

Small wastewater systems in Portugal: Current situation and trends for the future

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ABSTRACT

Portugal is a small Mediterranean country. Where wastewater treatment is concerned, the Portuguese levels of service in 2000 and 2006 were, respectively, 55% and 80%. These levels of service will continue to increase until 2013. Because of economic, environmental, and energy concerns, the design, construction, and operation of wastewater treatment plants (WWTPs) are currently under careful review in Portugal. Innovative designs continue to be developed and alternative treatment processes, specifically those based on natural systems, such as constructed wetlands, are being used. This paper presents information about investment costs of 165 wastewater treatment plants (WWTPs) built in Portugal between 2002 and 2004. The WWTPs were grouped in four population ranges that were analysed in terms of investment per capita costs. For the lowest range, up to 2000 inhabitants, the average investment cost was about €800 per inhabitant and just €89 per inhabitant for WWTPs serving more than 30,000 inhabitants. The analysis of investments related to WWTPs serving fewer than 2000 inhabitants has shown a large variation of unit costs, depending on the served population and, to a much smaller extent, on the type of wastewater treatment. In this paper, special attention is also given to three main groups of sustainability indicators, comparing conventional treatment systems with constructed wetlands. Results show benefits of selecting wastewater treatment based on natural systems.

Keywords: Constructed wetlands; Investment costs; Levels of service; Wastewater treatment

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