

Water resources management to achieve sustainable development in Bushehr (A coastal city in Iran)

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Introduction

Iran is one of the semi-arid to arid countries in the world, so comprehensive water study plans, water resources development and consumption management with the aim of sustainable social, economic and environmental conditions in different parts of the country is essential. The definition and implementation of such projects to provide fresh water in the drinking, industry and agriculture sections and to develop indicators of social, economic, political and environmental occurs. In some parts of the country, freshwater resources barely cover drinking water, while they have access to the endless brackish waters of the Persian Gulf, the Oman Sea, and brackish rivers. In addition to the lack of safe and suitable water resources, increasing water transfer costs from remote areas, the need to take into account environmental and social considerations, also makes the development of water resources as a sustainable process in the southern shoreline is avoidable. The subject of the current plan has been formed in this direction and its main focus is the supply of water with the desired quality and quantity in the southern shoreline of the country through the evaluation of desalination systems from brackish and brackish water.

Methodology

Bushehr Province (Fig.1) with ten counties is located in the south of the country, with a long coastline onto the Persian Gulf. Due to its location on the strategic coast of the Persian Gulf, maritime exports and imports, fishing industry, oil and gas reserves, agriculture and palm groves, and the existence of a nuclear power plant, this province has strategic and economic importance. The province has a population of 1,030,386 people and an area of 23160 km². Coordinates of Bushehr within Iran is [28.9184°N 50.8382°E](#). The present study is a combination of water needs studies, study of water resources, potential and water shortages in rural and urban areas and finally Bushehr province. In the selected method for estimating the shortage of drinking water and industry of the shoreline using water desalination systems, the assumption of the possibility of moving and transferring water between consumption centers, especially cities, has been accepted. Therefore, the scenarios in Fig. 2 can be suggested to supply water shortage.

Figure 4: The amount of water shortage in different horizons according to the second scenario

