

Investigation of regional resilience using spatial analysis and WASPAS hybrid model (Case Study: Townships of Khuzestan Province)

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(Received: November 22, 2017; Accepted: April 8, 2018)

Abstract

Natural and human hazards have caused vulnerability and resilience concepts receive much attention. Investigating the vulnerability and resilience of cities and regions shows the readiness and capacity of cities and regions to reduce the effects of disasters. If the situation of the city and the region is high in terms of resilience, Infrastructure, economic and social conditions of the residents have the ability to recover and return faster to a state of equilibrium. Besides, emergency services would be done properly. In this research, resilience was investigated on a regional scale with the purpose of assessment regional resilience dimensions in the townships of Khuzestan province. The research method is analytical-descriptive and in terms of purpose is applied. The data were extracted from the Planning and Budget Organization of Khuzestan Province's database. The data are divided into economic, social, infrastructural, health, and environmental dimensions and 26 indicators. In order to analyze the data and weigh indices, Shanon entropy was employed. The townships were then ranked by use of WASPAS technique. The results showed that Ahvaz, Dezful, Khorramshahr, Shadegan, Shoosh, Azadegan, Shoshtar, Abadan, Izeh, Ramhormoz, Andimeshk, Behbahan, Baghmalek, Mahshahr, Ramshir, Omidieh, Karoun, Hamidieh, Masjed Soleiman, Bawi, Gotwand, Lali, Hendijan, Indica, Haftkel, Hoveiza, and Aghajari ranked 1st to 27th respectively. Undoubtedly, based on the Khuzestan province's special position and its multi-cultural aspect, despite its rich natural resources, border situation and putting away the resiliency would result in a big crisis for the whole system. Also, the results showed that Khuzestan province resiliency related to spatial inequality.

Keywords

Hazards, Resilience, Regional Resilience, Khuzestan, WASPAS.

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Assessment of spatial vulnerability infrastructures in Yazd province, with passive defense approach

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(Received: March 5, 2017; Accepted: August 2, 2017)

Abstract

Nowadays, infrastructures play a significant role in the safety process in ordinary times and during the crisis. From this point of view, maintaining the safety of infrastructure against threats would be a security priority for any country; therefore, understanding current situation and vulnerability of infrastructures in a regional scale can be used as an efficient mechanism to formulate regional and national security strategies. This paper assesses the vulnerability of infrastructures with passive defense approach and analytical method, in Yazd province. The analysis of data and information collected were done with analytic network process model (ANP) and geographic information system (GIS) due to the interaction between infrastructures. The results showed that about 51 percent of province area is in the situation of high and very high vulnerability. The central part of the province, Yazd and Meybod, is the most vulnerable regions, because of their failure to comply with principles of passive defense, favorable environmental conditions, further concentration, centralization of infrastructure, and political, administrative, and geographical centrality.

Keywords

Infrastructure, vulnerability, infrastructure interaction, passive defense, Yazd province.

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Scenario Development in Realizability Territorial Spatial Arrangement (Case Study: Khorasan-e-Razavi)

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(Received: November 8, 2017; Accepted: March 14, 2018)

Abstract

Future studies in Territorial planning focus on finding key factors, drivers and uncertainties in the development of regions in the planning space. This is in the way that the planner can map and manage a desirable future by having them as a control lever. The purpose of this study is to identify the effective factors on the planning of Khorasan-e-Razavi province, to identify the key variables of the province's development and finally to develop effective scenarios for the province's planning. The research process is practical in terms of purpose, and the research method is descriptive-analytic. The nature of the data is qualitative. The data are collected through survey and from documents and records. Data analysis is based on futures research techniques including environmental scanning, structural analysis, and cross-impact analysis. The results of the research show that among the developed scenarios, province planning will face 22 strong adaptive scenarios, 2740 weak adaptive scenarios, and 1837 inconsistent scenarios, in the future. Of the 22 possible scenarios, eight scenarios have a favorable status, two scenarios have interstitial status, and 12 scenarios are in an unfavorable situation. Between the favorable scenarios, Scenario 1 is the best and the most likely scenario ahead of the province and all of its possible probabilities are quite desirable.

Keywords

Future studies, Scenario Writing, Territorial Spatial Arrangement, Khorasan-e-Razavi.

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Ecological impacts assessment of land use change on the natural structure of the Gharesoo Watershed

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(Received: November 27, 2016; Accepted: February 8, 2017)

Abstract

In order to evaluate the impacts of land use change, the quantification of landscape structure through relevant metrics can be used. These metrics are appropriate owing to the fact that they are measured easily and take low cost and time. The goal of the present study is to investigate the ecological impacts of land use change on the natural structure of the Gharesoo Watershed in order to identify the highly affected areas. Firstly, the amount of land use change between 1984 and 2013 was calculated. Then, landscape metrics were used to investigate the spatial patterns of land use change. Finally, an ecological impact index based on current land use was established. The results showed that during the period studied, areas of forest and agriculture have decreased by 12 and 5 percent respectively, and other uses including residential-industrial, rangeland, and transportations have increased by 292, 143, and 176 percent respectively. Landscape metrics analysis indicated a decrease in compactness and an increase in fragmentation and degradation of the landscape. According to the ecological impact index map, approximately 28 percent of the region is exposed to high and very high impacts. These areas can be used as a base for future studies and may be earmarked for intervention measures such as improving land management and decreasing fragmentation.

