

TECHNOLOGY WATCH REPORT

CÍRCULO DE INNOVACIÓN EN TECNOLOGÍAS DE LA INFORMACIÓN Y LAS COMUNICACIONES



ENERGY EFFICIENCY AND SUSTAINABILITY IN THE DIGITAL HOME

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Executive summary

The general framework for energy efficiency and sustainability is described in this Technology Watch report. The main focus has been on the sector of residential buildings with special emphasis on Spanish scenario.

For a better understanding, the content in this document has been divided into 8 subsections.

The first section begins with a brief introduction, where the motivation and importance for undertaking this study are exposed. Furthermore, an overview of the environmental elements related to the topic is also provided.

In the second section, the main issues regarding regulations and legislation related to energy efficiency in the residential building sector are presented. The main emphasis is on european, national and regional regulations (including the region of Madrid).

The section number 3 contributes information related to the energy consumption in the building sector in Spain, providing a detailed analysis of consumptions in the home. The energy production and prices in Spain are also analyzed, as well as the global consumption (by activity sectors in the country and by services inside the home) and the specific consumption in the more frequently used instalations and appliances in the houses.

The section 4 provides an overview of the most relevant recommended measures for energy saving and sustainability in the buildings, also emphasizing the spanish proposal. The recommended and under execution strategies suggest two main action lines: energy saving and energy supply. Special attention is paid to the measures designed to reduce the energy consumption in the building sector due to the high saving potential shown.

The Chapter 5 describes a set of initiatives and experiences (previous and under execution), in the target topic. In a first place, a selection of R&D projects is analyzed, providing a general sight of these activities according to its framework: worldwide, european or national; and to the approach and objectives of the work. Finally, the requested International Patents in a set of subjects related to energy sustainability in buildings are analyzed.

In the section 6, a brief overview of the market for this activity is provided. With this purpose, the role of the main agents involved in the commercial deployment of solutions for energy efficiency and sustainability in the building sector is described. Moreover some examples of business models for new buildings' residential sector in Spain are quote.

As a future prediction, the Chapter 7 presents the action lines that are opened for the field of energy efficiency and sustainability. The supporting actions carried out by the European Comission and the State Administration and the mechanisms to promote new technologies development and establishment are provided. Moreover, a list of aid

calls for R&D in these subjects, as carried out by the European Commission, the State Government and the Regional Administrations, is also presented.

Finally, a section of Conclusions and Recommendations is provided, where special emphasis is placed on the main promising lines, identified as being closely related to energy sources, mainly renewable, and to its intelligent consumption. Here, the investigation in ambient intelligence systems, which allows the development of new applications for the energy saving optimization in residential and tertiary buildings, has been identified as a future area. It's required these systems to be received by users as one more appliance for the home, providing functions for a maximum reduction of electricity, gas/oil and water. In this way, the user will only perceive the final service and not the complexity associated to the underlying technology. In the buildings of the service sector, this equipment is key in order to achieve energy savings in an intelligent and automatic way.