

ELECTRIFICATION OF ISOLATED AREAS BY INTERCONNECTING DIFFERENT RENEWABLE SOURCES OF ENERGY: A SUSTAINABLE APPROACH



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A scientific partnership

The EPFL in Lausanne and the engineering school IAV in Rabat intend to join their efforts to develop a technique to generate electricity from primary renewable sources : (hydraulic, solar and wind-energy) supplying small networks of isolated consumers with the possibility of interconnecting them and later, to be connected to the national network without modification.

Global program aims

- > operating a technical transfer with local participation
- > improving the population ability to absorb innovations such as rural electrification by isolated micro grid



Sustainable approach

The success of this project is directly determined by the multiplicity of its components in relation to sustainable development integration of different aspects:

- > human
- > social
- > technical
- > economic
- > environmental

Program phases

The site chosen for this application is the "Ouneine valley" (Upper Atlas/Morocco) in which the IAV already plays a part in the framework of an integrated rural development action.

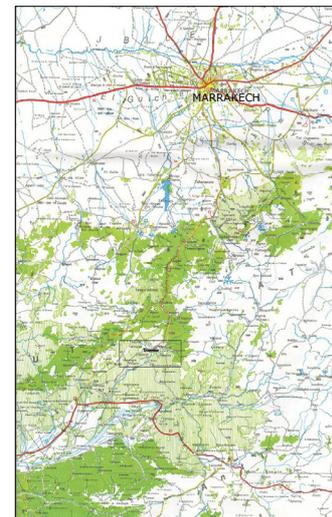
The project includes the following axes:

- > **Training** : Theoretical and practical courses (seminars)
- > **Development of a methodology** for rural electrification by micro-grids based upon different renewable resources.
- > **Application** of such methodology to a reference site (analysis of socio-economic, technical and environmental data, feasibility study, design of the equipment, simulation of various scenarios).
- > **Implementation** : equip 18 villages (measure and observe both technical and social behaviors ; follow up and analyze the social, economic and environmental impacts; improve the installations ; train the surveying staff and the Moroccan trainers)

Stakeholder participation in joint research

Three levels of public involvement were distinguished during the project's implementation:

- > identification, through public surveys, of the short- and long-term economic usefulness, as well as the societal demand. This involved evaluating public receptiveness to ensure the project's social feasibility as regards,
 - > incorporation of local knowledge that could be combined with the scientific aspects and new technologies,
 - > participation in the costs, construction and management of the network.
- Participation by households took several forms:
- > in cash, through disbursements for indoor electrical installations (after the energy meter) and low-voltage works,
 - > in kind, through workdays at the various construction sites. The commitment of the residents in the first area of the project was quite remarkable in this regard, as construction of the penstock and the hydroelectric micro-plant's irrigation canal represented respectively between forty and fifty days of work per household.



First conclusions

After 3 completed phases, the research action project has attained his general objective in each of 7 villages that had been planned for network connections: the implementation of all infrastructure and managing structures through participatory processes.

Theses experiences now allow for a research component aimed at understanding interfaces between social logic and technical framework, wich is critical to the implementation of local development projects