Status quo of the electricity provision and options for a Philippine island

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Supported by:
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on the basis of a decision by the German Bundestag

Contents of the presentation

1. Basic information on the island
2. Current electrification scenario on the island
3. Conclusion and Opportunities

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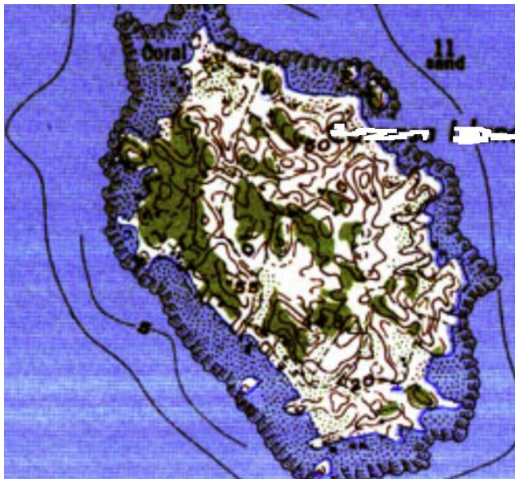
The island: Basic information

- Situated around 2.5 hours boat ride from the mainland
- Total area: ~173 hectares
- Population : ~3,000 with around 600 households
- Main sources of income:
  - Fishing
  - Carpentry
  - Small Shops
  - Remittance from the family members
- 3 schools (2 primary and 1 high school)
- 1 health center



Map: Source-NAMIRA, Govt of Philippines

A Household cluster in the island

The island: Basic information

- 600 households divided into 6 Sitios (clusters -unshaded regions in the map)
  - Sitio-1 : ~200 households
  - Sitio-2: ~40 households
  - Sitio-3: ~130 households
  - Sitio-4: ~ 200 households
  - Sitio-5: ~ 22 households
  - Sitio-6: ~ 22 households

- Commercial activities:
  - ~ 40 small shops (spread evenly in 6 clusters)
  - a welding machine shop

Indicative Map: Distribution of household clusters (unshaded regions)

A typical shop in the island

Status quo of the electricity provision

- The island has several small diesel gensets
  - roughly 30 to 40 gensets in the island
  - capactity: generally 3KVA and 5KVA
  - each serving to a small cluster of households;

- Typical electricity loads: lights and TV

- Operating hours: 6.00pm to 9.00/9.30 pm

- Electricity Tariffs:
  - ~ 0.15 Euros per light point (~18 W) per night (~3 hours) and
  - ~ 0.4 Euros per TV point (70-90 W) per night (~3 hours)

- This translates to the electricity rate of around 2 Euros/ KWh (it can even be more in few cases)

Status quo of the electricity provision

- Generators operate at a very partial load

- A 5KVA generator was supplying to
  - 12 houses with 1 light point (~18W);
  - 6 houses with a TV (+DVD player)
  - Operator's house with 3 light points and 1 TV (+DVD player)

- This implies: A 5 KVA genset serving 0.9kW load (~20% load)

- Fuel consumption: 3 liters of diesel to run this load for 3 to 3.5 hours (according to the genset operator)
- Diesel cost ~1 Euro/ liter in island

- This translates to the cost of generation of electricity to around 1 Euro/ KWh (only considering fuel)

- Gensets operate irregularly; frequent flickering in the lights was reported

Status quo of the electricity provision: A few pictures

A typical Diesel Genset

A typical wiring network around households

Internal Connections

Status quo of the electricity provision: Key aspects

- Wiring
  - Each household has a wiring system in the house for connecting light points and TV
  - This home network connects to an external wiring network provided by the Genset Operator
- For Lighting requirement after 9.00 pm or 9.30 pm, people use kerosene lanterns or flash lights
- Kerosene is very expensive in the village @ ~1.4 Euros/ liter
- People have aspiration of having refrigerators in near future
- There were also some remains of an old mini grid (supposedly set up in 1996)

Status quo of the electricity provision: A few pictures

Remains of Old Mini Grid

Wiring Network: making use of poles of old mini grid

Conclusions and Opportunities

- People pay very high prices for electricity
- Electricity supply is inefficient and irregular
- There is a big potential for installing PV systems or a PV-hybrid mini-grid
  - People have the willingness to pay for electricity
  - An wiring infrastructure is in place
  - Remains of old mini grid (for example several ~30 feet high wooden poles) or distribution lines
  - There is an expected growth of load (especially refrigerators)
  - Other possible approaches such as Solar Home System might not be a very apt solution

Thank You