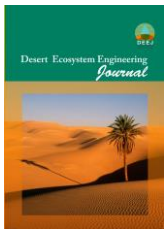
DEEJ (2018) 7 (19) 63-80

University of Kashan

Desert Ecosystem Engineering Journal

Journal homepage: http://deej.kashanu.ac.ir



Assessment of combat to desertification projects based on the vegetation criteria in Aran and Bidgol

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Received: 8/02/2018 Accepted: 20/05/2018

Extended Abstract

Introduction: Currently, desertification is a catch-up of many countries in the world, including developing countries. This problem is seen not only in dry and semi-arid areas, but also in parts of the semi-humid areas. Desertification involves processes that are both natural causes and human inferiority. Land degradation is referred to as desertification due to one or a combination of processes, such as wind erosion, water erosion, degradation of vegetation, degradation of water resources and soil salinity which exacerbates their environmental or human factors. In this regard, human factors play a key role in the emergence of the phenomenon of desertification, because they act as stimulants in addition to their direct role in harming the environment and provide stimulation and enhancement of environmental factors. The phenomenon of desertification has high severity in areas with high desertification potential. Therefore, coping with this phenomenon, especially in the mentioned areas, is very useful in protecting the ecosystem. In this regard, it is possible to reduce the severity of this phenomenon by preventing its development and advancement by providing appropriate managerial approaches and methods.

Effectiveness of implementation of desertification plans on the area under the project management can be investigated from five dimensions or aspects of water quality, water erosion, wind erosion, salinisation of water and soil resources. Because it is based on the foundation of validated and documented researches carried out in this regard. The type of effects that desertification has on the environment, or in other words, the kind of feedback that is expected from the implementation of a natural resource plan in the desert area and desertification control, is necessarily available in one of the five dimensions.

Sustainability measures in the territories affected by desertification plans include vegetation cover, erosion, wind erosion, water drainage and water resources. In this regard, plants play an important role in terms of the ecological structure of each area, soil conservation, moisture storage and increased permeability of descendants. The structure and composition of each plant community are largely controlled and influenced by environmental factors. In fact, these factors cause the establishment of different plant species in different habitats or prevent vegetation from settling in a place. In this research, an effective evaluation of the combat to desertification plans implemented in Aran and Bidgol City has been done based on vegetation criteria. Therefore, the objectives of this research are to identify combat to desertification plans implemented in Aran and Bidgol region based on the identification of plans, evaluation of combat to desertification plans based on

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DOI: 10.22052/deej.2018.7.19.45

the quantitative and qualitative index of vegetation, and ultimately determining the degree of stability of the ecosystems and the fate of the planting hands.

Materials and Methods: Aran and Bidgol City with an area of 6051 km^2 located in northern Isfahan Province. The city is bounded to the north by the Salt Lake and the provinces of Semnan and Qom, from the west to Kashan, from the south to Natanz and from the east to Ardestan. The total area of the city covers about 1900 km^2 of the desert and sand dunes. In order to carry out this research, firstly, the plans for desert restoration in Aran and Bidgol were identified based on their identity. For this purpose, descriptive identification and desertification studies were received by referring to the Natural Resources Department of Isfahan Province, which included the combat to desertification plans implemented in Ab Shirin areas, Nasr Abad, Siazgeh, Aran and Bidgol Road, Abu Zaid Abad, Fakhre and Rijen. Then, with reference to executive areas, four projects such as Ab Shirin, Aran Road, Fakhre and Rijen were used to harvest a series of vegetation parameters such as plant height, density, canopy percentage and length of collision, to evaluate the combat to Desertification plans and desert restoration projects. The field sampling method is a linear transect that has similar results to the Quadrat method. The length of the trench was selected according to the type of vegetation in the area between 10 and 100 m. Field observations also include canopy components, plant height and crop density. In order to measure the canopy cover percentage in the large diameter range, the species encountered with the transect were determined and measured using tape measurements. Indicators used to evaluate the combat to desertification plans include canopy cover, species diversity and rangeland quality. In this regard, the percentage of canopy is defined according to four classes and, depending on the percentage of canopy in each region, the necessary scoring is required. The number of plant species per unit area is also scaled according to the species in the design. Also, the quality of rangeland based on the current prevalence of perennial plants in terms of rangeland value and prevention of wind erosion in vegetation composition is compared with the pre-implementation conditions. Sustainability of the combat to desertification plans is also based on the final score of the ecosystem from the perspective of various indicators. One of the main criteria for determining the effectiveness of desalination plans is vegetation index, which itself is influenced by various indicators and according to the scores that can be taken, the severity of the desertification and the rate of success of the implemented projects can be measured. According to the information obtained in the field surveys in different designs, as well as the scores given on canopy indexes, variety and quality of the rangelands, it is possible to evaluate effectively the implementation of the combat to desertification projects in four study areas.

