

## **Efficient management of municipal water: water scarcity in Taiz City, Yemen – issues and options**

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The city of Taiz is the third largest city in Yemen, located about 250 km south of Sana'a and about 90 km inland from the Red Sea. Taiz is situated on the foothills and slopes of the Jabal Saber Mountain at elevations between 1100 and 1600 m a.s.l. Its population is rapidly increasing and is expected to grow from about 580 000 in 2012 to over 1 000 000 in 2020.

Water supply is the most pressing problem in the city of Taiz today due to the significant shortages of supply (the average consumption is 23 L/d) caused by the depletion of existing water resources and the lack of a clear direction in dealing with the problem. This forces frequent service interruptions (30–40 days) and the service is rarely extended to new users (only 57% of the population are covered). Sanitation is another daunting problem. The (poorly maintained) sewerage network covers only 44% of the population. In several unsewered areas to the north, east and west of the city, raw sewage is disposed of directly into wadis, which causes a health hazard and threatens to contaminate groundwater resources.

The proper computation of demand and supply is based on the various fields. It was performed under this study with a particular model: the Water Evaluation and Planning System (WEAP) developed by the Stockholm Environment Institute (SEI). WEAP is supported by a geographical information system (GIS). The available and relevant data on poverty and social indicators, water use and sources, surface runoff, surface and groundwater availability, groundwater depletion and management, crop production areas, soil cover, maps, and meteorological information were gathered from a number of sources.

There are only two ways to decrease the water deficit: by increasing water supply or decreasing the water demand. Any adaptation project aims at one of the two. Six projects are proposed, with three in each category (1, 2 and 3 to decrease demand, and 4, 5 and 6 to increase supply):

- Project 1: Improvement of irrigation methods
- Project 2: Improvement of the water distribution network in Taiz City
- Project 3: Water re-use
- Project 4: Water harvesting
- Project 5: Brackish water treatment
- Project 6: Desalinization of sea water