EUREC

Renewable Energy Projects Catalogue

A guide to successful and innovative projects in the area of renewable energy

INTRODUCTION

EUREC IS THE LEADING EUROPEAN ASSOCIATION OF RESEARCH CENTRES AND UNIVERSITY DEPARTMENTS ACTIVE IN THE AREA OF RENEWABLE ENERGY.

The purpose of the association is to promote and support the development of innovative technologies and human resources to enable a prompt transition to a sustainable energy system.

The ***Renewable Energy Projects Catalogue- A guide to innovative and successful projects in the area of renewable energy*** presents a list of projects, led by EUREC members, which have contributed to increase the presence of renewable energies in the energy mix, by reducing their costs, increasing their reliability or facilitating their integration in the energy system.

The Catalogue is divided in four main chapters dedicated to:

- RENEWABLE ELECTRICITY (e.g. PV, wind, biomass, solar thermal, ocean, hybrid systems)
- RENEWABLE HEATING AND COOLING (e.g. heat pumps, solar thermal)
- SUSTAINABLE TRANSPORT (fuel cells and biofuels)
- HORIZONTAL TOPICS (e.g. grid integration and energy storage, studies to support transition to sustainable energy, education and training activities)

Each chapter presents examples of successful and innovative projects in its respective area.

The Renewable Energy Projects Catalogue highlights the richness of renewable energy research, which covers different renewable energy sources with different research needs, all along the resource value chain (e.g. from production of the source- whenever needed- to the production of the generation and transformation device to its integration into the existing energy system).

The Catalogue also presents examples of horizontal topics, such as grid integration, building integration, energy efficiency, energy storage, education and training activities, whose importance has grown in recent years.

TABLE OF CONTENTS

PROJECTS

1.

RENEWABLE ELECTRICITY

Projects

2. Technology transfer for the implementation of renewable energies as part of the power supply in Tenerife and Senegal and installation of the first PV plant connected to the grid in Senegal (MACSEN-PV)

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CHALLENGES

This project, financed by the European Programme MAC 2007-2013, was conceived as a ***platform for technical cooperation between the Canary Islands and Senegal in the field of the integration of renewable energies in the power supply.*** The project started in October 2010 and was finalized in June 2013. Its main objective was to improve the capacity of public authorities and local technicians to support the implementation of renewable energies as part of the power supply in these regions. Its milestone was the installation of the first PV system connected to the grid in Senegal. The project was led by the I*nstituto Tecnológico y de Energías Renovables* (ITER) and had the following partners, the *Agencia Insular de Energía de Tenerife* (AIET), the *Agence Sénégalaise d'Électrification Rurale (ASER) and the Centre d'Etudes et de Recherches sur les Energies Renouvelables* (CERER).

Main features of the project

During the first stage of the project, a series of sectorial evaluations were carried out concluding in ***12 energy system analysis reports***. This work allowed to identify the availability of resources, the forecasts of the energy demand, the existing legislation, the main needs and the training lacks existing in the RES field in Tenerife and in Senegal. As a result of the findings of these previous reports, various ***capacity building actions*** were carried out, such as the elaboration of materials and tools aimed at public-sector managers and technicians and also at teachers. In particular, the materials developed were: the handbook ***"Guide for Energy Planners about RES integration into the grid"***, a collection of 16 ***"Teaching Supporting Materials for Secondary and University teachers"***, and a Teaching Supporting Video for teachers ***"Training Itineraries of ITER's RES installations"***. These materials were specifically distributed among the beneficiaries during the ***Technical Workshops*** organized in Tenerife and Senegal for public-sector managers/ technicians and for teachers.

In addition, one online ***Advisory Office***, containing the collection of elaborated materials, together with other documents, links and tools of interest, was developed in the Web page of the project: http://macsen-pv.iter.es.

RESULTS

The main outcome of the project is the ***3 kWp PV mixed plant*** installed in CERER´s headquarters in Dakar. This installation, inaugurated by Senegalese and Tenerife Island government officials on December 2012, was ***connected to the conventional Senegalese electricity grid*** on April 2013, being a milestone in the development of RES in Senegal, being ***the first renewable facility to be connected***. Beside this, the project promoted the creation of a ***"National Scientific Committee for Renewable Energy Systems integration into the Senegalese Grid"***, headed by the Senegalese Ministry of Energy. This Committee defined the required procedures needed to connect this PV installation to the grid, but it's intended to be a permanent one. The Committee will be decisive for the ***development of effective regulatory and legislative frameworks for renewable sources in Senegal***, and it will have ITER´s support and advice.

The PV installation is nowadays being used as a demonstration platform and internship for local technicians managed by CERER. For this reason, its design was adapted specifically taking into account the peculiarities of the Senegalese grid, and in order to maximize its demonstrative and educational use.

The enormous visibility and recognition reached by the project must be highlighted, appearing in more than 200 media releases and presented in more than 45 international events. Furthermore, the project´s results have been published in 3 international scientific publications.

MACSEN-PV Technical Workshop for Teachers.
Dakar, November 10th, 2012

Dakar University students visiting the PV Installation in CERER's facilities

Senegalese and Spanish Public Authorities during the PV Plant Opening Ceremony

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