

# The study of possibility of promoting the Miami area in terms of extensive recreational capacity

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## ABSTRACT

The destruction of the habitats as the most important danger is a comprehensive and all-embracing issue among the major threatening factors of biodiversity in the country which often occurs due to the construction and development. This study aims to investigate the possibility of promoting the Miami area in the Miami Township, Semnan province, in terms of extensive recreational capacity. For this purpose, by studying the criteria and conditions for the promotion of the regions, as well as considering the conditions in the region, it became clear that this region has the potential to become an extensive recreational area. Also, in continuation of the research, the region was divided into extensive recreation areas, using Analytic Hierarchical Analysis method and criteria such as slope, altitude, the density of vegetation, distance from communication, distance from the city, distance from sensitive habitat, distance from river and geology. The Expert Choice software was used to weigh the criteria and ArcGIS software was used to map the layers. The results showed that 38.2% (14206 hectares) had a high or very high potential for an extensive recreation in the region.

**Keywords:** Wide recreation, Analytic Hierarchy, Miami area.

## Introduction

Using land without considering its potential for different uses, will cause the loss of capital in that area <sup>[1]</sup>. Available human resources are very limited for exploitation on Earth. The same limited resources are also being destroyed and contaminated day by day, due to inappropriate and false use; in other words, the natural environment of the world has a limited ecological potential for human use. In some environments, nature with the least damage is ready for the highest development, and in others, the least development in it will lead to the

environmental destruction. Earth resources include natural, ecological, human and socio-economic resources.

In fact, humans exploit ecological resources to meet human resource needs. Accordingly, proper planning should be done to protect and support these resources. Considering the rapid growth of natural resources degradation and the threat of biodiversity, one of the challenges in protecting resources is to examine the status of protected areas and the need to improve the conservation degree of such areas.

Ghadimi et al. (2016) evaluated the vast and concentrated tourism potential in the Farkhoud protected area <sup>[2]</sup>. For this purpose, the multi-criteria evaluation method was used. For the vast recreation area, four criteria were considered and for the central recreation, twelve criteria and a limitation of the habitat layer of the indicator species were considered. The results showed that about 4,800 hectares (11%) of the Farkhoud protected area are suitable for the development of concentrated recreational use and 8 percent of the area (3200 hectares) are suitable for the extensive recreation. Ilderemi et al. (2016) evaluated the Eco-touristic power of the Malayer Township and

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the Lashgardar area<sup>[3]</sup>. The results of this study indicate that the region has a high potential for vast or concentrated recreation and most villages have the capability to develop appropriate and Eco-touristic tourism. Azizi Jalilian and Daneh-Kar (2011) showed that about 50% of the study area had the capacity for recreation and 50% had the capacity to be protected area<sup>[4]</sup>.

Azadi Nejat (2007) presented a model for locating forest parks using GIS. In this research, preparation of required layers using GIS analytical functions, weighing of layers and their alignment in GIS were used to select the most suitable areas for forest park, in the proposed locating model for forest parks. Kathryn et al (2011) have studied the appropriate site for the development of ecotourism through the use of the Geographic Information System and Analytic Hierarchy in Thai Province of Thailand. Chen et al. (2008), using the GIS and multi-criteria decision-making, assessed the capability of land in Queensland, USA<sup>[5]</sup>. To weigh the criteria, they used the AHP technique

and, by changing the weights, examined the dependence of the output model on the given weights, and concluded that using this method is simple, flexible and local. Accordingly, in this study, the possibility of promoting the Miami area in the Miami township of Semnan province is investigated in terms of recreational capacity.

## Research Methodology

The study area is located in Semnan province, Iran. The altitude of the study area varies from 1137 m to 2675 m. The north of the region is low in height and the highest part of the area is located in the central parts of the region (Fig. 1). The slope of the area varies from zero to 82%, with slopes of 82% at elevations and in the central parts of the region. But the slopes of zero percent were in the lower parts of the area (Fig. 2).