Keywords

Land use change, Landscape ecology, landscape metrics, Gharesoo Watershed.

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Spatial patterns analysis of urban growth in Iran metropolitan regions (Case study: Tehran, Mashhad, Isfahan, and Shiraz metropolitan regions)

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(Received: January 25, 2018; Accepted: June 10, 2018)

Abstract

Residential and employment attractions urge the population to reside in regions with appropriate potentials for development. The metropolitan regions of Iran have been attractive centers for the population; this attractiveness resulted in some changes in different spatial patterns. The present research examines the effect of spatial-physical, and demographic variables on metropolitan regions of Iran in order to achieve suitable planning for future spatial development of Iran. The objective of the study is to analyze correlation, centralization, and uniformity of distribution and composition of spatial patterns of development in the metropolitan regions. To do this, Shannon entropy, spatial Gini coefficient, spatial density index, and Kriging Estimator were employed. The results showed a trend that dictates on a decrease in concentration in metropolitan regions, which has manifested in different spatial patterns. In Tehran metropolitan region, the trend of development goes into polycentric with sprawl in the peri-urban and rural area. According to the development trend of population centers in Tehran, it can be said that at the same time of concentrated centralization, other settlements have played an effective role in the spatial structure of this metropolitan area, and strong road network has led to the formation of such pattern. In Isfahan metropolitan region, the spatial structure has changed into concentration. This has happened with an unbalanced distribution to a radial pattern. While Mashhad metropolitan region has a monocentric linear pattern, Shiraz shows a monocentric and sprawl in the periphery. This can be attributed to the small growth of settlements compared to the metropolis.

Keywords

Spatial pattern, urban growth, metropolitan regions, Iran

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Identifying and Analyzing the Influence of Driving Forces on the Regional Development of Alborz Province with the Scenario-Based Planning Approach

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(Received: March 10, 2018; Accepted: August 28, 2018)

Abstract

The present study uses a structural analysis method to seek out the most likely scenarios for the development of Alborz province on the horizon of 2032. The required data and information for the research have been collected through a territorial development study (Survey Questionnaire) as well as expert interviews within the framework of the Delphi model. The statistical samples of the study were 30 employees of relevant institutions and urban-regional researchers. For data analysis, MICMAC software has been used to analyze the interactions of variables, and Morphol software has been used to compile scenarios. Finally, the results showed that the issue of water resources and drought, and the issue of the destruction of gardens of the province are due to the irregularity of construction. Similarly, the issue of industrial production, environmental pollution increase, and the burnout of factories in the horizon of 2032, with three replications of the catastrophe scenario in the developed scenarios are three serious and major threats for the development of Alborz province up to the horizon of 2032. Nonetheless, the capability of being at the neighborhood of Tehran province and the use of demographic, economic, and other capacities of Tehran province in all three scenarios were identified as the desirable scenarios. Also, in each of the three scenarios, the capabilities of the "big and strategic industries" and "province tourism" were identified as the most intermediate scenarios, which indicates the importance of these three capabilities in the development of the province in the horizon of 2032.

Keywords

Scenario, Regional Planning, Development, Alborz Province.

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Investigating the Relationship between the Spreading of Human Settlements and Instability of Agricultural Water resources in the Zayandeh-Rud Basin

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(Received: May 4, 2018; Accepted: August 27, 2018)

Abstract

The Zayandeh-Rud Basin, placed in the center of Iran, is one of the areas with water instability problems. In the last decade, the water resources of the basin have decreased. Thus, that part of the length of the river in the middle and downstream of the water flow has dried or temporarily turned off, and the allocation of agricultural water to the agricultural lands of these sectors has decreased significantly. In this study, ground-level land use changes were analyzed through Landsat satellite imagery analysis in 2000, and 2014. These periods coincided with the periods before and after the occurrence of the instability of water resources in the basin. The researchers specified the research area and then divided it into three parts, naming upper, middle, and downstream. At the next step, these parts were compared in the form of 6 categories of use. According to the results, during the period, along with the occurrence of water resource instability, construction and residential land use across the rangelands has increased, and land use of pasture has decreased. Agricultural coverage has increased in the upstream, but it has decreased in the middle and lower parts. Besides, the empty and blank land use on the upstream has decreased, and it has increased in the lower parts. Regarding the results, some of the instability of agricultural water resources in the basin could be attributed to the expansion of settlements, increase in water consumption throughout the area, and increase in agricultural activities in the upstream basin.

Keywords

Land use changes, Residential expansion, Water resources instability, The Zayandeh- Rud Basin.

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