Findings and Results: The Ab Shirin area with a mean height of 176.88 cm is the highest plant species and the Aran Road with an average height of 143.4 cm is the shortest plant species. The maximum range of altitude variations is related to the Ab Shirin area, and the other three regions show small and close variations. The Rijen area with the average density of 5626 species per hectare is the densest area of the project, and the Aran Road with an average density of 828.8 species per hectare has the lowest density in the project areas. Also, the maximum range of density changes is related to Ab Shirin area. The results of the correlation between the measured density and NDVI with a coefficient of determination of 0.779 and a sig. of 0.048 at the level of 95% are significant. In the Ab Shirin area, due to the implementation of the combat to desertification plans, the area of incremental changes is equal to 4775.14 hectares. This increase in the density of cover is observed in some areas of the region, in which their designs have been implemented. In addition, the area of the fallen floor in this region is equal to 8591.86 hectares due to the recent drought in the region, as well as the land use change and smuggling of wood for the coal to produce coal in this area, and the area of change of the class without change in this region is 32094.6 hectares. In the Aran Road, the largest area with 310.79 thousand hectares is related to the class without change. The area of the additive class in this area is equal to 9.85 hectares due to the natural regeneration of the arable in some places. Also, the level of change in the decay class is equal to 40.91 hectares, due to the continuation of recent drought in the region, road construction and degradation of vegetation covers.

In Fakhre area, due to the implementation of the combat to desertification plans in the sequestration area, which is a suitable place for cultivating the species of halophytes, and the root of halophytes can easily use the water

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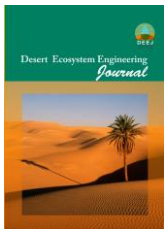

resources in the depths of the sand dunes, the highest amount of natural regeneration of gazelles and the largest area of density change is related to the incremental class with an area of 315.83 hectares and the area of the floor without change in this region is 140.27 hectares. Also, due to the recent drought in the whole region and the destruction of wood of woody trees, for the production of charcoal, the decreasing floor density changes are equal to 44.26 hectares. In the Rijen area, the largest area is unchanged, with an area of 555.17 hectares. Due to the implementation of the combat to desertification plans in the sequestration zone that caused the natural regeneration of ghosts, the area of change in the incremental class is equal to 434.26 hectares. The level of condensation changes in this area is 13.77 hectares, due to its close proximity to the Rijen countryside, the destruction of foodstuffs by local livestock is the same as camel and goat, in addition to the trafficking of wood by the profitable people to produce coal, the trees are dying. The results of the sustainability assessment show that the existing designs in the Fakhre and Rijen areas have excellent sustainability scores and existing plans in the Aran Road have a good sustainability score and also existing schemes in the Ab Shirin region have a moderate sustainability score.

Discussion and Conclusion: Field surveys from different parts of the combat to desertification plans show that in the Rijen region and the Fakhre, natural regeneration is a species of fungus, although natural regeneration is not observed in many of the floodplain projects in the freshwater region. The results of the field study indicate that from the direction of the Ab Shirin area towards the Abu Zaid Abad area, the vegetation density is increased, because the region of Rijen and Fakhre due to the seismic region of the conditions are better than the areas of transportation and harvesting in the successful implementation of halftone projects has been. Halibut plans have more reproductive power in the sequestering areas, in other words, the roots of these species can more easily penetrate the soil and use the water resources of the sand dunes. In sum, it is possible to say that the best territory for implementation of the combat to desertification projects through the implementation of hunting projects for the development of environment friendly plant species, is the range of sand dunes.

According to the studies carried out in the combat to desertification plans implemented in the study areas, it can be stated that although there may be a species of feces in the area of carriage and harvest, but is special in seismic areas, because in the area sequestration of sand dunes such as intakes and has a high permeability are good, as a result of evaporation at their surface is negligible and provides a suitable bed for the establishment and stability of the species of fungus, and also makes it more regenerative. Halibut plans in the Ab Shirin region due to the planting of halophilia in the transport areas, which were mainly soil salinity, and also the root of the plants had no proper penetration in the depth of the earth, lacked the necessary regeneration in many areas that in the long run the stability of Haloxylon planes endangers the work. However, in Rijeg and Fakhre regions due to de-drainage projects and hunting in places of sequestration, the herbaceous species have a greater regeneration than Ab Shirin schemes and increased the density of the coatings in these areas. The process in long-term can have more sustained effects on the combat to desertification plans in the regions.

Keywords: Assessment, Desertification, Stability, Vegetation Criteria, Remote Sensing.