

IMPLEMENTATION AND OPERATION OF SOLAR PV FOR COMMUNITY POWER IN KENYA

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Summary

- Introduction
- Piloting
- Expansion
- Operation
- Conclusion



Introduction

- Introduction of Solar Transition in Kenya in 2009
- India visit in February 2010 resulted in birth of many ideas
- Report on solar mini grids in India convinced senior government officials in Ministry of Energy to introduce solar hybrid in Kenya

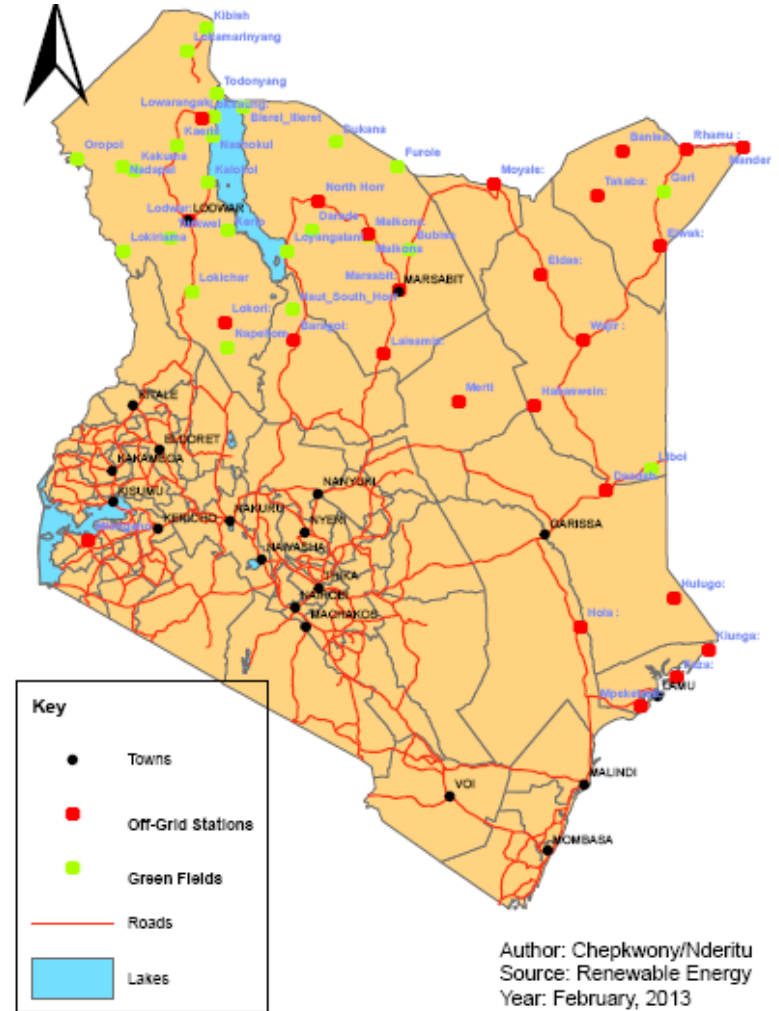
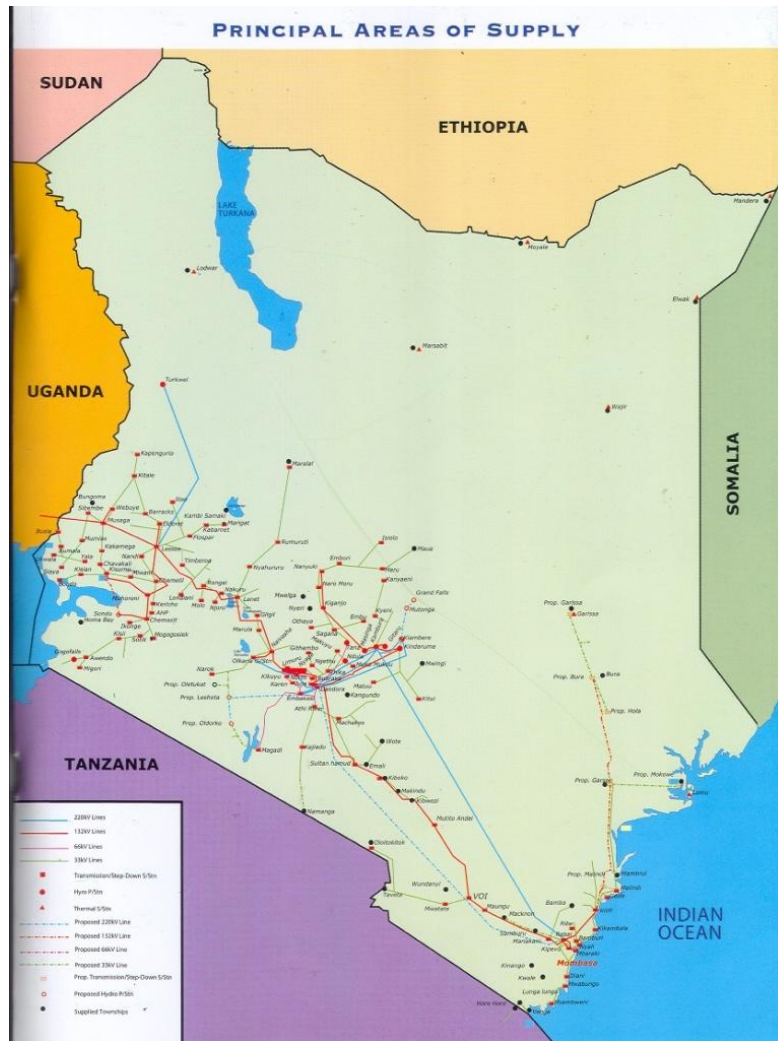
Introduction (Cont.)



