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Original Article

Determination of Appropriate Land Use by Using Land Use Planning Process in Sykan Watershed of Ilam Province, Iran

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ABSTRACT

Objective: The aim of this study is to provide a management plan for the Sykan watershed of Darre shahr city located in Ilam province using GIS in land use planning. **Methods:** For land using of Sykan watershed of Ilam province with about 9 hectares area, map of classes, elevation, percent slope, geographical aspects, soil characteristics, vegetation density and the final map units were combined using binary and the final map of environmental units was achieved. As a result, 89 environmental units or micro ecosystems were detected. For these micro ecosystems, evaluation of ecological capacity performed in agricultural land, rangeland, forestry, tourism holticulture, animal husbandry, aquatic aquaculture, urban development rural and environmental conservation land use classes and was combined with the social and economic needs of the region. As a result, the classification of land use and land use priorities can be qualitative method of comparative ecological, land use map of the Sykan watershed of Darreh shahr city was prepared. **Results:** The result show that 43.61% of area was allocated for forestry, 29.96 % for agriculture, 14.31 % for tourism, 6.77 % for pastoral, 2.46 % for conservation of environment, 2.05 % for animal husbandry and 0.84 % for aquatic aquaculture. Thus. this area is promoted from 3 to 8 land uses.

1.INTRODUCTION

Land-use planning is the term used for a branch of public policy encompassing various disciplines which seek to order and regulate land use in an efficient and ethical way, thus preventing land-use conflicts. Governments use land-use planning to manage the development of land within their jurisdictions. Land use deals to determine a use of the land based on ability, and quality and quantity talent of land for different uses from it, with

consideration of sustainability principle, so that reduce the destruction of natural resources, waste on environment and human poverty (Makhdoom, 2012). Land use planning process, is the trend for optimal utilization of the potential natural resources and human in order to achieve the objectives of balanced and harmonious community and region growth (zahedipoor, 2009). One of the main issues in the process of land use is ecological capability evaluation of land that is the identify the capabilities and potentials, possibilities and

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limitations of region, term of sustainable ecological resources including topography, soil, land, vegetation and non-sustainable ecological resources including water resources, weather, wildlife and etc. for different types of land uses (Makhdoom, 2012). During the last years the study of the ecological capability of different regions of the country can be done rather well for a variety of uses, which was used Makhdoom views and proposed models have been used Makhdoom mainly (Hamze, 1998; Sarhangzadeh and Makhdoom, 2003; Dehdar and Makhdoom, 2003; Babaei and Aunaq, 2007). Based approach to systems analysis, using two synthetic methods, the use of geographic information systems (in many cases), identify stable and unstable ecological resources, combining maps, determine ecological units, coding units and recognition the appropriate land use were the methods used in most of these studies. The aim of this study is to provide a management plan for the Sykan watershed of Darre shahr city located in Ilam province using GIS in land use planning.

2. MATERIALS AND METHODS

2.1. The study area

Sykan watershed, with an area of 9,000 hectares with a maximum 1900 and the lowest elevation of 600 meters above sea level, is located near the city center, at position 33 degrees 4 minutes 33 seconds to 33 degrees 12 minutes and 13 seconds north latitude and 43 degrees 44 minutes 12 seconds to 43 degrees 52 minutes and 51 seconds east longitude (Figure 1). Sykan watershed has 18 villages. Average annual rainfall in the area is 490 mm, the average length of the dry period is 175 days and the average length of the wet period is 190 days (Najafifar *et al.*, 2003). Forest types are including oak, oak - turpentine, oak - turpentine - hawthorn and oak - peanuts - maple. This watershed with the provincial capital is about 120 kilometers away and is located near the arre shahr city.

2.2. Materials and Methods

The purpose of this study is to provide a management plan for the Sykan watershed of Darre shahr city which in GIS space and by combining of land form unit maps (which were also the combination of altitude, slope and orientation were obtained) with maps of soil texture and vegetation density were obtained. This study was conducted with the method of systemic analysis. Using the method introduced by Makhdoom (2005), for each land uses, individual specifications of units for each land uses and for each class of that land use has been compared and according to the characteristics of each unit and for each land use, the capability of that unit can be expressed as the number of class. In this case, for

selection of capability class for each land use on each unit has a set of attributes considered.

