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# The challenge of irrigation modernization in Spain

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## Abstract

Spain holds the first position within the European Union in terms of irrigation surface. In Spain, there are 3.7 million hectares of irrigation, which represents 22% of the cultivated area, of which 52% is located irrigation. This method of irrigation is mainly used in crops such as olive grove, vineyard, citrus fruits plantations, other fruits and vegetables. The other half of the irrigation surface in Spain uses equally both sprinklers and gravity irrigation. Irrigation generates 65% of the vegetal production and it is the basis for the agroindustry.

However, the functions of irrigation go beyond providing sufficient, healthy and quality food to the population and supplying the agri-food industry. Irrigated agriculture is key to the socioeconomic sustainability of the rural environment, contributing to the fixation of the population in rural areas.

The main challenges that the irrigation in Spain has faced are, firstly, those of increasing the efficiency of production and the profitability of agriculture in a globalized market. Secondly, the challenges related to climate change, causing temperature variations and distribution of irregular and unpredictable rains. Thirdly, the water deficit in some regions of Spain where agriculture is the main engine of economic activity, and finally, the environmental issues such as the proper use of water resources and the reduction of pollution in nutrients. Challenges of a social nature also arise, such as improving the living and working conditions of the irrigators, in addition to combating the depopulation of rural areas and promoting the establishment of a young generation in the agriculture sector.

To respond to these challenges, at the end of the 1990s, Spain began a modernization program of the irrigation systems through different initiatives, such as providing the irrigation with improved infrastructures, new methods of irrigation management and the incorporation of new technologies.

Through the concurrence and effort of the national and regional Administrations and the irrigators, it has been possible to act on a total of 1.5 million hectares. This has led to an enormous economic effort in the sector and the investment of nearly 3.000 million euros by the Administrations involved.

These efforts have resulted in irrigation areas that have incorporated new technologies and are better prepared for the challenges of the future. From an environmental point of view, these areas use a more sustainable and respectful irrigation system, as they use less water and fertilizer. From the social point of view, it creates better quality jobs. This modernization has meant a decrease in water consumption by the agriculture sector: in 2002, the

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agricultural sector represented 80 % of the total water consumed in Spain, while currently, this figure has dropped to approximately 65 %. The reduction in annual consumption by agriculture has been 2.859 hm<sup>3</sup>.

Irrigation policy is a fundamental axis within the actions of the Ministry of Agriculture, Fisheries and Food of Spain. The objectives for the future of agriculture in Spain are to continue with the modernization of irrigation infrastructures to make an efficient use of irrigation water and to promote the use of new technologies among irrigators.

**Keywords:** sprinkler and gravity irrigation, Spanish modernization program