Modeling of Chahnime Water Reservoir Allocation by Interactive Meta Goal Programming and System Dynamic

Abstract:

There are some complexities for optimization of water System resources. It is not possible to solve these problems with optimization or this way is not economical. Interactive Meta Goal Programming and System Dynamic are two new and appropriate models for optimization; especially system dynamic is more practical method for water resource management modeling. In this study, these two methods were used for water allocation between different sectors, such as Zabol domestic water demend, Zabol'subsidiary villages domestic water demand, Zahedan domestic demand, Agriculture and Environment. Also, 20-years time series data during 1369-1388 was used for building the Models. With Second iteration of solving the Meta Goal model results showed that all three types of meta goals are acceptable. Moreover, results showed that about 90% of domestic demand water for Zabol and it's villages, also about 60% Zahedan doestic demand and 64% agricultural water requirements can be supplied from Chahnime reservoirs. Thus, according to the water crisis in the region and priority of water allocation, water allocation for domestic demands are is optimized. Estimated results for system dynamics model showed that 89% Zabol domestic demand, 89% it's village domestic demand, 55% Zahedan domestic demandd, 41% agricultural sector need and 69% of Environmenal water demand, during different months can supply from Chahnime reservoirs.

Key words: Interactive Meta Goal Programming Model, System Dynamic, Water Allocation, Chahnime, Sistan.

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