



# The role of Qanat(subterranean) engineering on economy as a factor of environmental engineering

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## Abstract

*The problem of water in Iran, especially in dry and half-dry areas has become serious by the increase of population, industrial and agricultural activities and it will be more important in the future. Therefore it's necessary to have remedy for the future generation even now, by subtle study of aquatic sources in these areas, especially subterranean canals (subsurface canals that has been dug below alluviums and are extended to the feet of mountain and it has airing blow within different intervals) and by the use of correct ways of the management of aquatic sources and water's exploitation and best consumption, because water is the main element of life and the root of stability expansion.*

*The improvement of industry, agriculture, environment excavation and so on, in dry and half-dry areas is related to suitable attention to safeguarding and rebuilding of this enormous capital (subterranean canal). Subterranean canal has different economical, socio-cultural, environmental functions that these functions lead to stable expansion in areas that have subterranean canals.*

**Keywords:** canal, Stability, Culture,Economy,Water

## 1. Introduction

Water plays important role in construction of residential areas and formation of human civilizations and villages and cities are established near water. By discovering Qanat as one of the most complex discoveries of Iranians, living in arid and semi-arid areas was possible. Thus, Qanat is the most advance traditional innovation in Iran desert areas. Traditional water structure of Qanat includes various environmental, cultural, economic, social and management functions as sustainable development and city and village construction are considered and they are also explained in details.

### *1-2 The role of Qanat in sustainable development*

*Economy, urbanization and sustainable architecture are not possible without Qanat in traditional dry and hot areas of Iran villages and the extension and population of desert cities as Yazd, Nayin in central desert of Iran are determined based on the access to Qanat water. Thus, various functions of Qanat are considered form economic, architecture, cultural and social aspects.*

## 2. Economic functions of Qanat in sustainable development

Qanats as vital arteries of desert regions of Iran play the important role in economic aspect of urban sustainable development. In these areas, water is a basic barrier (development of other resources depends upon water)( Zahra Tabatabayi)( Mostafa Azkia, 2002).

In these regions, life style is low and increasing it depends upon increasing water consumption. As urbanization and architecture programs in these regions are for improving life style of people, the need to water is considerable. Qanat is the most stable choice in good and logical operation of underground water. As development of agriculture, industry, establishment of human communities, villages and small and big cities and other various activities of operation depend upon water, Qanat is one of the most economical factors of operation method of Qanats with the