

Measuring the Vulnerability of Urban Structures from the Point of View of Passive Defense During the Crisis (Case Study: Gomishan City)

Hassan Hosseini Amini

Coordinator of the Nonprofit Defense Studies Center. Ph.D. Candidate in Geography and Urban Planning, Central Tehran Branch, Islamic Azad University, Iran

Hossein Mousazadeh *

Dep. of Geography, Garmsar Branch, Islamic Azad University, Iran. Ph.D. Candidate, Dep. of Regional Science, Eotvos Lorand University, Faculty of science, Budapest, Hungary

Amir Bakhshi

Assistant Professor Dep. of Geography, Payame Noor University, Iran

Reza Sarli

M.A. in Geography & Urban Planning, Golestan University, Golestan, Iran

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EXTENDED ABSTRACT

Introduction

Human beings have always been faced with various kinds of injuries, wars and invasions and disasters, and have caused many financial and financial losses. Cities as centers for the emergence and development of science and civilization have been at the center of these injuries and assaults. Today, with the use of comprehensive crisis management programs and the implementation of previously inactive passive applications, the severity of the damage and damage caused by such risks can be greatly reduced. One of the most important of these measures is the use of passive defense principles to reduce. To this end, the purpose of this study was to evaluate the vulnerability of Gomishan city during crisis with the passive defense approach. For this purpose, descriptive-analytical method and field survey, and then zoning and overlapping of information layers in GIS spatial analysis software have been used.

Methodology

At first, the identification of existing resources and the current status of the environment was carried out by library and field research. Then, topographic maps of the region were made up of a 1: 25000 scale from the management and planning organization and other information layers such as geological maps and urban information systems of the relevant organizations. On the other hand, non-operating defense vulnerability maps were generated using ArcGIS software using the AHP model. In this method, a team of experts could be used to avoid personal errors or attempts to make decisions. Therefore, in this research, after determining the effective characteristics of urban development in order to determine their relative weight and in order to improve the accuracy, a questionnaire was developed for using the opinions of experts related to the topic. The evaluation criteria used were ranked below.

Results and discussion

In this research, using scientific literature, library resources, indigenous knowledge, and expert opinions on effective criteria in determining the vulnerable areas for zoning drinking water

* Corresponding Author:

Email: hmosazadeh5575@yahoo.com

systems by completing the questionnaire by expert experts and using the AHP model, weighs Each of the effective measures was achieved.

After determining the final weight for each of the criteria, these weights are integrated with the support of GIS capabilities in applying weight to layers and then overlaying them according to their impact on the evaluation process in the GIS environment. Finally, for each of the desired criteria, considering the number of effective layers and the effect of these layers, the final design was obtained by fuzzy method in which risk areas are presented for urban management. Vulnerability assessment in our country is based on multi-factor assessment. Given the unique characteristics of each region, it is certain that the assessment of the vulnerability capability in each region includes its own criteria and criteria. Due to the variability and number of developmental features, GIS provides a good way to analyze these data, while doing so with manual methods is very difficult and time consuming. The results of the assessment of the region's vulnerability by the hierarchical analysis process and the final output. indicate that the ranking of 1 to 3 in the injury category (8.88-20.89-28.49) was ranked 4 to 6 in percentage terms, respectively (12.74-8.92-6.05) Also, in the middle class vulnerability, with a percentage, also ranked 7 to 9 in the category of high vulnerability (1.86-4.20-8.03).

Conclusion

Inactive defenses are among the issues that have been considered in urban plans and plans in recent years. Currently, in comprehensive urban plans, this includes specific criteria for locating land use and building retrofitting that can be used for Each city (not just the city under study) is used to reduce the vulnerability of urban areas to reduce damages by exploiting new crisis management approaches such as inoperative defense that can contribute to a safe environment in cities. The most important goals that today's planners and city managers are trying to implement in the cities as you know, so far, urban-designed urban planning has not been paid much attention to non-operational defense. Scattering, camouflage, hiding and covering is one of the principles of non-operational defense that should be taken into consideration in the preparation of urban plans and in the location of sensitive, vital and important applications. The proposed vulnerability zoning provides the possibility to Considering the severity of the vulnerability, in each of the areas, measures should be taken to reduce their vulnerability. In some cases, by carrying out such actions as transferring some hazardous centers to other locations, taking into account the principles of non-operating defense in urban elements and their components, and some cases To a large extent, the severity of the vulnerability of the caste areas can be highlighted with regard to the important applications that Unfortunately, so far, a comprehensive model of urban vulnerability has not been presented and this research can be considered as the first research in this field. Among the most important other results of this research is the presentation of a model for building the city's physical vulnerability map with applications. Due to the information obtained and the results of several indicators analysis, it can be said that the current situation of the system of Gomishan City facilities has become vulnerable to threats (natural and human).

Keywords: vulnerability, urban structure, passive defense, crisis, Gomishan City