

The Role of Water Resources in Regional Sustainable Development. Case Study: Badrood, Isfahan

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Abstract

The Sustainable Development is a process through which people can fulfill their needs without jeopardizing the ability of future generations to meet their needs. The Most important factor in the survival of Human Settlements in Desert Regions in Iran has been the access to Water Resources. Changes in methods of Exploitation of water resources have been greatly influenced by Sustainable Development in these areas. With the beginning of Land Reforms in 1341 gradually motor wells replaced traditional water sources. Changing in water resources in the short term has increased agricultural acreage and raised the income of agricultural crops. However, after a while, it caused problems like the reduction of groundwater levels, reducing the discharge and sometimes completely dried Qanat and some wells in the indiscriminate exploitation of water resources and has caused the process of sustainable development of these regions some serious problems. Badrood District is located near Natanz in the Province of Isfahan, at the border of the central Desert of Iran, between the plain of Kavir and the Karkas Mountains. It's a typical example of arid and semi-arid climate. This study discussed transformation due to changes of agricultural water resources and its position in sustainable development of studied area by interviews with those involved in the organization and analysis of information related to water resources, agriculture and water resources.

Keywords: Sustainable Development, Water Resources, Kariz, Well, Badrood

Introduction

Water is not only important in the history of the rural settlements, their shaping and agricultural economy, but it has been the reason leading to the theories of social, economic and political structure. The main sources of the supply of agricultural water are divided into three main groups: rainfall, surface water and underground water (wells and Qanats). Precipitation in Badrood is low and has great annual volatilities. Surface water is scarce and the only known surface water supply is "Badrood River" that originates from Karkas Mountains. The main source of providing agricultural water in Badrood is underground water which is utilized by wells and qanats. In the past, before the spread of water wells, agriculture in Badrood was depended on several Qanats. But by digging and inappropriate expansion of motor wells in the region and with drought in recent years, water level of qanats has fallen drastically.

Methodology

This research has used the basic- applied research and descriptive – analytical method. Data have been collected by library and field (work) research. In field studies interview techniques are used. Library study has analyzed the statistics related to water resources and agriculture Including the Department of Agriculture and Water Resources Management of Ministry of Power. In the field work two forms of interviews based on traditional water resources (including the Kariz and river) and wells have been taken. Kariz, was interviewed according to the need from 2 or 3 people per Qanat and total of research population for traditional water resources are 30 people from experts and major shareholders. Also for wells the ratio of the wells in each village or city is considered randomly interview forms were taken from 25 people of experts.

Discussion

The Sustainable Developments a process through which people can fulfill their needs without jeopardizing the ability of future generations to meet their needs. The Most important factor in the survival of Human Settlements in Desert Regions in Iran has been access to Water Resources. Changes in methods of Exploitation of water resources has greatly influenced by Sustainable Development in these areas. With the beginning of Land Reforms in 1341 gradually motor wells replaced traditional water sources. Though changing in water resources in the short term has increased agricultural acreage and raised the income of agricultural crops, But after a while, It caused problems like the reduction of groundwater levels, reducing the discharge and sometimes Completely dried Qanat and Some Wells in the indiscriminate exploitation of water resources and has caused the process of Sustainable Development of these Regions some serious problems. Badrood District is located near Natanz in the Province of Isfahan, at the border of the central Desert of Iran, between the plain of Kavir and the Karkas mountains. It's a typical example of arid and semi- arid climate. This study discussed transformation due to changes of agricultural water resources and its position in Sustainable Development of studied area by interviews with those involved in the organization and analysis of information related to water resources, agriculture and water resources.

Conclusion

In the past, before the spread of water wells, agriculture in Badrood depended on qanats, But by digging and inappropriate expansion of motor wells in the region along with drought in recent years, water level in qanats is decreased. In 1345 there were 17 qanats. This number reduced to 5 qanats in 1390 with lower water discharge. Before entering the motor wells, Kariz was the main source of agricultural water supply, but after Land Reform, wells with increasing water capacity, replaced old Karizes. The number of wells gradually increased and reduced the discharge of qanats. Statistical analysis of rainfall reject the theory of reducing qanats discharges and their destruction it due to low rainfall. This is only due to exploitation of water from deep and half- deep wells. This transformation has a significant impact on other social - economic changes. In fact, after digging and expanding wells, although the utilization of water increases farmer income, but the higher utilization than the capacity of water resources pushes underground water level down. With the current trends of using soil and water resources certainly in the future we see more destruction of resources and consequently endangered status of sustainable development in the region.