



**REGIONAL INVENTORY IN SPAIN**  
**by ESCAN,S.A.**

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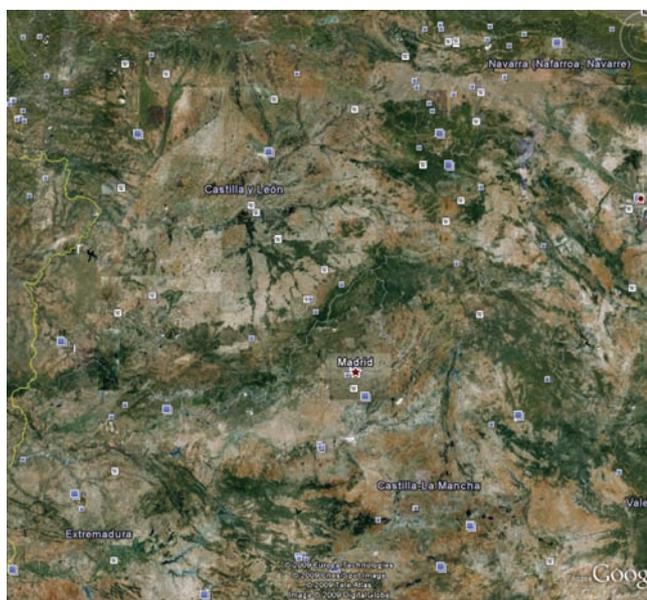
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## The regional context

### *The region*

The region of Central Spain includes the sub-areas of Castilla León, Madrid and Castilla La Mancha, involving a total surface of 182.000 m<sup>2</sup> and with a total population of 10.856.000 inhabitants. The economy is diverse, and includes all sectors as agriculture, industry, tertiary and public.

The main economic cities are Madrid, León, Valladolid, Ciudad Real and Albacete, with very diverse socioeconomic conditions.



Source: Google

### *Solar market*

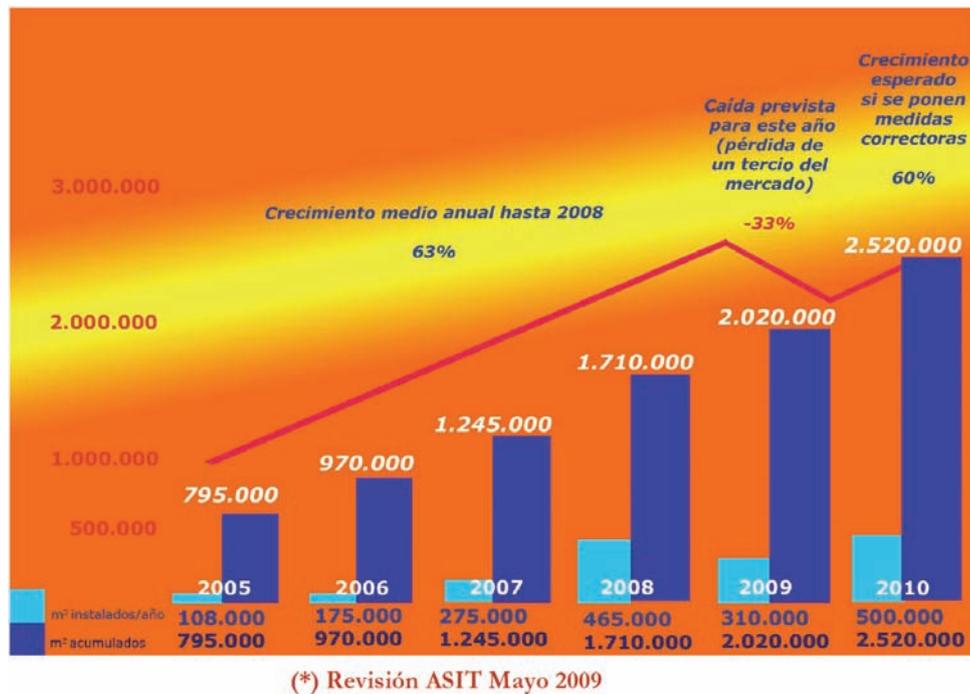
Solar thermal market in Spain has suffered a strong development during the last 5 years, until the big economic crisis of mid-2008, which affected seriously to some of the bigger consumers in the country, the building sector. This sector was favoured until then by the regulations existing, in comparison with the industrial sector, where no strong promotion had been made.

