Ethiopia Market Assessment Practical

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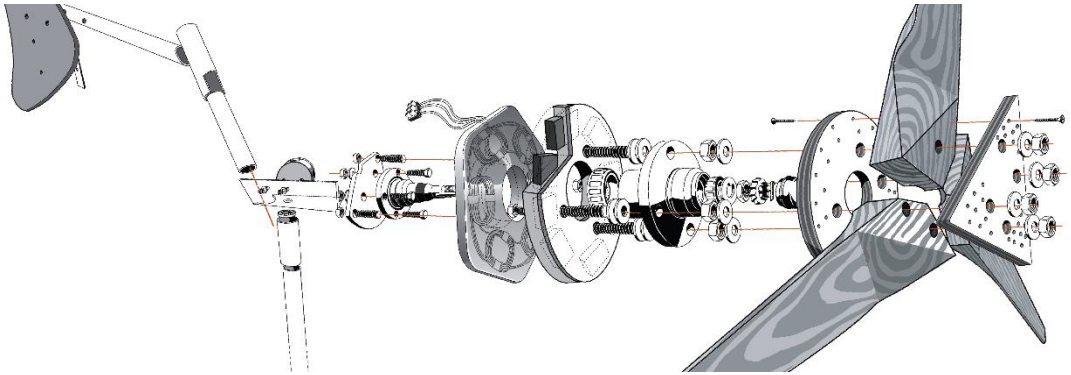


Key learning objectives

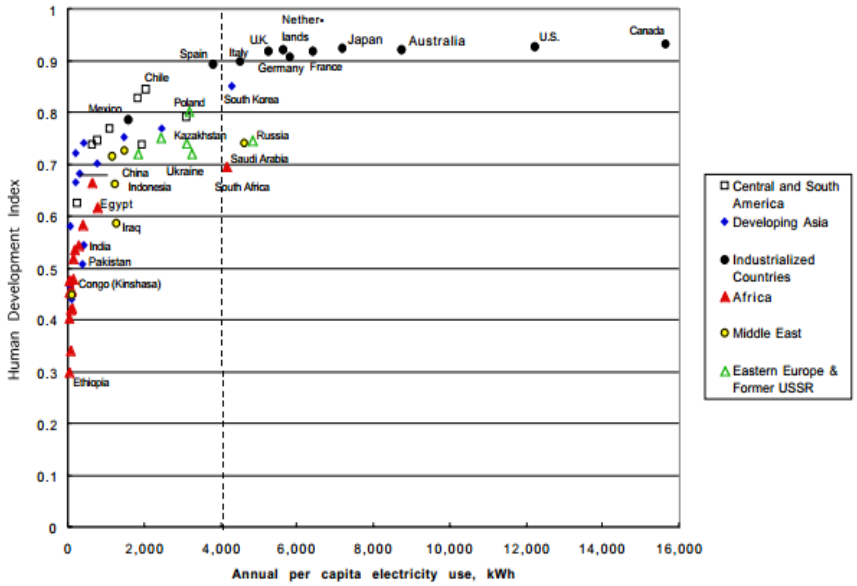
- To be able to process and analyse some of the data collected during a market assessment
- To understand the different types of data required to carry out a market assessment and the interdependencies between them

Outline

- Introduction to the Market Assessment for SWTs in Ethiopia
- 3 parallel streams (1 hour):
  - Spatial data - GIS
  - Techno-economic energy systems modelling – HOMER
  - Socio-economic survey data
- Skill share

MA for SWTs in Ethiopia

The problem:



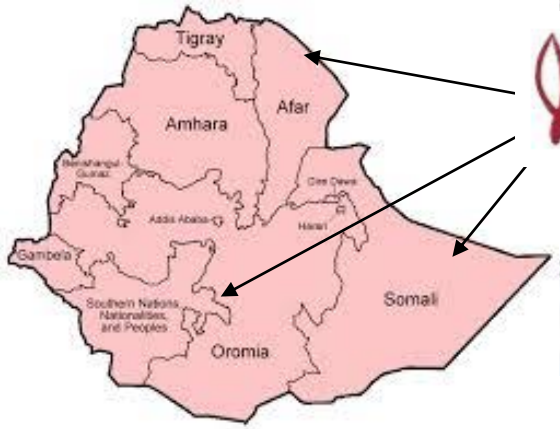
The solution?

120MW Ashegoda wind farm at Mekelee in Northern Ethiopia (Smith 2013)

MA for SWTs in Ethiopia

- Research question:
  - *What role (if any) could Small Wind Turbines (SWTs) play in the electrification of remote communities in the Somali, Afar and Southern Oromia regions of Ethiopia?*

