Analysis of the Spatial Interaction between the Iranian Southern Ports and the Regional Hinterland Cities*

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Abstract

Ports in most parts of the world play a great role in creating integrity between the prosperous of the regions and balancing the supply chain (production, distribution, and consumption). This article is to analyze the spatial interaction between the southern ports of Iran and local-regional hinterlands and explain the role of ports in shaping the spatial structure. For this purpose, a network analysis of commodity flows method is used in 1996, 2006 and 2015. The findings indicate that southern Iran's ports are often the importer of consumer goods in the populated centers, located in regional hinterlands, and, at best, have exported energy sources and raw materials. While urban centers, located in local hinterlands, do not play an effective role in the production and delivery of goods to ports, they are often dependent on the regional center (Shiraz) to meet their consumption needs. It revealed that although the process of spatial inequality has been moving towards greater balance over the past two decades, the development of medium-sized ports and local nodes in the contiguous hinterlands and forelands has led to a balanced monocentric spatial structure in this region.

Keyword

Port, Hinterland, Network Analysis, Spatial Structure, Southern Regions of Iran.

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Evaluating Ecological Networks of Urban Landscape (Case Study: Karaj Metropolis)

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Abstract
Landscape fragmentation is the most important challenge in urban development. This challenge prevents the flow of materials and energy in the region. These changes affect ecological characteristics. In this regard, ecological networks are considered as tools for conservation planning. Therefore, satellite images were used in the years 2006, 2011 and 2017 to evaluate the ecological networks of Karaj Metropolis. The Classification and preparation of land map conducted based on land cover and with the support vector machine algorithm. Landmarks were also used to assess the status quo and the process of changing heterogeneity, continuity, and communication-isolation networks in previous years. The results showed that the trend of criteria changing in the study area is not desirable. The inappropriate process of changing of Space landscape heterogeneity criteria, the conjunction of the same spots across the land, and the optimal communication reduce the ecological function and the consequence is a decline in the sustainability of ecological networks. Also, due to the decreasing trend of metrics in green spots, especially human green, and the increasing trend of metrics in construction and open spots, in sum, it can be concluded that the ecological function and the ecological network characteristics of the landscape are following a descending trend.

Keywords
Landscape Ecology, Ecological networks, Land Use, Landscape Metrics.

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Predicting of Land Use Changes for 2030 Using Remote Sensing and Landsat Multi-Temporal Images (Case study: Mashhad)

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Abstract
By predicting land use changes, the extent of the expansion and destruction of resources can be determined, and future policies can be pushed in the right direction. The aim of this study is modeling the land use changes process in Mashhad by using Landsat satellite images related to 1989, 2008, and 2014. Initially, based on the hybrid method (unsupervised and supervised classification combination), land uses were classified into six classes. Then, by using the Markov chain, the transmission matrix between 1989 and 2008 was calculated and by applying it in the Markov-CA model, the land use map for 2014 was predicted. In the following, the predicted land use map for 2014 with the actual 2014 land use map was compared with the Crosstab table, and the total Kappa coefficient was 0.91. Accordingly, the accuracy of the predicted Markov-CA model was confirmed. Finally, this model was used to predict land use in 2030. Therefore, by entering the 2014 reference map as the base map, the 2030 land use map prediction map was extracted. The results showed that from 1998 to 2030 there will be an increasing trend in urban and arid lands and a decreasing trend in agricultural lands and gardens. The results indicate that the Markov-CA model can contribute to the design of a sustainable urban system.

Keywords
Hybrid Classification, Transmission Matrix, Crosstab Table**,** Markov-CA Model, Sustainable City System.

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Environmental Development Planning of Shandiz District based on the Analytical Process

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Abstract
One of the new problems is paying attention to environmental planning for sustainable exploitation of land resources and prevention of environmental issues that have been considered by researchers and managers recently. As much as this planning is based on objective facts and potentialities, achieving predetermined goals becomes more feasible. On the other hand, environmental planning tools have tended to achieve local-scale plans to reach more sustainable cities and townships. In this paper, local-scale development planning has investigated in Shandiz district located at Torghabeh-Shandiz city. The planning of the Shandiz district has carried out using the analytical process consisted of three stages of environmental planning and using the Geographic Information System (GIS). The first stage involves understanding the capabilities and potentials of the study area through the study of the current status. Issues, facilities, and constraints associating to each section are categorized and prioritized in the second stage. The third step involves drawing a vision, organizing the general goals, and defining the objectives. Regard to the priority of the studied factors, it was proposed spatial solutions in environmental units. Finally, physical-spatial development plans were developed to guide the regional changes according to the natural and man-made constraints and potentials.