Introduction (Cont.)

- Currently there are 10 public solar-diesel mini grids operated by Kenya Power with a total installed solar capacity of 720kW
- There are plans to increase the solar capacity in these ten mini grids and also hybridize two more.
- Total planned additional solar capacity for the public hybrid mini grids is 6.53MW
- There are several private solar micro grids of about 2kWp capacities

Introduction (Cont.)



Introduction (Cont.)

- In between the mini grids and the national grid, there are many homes in need of basic energy services such as lighting and phone charging
- Ikisaya Energy Center was created to meet such needs
- As part of CSR, with funds from KP, we distributed 450 solar lanterns and 100 SHS to three day schools

Piloting

- From the data collected in Ikisaya, the main basic energy need was found to be lighting and phone charging
- The agents were found to be an easy and fast way of expanding the provision of basic energy needs
- With funds from University of Oslo, pilots for lanterns and phone charging using solar energy, through agents were established in several villages in Turkana County as a start

Piloting (Cont.)

- Several types of lanterns as well as solar central charging systems were tried at this piloting stage
- Comments from the customers and agents, together with teething problems experienced by the operator were used as inputs to adjust the program

Piloting (Cont.)

- Payment patterns of the customers to the agents and remittance of the charging fee by the agents to the project were used as inputs to design appropriate prepaid central solar charging system that could be used for rolling out the service to many villages

Piloting (Cont.)



Nasigel Solar Village Lighting

Piloting (Cont.)



Village Lighting Using Solar (Cont.)



Nasigel Solar Village Lighting

Expansion

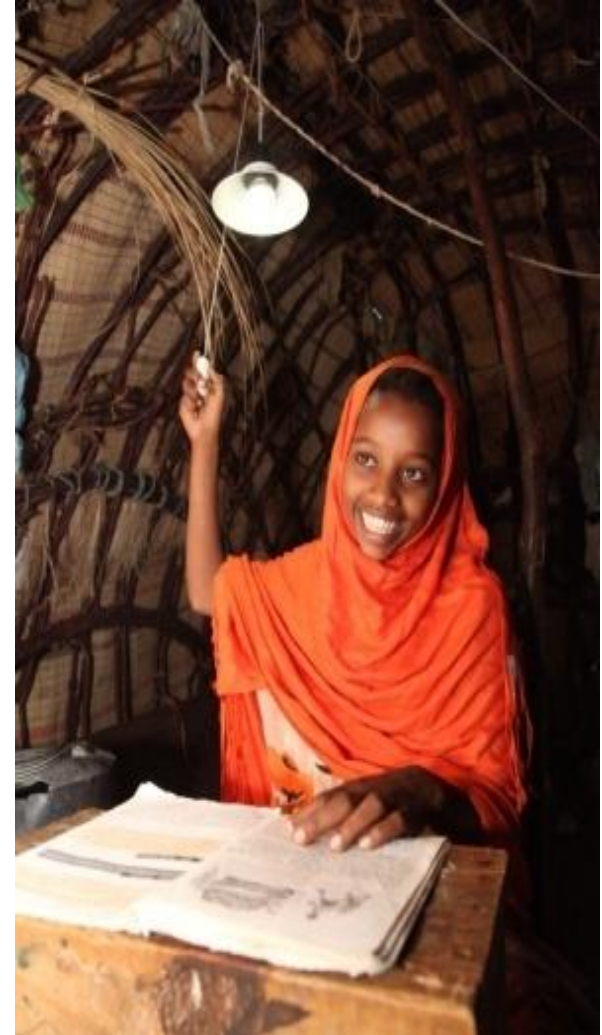
- The pilot project was expanded from Turkana County to Kirinyaga, Homa Bay, Wajir, Isiolo, Muranga, Embu, Nairobi and is still expanding
- By end of December 2014 the customer base had exceeded 500 and by end of March 2015 it exceeded 1000 with 46 agents
- The rapid expansion of the pilot project in the last quarter was through day primary and secondary schools

Expansion (Cont.)

- Another interesting area that we are currently focusing on is coffee, tea and flower farms. These have high population without electricity and are within easy reach
- Grant of Euros 1.25 million was given by NDF to the government of Kenya for solar lantern project. Tender has been awarded
- NDF advised the implementing agency to follow our pilot
- 840 charging stations with 24,500 lanterns

Operation

- Several different charging systems were tried
- Some areas have poor or no mobile network coverage so we have settled for prepaid systems with keypad



Operation (Cont.)

- Prepaid systems critical for enforcing payments
- Use of mobile money transfer
- Treat the agents as business partners
- Decided to use lanterns that charge at 5V which is same as mobile phones for best utilization of equipment
- Some cultures prefer to own than rent while others are comfortable in buying service rather than equipment

Operation (Cont.)

- Choose lanterns that are robust (shock and water proof)
- Lantern rental working very well in areas that people leave close together
- Day schools are a good way to reach the dispersed population as the students come daily to school and go home with the light
- Sustainability is critical so the users need to pay for the service

Conclusion

- *Plenty of sunshine all year*
- *Solar lighting to replace kerosene*
- *Quality lighting for tiny remote villages*
- *High mobile phone usage even in remote areas*
- *Mobile money transfer has transformed way of doing business in Kenya*
- *Communities in remote villages live close together*
- *There is a lot of interest in increasing RE in rural areas and increasing access to modern energy*

Q&A

THANK YOU