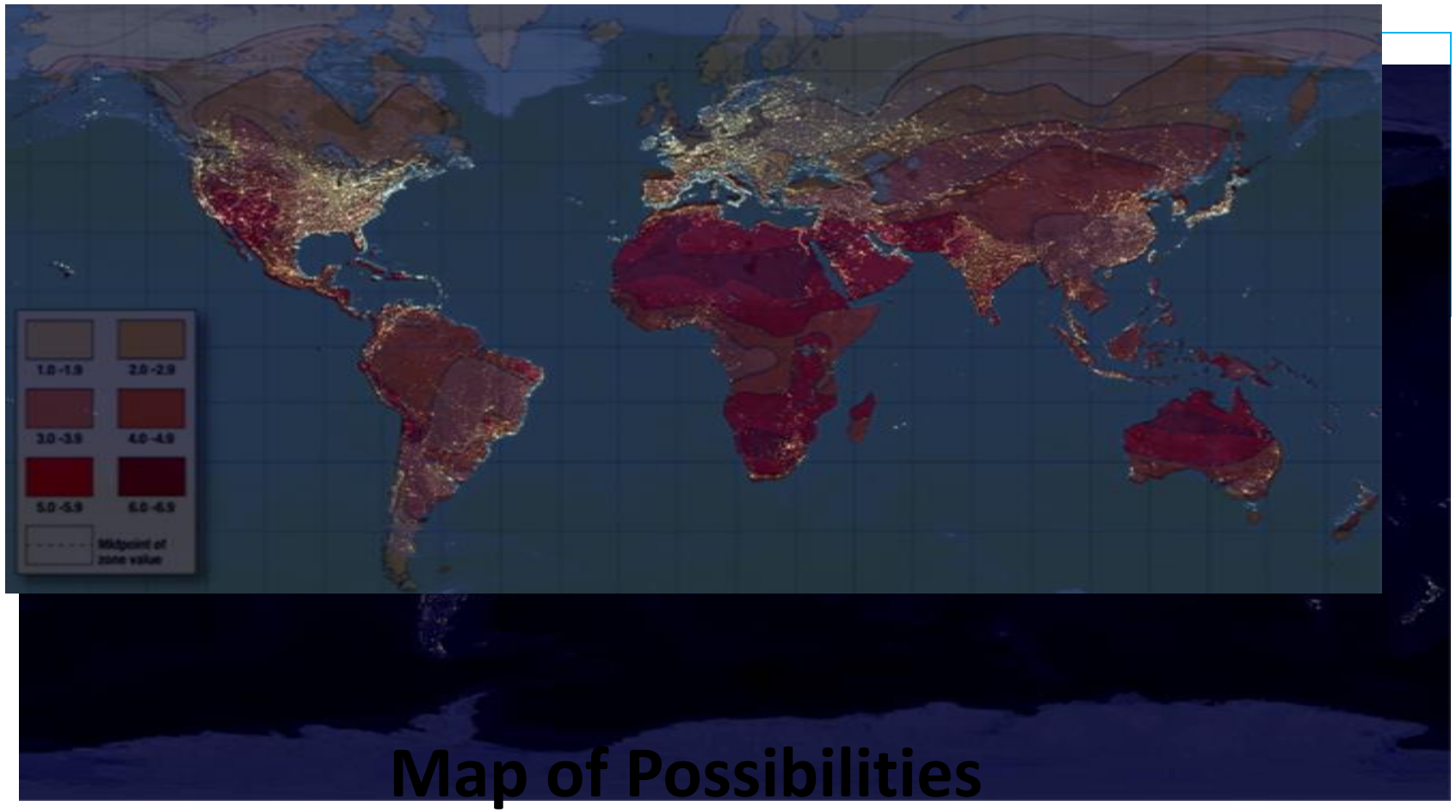
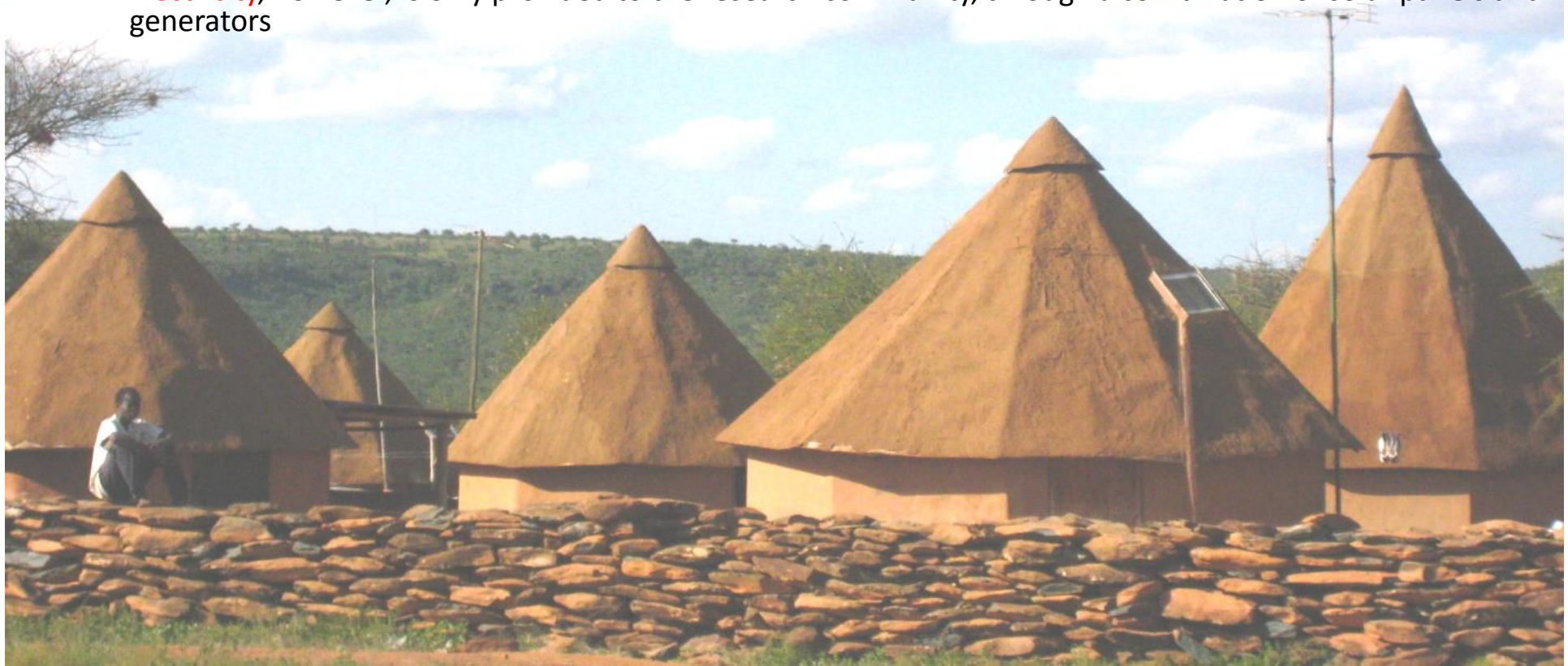
Motivating Technological Independence in Africa: Solar Energy



