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Topic: Qanat: The secret behind survival of an ancient civilization

Abstract:
The challenge of reliable water management in arid lands of Iran is magnified by the country's geography, climate and hydrology. Rainfall has an uneven temporal and spatial variations, with periods of droughts interspersed with some heavy rainfall events. Iran receives about 240mm precipitation per year, that is one third of the world and one fourth of Asia mean annual precipitation. It ranges from 51 mm in the Central Desert to 2000 mm in the north. Over 70% of the total precipitation is counted as evapotranspiration. Almost 94% of readily available water is used for agriculture and groundwater supplies about 60% of the annual consumption of water. Iranian devised a water supply system, called Qanat, to utilize groundwater in arid and semi-arid lands where there is no permanent and reliable water on the surface. Qanat is a system of water supply consisting of an underground tunnel connected to the surface by a series of shafts which uses gravity to bring water from the water table to the surface. Qanat have several significant advantages compared to the conventional water utilization techniques like wells. It provides a sustainable water resource during dry months of the year. Also, it exploits groundwater as a renewable resource with a controlled rate of flow. Since the major channels in a Qanat system is located underground, the rate of water loss from seepage and evaporation is minimum. There is no need to pump water because Qanat system is fed by gravity. The water content that recharge the Qanat systems is infiltrated naturally through the groundwater aquifers so it is cold with least pollutions. The last but not the least, Qanat has a main role in the regional cultures and forming the social participation on water governance, management and legislation.