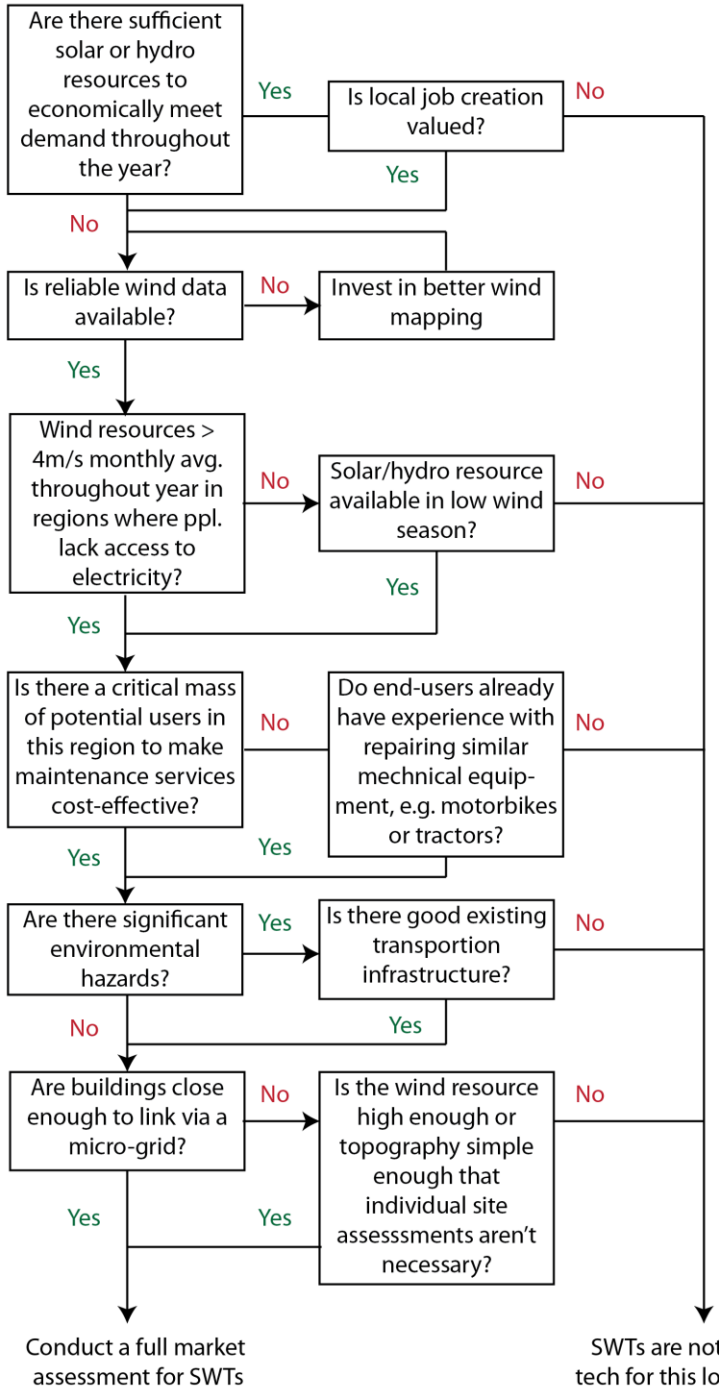
Wikipedia.org



MercyCorps

MA4SWT Decision Support Tree

- STAGE I: Learning from existing initiatives
- **STAGE II: Quantifying the market potential**
- STAGE III: Mapping the local energy access ecosystem and identifying the key barriers



3 Streams

Stream	Stream I: GIS	Stream II: HOMER	Stream III: Social
Facilitator	Madis	Jon P (assisted by Matt)	Aran
Description	GIS analysis of Ethiopia to compare PV/wind/diesel LCoE across the country	Building a HOMER model of small commercial centre in Ethiopia	Reviewing household survey data from Ethiopia to determine whether these households have the ability to pay for an SWT mini-grid
Software & input data	QGIS & relevant layers. HOMER output data	HOMER & relevant input data	Household survey data, HOMER output data
Key learning objective	To be able to model the spatial variation of renewable resources at a national level and use this to make economic comparisons between RETs	To be able to build a model of a small scale RE system and use it to compare between a range of system configurations.	To be able to model the financial viability of small scale RE systems for rural development
Output	Location of most viable regions for PV/wind/diesel systems	Input data for GIS LCoE analysis & household survey comparison	Recommendation for whether an SWT mini-grid would be appropriate for these households

Discussion points

- Spatial data – GIS
  - How can we determine the size of the market in these regions?
  - How reliable is this technique?
- Techno-economic energy systems modelling – HOMER
  - Which sensitivities should be tested?
  - What other software could be used for this modelling?
  - How reliable is this technique?
- Socio-economic survey data
  - Which locally available financing mechanisms are applicable?
  - How different is the data from the communities that CEM works with likely to be?
  - How could this technique be applied to a productive application?
  - How else could this data be obtained?
  - How reliable is this technique?

Key messages

- Market assessments require a broad range of interrelated data to be collected, processed and analysed
- Not essential to be able to understand everything, but must always be aware of what is going on in the other streams

References

- Pasternak, A.D., 2000. *Global Energy Futures and Human Development: A Framework for Analysis*, University of California, Lawrence Livermore National Laboratory for the U. S. Department of Energy.
- Smith, D., 2013. Ethiopia opens Africa's biggest windfarm. *The Guardian*. Available at: http://www.theguardian.com/global-development/2013/oct/28/ethiopia-opens-africa-biggest-windfarm [Accessed November 10, 2015].