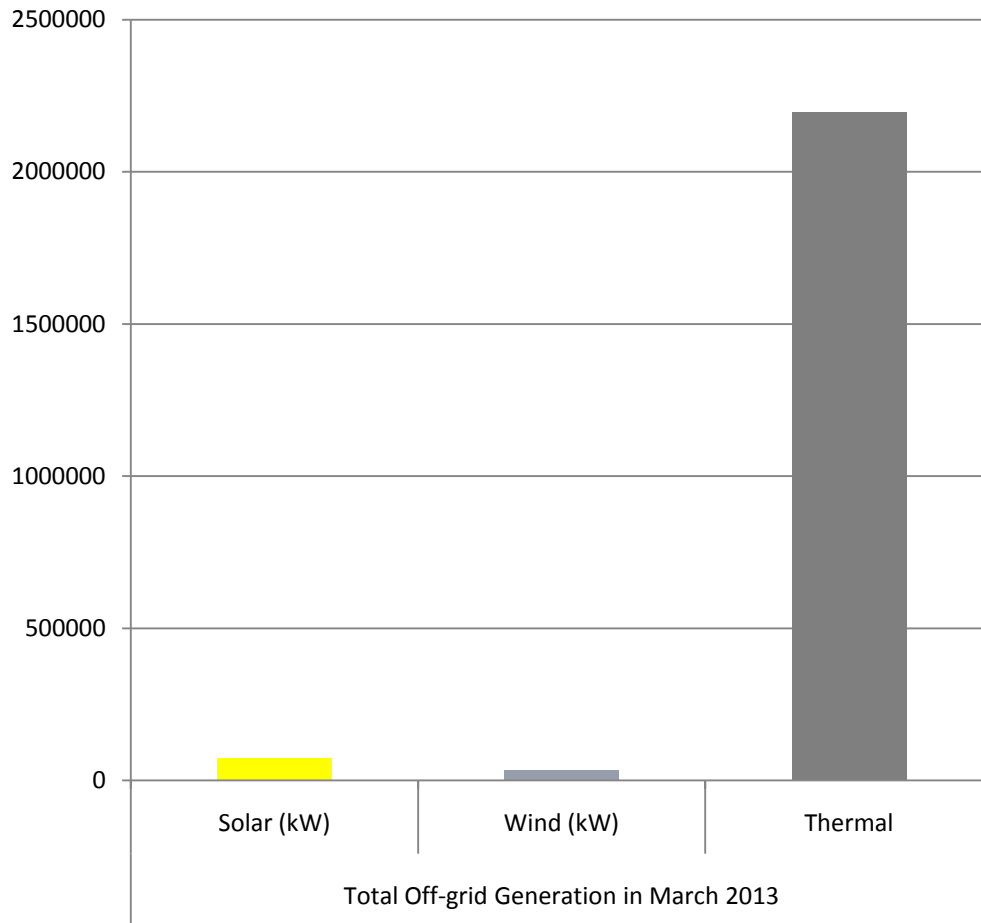
Off-grid Renewable Energy Projects (Cont)