The main regulations and plans aimed at the promotion of the solar thermal, currently running, are:

- ⇒ The National Plan for RES (2005-2010), stating the figure of 4.900.000 m<sup>2</sup> installed by 2010

- ⇒ The Technical Code for Buildings, with the obligation of installing solar thermal in every new building in Spain
- ⇒ The Regional Plans for RES, with programmes promoting and providing funding for solar thermal installations

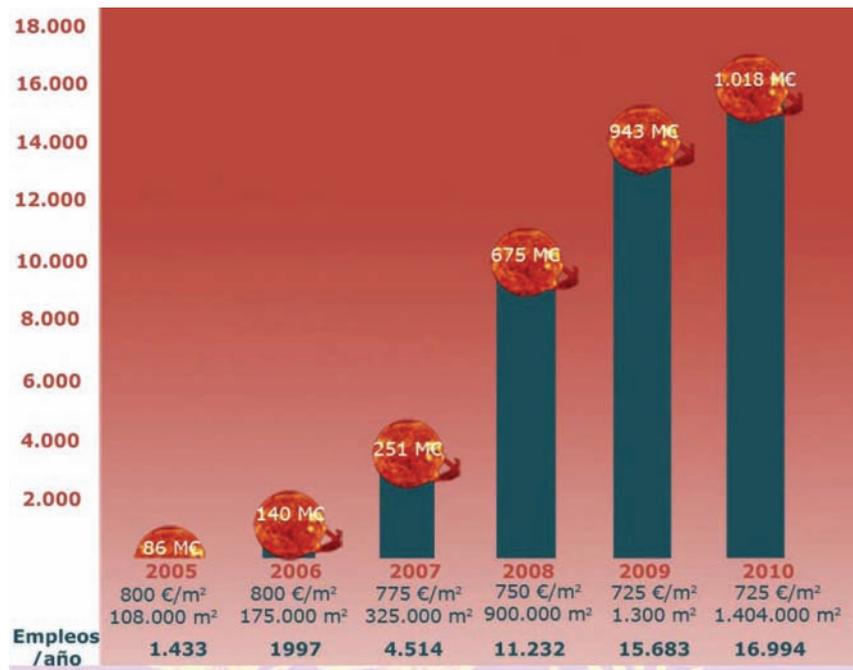
Moreover, the following figure presents the evolution in the last years and the forecast until 2010 of the total capacity in Spain.



Source: ASIT

While the current installation in Central Spain, the target region, is of approximately 220.000 m<sup>2</sup> surface installed: Castilla León (80.000), Madrid (100.000) and Castilla la Macha (40.000).

Regarding the employment (employment/year), it is estimated that in 2009 over 15.600 could be created by the solar thermal industry in Spain.



Source: ASIT

The main players and stakeholders that will affect the development of the solar thermal for industries development in the region will be:

- The regional public institutions and regional agencies, through the programmes and subsidies that promote this technology in a big scale
- The national public institutions, considering the solar thermal for industries as a priority to fulfil the national requirements for RES and Kyoto commitments
- The solar industries: manufacturers, installers, ...
- The ESCOs, than might offer their services in the solar thermal sector
- The pioneer industries (as Nissan and others) that have already installed solar thermal collectors in big scale
- The consulting and engineering companies, detecting new projects and develop them
- The media, that inform and promote successful installations, and particularly those specialised in RES

The economy of the solar thermal installations presents some particular characteristics in the analysed area. The cost of the installation varies typically from 500 to 600 Euro, depending on the size and quality of the panels. Furthermore, the payback period is well related to the fuel substituted, being of particular interest the change of oil systems consumption by solar thermal systems. Oil price varies from 4,5 to 6 c€/kWh in 2009, while gas is between 2,5 and 4 c€/kWh.



**Solar thermal installation in Industry**

When analysing the economic viability, it should be considered, on one side, the subsidies and financial support provided by the public institutions (mainly the energy agencies and regional Governments), and on the other side, the private ESCOs providing services that can include the investment, maintenance and operation of the solar plant, obtaining their incomes from the energy sold.

Some examples of solar thermal installations can be presented in the region, as the Nissan factory in Avila, with a two years old installation of over 500 m<sup>2</sup> for painting process.

## **Industrial sectors of special interest**

In order to focus the project effort, some sectors have been detected during the project development. It has been shown of particular interest those industries which include basic process as washing, raw material production with hot water and heating in baths. The sectors of interest detected at present are the food and drink, car and trucks and metal industry. Due to economic crisis it is not expected to have new big industries installed during the next 3 or 4 years, so the project will be focused on existing industries.

The solar process heat applications already identified are the heating of baths in painting process, the washing of vessels and machinery, the washing of food industry products, the washing of packages to be reused, the feeding water for new products, the chemical cleaning of metal spare parts and the heating of vessels.



Industrial washing process

Based on the previous experiences on energy audits from ESCAN, the experiences from diagnosis and studies previously developed at regional level and the inputs from the industrial associations, there have been selected the most promising companies or sectors for screenings. At the same time, some relevant ESCOs have been contacted for the project, particularly those with experience in solar systems and other energy matters.

## Market development - outlook

The market potential for solar process heat is high, as the technology is mature in the country, and also due there have been detected several industrial processes where the technology would present technical and economic viability. Some new industries will get benefit of the results of the project in the future, as the pilot projects will be running and optimized.

Moreover, the speed of the solar market development in the sector will be probably slower than expected, affected by the world economic crisis.

Some of the barriers that the SOPRO project will undoubtedly overcome, will be definition of the most promising process and industrial sectors, the networking of the key actors and stakeholders, the increasing of the knowledge of solar for process, the promotion of initiatives to install solar thermal, new representative pilot projects, subsidies and financing in the region and solar ESCOs business.