



Land Use Planning with Agro-ecosystem Paradigm Approach in Rural Areas of Arid Regions of Iran

Naghmeh Mobarghaee¹, Houman Liaghati², and Mostafa Keshtkar³

- ¹- Associate professor of Shahid Beheshti University, Department of Environmental Planning, Environmental Sciences Research Institute, Tehran, Iran
²- Professor of Shahid Beheshti University, Department of Environmental Economics, Environmental Sciences Research Institute, Tehran, Iran
³- PhD candidate, Department of Environmental Planning, Environmental Sciences Research Institute, Shahid Beheshti University Tehran, Iran



Introduction

- Global population growth and other principal Driving Factors are causing the land change in arid regions of Iran, such as most parts of the world.
- Isfahan Province has a Dry Climate, and despite limitations such as water constraints, Due to its political and geographical location in Iran and Its valuable resources, development has accelerated in different dimensions.
- The implementation agroecosystem paradigm and its application can play a significant role in the stability of villages for human well-being and eliminate imbalances.
- an agroecosystem project can implement in the region when the region has carrying capacity and range capability.

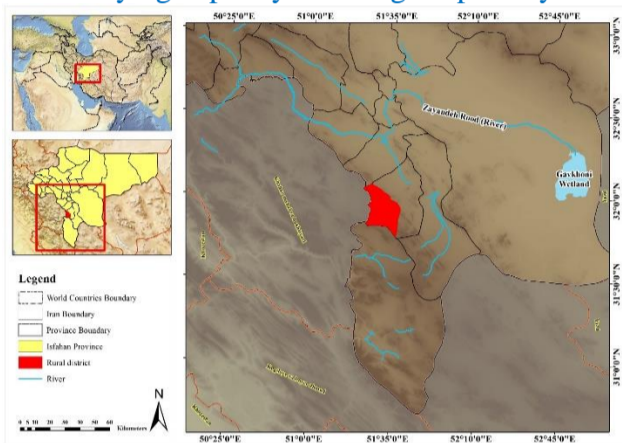


Fig. 1. Location of the Hamgin rural district in Isfahan Province of Iran

Result

- More than 40 layers were used to assess the land suitability of each class.
- Due to different weights, the layers were divided into two ecological and infrastructure groups for each suitability assessment.
- By receiving control points and weights, fuzzysion and performed linear Combination. The constraint (Boolean) layers were also aggregated based on the control points and multiplied in each land suitability.
- more than 50% of the area has ecological potential for arboriculture and extensive recreation. there is no capability of irrigation and rainfed agriculture, Urban and industrial development. It has good ecological capability in solar energy and there is no limit for extensive recreation.
- Land use planning based on the Paradigm of agroecosystems was developed. Fig. 4 shows distributed Land use class based on the agroecosystem paradigm.

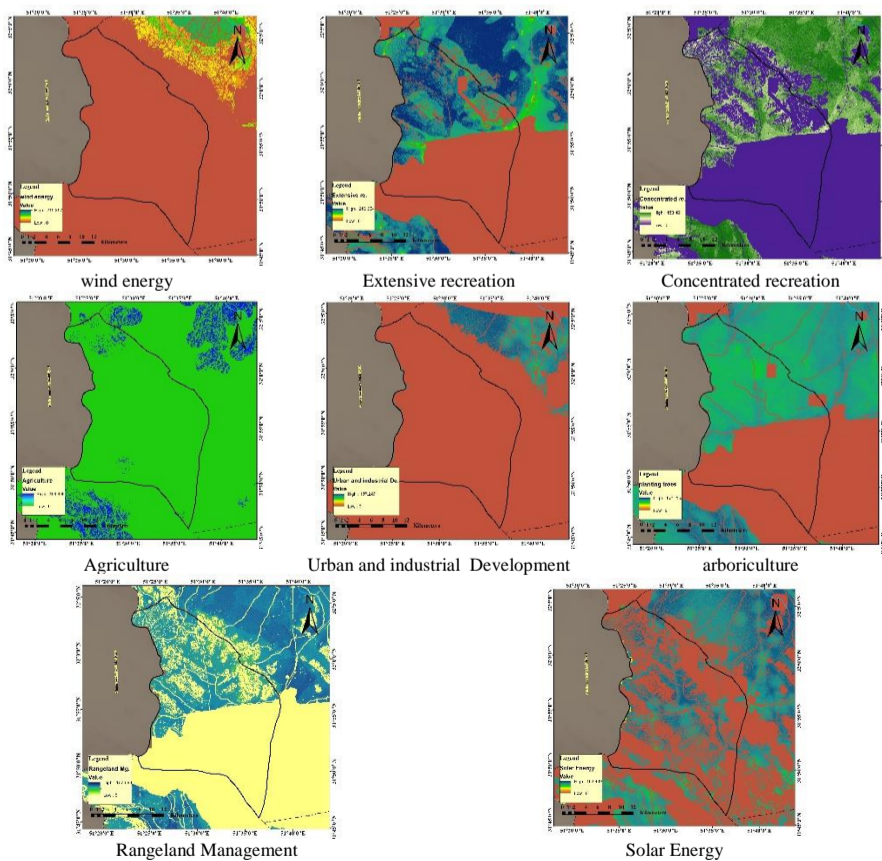


Fig. 3. Final suitability maps resulted from MCE: Suitability increases as the value rise.

