

Decision Support System for Rehabilitation of Hamoun Wetland through Sustainable Water Resources Management

Abstract

Conservation of wetland ecosystems has become an important issue of the world due to water demand increase. In the current study, Hamoun international wetland management is modeled using establishing a decision support system. International Hamoun wetland is one of the main wetlands of the world that had been designated in Ramsar Convention in 1972 as the seventh international Iranian wetland. Despite its high importance and functions, wetland ecosystem cycle faces significant changes because of different factors such as continuous droughts, population and water demand growth for urban and agricultural activities and lead to irreversible damages to wetland catchment. In order to help the decision makers in the situation, the first purpose of the study was to make a decision support system for better management of wetland water resources. The second purpose was to analyze the different scenarios of water resource management activities and policies and their effects on the wetland rehabilitation. Therefore, Sistan and Parian River inflows simulated using Hirmand River inflow during 1961-62 to 2011-12 water years, in the first step. Then, the decision support model was made and the effects of executing different policy options on water inflow level to Hamoun Hirmand wetland were simulated. Finally the economic benefits of water release into International Hamoun Wetland were calculated. Results of different scenarios execution showed that simultaneous water supply and demand policies lead to an increase in water inflow into the wetland. Also, using decision support system is an appropriate approach for studying the impacts of management scenarios that is suggested to be used by managers and policy makers. Results of calculating economic benefits of wetland showed that agricultural, livestock, fisheries and woody resources extraction from the wetland margins will make 32911.8 thousand rials per capita that is significant compared to the agricultural sector gross margin that would be made in the agricultural areas.

Key words: decision support system, simulation, international Hamoun wetland.



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**The Thesis Submitted for the Degree of Ph.D
(In the Field of Agricultural Economic)**

Title:

**Decision Support System for Rehabilitation of Hamoun
Wetland through Sustainable Water Resources
Management**

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January 2016