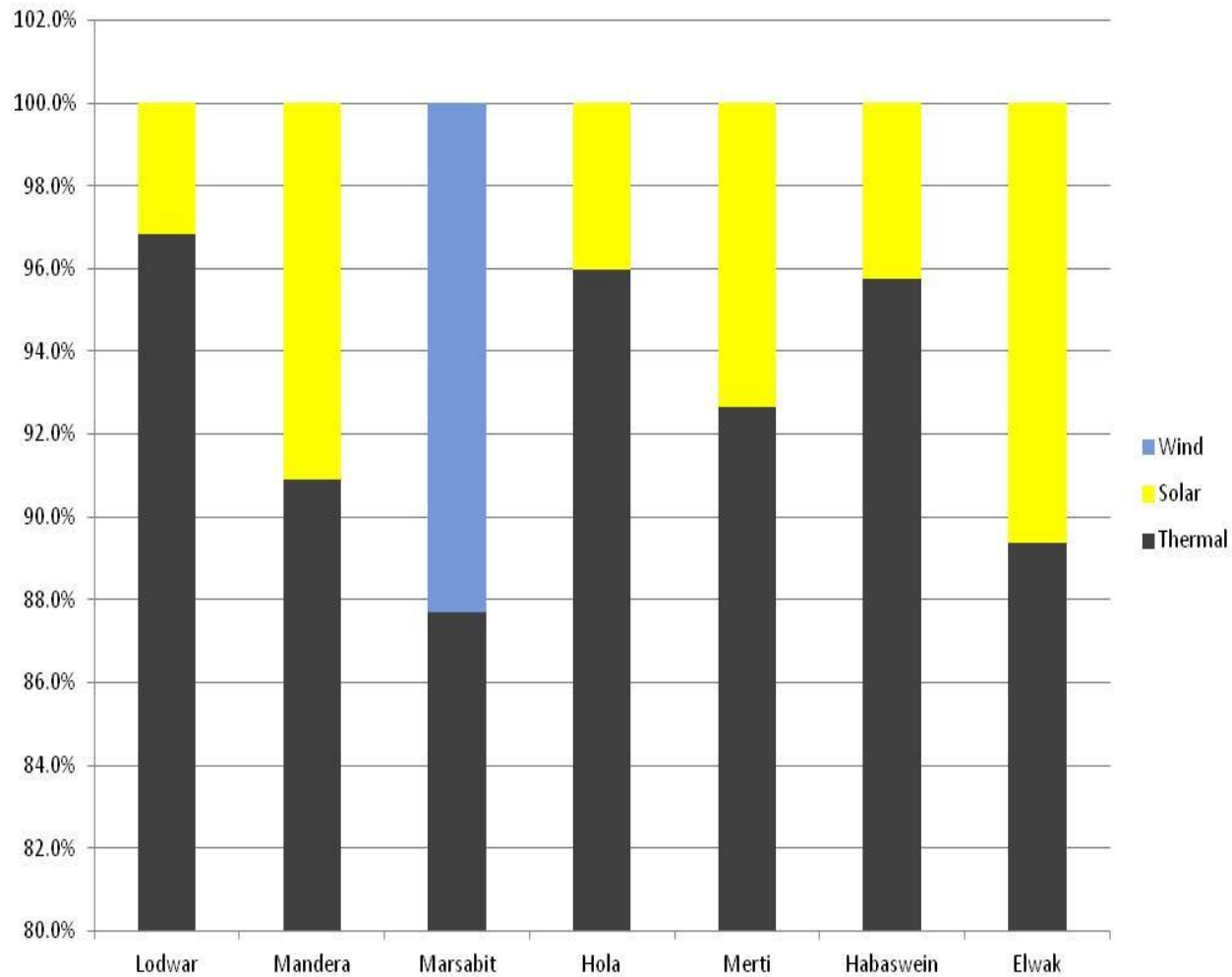
Off-grid Renewable Energy Projects (Cont)



Generation in Mini-grids



Energy Mix in Hybrids



Village Solar Lighting



Village Solar Lighting (Cont.)



