



Renewable Energy for Remote Palestinian Villages

Author/s: Skelton K., Lahdesmaki K., Risser J., Bartha J.A., & Jensen P.S.

Academic Degree: M.Sc. Environmental Management & Sustainable Energy Planning

University: Aalborg University, Department of Development & Planning (Denmark)

Thesis Defence Date: January 2010

Keywords: Palestine, Renewable Energy, Stakeholder Analysis, Participatory Approach, Sustainable Livelihoods Approach, Engineers Without Borders

Abstract

The following report presents the initial development phases in which the feasibility of a hybrid renewable system is determined for two remote Palestinian villages. The project was carried out between 2009-2010 by a group of students from Aalborg University. The report chronicles their initial experiences in collaborating on behalf of Engineers Without Borders Denmark with Israeli and Palestinian project partners, which is a particularly challenging proposition in a politically contested territory. After writing this report, the students have since returned for implementation alongside the village inhabitants and project partners.



Foto 1: Village Children (Skelton, 2010)

Objectives

The provision of energy to the community of Haribat an-Nabi will allow villagers to use devices such as an electric butter churner to make butter from their 250 heads of goats and sheep. The system will support 3 refrigerators to store the dairy products and to market it to the nearby villages and towns. Many other trivial modern-life appliances such as light, radio, t.v. and mobile devices, will support the daily life of the community while gaining energy independence from Israel.



Foto 2: Installation in Haribat an-Nabi (Skelton, 2010)

Analysis, and data collection

Field mission (November 2009) – involved fact finding, stakeholder negotiations & project design via qualitative methods including interviews, site assessments and situational/environmental observations.

Implementation (May 2010) – five days of preparatory work, stakeholder consults and participatory implementation were carried out.

Action research was carried out via a participatory and reflective process. Furthermore, the nature of the project greatly supported Aalborg University's model for problem based learning.

These methods generated field notes, reflection journals, audio recordings and transcripts, and various texts and pictures.

Secondary sources were utilized from literature and course notes. Literature utilized included Stakeholder Analysis, Sustainable Livelihoods Approach and the Participatory Approach.

Results

Successful installation:

The system was designed to support each of the 4 families that live throughout the year in the Haribat an-Nabi. The total average energy capacity is designed to be of the order of 6-7 KWh daily.

Included in the system were 8 solar panels of 135Wp each, which could provide 4-6 KWh of daily energy. (there are more than 85% sunny days throughout the year).

Also, 1 KW, 3 m diameter, home-brewed wind turbine providing an average of 2 KWh per day. On cloudy and winter days, the turbine can provide 4-10 KWh.

This energy will be consumed daily as follows:

- Three refrigerators – 3 KWh
- Illumination – up to 0.6 KWh
- Electric butter churner – 1 KWh
- Radio, t.v. – 1.2 KWh
- Washing machine (every third day) < 200 Wh average daily use

Future challenges

Tragedy of the commons:

- Three families cannot agree on sharing the power load. One family over consumes. Result: battery is depleted and days go by without power
- Refusal of payments: Inability on the part of the community to understand payment mechanisms and/or unwillingness to accept treating electricity as a paid-for commodity

Two diverging viewpoints:

EWB-Palestine - An Israeli NGO will never have the legitimacy required to conduct humanitarian aid work in the Palestinian Territories. Such activities perpetuate the occupation and still place Israelis in a position of power to decide the fates of Palestinians.

Comet-ME - EWB-Palestine, or any other Palestinian NGO, has absolutely no 'on-the-ground' track record of continuous engagement with communities in the area. Comet-Me may not be Palestinians, but they are more deeply tied in with the communities.