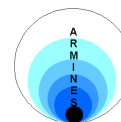


REDEO - Rural Electrification Decentralised Energy Options

Newsletter n° 3



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Rural Electrification Decentralised Energy Options

in Cambodia, Lao PDR and Vietnam

*Under the framework of the Initiative
for ASEAN Integration Project*

Introduction

The REDEO project is founded on the observation that most of power sector planning tools address main interconnected networks and their expansion. Those which address more local issues rather than a global picture of the planning process, renewable energies in particular, are generally limited to techno economic analysis or very local distribution planning – and are in all cases limited to electrification issues. Further, it is now becoming clear that in order to achieve maximum impact, rural – or local – electrification must be viewed in a holistic context of local development dynamics, including other related infrastructure (health, education, telecommunications, etc.) and related sectors – agricultural, cottage industries, etc. In addition, use of Geographical Information Systems (GIS) would allow different layers of inputs in the planning and result in a better visualization of the outputs.

REDEOs main objective is to provide planners of rural electrification (RE) with a set of flexible and computerised decision aid tools for integrating sustainable and off-grid distributed generation options in the planning for rural electrification. The proposed approach is cross sectoral in essence and uses the support of GIS.

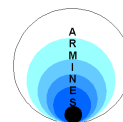
The first three countries for testing, developing and implementing the approach are Cambodia, Laos and Vietnam (CLV). These countries are very much in need of a proper and better planning tools for rural electrification.

Past activities

The various activities undertaken under the framework of the REDEO project are:

- Organization of a kick-off meeting with institutions in charge of Rural Electrification in the target countries.
- Assessment of existing software programs and areas of application for Rural Electrification in CLV
- Design of a global REDEO methodology for Rural Electrification Planning (REP) at a provincial level in CLV countries
- Development of a preliminary version of a GIS-based decision-aid tool for REP. (This first tool enables the user to define and characterize potential options for electricity production, to draw a network connecting various selecting load points and potential sites, and to calculate some associated costs).
- Discussion with partners in CLV on the preliminary version of the REDEO Tool and specifications of the final tool.
- Data collection for 3 case studies in the following provinces: Kampong Speu in Cambodia, Oudomxay in Lao PDR, and Lao Cai in Vietnam. This data collection was first only done at a national level in each of the three target countries, between May and July 2004. Further data collection at provincial level (but without field surveys to villages) was done in January 2005.

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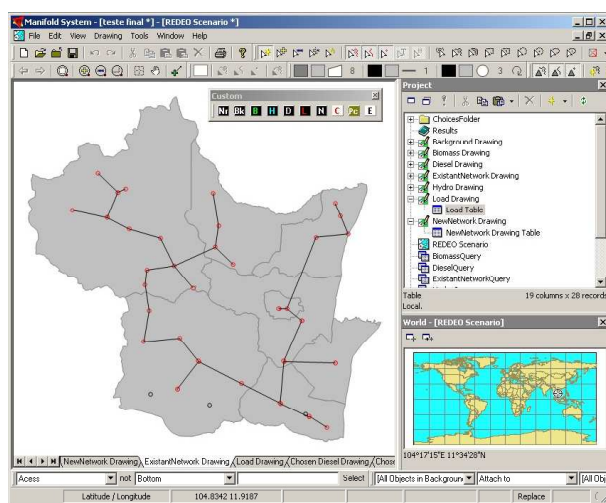


Figure 1: The preliminary version of the REDEO Tool

Missions in January 2005 to Cambodia, Laos and Vietnam

Three-week mission of the project team to target countries was conducted in January 2005.

These missions were organized as follows:

- 3 to 4 days in the capital city to discuss with local partners on the preliminary version of the REDEO Tool and thus to ascertain the needs of the users. Data collection for case studies (started in the last mission) was completed..
- About 2 days in the “provincial” town of the province selected for the case study, to work with local institutions on the data collection.

Useful discussions took place between the project team and local partners regarding the specification of the tool, i.e. what for the tool should be used? And very useful data and information were obtained for the case studies to be conducted on provinces. The project team has now well

understood the situation in the selected provinces and has a clear idea of how the REDEO tool could help address the planning issue.

The Mission reports is expected to be sent to local partners by early March.

Case study in Vietnam: Lao Cai province

Conclusions of the second mission show that REDEO is a good addition for institutions in charge of electrification in Vietnam, namely Institute of Energy (IoE) to test a pilot approach. IoE has already developed a methodology for rural electrification planning at provincial level but without using GIS, and considering grid extension as the main option for Rural Electrification. The REDEO project can, therefore, provide an opportunity to update this methodology.

