

Assessment methodology of wind and solar renewable energy hybrid systems for island and rural areas in Vietnam - BL/01/V16

OSTC testsite : Quan Lan island, Quang Ninh, Vietnam

Context and objectives

As in many other countries in the Southeast Asia the rural people do often not have access to electricity. The absence of electricity is an obstruction towards development and gives a poor quality of life. Extension of the grid to isolated places is economically not feasible. Solutions are often found in several ways like the use of small diesel gensets, solar home systems at individual bases. In order to come to sustainable solutions renewable energy can often provide feasible solutions taking into account the cost of diesel.

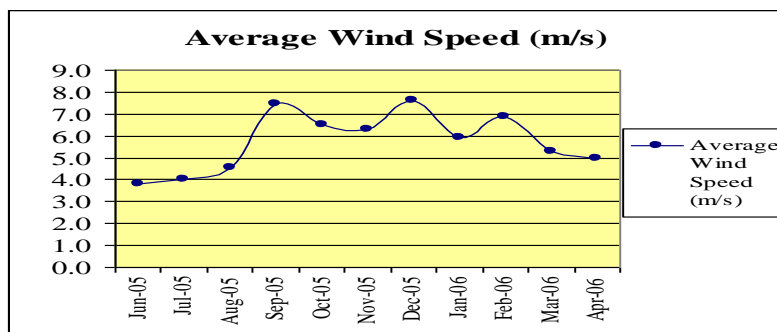
The aim of this project is to refine the methodology for the renewable energy potential on selected sites and to demonstrate the viability of renewable energy systems (wind and solar photovoltaic) in Vietnam's rural areas in a sustainable way, based on available data and modelling, analysis of the current energy situation in the rural areas, state of the art of technology and impact of hybrid systems on rural electrification.

Methodology

- Determining potential of wind and solar on selected site: It is done through refining the resource maps for a pilot case based on the Wind Energy Atlas of SE Asia, and data collected onsite by installing a wind logger. The data inputs include terrain elevations, land cover and vegetation on a 1 km grid scale, as well as meteorological data.
- The model developed here for rural electrification is a multi-objective model that considers economic efficiency, minimum municipality coverage. The economic efficiency objective is measured by the maximization of the discounted net benefits of the projects to be implemented. The minimum municipality coverage objective is oriented to warrant a minimum level in all the municipalities of the region, so that the actual differences in the coverage levels between the municipalities are diminished.
- Technical aspects: Design modelling of hybrid systems will be done to investigate different topologies. Thorough knowledge of the load demand, for which some further research is required, is needed. In case this is absent a standard load profile could be used.
- Local training, exchange knowledge and capacity building: The research activities include literature study, modelling study, laboratory experiment, collecting the relevant experience from visited wind and solar sites in Vietnam and Belgium and hand-on training sessions in resource assessment. Local training is done by giving courses for Vietnamese experts at ELECTA, training on the computer model, and visiting at the site. The knowledge can be exchanged further by sending experts among partners and visiting some projects in Belgium.

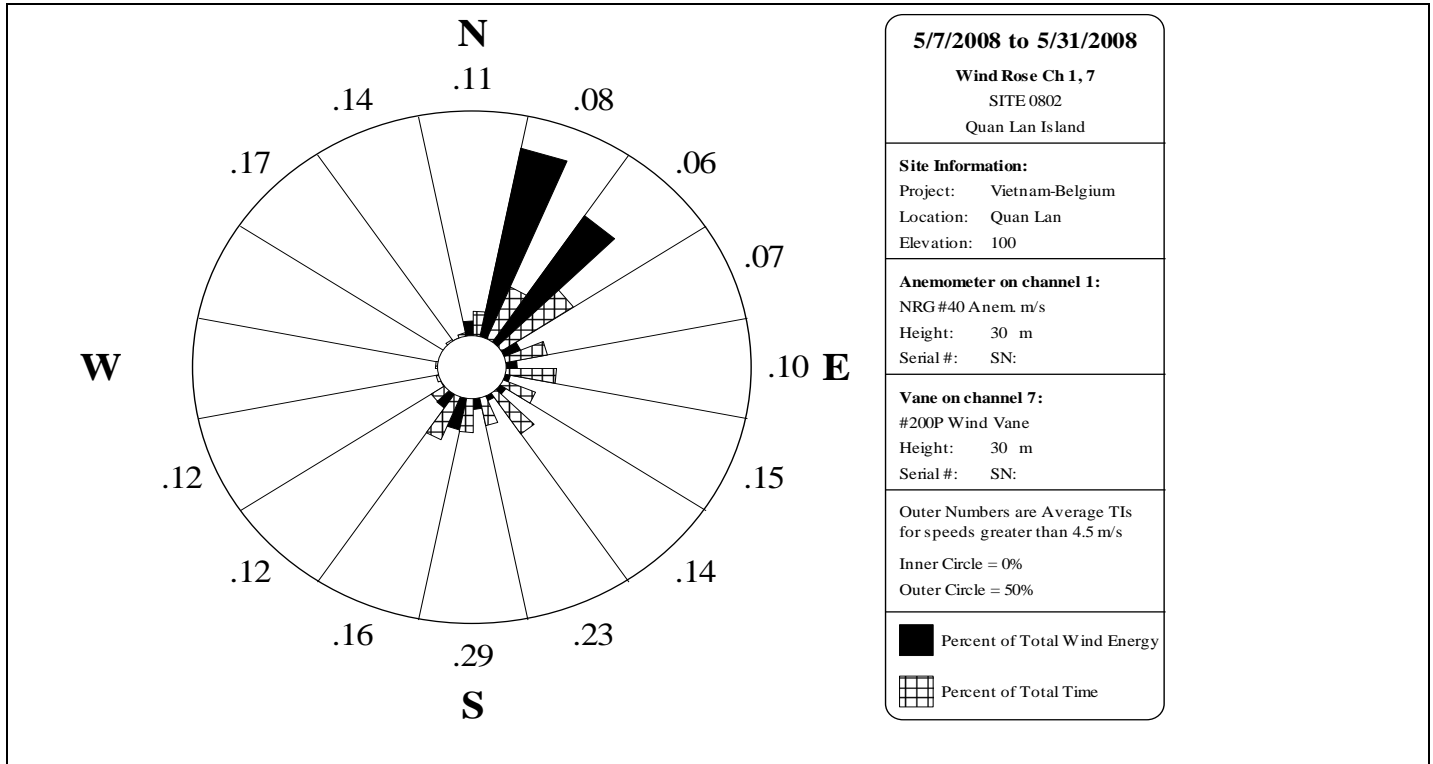
Results

- The wind data are collected from the existing meteo stations and from a wind logger provided by 3E in the Quanlan island. Additional data are still collecting to validate the results.



- Assessment methodology for development of rural electrification projects in Vietnam is provided
- Simulation in HOMER is being carried out.
- One exchange of Belgian experts to Vietnam in October 2007 and one training and exchange of Vietnamese experts in Belgium in May 2008 were done.

Products and services



Execution

- **Period:** 01/05/07-30/04/09

- **Laboratory/network** (promotor names, institutes, mail-adresses, web-site) :

Ronnie Belmans/Johan Driesen

K.U.Leuven/ESAT/ELECTA

Ronnie.belmans@esat.kuleuven.be

Johan.driesen@esat.kuleuven.be

<http://www.esat.kuleuven.ac.be/electa>

Luc Dewilde/Thong Vu Van

3E

Luc.dewilde@3e.eu

Thong.vuvan@3e.eu

Discipline

Energy
 Policy & legislation