Map of the World at Night

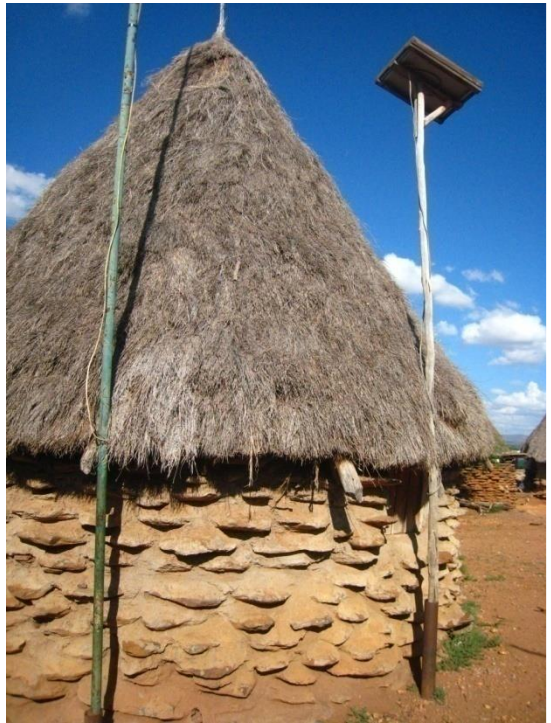
Mpala Project-Based Module

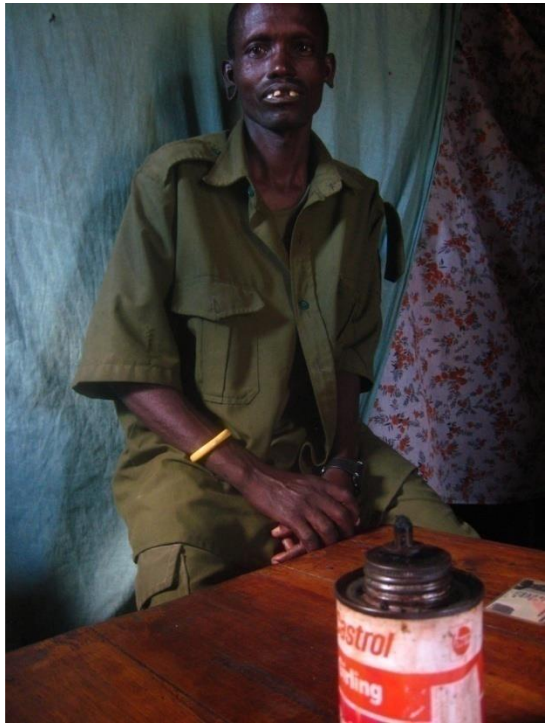
- 49,107 acres of savannah and dry woodland, 1 hour from Nanyuki, on the Laikipia Plateau in North Central Kenya
- MRC staff members and immediate families housed in various community villages
  - Homes were generally a single 20-ft diameter room. People used old bed-sheets to partition the space to create a living room and 1-2 bedrooms. Household sizes ranged from 1-8 persons.
- Because it is in a remote area, access to basic necessities is a challenge.
  - Clean drinking water is available to staff and researchers through boreholes and purified rainwater collection.
  - Electricity, however, is only provided to the research community, through a combination of solar panels and generators