Data on Lao Cai province were collected for the case study. These data include:

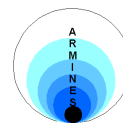
- Data on existing power infrastructures, main roads and main rivers in GIS format.
- Data on elevation lines and rural roads to be integrated in GIS.
- Latest Master Plan for Lao Cai Power Network Development.

The REDEO project will provide the Institute of Energy and other partners in Vietnam (PC1 and EVN Headquarters) with:

- A GIS tool helping them to perform more easily the Master Plan for Provincial Power Network, consisting of several modules. One module will be used to help prepare the layout of the grid extension.
- An additional module will present the decentralized options for Rural Electrification. Biomass option being

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not considered in the Lao Cai province, this module will focus on the feasibility of mini-grids fed by diesel and hydropower production systems.

- Some suggestions considering the link between electrification (or access to electricity) and development.

Case study in Lao PDR: Oudomxay province

Partners of the project team in Lao PDR have expressed a significant interest in the REDEO project, since there is a high need of capacity building and development of decision-aid tools on electrification planning process.

The REDEO project, by providing the Ministry of Industry and Handicrafts (MIH) with a GIS-based decision-aid tool for rural electrification planning, will enable this electrification stakeholder to:

- Have a framework to structure all the GIS data MIH and EDL (Electricité du Laos) have already gathered
- Better take into account the various steps of the rural electrification planning process, namely load forecast, feasibility of grid extension and feasibility of decentralized options.

The case study on Oudomxay province will be fed by GIS data already collected from EDL, as well as the results of data collection being done in Oudomxay province (on the socio-economic situation and perspectives). It will analyse the following options for electrification:

- MV-grid extension, being often considered as the best option for electrification. Use of the REDEO tool will show the area on which the grid should be extended based on the policy objectives for rural electrification as well as financial constraints.

- Mini-grids (connecting one or several villages), with either hydropower production or biomass electricity production system
- Mini-grids with diesel systems.

Case study in Cambodia: Kampong Speu province

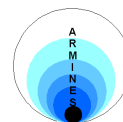
The electrification planners in Cambodia could use and benefit from the framework approach adopted in the REDEO project. Most data needed to test the REDEO approach were easily collected from three main sources: (i) National Institute of Statistics (delivering georeferenced data on most socio-economic infrastructures of population settlements, (ii) Ministry of Transportation and Public Work, managing an important set of GIS data, and (iii) the SEILA Program¹, having a quite impressive amount of data on the development perspective.

The REDEO project is a good opportunity for Cambodia electrification's stakeholders to:

- Structure all the existing data being useful to analyse the electrification scenarios.
- Work on the various steps of the rural electrification planning process. Thanks to the large amount of data already available in Cambodia, and the quite high population density of the eastern part of the Kampong Speu province, a special emphasis will be made on the clustering approach.

¹ <http://www.seila.gov.kh/>

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Specifications and development of the final tool

Specifications of the final tool, i.e. description for each part of the tool of the needed input data, data and reports obtained as output, process and algorithm, and interfaces, are nearly complete (only comments formulated by the local partners during last missions are being taken into account).

Development of the final tool is in progress and the objective of the project team is to develop a module per week, in order to have a beta version of the tool by end March 2005.

Next phases of the project

Next phases of the project will be as follows:

February – March 2005:

- Development of the beta version of the REDEO tool.
- Writing missions reports.

April:

- Application of the REDEO Tool to the case studies
- Debugging
- Preparation of missions to Cambodia, Lao PDR and Vietnam
- Writing the fourth project newsletter.

May 2005: Missions to Cambodia, Lao PDR and Vietnam

- Installation of the Manifold software and the REDEO Tool
- National workshop on the REDEO tool and approach
- Working sessions with planners of the countries on REDEO tool and case studies

- Preparation of the final project workshop

June 2005:

- Writing the second progress report
- Final project workshop at AIT (Bangkok)

July – August 2005:

- Writing the final report.
- Writing the fifth project newsletter.

Project team:

The REDEO project is led by the French engineering and consulting firm IED (Innovation Energy Développement), with two partners: the Energy Field of Study of the Asian Institute of Technology (AIT) and the Center for Energy and Processes (CEP) of the French Research Centres Association ARMINES (Association pour la Recherche et le Développement des Méthodes et Processus Industriels).

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Disclaimer

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