

COMMUNITY ENERGY MALAWI

By

Community Energy
Malawi (CEM)

By

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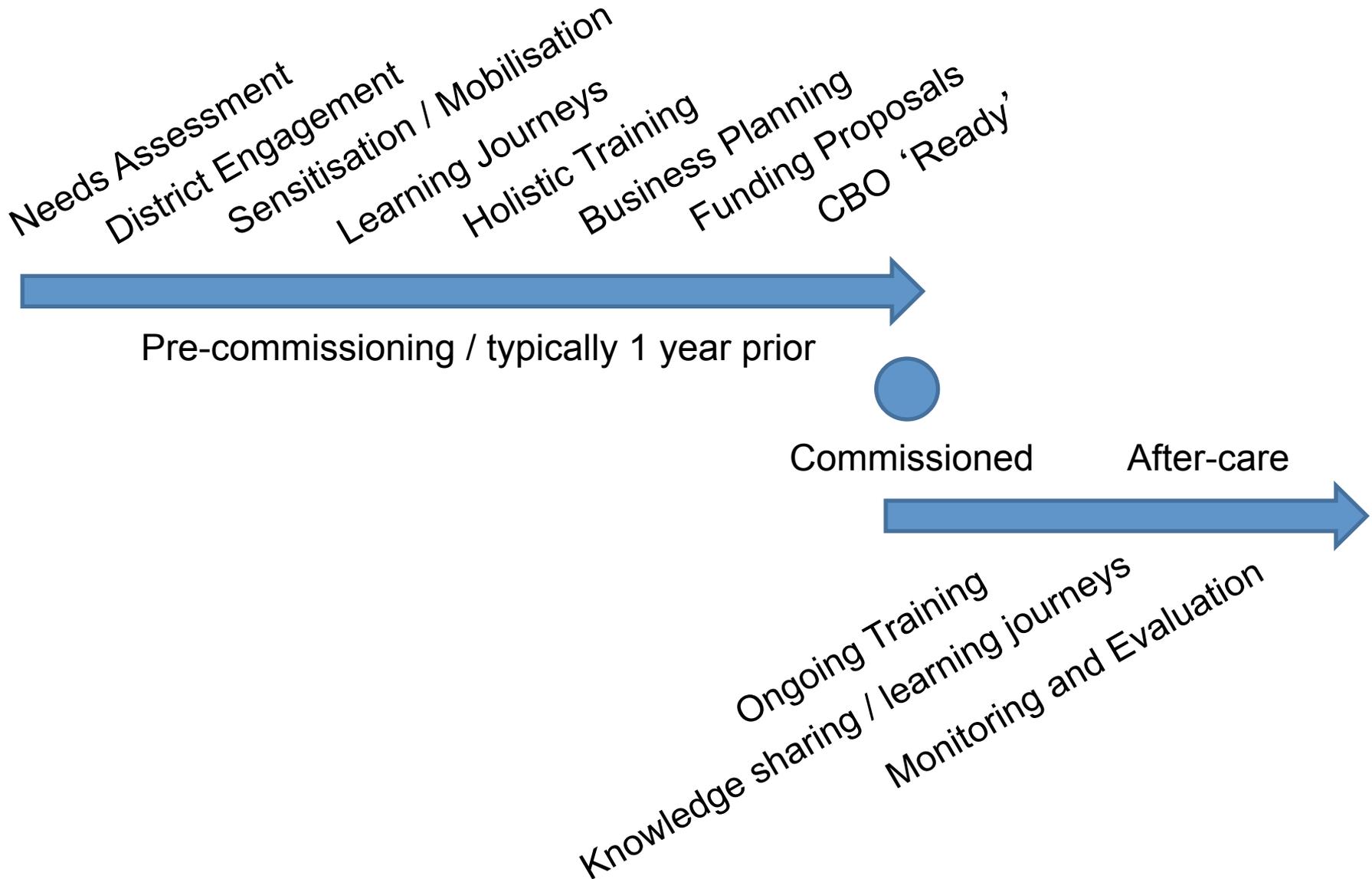
www.communityenergymalawi.org



