

## **Desertification assessment for the Guadalentín River Basin, Spain using the MedAction® PSS (Policy Support System) integrated model.**

**Vanessa Mateus**

CITTA - Centro de Investigação do Território, Transportes e Ambiente (Research Centre for Territory, Transports and Environment). Faculdade de Engenharia da Universidade do Porto

Rua Dr. Roberto Frias, s/n. 4200-465 Porto, Portugal

vlmateus@fe.up.pt

Phone/fax numbers: +(351) 225081903

The Guadalentín Basin (3,300 km<sup>2</sup>) in Southeastern Spain is an important EC-funded MEDACTION project (Policies for Land Use to Combat Desertification). This region is an important case study since it is one of the severest cases of land and water degradation and desertification processes in Europe. For the comprehensive understanding of the complex dynamics and interactions between (internal and external) biophysical and socio-economic drivers (and reaction intensity through absorption and buffering processes), that can lead to environmental degradation, a modelling tool was applied: the MedAction® Policy Support System (PSS) which is an integrated model applied to the regional Guadalentín Basin area at a relevant time-span of 30 years. The MedAction® PSS links science with policy making allowing the integration of policy themes, options and indicators, where the desertification issue can be analyzed through a comparative “what-if” scenario for the regional scale. For the present study it was tested a number of relevant scenarios related to land and water management, crop subsidy and extreme climatic events. For the Guadalentín Region the main conclusions derived from the model outputs are the strong evidence that regional land and water are clearly mismanaged and that farming options are primarily guided to profit maximization. All these features have a significant negative consequence on environmental quality and overall sustainability. This modelling tool allowed an improved perceptive of desertification drivers, being a valuable contribute for the understanding and management of the land degradation and desertification phenomena, and therefore it is a resourceful tool for effective policy implementation and in the long-run, sustainable development.

**Key-words:** MedAction® PSS; Guadalentín Basin Region; Desertification-indicators; Biophysical and Socio-economic scenarios.