عنوان مقاله:

Priority determination in future allocation of water resources for agricultural, household, public and environmental sectors in Hirmand Area in wet - normal and drought conditions

محل انتشار:

دومین کنفرانس بین المللی پژوهش های نوین در مدیریت ، اقتصاد و توسعه (سال: 1396)

تعداد صفحات اصل مقاله: 13

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خلاصه مقاله:

Supply and demand management of Hirmand water resources is one of the most important problems facing by policy makers and they will not be able to manage this sector properly without specifying the future prospects of the Hirmand Area. The main objective of the research is to determine the priority of future allocation of water resources in the Hirmand Area by using dynamic optimization models in different climatic conditions in agricultural, household, public and environmental sectors. The method of this research is based on the applied scientific method. The required statistics and information are obtained by the library method. In this research, the water demand functions in the agricultural, household, public and environmental sectors as well as the water supply function are achieved initially in different climatic conditions and then the general objective function for determining the allocation priority is estimated by using EVIEWS and GAMS soft wares. The results showed that in different conditions for agricultural sector, water demand is inversely related to water price, therefore under drought, wet and normal conditions, if the water price increases by one percent, the product will have a negative value decrease by 4.4%, 88% and 1.006% respectively. Moreover, since in this model the demand function for water is only a function of the price, the return to the scale is decreasing and Iso Quant Curve in the agricultural sector has a negative technical substitution rate in all aquatic conditions. In household demand, the results showed that with increase in water price, consumption decreases and rise of price is a necessary condition for reducing consumption, but is not sufficient. The average consumption based on the current trend is 12.42 M3 per month for each household. The reaction in the amount of demand change versus the change in the number of stormy days is positive and equal to 0.39. The results of the study for determination of water allocation indicate that if the next year is drought, priority of allocating for household sector will be (44%) - agriculture (41%) - Public (10%) and environmental (5%). In normal year, allocation priority will be (41%) household - (37%) agriculture - (14%) environmental and public sector (8%). While in rainy year, the allocation of priority has recorded for agriculture (43%) - domestic (39%) - environmental (15%) and public (7%). At the end some strategic .policies based on research findings are suggested

کلمات کلیدی:

Sistan, Dynamic, optimization model, Social welfare, Priority determination