INTRODUCING CEM

- Dates back to 2011
- OUTPUT OF Community Energy Development Programme (CEDP)
- CEDP-Strand of Malawi Renewable Energy Acceleration Programm (MREAP) led by UoS
- MREAP Delivered 86 Projects impacting over 80,000 people
- Left the CEDP as model for community projects

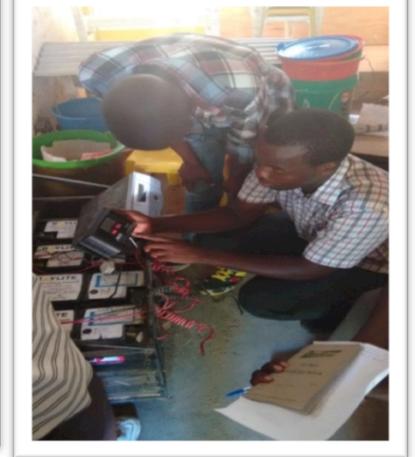
CE Development Model



How CEM works

- Works with off grid communities
 - Community Energy Planning, assessments
 - Capacity building, lobbying, networking
 - Implement projects
- Works with and through CBOs
 - Legitimate bodies for sustainability

Collaborates with government and like minded organisations

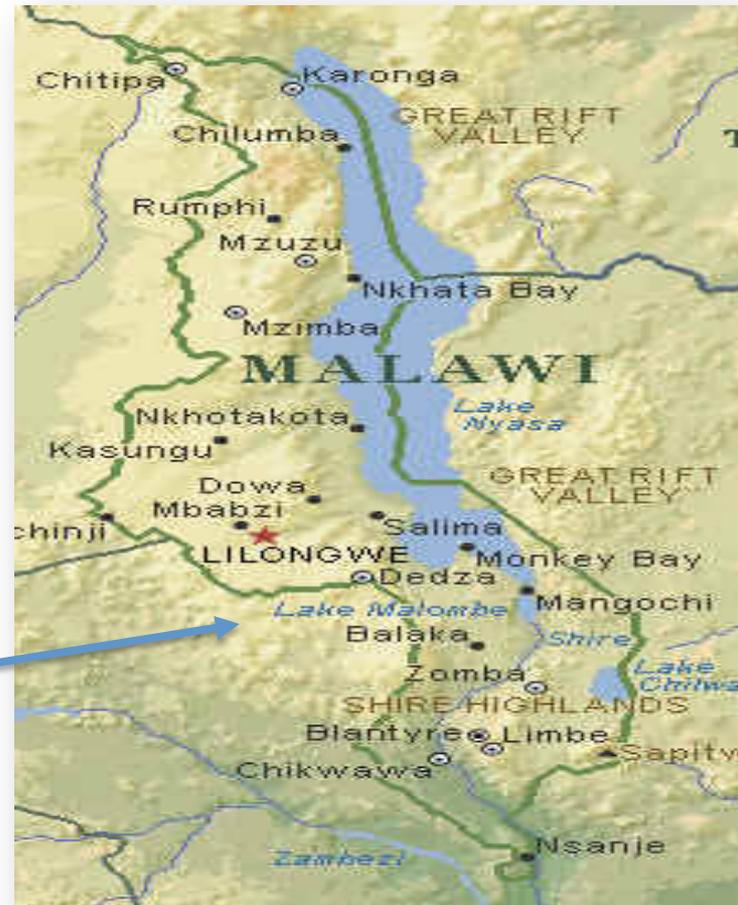


Some Projects

SITOLO 80kW Solar Micro Grid Project



About Malawi



About Malawi

- Highly rural-85% of population in rural area
- Agro-based economy with over 80% relying on subsistence agriculture
- Limited value addition-mostly agricultural produce sold raw
- 17.5m (dense) population
- Small country in Southern Africa
- Strong links with Scotland-Dr. David Livingstone
- 118,000Kmsq
- A 3rd of the country covered by Lake Malawi
- Land locked-Boarders Mozambique, Zambia and Tanzania

Energy Situation in Malawi?

