INSTABILITY OF SMALL RURAL SETTLEMENTS IN DESERT AREAS

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Abstract: Desert and desertification after two water and climate challenges is the third challenge that causes instability of human habitats in marginal areas, economic and environmental disorder and serious limitation for development plans and sustainability of these areas.

One of the fundamental principles of development is economic stability and the economy sustainable, so to achieve sustainable economic system requires good quantitative and qualitative access to water and soil resources. Due to limited basic resources (water and soil) in the arid and semi-arid areas, this will be not achieved only by adopting good management in exploiting the limited resources and lateral activation related agricultural sector.

The study area, located in the sideline of salt desert at the center of Iran, nevertheless of severe limitation of soil and water resources due to the desertification, totally is dependent on agricultural activities, especially gardening; and services and industries have an insignificant proportion of the region's economy. So any such activity should be done in order to stabilize the region by optimize utilization of limited resources and controlling of the phenomenon causing desertification.

Keywords: Desert, Instability, Iran, Small rural settlements.

INTRODUCTION

Achieving sustainable development in all dimensions is one of the main goals of human societies. In this regard, the environment as a root of human life is facing serious crisis degradation of renewable resources. Hence, the processes of desertification and its consequences such as droughts, spreading deserts, destruction of farms and pastures, becoming marshy and salivation of soil, and drop of groundwater levels, changes in water quality, reduction of water surface and climate changes (temperature, precipitation, wind), which are the outcomes of collaboration between unstable ecosystems (particularly in arid and semi-dry) and the man has too much debt. In other words, the overuse of natural sources is the main factor of instability.

Desert study around the world shows that there are five desert areas, which are distributed between two belts of 15-30 latitude of northern and southern hemisphere. About 1.3, worldwide land area and 2.3 of Iran which is located in a dry and semi-arid area are matched with these desert belts in terms of latitude and longitude [1].

To know the Iranian desert areas, in addition to ecological factors such as geological features, geomorphology, climate, vegetation and soil the socio- economic conditions o these areas should also be considered. In this regard, the desert area of Iran with an approximately 45 million hectares is located in the tectonic holes that in terms of the climatic and Demartin drought factor are located in the border of arid and over arid climate[1].

The main cause of land degradation and desertification in arid and semi-arid and dry even in wet and humid areas are the wind and water erosion. Degradation factors such as water, wind and high erosion rate for all types of weather conditions combined with the geomorphologic conditions are provided. Degradation factors such as water, wind and high erosion rate combined with the geomorphologic conditions are provided conditions for all types of erosions.

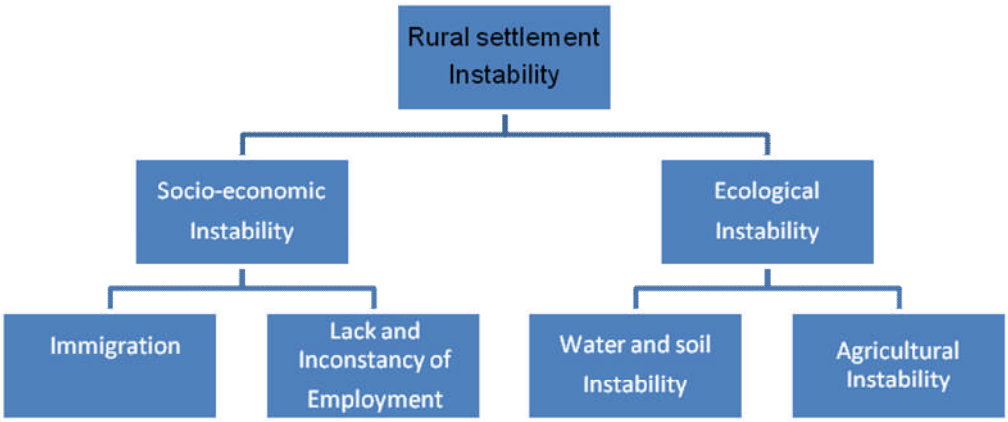

Figure 1: Instability Factors of Rural Settlements in Arid and Semi-Arid Area

Besides these factors, the role of human is more effective and impressive. The uncontrolled exploitation, lack of appropriate strategies for conservation and resource management, giving priority to reducing methods rather than adopting of reconciliation and conservation procedures, and less attention to the participation of people is caused erosion and desertification become a worldwide problem. If, appropriate and measured strategies are selected this phenomenon can be largely restrained. Desertification and the destruction of desert which is formed by ecological reasons and the human condition will be worsening it will lead to loss of fertility of soil, reducing the quality and quantity of groundwater, increased salinity, instability of the basic sources, the instability of production and livelihood of rural communities and nomadic, and ultimately unstable ecological, social, economic, environmental and or to be more precise small rural settlement's instability.