Methods

- The study was conducted in the Hamgin rural district in Isfahan province, Center Iran(Fig.1).
- In this study (Fig. 2), land suitability analysis using the integrated GIS and Multi-Criteria Decision Making (MCDM), for arboriculture, agriculture, Urban and Industrial Development, solar and wind energy, Extensive and concentrated recreation, and rangeland management were assessed.
- Using the consensus of elites (stakeholders, influential people, and decision-makers), applied weights to each layer and sub-layers, and land suitabilities were assessed by the MCE and Weighted Linear Combination (WLC) method.
- For integration to Environment planning, based on the carrying capacity and land capacity (macro suitability assessment) landuse planning was conducted using the Optimal Multi-Objective Land Algorithm (MOLA) in Hamgin rural district.

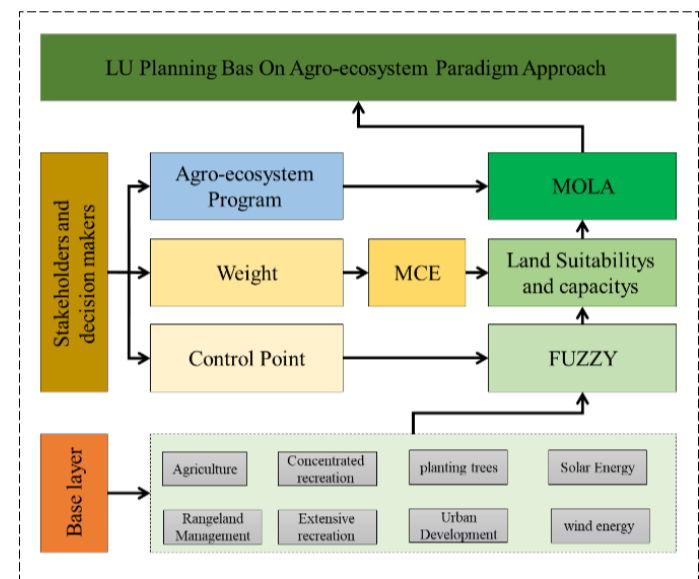


Fig. 2. Conceptual framework for integrated land suitability assessment and agroecosystem paradigm in land planning adopted in this study (Source; Research result).

Conclusion

- For respect to the principles of sustainable development, having a foresight view of development, based on the observance of ecological consideration, and applying the principles of forecasting research in landuse planning are among the most important factors.
- The results showed that in the studied rural district, by using the new spatial paradigm, the ability to perform both land classes in land use planning to achieve sustainable development has been provided.
- This paradigm, the spatial organization of the landscape is such that in the future we will see a reduction in environmental and human problems and move towards sustainable development Goals.

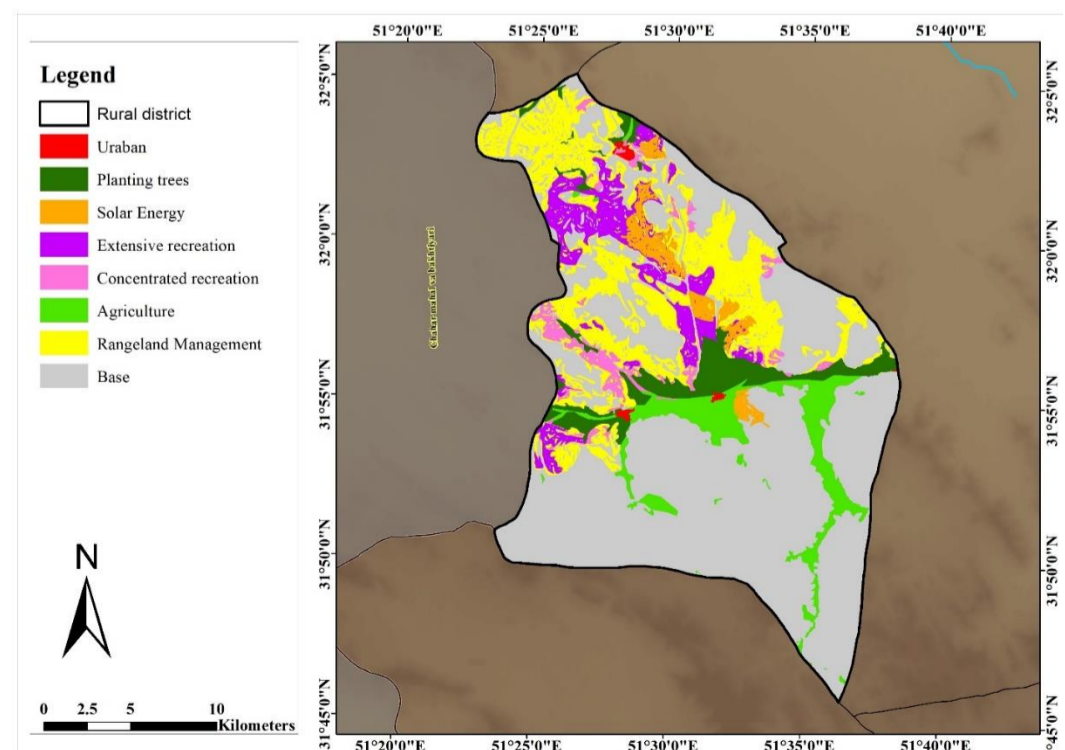


Fig. 4. Land use planning of Hamgin rural district based on agroecosystems paradigm