Rural Life in Mpala Village

Types of lighting and energy sources

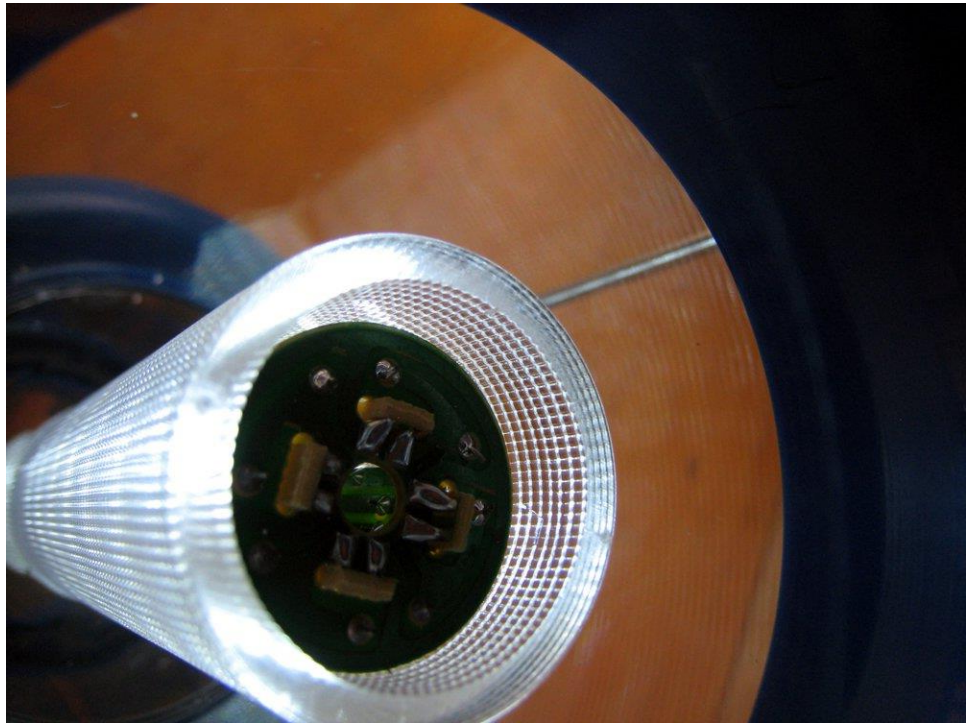


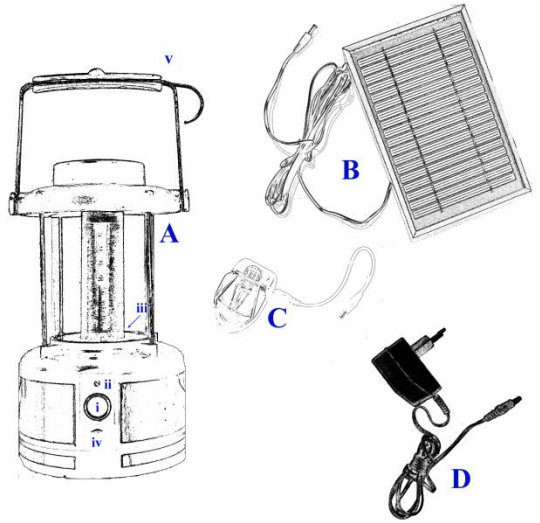


Solar Lanterns:

- 28-pc LED light
- 6V Battery
- 9V Solar Panel
- 6V AC Charger
- Universal charger for mobile phone batteries

Roy Solar (Shanghai, China)

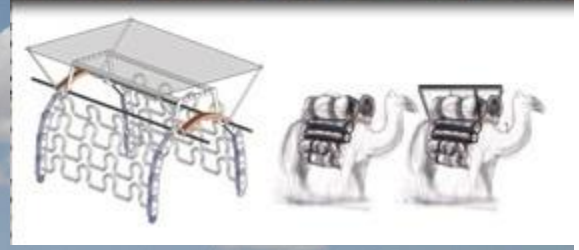




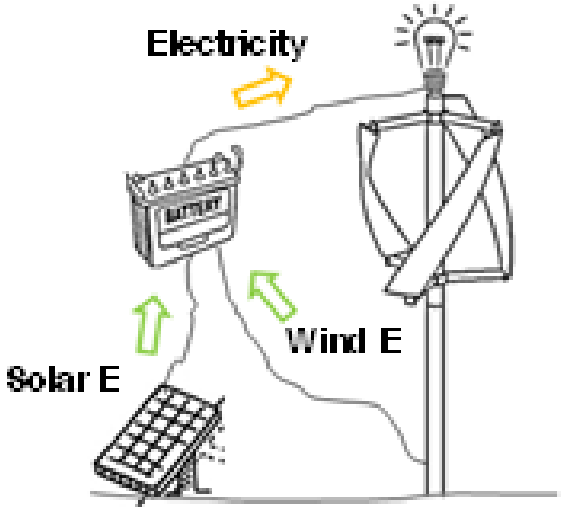
Community-Based Solar Power Implementation

- One 85W panel in each:
  - Ranchhouse village
  - Research Center village

Solar-Powered Vaccine Delivery System for Medical Clinics in Rural Communities



Hybrid Wind and Solar Energy Harvesting System



Summary & Concluding Remarks

- This talk presents an overview of the materials science modules that are part of the MS4SSA program
- The teaching modules present an introduction to materials science and engineering – structure, properties, processing, materials selection & design
- They enable a more intuitive approach to learning how to use the materials around us for different functions
- The teaching modules are complemented with project-based approaches that teach “problem solving” and engineering within an African/global context
- We welcome your engagement in using human capacity in materials science and engineering as engines for African development...


THANK YOU!
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