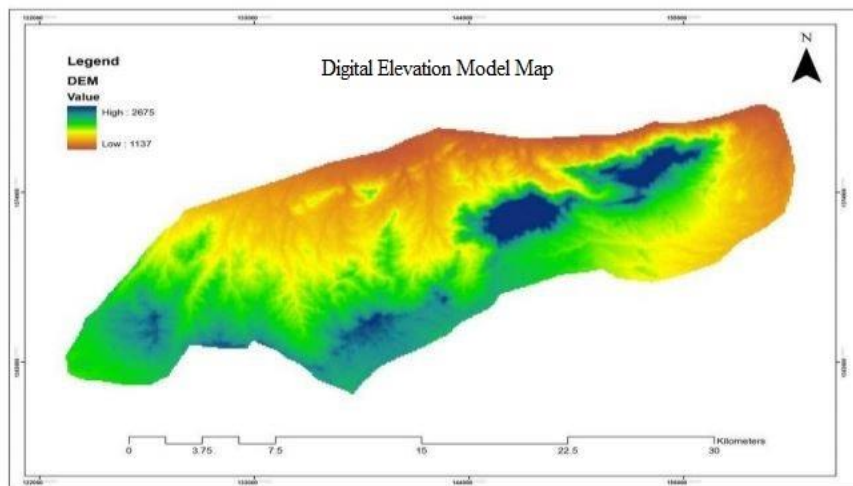


Figure 1: Digital Elevation Model Map

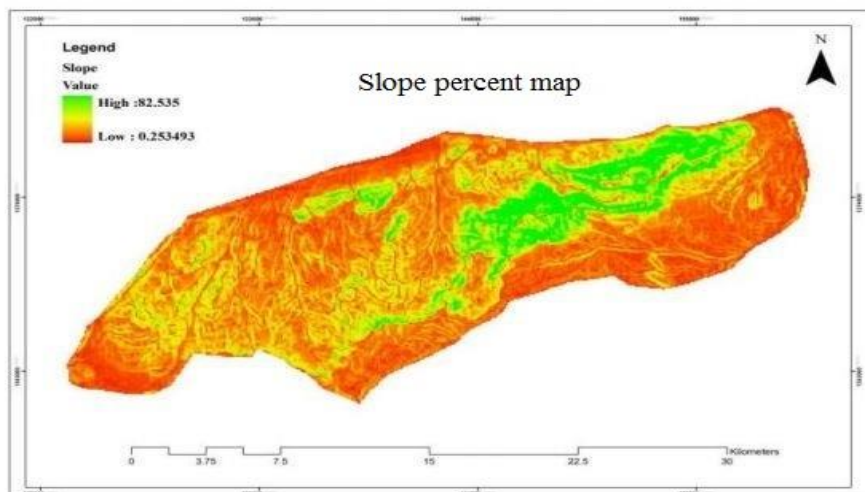


Figure 2: slope percent map

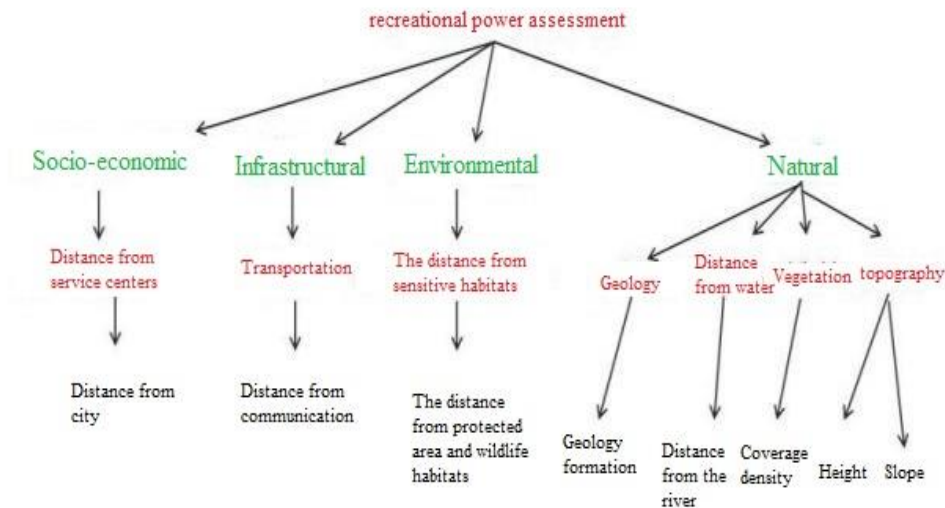
During the research process, Expert Choice 11 software has been used for weighting the criteria and the sub criteria and ArcGIS 9.3 software has been used to analyze the layers. Excel software is also used to draw graphs.

