

Combating with Desertification Process by an emphasis on Capabilities of Desert Areas (Case Study: Isfahan Province)

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Introduction

One of the present challenges in Iran is drought as a natural hazard and the crisis of desertification. Drought and limitation of precipitation is an inherent part of nature in Iran. This warm and arid nature causes environmental issues for the inhabitants of the country.

One of the suffered provinces nationwide is Isfahan Province. Progressive desertification and its geographic characteristics, neighborhood deserts, shortage of rainfall and emergence of periodic droughts are among notable characteristics.

The basic incentive to prepare this article is familiarity with the crisis of desertification in Isfahan Province and the definition of some strategies and guidelines to cope with this desertification. This phenomenon was not considered as an innate threat. We have also paid attention to its advantages, in addition to being a challenge for the province for which it could also be regarded as an opportunity.

Materials and methods

In this research, geographical limitations of Isfahan Province and its counties were determined by the aid of Arc GIS software. Thereafter, the deserted and non-deserted counties were specified by using digital information of Department of Natural Resources and Watershed Management of Isfahan Province. The data of the critical center of wind erosion was added to the map by the aid of shapefile. Finally, the extent of desertification in the province and the guidelines and strategies for combating with it was stated by analyzing meteorological data and the factors causing desertification.

Discussion and results

Iran with its particular geographical status is among the countries which have signed the international convention of combating with desertification. Also, during the past four years, Iran has pursued many national programs to control erosions due to windblown that have been performed so far.

Regardless of geographical factors, also human role has intensified these challenges comprised of desertification specifically windblown and run off erosions and other items that affect physical and chemical destruction. Hence, the mentioned items and executive steps which have been taken have been faced ineffective results.

The lack of public awareness about natural reserves culture, lack of suitable forecasts required before advent of drought and unprecedented emergence of drought, lack of suitable supervision in practicing projects, lack of enough fossilized petrol in rural areas, lack of control over run off, too much grazing of hordes, unemployment and population growth, incorrect plowing, rental of deserts for progressive grazing, pollution of water resources, lack of utilization of green energy resources such as sun and wind, shortage of barrage and dam construction, considerable expenditures of transportation for petrol as a result of unsuitable access roads, progressive exploitation of aquifers, lack of meteorological stations in grazing-desert and remote areas are counted as effective factors that could be mentioned about desertification process.

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By the enjoyment of an arid and warm weather, Isfahan has been the target of drought and desertification. About 6.6 percent of the total areas are covered by deserts provincially.

Combat with desertification process started from 1970 in this province. It has initiated with an area titled Agha Ali Abbas in Natanz to the present time which led to converting over 300000 hectares into jungle-plateau as a green belt initiated by Naeen County stretched to the border of Qom Province.

Tree plantation, seeding, graze reserving is among solutions to control desertification. On the other hand, a suitable management of water resources along with optimum consumption of water by the aid of practicing scientific methods and new styles of irrigation and also a suitable control over exploiting wells could be counted as executive guidelines responsible in this field. Although performance of programs like this could affect considerably on the output of irrigation in the field of agriculture. This may be regarded as a passive challenge while encountered with the mentioned process.

Iranian experts have gained a step by step movement forward, based on the latest scientific methods for a better cognition of social-economic construction of rural societies while awareness for a more suitable performance throughout every program to encounter with traditional layout of villages and its social framework during their specialized studies. They have always confessed that in every program about rural society, cognition of social, economic and cultural structure is required to be considered. The concerned experts have often reminded cultural weaknesses especially in the field of natural resources as a deterrent factor. They have criticized progressive root out of bushes in desert areas as a source of energy by the local people. On the other hand, they have emphasized about considerable potentiality of deserts to cover up energy requirements within the framework of *green energy resource*. They have also recommended settlement of light industries there to occupy existing man-power more vastly to prevent unsuitable trend of overloads on local areas and water resources. In brief, they have come up with this idea to exploit desert resources in a more logical way in practice.

In this article, emphasis was made for a better practice to face with desertification process within the following contexts:

- Execution of suitable plans to control runoff water to face with their hazards as flood and reserve of them as aquifer
- Establishment of rural industries to pave the ground for better opportunities to employ rural dwellers
- To convert small-sized husbandries into large-scale industrial ones
- To give more reliable guarantees for investors in the field of agriculture and natural resources
- To fill up unpermitted dug wells and fixture of volume-measuring counters over them
- To nationalize provincial projects
- To materialize operative national programs
- Preparation of instructions for planning about consumption of urban waste waters for developing foliage and prevention of desertification before equipment of water treatment stations to concerned technologies
- Development of new-energy exploitation to prevent wood and bush consumption in desert areas
- Adaptation of energy supplement to minimize desertification in apt areas

Thus, to cope with drought in Isfahan Province an integrated management system is necessary firstly about existing water resources in Zayandeh Rood (river) along with water transfer there as for additional discharge.

Conclusion

Disregarding challenges and threats that have been focused on, Isfahan desert areas are important since they have plenty of capabilities. Variety of life has also ranked Iran among the first five countries worldwide. Vastness and abundant of flora and fauna species have also gained special advantages in addition to various elements of mines that can cover all of existing items in Mendeleev Table. Particular climatic characteristics with its genetically resources have also prepared large tourism capacities for eco-tourism seekers.

The province is so vast that in the west one can find cold weather plants, meanwhile on the east hot weather plants such as palms are available at all the seasons. Tourism services are blue sky of daytime and shiny sky of night with high resolution which is suitable to establish observatories and also possibility to research on all types of rarest herbal and industrial drugs.

Desert-trekking services, diversified life reserves, observing extraordinary groups of houbara bustards, ravens and reptiles are just a few to name, some of which are extinct and some going to be extant such as leopard, chinkara, tiger, caracal, sandy cat and other types of wildlife capabilities of tourism which should be exploited as it deserves, regardless of their potentiality for exploitation of new energy resources like solar, wind force, etc.

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Key words

Desertification, Forest, Erosion, Crisis Management