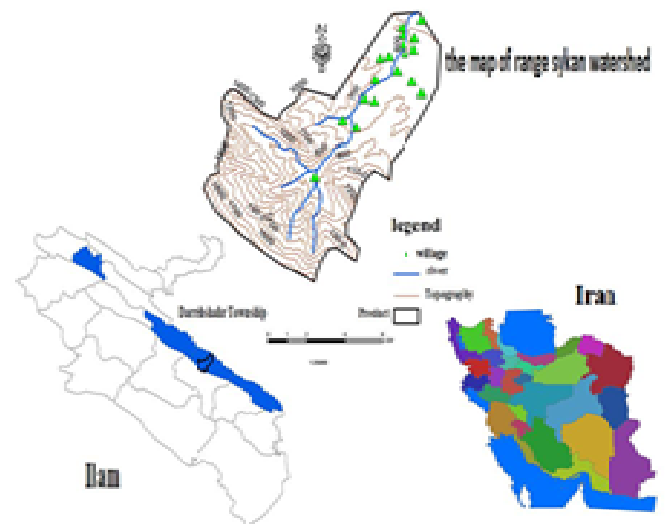


Figure 1. Location of Sykan watershed in the Iran, Ilam province and Darre shahr City

Land use planning and the final decision for each unit was performed according to the capability class of each land use with using qualitative method to determine priority and using presuppositions mentioned in the foundation of land-use book (Makhdoom, 2012). Capability classes for any unit were compared with existed method in each of the following assumptions 1 to the numbers next and In each class of model assumptions that are in accordance with the decision-making capability unit proposed in default as to the final decision was taken that unit. Then, after evaluating the ecological capability, land-use maps were drawn to the watershed. These maps were prepared using the final decision for each unit existed in the final map of environmental units.

3. RESULT

In this study, we evaluated the ecological capability. Then, land-use plan for the area was plotted (Figure 2). The results of this study revealed that these watersheds have different land uses, including capability of agriculture, rangeland management, forestry, tourism, aquaculture, horticulture, animal husbandry and conservation. Observed tourism in the watershed can be used by tourists. Planning and rangeland management of region, it can be used for livestock and prevent the destruction of vegetation and the bare soil. Urban - rural development could not be observed in region, and this was not unexpected given fertile lands in the area. Forestry in the region can be observed also. Due to the absence of a proportional management plan, current use land uses have not large correspondence with land use or prioritization map (Figure 3).

