



Practical Conditions for Floodwater Utilizations Systems (Local Experiences Investigations In Khorassan and Sistaan & Bloochestaan Provinces)

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Abstract

The aim of this paper is to briefly outline the practical conditions for floodwater utilizations systems with The local experiences investigations in Khorassan and Sistaan & Bloochestaan provinces and the lessons learnt from the traditional activities in semi-arid and mountainous areas of Iran.

At first, the importance of soil, water, and natural resources in sustaining daily life in arid and semi arid conditions is highlighted and the recent problems aroused was discussed.

The paper also attempts to suggest ways to incorporate the traditional practices with modern water management activities to promote water harvesting in these areas. It was concluded that the traditional and modern methods have merits and limitations. By incorporating beneficial elements of both into one, a water management system can be developed that result in more water harvest and at the same time is sustainable and environment- friendly in the long run.

Finally, the strategy and action plan needed for the watershed development as well as up scaling rainwater harvesting into watershed management activities including micro and macro-planning framework in which the optimized utilization of precipitation can be ensured was discussed

The fact that rainfall is very meager in the Arid and semi-arid regions of Iran and that one millimeter of harvested rainfall is equivalent to one liter of water per square meter, suggests the importance of WH apart from the quantity of rainwater collected.

During the summer season, warm and humid air of the Oman Sea and Indian Ocean influence the southern barrier of Elborz Mountains. In the same time, strong northerly cold currents flows to the northern barrier of Elborz Mountains and into north-south channel of Dasht area, located between Khorasan and Golestan provinces. Mentioned condition cause a convective instability in accompany with heavy rainfall. Three types of synoptic patterns have been introduced for development of heavy rainfall of the northern parts of Khorasan province and eastern area of Golestan province, located on the north east of Iran: upper level trough, twin surface pressure systems and composed jet-streams.

Arid and semi-arid regions occupy more than 80 percent of Iran's land. Short duration and high intensity are common characteristics of rainfall in these regions. The most optimistic estimation of average precipitation stands at 273 mm, which is less than a third of the world's mean annual precipitation. Temporal and spatial distribution of rainfall is quite unfavorable. The mean annual precipitation is less than 100 mm in 13% of total land area, between 100 to 200 mm falls on 61% of area, 250-500 mm are fallen in 17% of land, while only less than 8% of land get 500-1000 mm of precipitation. It should be noticed that about spatial distribution of precipitation in Iran is about %75 precipitation in %25 area and %25 precipitation in %75 area. Also temporal distribution of precipitation %25 precipitation in plant growth season and %75 precipitation in off season. The temporal variation in rainfall in wet and dry years is also large, e.g. in 1969 was high and in 1970 was low. Similar conditions prevail not only in Iran, but also in many other countries in the region. High density, short duration rainfall often generates destructive floods. At present in many parts of the country, the water levels have been falling rapidly. The demand for drinking water is also has been increasing manifold in the last three decades due to rapid increase in the population. Due to this, the stress on exploitation of water resource increased everywhere in the country. The most notable consequence of the agricultural development strategy has been the depletion of ground water resources. Artificial recharge techniques have become a pragmatic approach to augment depleting ground water resources. Utilization of floodwater for groundwater recharge can be a reliable solution. As, this will improve both groundwater quality and quantity.

Keywords: Catchments, Water-harvesting system, Rainwater , Semi-arid,

Introduction

Arid and semi-arid regions occupy more than 80 percent of Iran's land. Short duration and high intensity are common characteristic of rainfall in these regions. The most optimistic estimation of average annual precipitation stands at 273 mm, which is about one third of world average annual rainfall. Spatial distribution of annual precipitation is quite unfavorable. The mean annual precipitation is less than 100 mm in 13% of the area, between 100 to 200 mm in another 61% of area, 250-500 mm in 17% of land, and 500- 1000 mm in the remaining 8%. It should be noticed that about spatial distribution of precipitation in Iran is about %75 precipitation in %25 area and %25 precipitation in %75 area. Also temporal distribution of precipitation %25 precipitation in plant growth season and %75 precipitation in off season. The temporal variation in rainfall in wet and dry years is also large, e.g. in 1969 was high and in 1970 was low. Similar conditions prevail not only in