

## **Abstract**

As one of the most important issues of the century, today climate change has been affected the human society. Impacts of this phenomenon on various aspects of human life and activities has been proved; water resources development, spatial and temporal distribution of precipitation, surface waters, evaporation, groundwater recharge, water quality and sea levels rising are some examples of the impacts which could be effect on human settlements, agricultural productions and energy uses. Indeed, a comprehensive understanding of water resources management and optimize utilization between economic and social developments are the most influential factors. The Bar river Basin is an important basin in the Neyshaboor city because the Bar Dam is constructing in this Basin as a main source for Neyshboor water supply. The aim of this study is the investigating effects of climate change in the period 2011-2040 by using general circulation climate models (HadCM3) under two climate scenarios A2 and B2 for basin water resources allocation. Results of Downscaling model SDSM shows an increase in temperature and decrease in rainfall (during 2011-2040) in comparison to the base period (1971-2000). Under the A2 it is forecasted 0.086 °C increasing in the temperature and 9 percent in the rainfall and under the B2 0.095 °C increasing in the temperature and 7.23 percent in rainfall during (2011-2040). Consequently, according to the increase in temperature and decrease in rainfall, river discharge rates would be dropped; thus it is expected a decrease 21/17 percent under A2 and a decrease 22/18 percent under B2 during 2011-2040 relative to the base period (1971-2000). WEAP (Water Evaluation And Planning) was used to study effects of climate change on water allocation. Results for three scenarios of increasing in water demand, population, and agricultural areas and industrial development indicate that it is remained uncovered demands for agriculture, domestic and Industry.

**Keywords:** Bar Basin River, Climate Change, Allocation of water resources, HadCM3, SDSM, WEAP



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**Evaluation of climate change impacts on water  
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watershed in Nishabur with WEAP**

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