



Background

In October 2006 the UK and Spanish Governments agreed to deepen bilateral collaboration in the field of renewable energy.

As a direct result of this, Narec and CENER (Spain's National Renewable Energy Centre) undertook a collaborative micro grid R&D study looking at all aspects of low carbon distributed energy within various urban environments in the UK and Spain.

Project outline

Narec and CENER explored the issues of localised grid management, to allow for greater penetration of low carbon and renewable energy generation. This required a detailed analysis of technologies to allow for the full integration of energy loads, stores and generators.

The project

The renewable energy resource feasibility study looked at several towns and cities in Spain and the UK, considering the energy demands per capita, and the feasibility of a multitude of renewable and low carbon technologies including wind, PV, solar thermal and biomass.

A detailed technology review of energy storage, energy distribution and energy generation was undertaken and substantial research into smart grid technologies and the economics of various solutions.

Results

The report has helped to lay the foundations for the role out of new energy technologies in the UK and Spain by:

- Providing a range of scenarios for the towns in question;
- Developing a methodology to design micro grids;
- Producing a piece of software for the testing of such scenarios;
- Conducting a technical and economic viability plan to implement a demonstration plant;
- Conducting an economic analysis of all technologies outlined;
- Analysing energy demand;
- Producing a low carbon economy technology road map.

The report was presented to the Spanish Government and showed various options for increasing renewable penetration into the grid. The project identified technical, economical, regulatory and social barriers to a wide scale rapid introduction of smart grids.