Keywords
Planning Process, Shandiz District, Development Plan, Physical-Spatial Plan.

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Assessing Tourism Attractions of Gharahsoo Watershed Based on the Impact and Effectiveness of Environmental Criteria

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Abstract
Identifying tourism attractions is a basic requirement in the local and national community toward balanced and harmonious development of land potential. This study aimed to evaluate the tourism attractions of Gharahsoo watershed in Golestan province, northeast of Iran, based on the impact and effectiveness of environmental criteria. After determination of criteria and preparation of layers, criteria analysis was done based on the impacts and effectiveness of the criteria using DEMATEL method. Entropy Shannon method was used for weighting criteria. Finally, the spatial analysis was done by employing the TOPSIS method. The results showed that landform and plant density, in terms of the impact, and access to facilities, in terms of the effectiveness, have priority over the other criteria. Also, the criteria weighting results showed that the criteria access to facilities, landform and plant density with the value 0.229, 0.147 and 0.123 are a priority to the other criteria, respectively. Finally, the results showed that, in terms of tourism attractions, the areas of the southern of Gharahsoo watershed are in suitable conditions and the rest of the area, especially the northern parts, has unsuitable conditions.

Keywords
Tourism, Cross Impact, DEMATEL, Entropy Shannon, TOPSIS.

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Redefining the Role of Small- and Middle-Sized Cities in the Regional Development Process; Introducing a Spatial Based Applied Method (Case Study: Kurdistan Province)

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Abstract
Much quantitative research (and some qualitative cases) has been done on the role of small- and medium-sized cities in regional development. The present article is also in this line, but with a slight change in the structure of the breakdown in the approach to the subject and the analysis of the problem, and the multi-faceted analysis of the data using the Fuzzy Inference System. The purpose of this research, with regard to the title, is developmental-applicable and has a descriptive-analytical approach. The FIS application and increasing approach has four stages (in general): its Database and Fuzzification; the rules base; the engine; and the Defuzzification. In the glimpse (Knowledge Base), regional development indicators (10 indicators) and variables (more than 70 variables) in four pillars of regional development (economic, physical, infrastructure and human development) for the small- and middle-sized cities of Kurdistan province (9 cities of the city centers Except for Saravabad) were selected and mapped in 2006 and 2016, and then a detailed analysis of the process was performed on the data. The final result of this paper is that although fluctuations in the development of the inland region of the province have been observed, regional development changes (relying on economic indicators) have been consistent with changes in the urban hierarchy (demographic projections). Thus, with the decline of concentration and concentration in Sanandaj, we see an increase in the role of small- and middle-sized towns in the urban-regional development of the province.

Keywords
Small- and Middle-Sized Cities, Regional Development, Fuzzy Inference System, Kurdistan Province.

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Investigating the Dimensions of Water Scarcity Using the Water Poverty Index (WPI) and its Comparative Analysis in Qom District

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Abstract
The purpose of this study is to evaluate the situation in Qom and its regions in terms of the water poverty index, which identifies the zonal differences and the dimensions and strengths and weaknesses of each. The basis for determining the Water Poverty Index is the Sullivan method, which is a weight linear combination of components (resources, costs, environment, capacity, and access). The required data were collected through related organizations and analyzed in the framework of this method. There is a difference between the five sections of the county in terms of poverty. Weakness in resources is a common feature among zones, which is significant in some zones and moderate in the others. Also, in terms of human capacity, almost all regions have a good status that can be regarded as a strength. Water consumption management, as the most important option, should be at the forefront of planning and considering the inability to expand water resources. Currently, more than twice as much of renewable water resources are being extracted. The best way to manage water poverty is to make optimal use of available resources and capacities and to focus on research principles, rather than the expansion of water resources in a variety of ways, which can increase the territorial imbalances, domestic disturbance, and lack of control on consumption and so on.

Keywords
Water Poverty Index (WPI), Water Resources, Qom County.

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