Based on the review of relevant resources and local conditions in the region, the following factors have been selected for zoning the extensive recreation of the region: Density of vegetation in the area, distance from seasonal rivers, elevation, gradient, distance from the presence of endangered wildlife

species, distance from the presence of protected species of the city.  
 wildlife, distance between communication and distance from

**Table 1: Functions and software used to prepare required research layers**

| Row | Layer name  | Function              | software   |
|-----|---|-----------------------|------------|
| 1   | The distance from the four areas of the environment | Distance              | ArcGIS 9.3 |
| 2   | Height  | Topo to raster        | ArcGIS 9.3 |
| 3   | Slope   | Topo to raster, Slope | ArcGIS 9.3 |
| 4   | The distance from the presence of wildlife species  | Distance              | ArcGIS 9.3 |
| 5   | Geological Formation Layer                          | Clip                  | ArcGIS 9.3 |
| 6   | Distance from the waterway                          | Distance, Clip        | ArcGIS 9.3 |
| 7   | Distance from communication                         | Distance, Clip        | ArcGIS 9.3 |
| 8   | Distance from the city                              | Distance              | ArcGIS 9.3 |



**Figure 3: Analytical Hierarchy tree for recreational power assessment**

## Results

The density of vegetation in the region, the distance from seasonal rivers, elevation, slope, distance from the sensitive habitats and distance from communication are factors that were selected to the evaluation of the recreational potential of the area for cast recreation. These layers are selected based on the

regional conditions, available information and access to the layers. In Table 2, weights of criteria and sub-criteria for extensive recreation activities in the Miami region are presented. Weight of criteria was calculated in the Expert Choice software environment, and since in all judgments, the inconsistency rate was less than 0.1, the weights were correct.

**Table 2: Weight of criteria and sub-criteria for extensive recreation activities in the Miami area**

| criteria | score | Level 1 parameter | score | Level 2 parameter | score | Level 3 parameter | score |                |      |
|----------|-------|-------------------|-------|-------------------|-------|-------------------|-------|----------------|------|
| Natural  | 0.24  | topography        | 0.23  | Slope (%)         | 0.75  | 0-15              | 0.51  |                |      |
|          |       |                   |       |                   |       | 15-25             | 0.24  |                |      |
|          |       |                   |       |                   |       | 25-50             | 0.14  |                |      |
|          |       |                   |       |                   |       | More than 50      | 0.1   |                |      |
|          |       | Height (m)        | 0.25  |                   |       |                   |       | Less than 1500 | 0.49 |
|          |       |                   |       |                   |       |                   |       | 1500-1800      | 0.26 |
|          |       |                   |       |                   |       |                   |       | 1800-2100      | 0.12 |
|          |       |                   |       |                   |       |                   |       | More than 2100 | 0.11 |

|                |      |                                      |       |                              |   |                        |       |
|----------------|------|--------------------------------------|-------|------------------------------|---|------------------------|-------|
|                |      | Vegetation                           | 0.6   | Coverage density             | 1 | Low                    | 0.07  |
|                |      |                                      |       |                              |   | Medium                 | 0.26  |
|                |      |                                      |       |                              |   | Much                   | 0.66  |
|                |      | Distance from water                  | 0.11  | Distance from the river (m)  | 1 | 0-500                  | 0.69  |
|                |      |                                      |       |                              |   | 500-1000               | 0.26  |
|                |      |                                      |       |                              |   | More than 1000         | 0.05  |
|                |      | Geology                              | 0.051 | Geology formation            | 1 | Els                    | 0.04  |
|                |      |                                      |       |                              |   | Jbg, ktzl, trjs, pcmt2 | 0.09  |
|                |      |                                      |       |                              |   | E2c, Eav, Ja.bv        | 0.03  |
|                |      |                                      |       |                              |   | Jh                     | 0.15  |
|                |      |                                      |       |                              |   | Jugr and murc          | 0.06  |
|                |      |                                      |       |                              |   | Murm                   | 0.19  |
|                |      |                                      |       |                              |   | Qcf, Qft1 and Qft2     | 0.44  |
| environmental  | 0.56 | The distance from sensitive habitats | 1     | The distance from the        | 1 | 0-1                    | 0.028 |
|                |      |                                      |       | ewe and ram (m),             |   | 1-3                    | 0.054 |
|                |      |                                      |       | The distance from the        |   | 3-5                    | 0.09  |
|                |      |                                      |       | leopard and cheetah (meter), |   | 5-7                    | 0.15  |
|                |      |                                      |       | The distance from            |   | 7-9                    | 0.23  |
|                |      |                                      |       | the protected                |   | >9                     | 0.44  |
| infrastructure | 0.15 | Transportation                       | 1     | Distance from communication  | 1 | 0-150                  | 0.65  |
|                |      |                                      |       | (m)                          |   | 150-500                | 0.25  |
|                |      |                                      |       |                              |   | >500                   | 0.1   |
| socio-economic | 0.05 | Distance from service centers        | 1     | Distance from city (m)       | 1 | 0-1500                 | 0.64  |
|                |      |                                      |       |                              |   | 1500-3000              | 0.23  |
|                |      |                                      |       |                              |   | >3000                  | 0.13  |