Low Access to Energy

- Only 10% Connected to grid
- Over 90% relying on biomass
 - Deforestation-3%PA
- Technologies concentrated in towns
- Affordability issues
 - Solar expensive in Mw than neighbours
- Regulation, Quality and standards issues
- Fossil fuels and obsession with centralised than decentralised still high

3 Stone fire very common



Unreliable grid makes us go back to candles or lamps



320mW Hydro Installed Capacity



- 99% of hydro on one river-The Shire
- Unreliable grid-epileptic supply with load shedding programmes of 6-18 hours
- installed diesel generators in cities to manage peak demands
- Electricity Act amendments-giving opportunity for IPPS through unbundling of Utility company to EGENCO and ESCOM

Energy Situation

- 14.5 Million people as having no electricity-1.6 million urban and 89% or 12.9 million rural-BIF, 2017
- Estimated US\$50 million/year spent on bad quality and harmful lighting –BIF, 2017
- Average annual household spend on lighting per household is \$14.00 and for phone charging is \$9.00 –BIF 2017
- Paraffin accounts for 52%, batteries 27%, firewood 8%, electricity 8% and candles 5% on lighting (2013 HIS by NSO)

Broad Policy Goals

- Reduce biomass use from 88.2 to 33.5% by 2035 (NEP 2018)
- Increase electricity from Renewables from 2% to 28.9% by 2035 (NEP 2018)
- Fossil fuels (coal etc) projected to increase though (NEP 2018)
- Decentralized grids are a solution to villages 5km or more from the grid (MREAS, 2017)

Suffering Amidst Plenty

- 21.1 MJ/m²/day average radiation
 - equivalent to 5.8 kWh/m²/day
 - 6000 GWh potential yield (Zalengera 2014)
- Wind –
 - 2 m/s to 7 m/s at 2 metres (DoE, Zalengera 2014)
 - 9 m/s at 10 meters (Sgurr 2013)
- 1.4 GW of hydro potential (untapped) (Zalengera 2014)
- 7000 GJ pa of crop residue
- 7 MW from municipal-solid-waste generated biogas
- 50 known potential geothermal energy sites
 - 200MW (Gondwe 2010);

Opportunities

Productive uses

- Cinema facilities
 - Growing interest for EPL
- Phone charging
 - Walking 5-10kms-Phone charging twice/week
 - Paying US0.10 / charge (\$0.80)
- Grinding of maize
 - Diesel mills common but at a distance



Opportunities

- **Irrigation**
- El Nino Effects-low rains
- Dry water sources
- Low Water tables
- Growing interest in Solar Water Pumping being
- Farmers willing to pay for service



Opportunities

Education

- Low computer/internet access (rural schools)
 - poor resourced science labs
 - Studies limited to day light
 - Poor preparation by teachers
- Poor WASH facilities/
security-especially for girls
on **SELF BOARDING**
- Poor retention of qualified teachers

Domestic

- Households spending \$2.50 or >/month –lighting
 - lamps or dry cell torches
- Willing to pay for clean energy
- > \$7.15/month – energy for lights, TV and radio

Others already cashing on it



Opportunities

Access to potable water

- Afridev pumps only reliable source in rural communities
 - Accessed by 100HH <1km
 - High wear costs
- Girls disadvantaged
 - Up early 4:30am –Sleep late
- Waterborne diseases
- Affects staff attraction to rural schools
- Baseline: 70 HH pay \$.50/ month for hand pump

Women drawing water from a river



Others draw from rivers with varying distances 2-3km >

What Next?

- Building rural energy projects around productive uses
 - Key to sustainability of decentralized energy systems
- Malawi needs both centralized and decentralized energy systems
- With Malawi Renewable Energy Strategy and New Energy Policy + reforms in regulation of micro grids-**LETS ROCK ‘N’ ROLL**

Thank You for Your Attention

