

Assessing the Vulnerability of Urumia City Using Passive Defense Approach

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Extended abstract

1. Introduction

Given the complexity of urban life, there are cities in different dimensions with natural hazards and technological crisis on the one hand and there are also social-security crises on the other side. Since most cities are exposed to potential natural and artificial hazards. In recent years, the attention of many planners, governments and nations has been drawn to the issues of vulnerability and management. To reduce vulnerability and achieve sustainable development in addition to understanding the natural and spatial nature of the hazards, social-spatial aspects of community vulnerability should also be recognized. Observing the requirements of passive defense not only against possible attacks but also in the face of natural disasters is one of the necessary principles for sustainable development and the sustainability of urban facilities and the preservation of the lives and property of the people. As the administrative and political center of West Azarbaijan Province, Urmia is always at high risk of vulnerability due to the following factors: low risk of earthquake hazards, its location in the catchment basin of Lake Urmia, the potential of flood damage, the strategic position of this city, the conditions of the eight years of the imposed war, the crises in neighboring Iraq, Azerbaijan, and also the ethnic conflicts in

Turkey as a defensive city in the northwest of the country.

2. Review of Literature

Attacking sensitive centers of gravity is the enemy's first objective of weakening and defeating the other. Therefore, attention to these centers is of particular importance; As various scholars have argued about the elimination of centers of gravity, the most important of which is the strategy of destroying centers of gravity, or "five-loop theory of Varden." According to this theory, one of the basic studies in the field of passive defense, Land use planning and prepare Land use map. Balanced and proportional distribution, the location some of the urban land use such as infrastructure and Urban Equipment are of the utmost importance so that there should be some consideration in relation to the location and proprietors of these uses, However, it cannot be expected without sufficient attention in relation to the location and establishment of the land in the city can be an efficient intervention actions in relation to the management, crisis and relief and saving of the injured. Meanwhile, urban vulnerability with regard to passive defense approach by Siamie et al. (2014), Ranjbar et al. (2014), Motvali Habibi and Barghchi (2015), Dadgar (2016) and Mohammad Taghi Razavian et al (2017) And ... it's been investigated

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3. Method

Considering the applied nature of the issue and the investigated variables, the approach used in this study is descriptive-analytic. To begin with, the research problem was first explained and the effective factors were discussed in this regard. In order to investigate the vulnerability of Urmia, nine main criteria (including support services, mass media, military factors, critical and vital land use, green space, commerce, education, industry, and administration) with 21 sub-criteria were selected based on external and internal sources. Using the network analysis process, the importance of the coefficients of the criteria was then determined through the Super Decisions software. In the next step, information layers were produced using the GIS, and then they were fuzzified according to the indices. In addition, due to the capabilities of GIS and fuzzy overlay functions, integration and overlaying of information layers was done in order to zone the vulnerability of Urmia.

4. Results and Discussion

Based on the collected results, critical and vital land use with a score of 0.340 had the most important and influential effect on the vulnerability of Urmia to passive defense, while administrative agencies with a score of 0.197 and military centers with a score of 0.172 were important as well. Of all the main criteria considered, green and educational criteria were the least significant factors with the scores of 0.015 and 0.028, respectively. After obtaining the final weights corresponding to each of the criteria and sub-criteria, the location databases of the study area were created in the ArcGIS 10.2 software environment and the effective options in the assessment process were transformed into information layers. Since the maps of the distances do not have the same units for standardization and homogenization as well as their flexibility, fuzzy standardization method with numerical amplitude between zero and one was used in GIS software. In this regard,

according to the criteria and sub-criteria used to measure the vulnerability of Urmia, smaller, large, and linear fuzzy functions were used. Considering the different effects of criteria and sub-criteria on vulnerability in Urmia, vulnerability distances and different coefficients were used for each of the five factors. After weighting in the ArcGIS environment through fuzzy overlay and with gamma of 0.9%, map was overlay and the final map of the vulnerability assessment of Urmia was prepared.

5. Conclusion

The results of this research are used to assess the vulnerability of Urmia City in the form of five classes of highly vulnerable to very low vulnerability. The vulnerable areas with maximum vulnerability are mostly in the northern (poor neighborhoods) and central (old neighborhoods) city of Urmia, which are mostly located in the 4th and 2nd regions, that is, the most vulnerable parts of Urmia. This is mainly due to high density population and residential, the placement of most administrative and political centers, sensitive and commercial factors in these regions. Therefore, adherence to the principles of neighborliness in the urban infrastructure of Urmia in the 4th and 2nd regions is more than other urban regions. On the other hand, the minimum vulnerability in Urmia includes the western and southern parts of this city which are considered new urban textures. The reason for this is the high quality of the physical factors, the dispersion of the population, the extent of the green and open spaces, and the systematic and logical location of the sensitive and threatened centers. It should be noted that among the 9 existing criteria, criteria of vital and critical land use, military and administrative centers have the most impact on the vulnerability of Urmia City, respectively.

Keywords: Passive defense, Urban vulnerability, Network analysis (ANP), Geographic information system (GIS), Urmia City

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