After weighing the criteria, the ArcGIS software environment and the use of the Raster calculator function were formulated

by the layers and coefficients, and the recreational zoning layer was obtained (Figures 4 and 5).

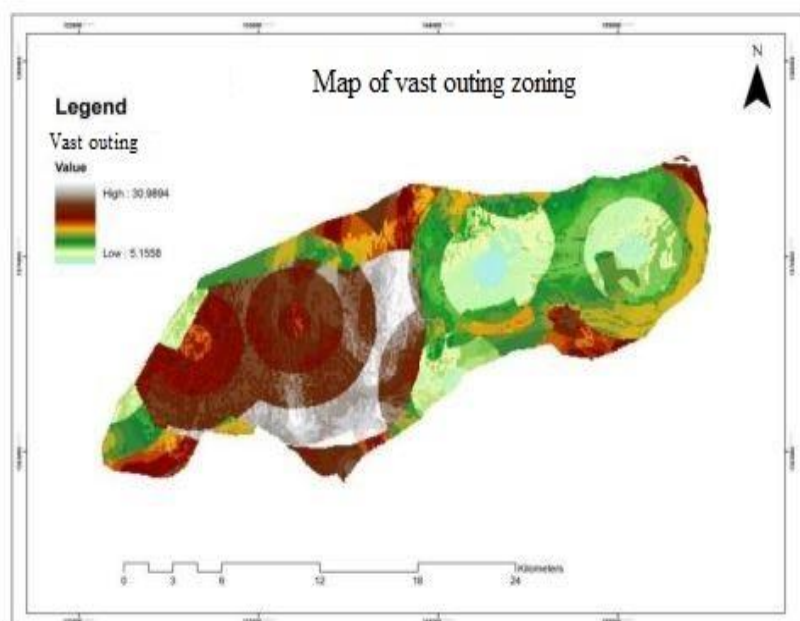


Figure 4: Map of extensive recreation zoning

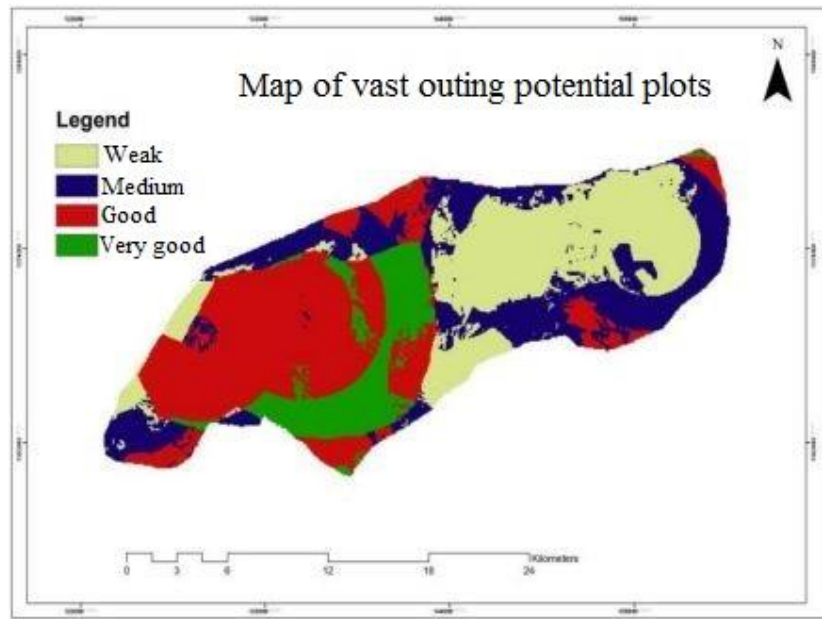


Figure 5: Map of extensive recreation potential plots

Based on the figure above, many eastern parts of the region have a weak potential for extensive recreation activities. Also, the eastern and southern parts of the region, which is characterized by blue, have a modest potential for this purpose. The high potential for extensive recreation activity in the region is included in the western part of the region, which is characterized by red color, and the margin of these areas, which is marked with green, has the greatest potential for carrying out extensive recreation activities in the region (Table 3). The area of each class shows the potential along with the coverage percentage of the area.