Nasigel Solar Village Lighting

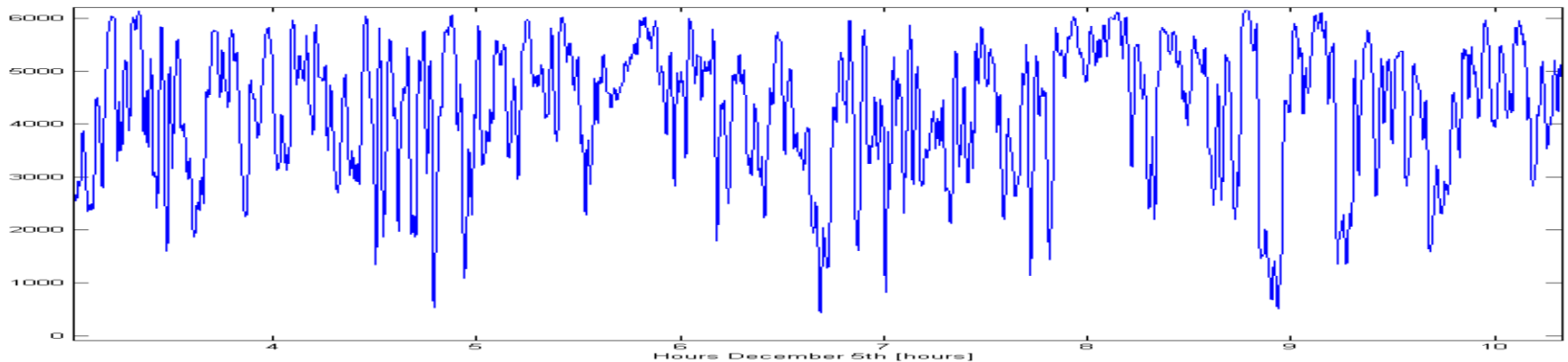
Challenges of RE in Mini Grids

- Project capital costs are high
- Storage of energy is still very expensive
- Remote areas have poor infrastructure – makes maintenance difficult
- Ability of beneficiary communities to pay for the services
- Willingness to pay – viewed as donation
- Individuals in the community looking for personal benefits

Challenges of RE in Mini Grids (Cont,)

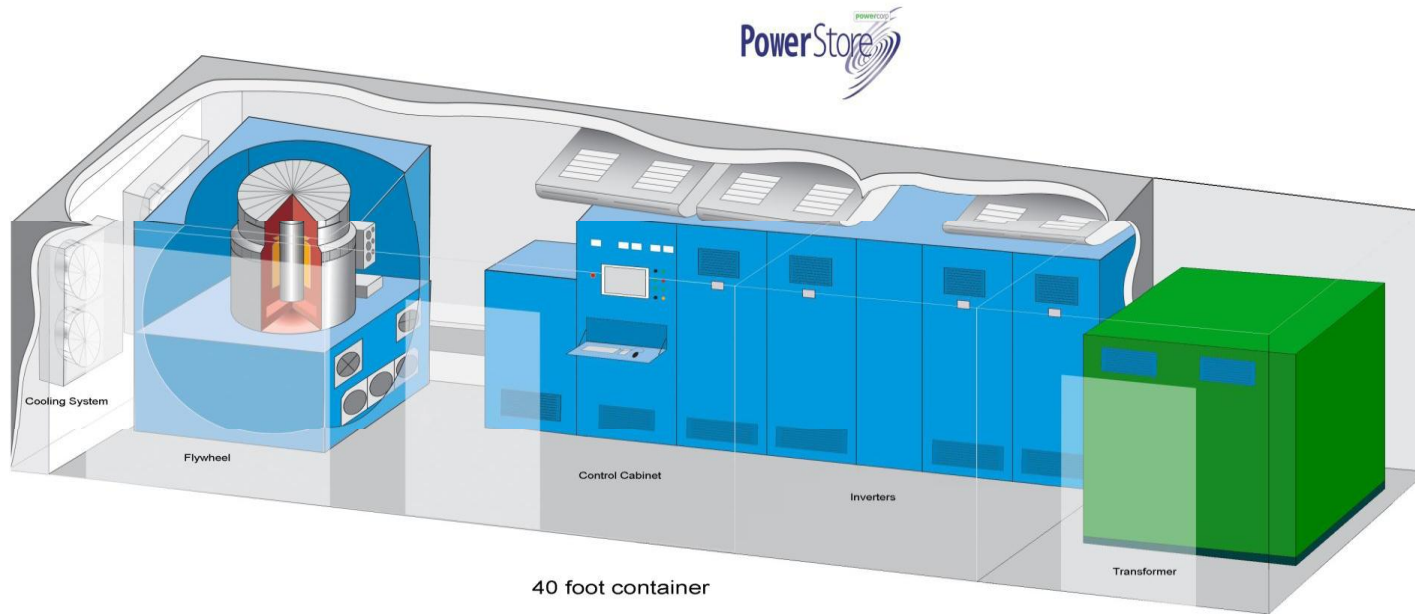
- inadequate training on system operation and maintenance
- Low penetration
- Wind turbines destabilize the small systems:

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Challenges of RE in Mini Grids (Cont.)

- Intermittent nature of RE therefore cannot entirely displace thermal generation



Summary

- *Power supply transforms lives in rural villages*
- *Many areas have plenty of sunshine all year and space for installation of solar panels, and good wind speeds*
- *Challenges include high capital cost, operation issues and debt collection*
- *Government of Kenya is committed to increase RE in rural areas and increasing access to modern energy*