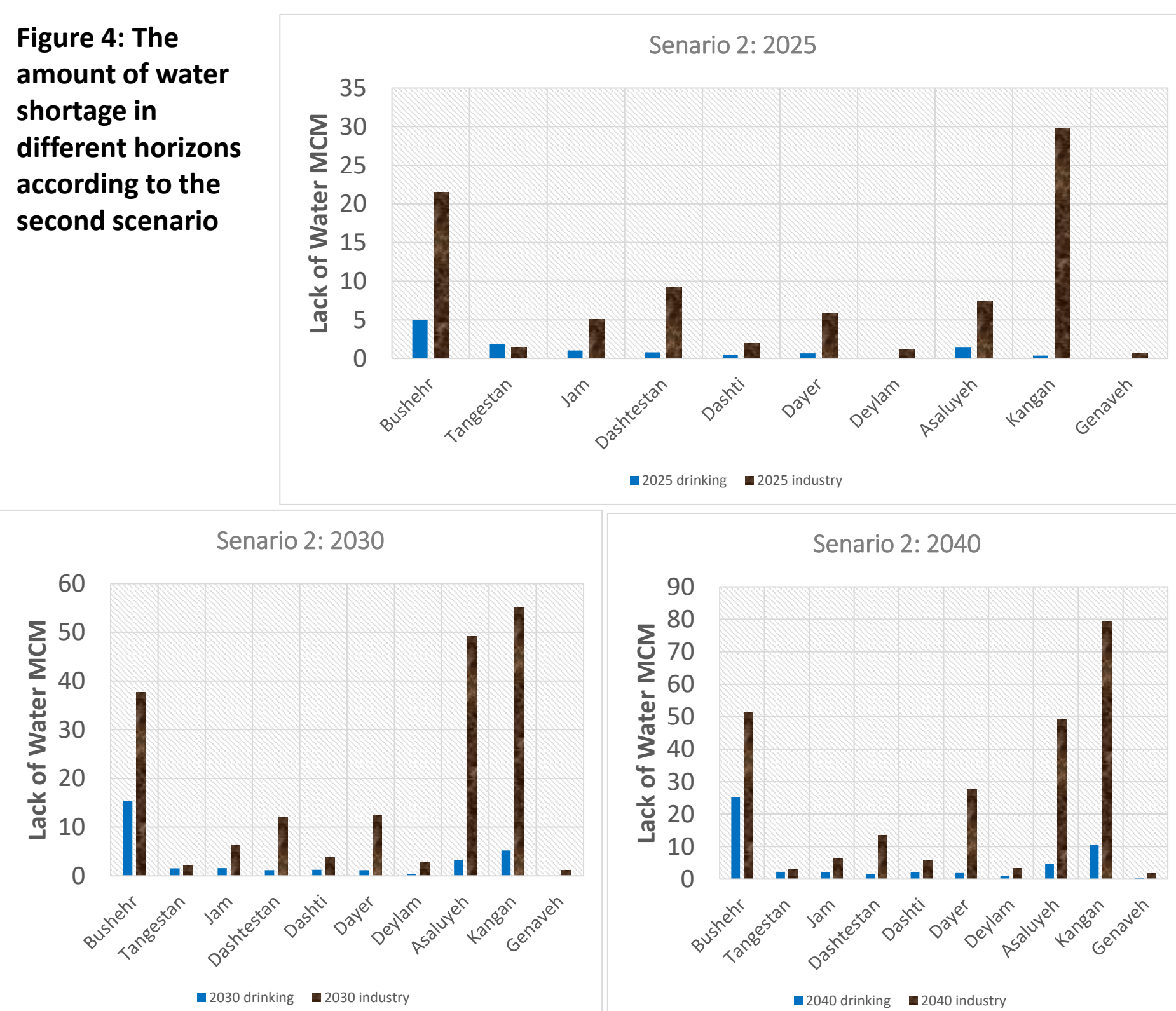


Figure 1: Map of Iran and Bushehr Province



Figure 2: The suggested scenarios to supply water shortage

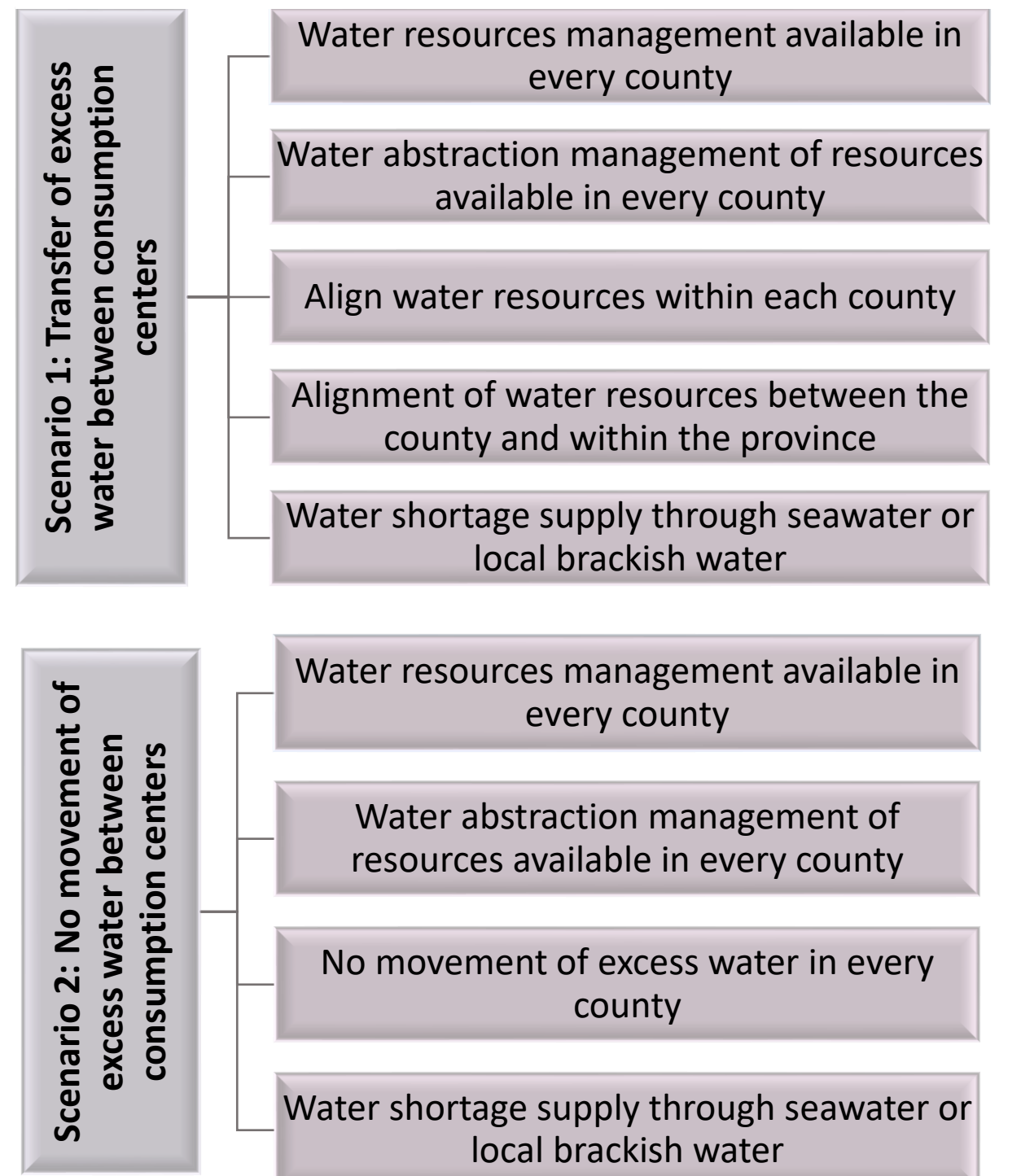
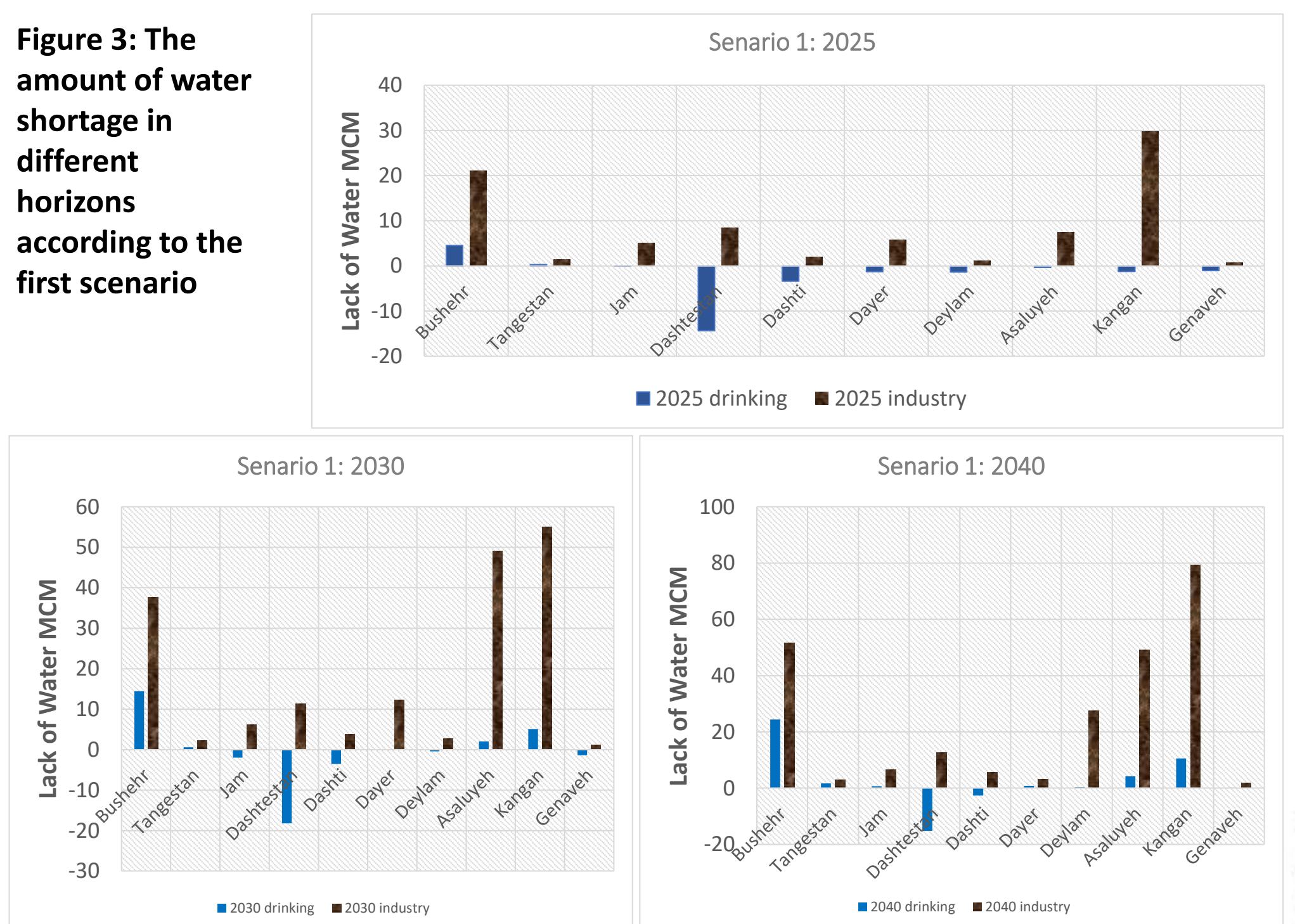


Figure 3: The amount of water shortage in different horizons according to the first scenario



Results

The amount of water shortage in different horizons according to the first and second scenarios are presented in Fig. 3 and 4. Based on the graphs in Figure 3 related to the first scenario, it is observed that with the consumption of excess water in the drinking sector and allocating part of it to industry, there will be a shortage of water in Dashtestan in other cities. However, in most cities, a small part of this water shortage is related to drinking water. This amount of water needs to be supplied from saline or saline sources. According to the graphs of the second scenario and assuming no excess water is transferred within the counties and transferred to neighboring counties, in 2025, the total water shortage in Bushehr province is 51.54 MCM for the drinking sector and 241.25 MCM for the industrial sector. A part of this water is related to the industrial sector, which is supplied through sea desalination plant.