Table 3: Area of extensive recreation potential plots

| Row | Potential class | Area (h) | Percentage from region |
|-----|-----------------|----------|------------------------|
| 1   | Weak            | 10796.23 | 29.16                  |
| 2   | Medium          | 9218.27  | 24.89                  |
| 3   | Good            | 12577.55 | 33.97                  |
| 4   | Very good       | 4430.25  | 11.96                  |

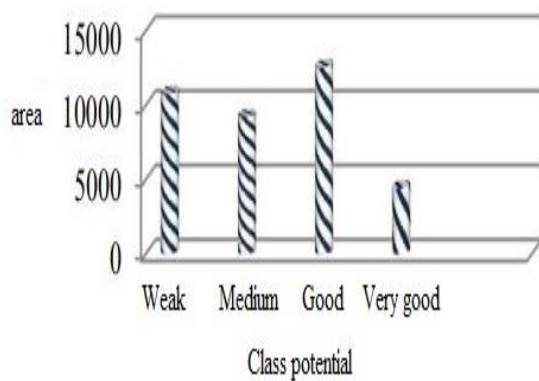


Figure 6: The diagram of area of the extensive recreation potential in the Miami area

Accordingly, regions with good, poor, moderate, and very good potential are the largest part of the region, respectively.

### Discussion and Conclusion

In this research, the zoning of the Miami area of Semnan province, has been investigated for extensive recreational activities. To zoning of the extensive recreational activities, using the influential layers of tourism and conservation, the recreational potential of the Miami area is identified and recognized. The elevation layer has great importance due to its impact on climatic conditions, accessibility and type of the tourism activity, and therefore is used as an information layer in this research. The slope layer is one of the important layers that has been used to influence the type of the tourism activity, the amount of soil erosion, the choice of suitable location for the facility, and so on. The distance from communication with the direct impact on choosing the type of location, the amount of costs and easy access is of great importance, which was used in this research. The distance from the city is one of the most important factors which used in this research, because the distance from the city has a major impact on the costs, and therefore plays a major role in selection of the location of the tourist.

The geological formation layer was selected due to the impact of tourists during the tourism period, as well as the effect on permeability and soil erosion. Vegetation density was selected due to the creating attractive and cool environment (in the summer) and the pristine environment from the important information layers. On the other hand, vegetation density is important for preventing erosion. For this reason, it was used for both purposes. The distance from the sensitive ecosystems in the area was selected and used to observe the environmental status of protected species. Water supply has always played a

major role in choosing location of tourism, because in some researches, it is even mentioned as the most important factor. In this research, due to the availability of these tourists to the water, the distance from the source of water has been selected. It needs to be explained that in the present research, a series of informational layers, including socio-economical, infrastructural, environmental and natural information layers, were used, which with the criteria of grade two and three, almost all layers involved in the recreational and protective capability assessment, were used.

According to the results, more than 45% of the area is a high potential land for a vast recreation, indicating the high capacity of the area for recreation. These areas are in very good conditions, in terms of slopes, altitudes, proximity to the city, access to water, geological formation and distance from environmental sensitive areas. Areas with extensive recreation capacity of grade 2 are dispersed in different parts of the region, mainly in the south of the region, in the forest areas; which is located in a lower class than the concentrated recreation floor of grade 1 and in terms of the corresponding layers. In researches by Rashidi et al. (2010)<sup>[6]</sup>, Josie et al. (2011)<sup>[7]</sup>, Eskandari (2013)<sup>[8]</sup>, Azizi Jalilian and Danesh-kar (2011)<sup>[4]</sup> and Jalilvand et al. (2012)<sup>[9]</sup>, most parts of the region have a high potential for performing extensive recreation activities, which was similar to this study.

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