MARERIAL AND METHODS

Desertification is a relatively new term used in recent decades with the word desert which is threatened not only healthy climate but also deserting areas. The term desertification is used for the first time by Lewis Levon (1927) and then by Gabriel Abreweil (1949). At that time desertification process was seen as deforestation and reduction of vegetation. But today, desertification has more complex aspects like industrialization, climate change, drought and threatens life on Earth[2]

Desertification is a process that causes demolition and destruction of natural ecosystems and reduces the extent of biological degradation like soil destruction and particularly wind erosion (Shankara, 1984). Desertification is known by increasing human pressure on the system and sensitive ecosystems which is lead to the loss of production and ecosystem non-reversible. [3]

Rafker (1976) stated the importance of the role of socio-economic factors in the desertification process and added soil erosion and desertification are the visible, terrible and intense symptoms of resource destruction by population growth and the extend of some pollutions in the ecosystem increasing with poverty. [4]

The most comprehensive definition of desertification is the imbalance of soil, vegetation, air and water in areas with dry climate that the continuity of these conditions will be followed by the reduction or complete destruction of biological potential of land, destruction of life favorable conditions and increasing of the desert unpleasant landscape [5]

Recognition of study area. The study area, Qahab Rastaq, is located 54º 30´ -54º 15´ eastern longitude and 36º 25´ -36º 00 north latitude in Semnan Province, southeast and southwest Damghan in the center of Iran. It is located about 15 km away from the town of Damghan and more than 135 kilometers from Semnan province center. The study area is ablout 8614 square km. The population of this area based on 1385 census is about 4680 people. According to 1385 census, there are 54 inhabitants of rural settlements. More than 85 percent of these have less than 49 households, and interestingly 72 percent of these numbers have less than 20 households. So, the number of small settlements and their instability is very important.

METHODOLOGY

The census population is the living households of rural areas in Qahab Rastaq. So, from 54 rural

settlements of study 25 percent is selected as sample that includes 12 rural settlements. It should be noted that the selection of sample rural settlements is with respect to geographical distribution and socio-economic status.

The methodology of the study in addition to assess the potential ecological has been used data from formal organizations and questionnaires and surveys of rural residents.

RESULTS AND DISCUSSION

Studies and tests have been performed on ecological variable indicates that the limits in quality and quantity of water leads to land demolition and rural settlements instability.

Although the influence of two variables of sand smooth and desert winds sand on land demolition and instability has been rejected by K2 test, but other parameters such as soil salinity, water shortages and its salinity, land demolition which are the main factors of desertification and desert expansion has been confirmed by K2 test.

So, the stability of small villages on Qahab Rastaq area has been threatened because of qualitative and quantitative restrictions of water and soil resources that should be considered seriously.

Economic income of farmers has impact on small rural settelment. To test this hypothesis, the variables like reduction of cultivated lands, land use change, reducing the harvest, the damage to crops, on trees, the impact of drought and water shortages on livestock mortality, the impact of social factors on rural migration, the impact of migration on income are used.

The impact of cultivation reduction on the instability of rural settlements by K2 test shows that there is a meaningful relationship between reduction in cultivation and instability of rural settlements.

The lack of employment and the seasonal migration of large numbers of villagers to the cities has created, data from the questionnaire show that 85 percent of people are calling for immigration from their location.

Low-income and immigration are two main socio-economic factors of instability, in rural settlements particularly in small settlements that under influence of ecological factors and variables (desert and desertification) are intensified and accelerated.

Thus, the desert and desertification are the major obstacles to economic sustainability of rural settlements in Qahab Rastaq areas; economic instability will be followed by social instability and immigration, a phenomenon that has been growing strongly over the last few decades. The evacuations of more than 85 villages over five decades, 36 percent decreases in population during the 1375-85 are some samples of immigration status in this region.

CONCLUSION

Desertification in the study area is a multi-dimensional issue. Hence, to deal with it and guarantee the stable condition in it different aspects and solution should be considered. Desertification caused by natural factors and social and cultural structures that has influenced operational practices of soil and water resources. [6]

In this regard, to reduce the negative effects of policy principles the following steps in planning seems necessary:

• designing rural management patterns for efficient socio-economic development

• Planning the sustainable management of water resources by reducing waste and increasing efficiency of irrigation

• Controlling wind and soil erosion

• preparing a plan to reduce drought mitigation

• Water supply during drought - the revival of indigenous knowledge, extraction of water

• Public awareness and education for drinking and agricultural water saving

• Crisis Management Plan

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