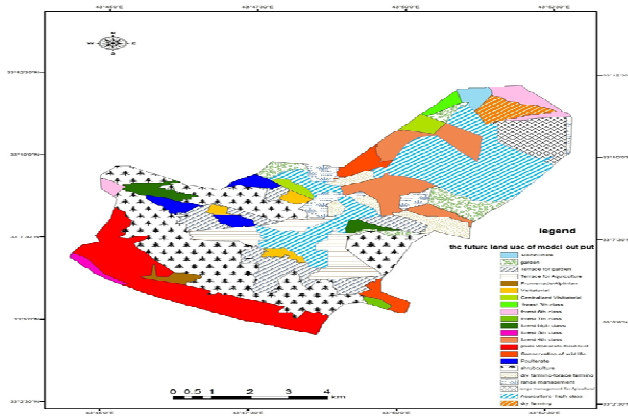


Figure 2. Land uses map of Sykan watershed

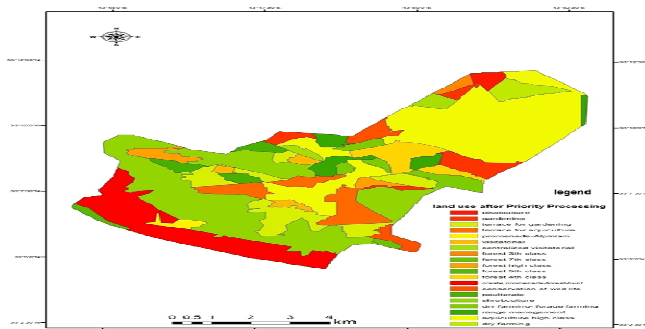


Figure 3. Land uses map of Sykan watershed after prioritize

4. DISCUSSION

Reviewing the results of the evaluation of development capability Sykan watershed which was performed with the aim of optimal utilization of the land in order to achieve sustainable development, it was determined that the current land uses were pasture, forest and farming areas respectively that with 38.8, 37.9 and 23.4 percent, allocate of the maximum surface area. But the most land uses of model output of this research are forestry, agriculture and tourism that can be covered 43.61, 29.96 and 14.31 percent of the area respectively. Land use models for this region, cannot predict urban development land use, when considering the quality of land area, it is not far-fetched. Also the region can upgrade through having 3 to 8 land uses. About 43.61% of the area is forest, of which only 9.1 % of it covered with dense forests form. The results show that shrub plantation must be done to protect these areas. 24 percent of the region that was forest formerly, but its coverage is less than 30 percent. 10.7 % of this forest as a garden can be plant. About 14.31 % of the field is wide promenade (outing). Current land uses of region is not allowed dignity and value for the preservation of endangered animals and rare species. However, as the results show a 2.46 percent of the area has a special ability for devoting to conservation and the dense forests

can be considered as a haven for these species nonspecifically. In terms of land use process (to determine land uses preferences according to the ecological potential) darre shahr's Sykan watershed were adorned using the multi-purpose or multi-territory analogy to the use of qualitative methods for different land uses. In this area, 38.8% of the surface area is devoted to pastures are mostly poor pastures. The output of these models showed that only 6.77% of the area has the Rangeland Management capability and Range Management plans should be implemented in those areas. However, given that the area of forest are oaks and also areas where forests have been seen have ability to produce good forage, ranchers can choose these areas for grazing In order to be more efficient. Also 10.7% of the area is intended to create a garden in the area due to weather characteristic and predisposing conditions of region, this type of land use there has been unknown, which can be a good source of income for local people.

In the evaluation, we cannot prioritize aquaculture and only 84/0 of the area accounted for it, based on the fertile lands were consistent with agricultural potential in the region, The proceeds of this capability compared with agriculture, it is not cost effective. Also due to pastures in the forecast area, livestock land use can also create jobs and income in the region that spatial models output know about 2.05 % of the area suitable for this land use. The survey results show that 23.4% of the area is under cultivation either irrigated or rain fed agriculture, but with terraces in arable areas can be increased surface of this area to about 29.96 percent. In summary, failure to comply with a proper planning and codified in the region is palpable that Investments can be put to waste and ruin nature. Therefore, to provide a make-up for the program can be an answer to many problems.

REFERENCES

- Babaei, A. and Aunaq, M. (2007). Evaluation of development capacity and land use planning of Pushtkuh watershed. *Journal of Agriculture and Natural Resources*, 13(1): 1-11 (in Persian with English summary).
- Dehdar, M., and Makhdoom, M. (2003). Land use of Arasbaran region. *Journal of Mohit shenasi*, 26: 1-7 (in Persian with English summary).
- Hamze, B. (1998). Geographically organized way of preparing digital elevation model of Forests and Rangelands. *M.Sc. Thesis*, Department of Environment, Azad Islamic University, Tehran, 156 p.
- Makhdoom, M. (2005). *Land use planning of Karoon Watershed. Evaluation and programming of environment using GIS*. Tehran University publications, 254 p.
- Makhdoom, M. (2012). *Land use footing*, Twelfth Printing, Tehran University publications, 289 p.

Najafifar, A., Raafatnia, N., Rahmani, R. and Hosseinzadeh, J. (2003). User-forest ecological capability evaluation model in Zagros forests. *Pajouhesh and Sazandegi*, 59 (2): 39-34 (in Persian with English summary).

Sarhangzadeh, J. and Makhdoom, M. (2003). Land use planning of Arasbaran protected aea. *Proceedings of the national conference of land management, soil erosion and sustainable development* (Arak). 143-155.

Zahedipoor, H., Moradi, H., Goodarzi, G. Myrdavdy H. (2009). Determination of Ecological Capacity of the central province using Geographic Information System (GIS). *Iranian Journal of Rangeland and desert Researches*, 15 (2): 242-255 (in Persian with English summary).