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The full text of this article is entitled:  
Evaluation and measurement of  
dimensions and components of resilience  
of Golbahar new city against natural  
hazards  
Published in the same issue.

## **Evaluation and measurement of dimensions and components of resilience of Golbahar new city against natural hazards**

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### **Introduction**

Today, the prevailing view of reducing vulnerability to increase resilience to risk has changed. According to this view, risk reduction programs should seek to create and strengthen resilient societies. Among these, resilience is one of the most important factors in achieving sustainable development. In urban studies, literacy mainly refers to the capacity to recover from natural disasters such as earthquakes, floods, and war. Natural hazards have the potential to become terrifying and devastating hazards to human societies in the absence of hazard reduction systems. Therefore, it can be said that natural hazards are an important challenge in achieving sustainable development in human societies. The view that has existed so far in natural hazard management and urban management is a confrontational and risk reduction view. Among these, the concept of resilience is a new concept that is mostly used in the face of uncertainties.

Iran is geographically very vulnerable to natural hazards. Khorasan Razavi province is the second province in terms of population and is one of the most important provinces in terms of worn texture, uneven development, dense urban texture and marginalization phenomenon, and on the other hand due to its geographical location and proximity to faults and canals. Are always affected by natural disasters (earthquakes and floods). According to the mentioned cases, the current research will study and measure resilience and its components with the aim of proper urban planning in the new city of Golbahar.

### **Methodology**

Applied analytical research method and written reports and questionnaire data were used. The statistical sample using a simple random method is 30 urban planning specialists who have been purposefully selected and questioned. The questionnaire is a researcher-made questionnaire in the form of a Likert scale on a scale that has been completed in the field. The variables of this research are resilience dimensions and 66 components. The validity of the questionnaire has also been reviewed and approved by urban planning specialists. Regarding reliability, Cronbach's alpha coefficient was used, which is equal to 0.727, which indicates the high reliability of the research instrument. The calculated value of chi-square statistic is 27.33 in degree 4 of freedom at the level of 0.000. Statistical analysis was used to analyze the data and in the inferential section, one-sample t-test and Friedman test were used with the help of statistical analysis.



### **Results and Discussion**

A) Based on the one-sample T-Test, it can be concluded that the new city of Golbahar in the social dimension of the component of the citizens of my city have the necessary skills to identify dangerous places is the best and the component of people trust city managers is the least desirable.

1) In the economic dimension, the component of the city budget is sufficient to meet the needs of citizens. It has the best utility and the component of financial support for the vulnerable groups of the city has the least utility, which requires special attention.

2) In the dimension of infrastructure, water, electricity and gas components are in good condition. It is convenient.

3) In the environmental dimension, the physical component of my city is prone to natural crises, such as earthquakes, and vehicles. Of course, this does not mean that it is not observed at all, but like other cities, there is a possibility of unauthorized construction.

4) In the institutional-managerial dimension, the component of hospital staff (physicians and nurses) is committed to dealing with the injured.

B) Friedman test was used to rank the components of urban resilience, the results of which are as follows.

- In the social dimension, there is a component of people's participation in actions and preparedness and safety against accidents. It has the highest rank and the component of people trusting city managers has the lowest rank.
- In the economic dimension, the component for creating a business in the city is a codified plan with the highest rank and the component of citizens with different skills has the lowest rank that needs attention.
- In the infrastructure dimension, there is an easy access component to the main thoroughfares of the city.
- In the environmental-physical dimension, there is a component of access to open spaces in a favorable condition, it has the highest rank, and the component of evacuation plans and plans of urban areas and areas and temporary urban accommodation is predetermined and exists from the lowest rank. Enjoys.
- In the institutional-managerial dimension, the fire component is quickly present at the scene of the crisis, has the highest rank, and the aid allocation component is done fairly, has the lowest rank.

### **Conclusion**

Globally, the dominant view has shifted from focusing on reducing vulnerability to increasing resilience. Accordingly, natural hazard reduction programs should seek to make communities resilient. As stated, in resilience we seek to increase the resilience of human and environmental systems against natural hazards. In this regard, the present study shows evidence of the sustainability of urban resilience against natural hazards. This evidence helps to further develop the resilience dimension as a guide for policymakers. Our findings show that knowledge of natural hazards, urban resilience can help to better understand aid and resource mobilization.

Hence, social support and social cohesion programs should be considered. Hence, many factors, including individuals and society and social levels, seem to be important in shaping resilience. As a result of this research, it tells us that while paying attention to the dimensions of urban resilience, we will be able to be aware of all the components



related to resilience and reduce the adverse effects of these risks in our urban communities. According to the study, the results of Golbahar resilience against natural hazards are as follows.

1) According to the one-sample T-Test, the new city of Golbahar is a city that has a high resilience against natural hazards. So that in the economic dimension, resilience has moderate, medium institutional, high infrastructure, medium social and high environmental desirability.

2) Friedman test has been used to rank the component of urban resilience against natural hazards. The results of Friedman test show that the city is in the middle rank in terms of resilience and in the dimension ranking section, the social dimension is in the middle rank, the average economy, the average infrastructure, the average environment and the average institution.

3) According to studies, this city is somewhat resilient to natural hazards in terms of resilience.

4) The new city of Golbahar is resilient to natural hazards in terms of infrastructure and environment - physically.

5) This city is not resilient to natural hazards in managerial, economic and social dimensions and needs attention and appropriate policies in this field.

Practical solutions and suggestions in order to increase the level of resilience in the new city of Golbahar can be expressed as follows:

- Management and organization necessary to prepare and deal with, in order to reduce the risks of natural hazards
- Determining the role and responsibility of city managers based on comprehensive and integrated natural hazard management programs
- Using the natural and tourism potentials of the region with the aim of increasing the economic dimension of the new city of Golbahar
- Increase the allocation of municipal budget to the safety and urban crisis management
- Increase of hospital beds in the region It is suggested to increase the social knowledge through local institutions on dealing with the crisis and the principles of return to the initial training.
- Proper training before, during and after the crisis in the form of accident management classes in schools and strengthening the awareness of children under 15 years.

**Keywords:** Resilience, Crisis, Natural Hazards, Vulnerability, Golbahar New Town

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### How to refer to this article:

Hataminejad, Hossein. Asiai, Mehdi. Goharkhah, Fatemeh.(2022). Evaluation and measurement of dimensions and components of resilience of Golbahar new city against natural hazards, Iranian Urbanism, 5 (8), 150-170.

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