



## Identification of macrotrends influencing on the sustainable regeneration of Mashhad metropolis

Seyed Mostafa Hossieni\*

PhD in geography and urban planning, Ferdowsi University of Mashhad, Mashhad, Iran  
S.mhosseini65@yahoo.com

Marzieh Sabouri

PhD student in geography and urban planning, Ferdowsi University of Mashhad, Mashhad, Iran  
Iran\_mnsabouri.1998@gmail.com

### Abstract

**Objective:** The indiscriminate expansion and development of urbanization has increased the importance of paying attention to the regeneration of urban spaces as one of the most important interventions in cities. Regeneration with the aim of revitalizing urban spaces can provide a suitable platform for the realization of sustainable urban development. Therefore, in recent years, it has received special attention from city managers. Mashhad metropolis has 69 target neighborhoods for urban regeneration with a population equal to 1287731 people (equivalent to 42.11% of the total population of Mashhad city), where the need to pay attention to urban regeneration is felt more than ever. The aim of this research is to identify the major trends influencing the sustainable regeneration of the Mashhad city.

**Method:** In this research, by using studies and library resources (with emphasis on documentary sources) and taking advantage of experts' opinions, 42 variables effective on sustainable urban regeneration in Mashhad were identified. Then, by using the analytical descriptive method and using the matrix of cross-reciprocal effects, the relationships between the research variables were determined.

**Results:** The findings indicate that the variable of smallness of housing, lack of a comprehensive urban management system, weakness in residents' demands, high proportion of unsustainable license plates, lack of sense of pride in the neighborhood have the most impact in that order.

**Conclusion:** The distribution of indicators in the direct and indirect effect-dependency map showed that Mashhad metropolis has an unstable situation in terms of regeneration parameters. Therefore, according to the results, the use of expert forces in local development offices; Efforts to synergize the organizations and institutions involved in regeneration in order to prevent the implementation of duplicate and parallel programs in the target areas; It is suggested to create a coordination secretariat to align and prevent partial actions of organizations and institutions involved in the regeneration process in Mashhad metropolis and to inform the residents of the target areas and areas in order to benefit and familiarize themselves with the regeneration programs.

**Key Words:** Future research, regeneration, macro trend, urban fabric, Mashhad city

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**Corresponding Author/ E-mail:** S.mhosseini65@yahoo.com

## Introduction

In recent decades, one of the most important interventions in urban areas is to pay attention to sustainable urban development and regeneration. Iran is one of the 10 vulnerable countries in the world against natural disasters, which according to the latest population and housing census (2015) has a population of nearly 80 million and 74% of the population is urban. Human and construction density, the construction of unsustainable buildings and the wear and tear of many buildings have caused the excessive vulnerability of Iran's urban areas, especially large cities, which has led to the re-creation of inefficient urban tissues (outskirts of cities) in clause "b" of Article 2. and worn-out textures), historical textures and rural areas are among the special topics of the sixth five-year plan of economic, social and cultural development of the Islamic Republic of Iran 2017-2021 and in paragraph a of article 59 of the mentioned program, the ministries of road and urban development and the country and municipality have been entrusted with revitalization, improvement, renovation and retrofitting and regeneration with a neighborhood-oriented approach. Also, according to the national urban regeneration plan, 1955 neighborhoods with an area of 66 thousand hectares have been considered as sustainable urban regeneration targets, which shows the great importance of urban regeneration in Iran. Mashhad metropolis is the second metropolis of Iran after Tehran, whose population has increased from 241,989 people in 1956 to 3,057,679 people in 2016. Urban regeneration in the metropolis of Mashhad due to the presence of the royal court of the 8th Imam of Shiites and, accordingly, the reception of millions of domestic and foreign pilgrims (so that 3232315 Iranian and foreign travelers in 2018 only went to hotels, apartments, and guesthouses in the city have entered Mashhad, of which 769,784 people are foreign travelers, and the presence of 69 neighborhoods under the sub-types of simply worn out, worn out and informal, only informal and historical-worn out, equivalent to 1287731 people based on the census of 2015, among the 170 neighborhoods of Mashhad metropolis, was noticed. Since regeneration is focused on solving important problems of the city, and the future cannot be imagined as a simple continuation of the past, therefore, using the approach of future research can be an effective step towards the realization of sustainable urban regeneration. Based on this, in this research, a systematic analysis and determination of drivers effective on sustainable regeneration in the city of Mashhad has been done.

## Materials and Methods

In terms of the purpose, the current research is of an applied type, which according to the nature of the research, a descriptive-analytical research method has been used in it. In this research, first by using studies and library resources (with an emphasis on documentary sources) and taking advantage of the opinions of experts and experts active in the field of regeneration, 42 variables were identified as effective parameters on sustainable urban regeneration in Mashhad (Table 1). The next step was to investigate the actual and potential relationship between the primary parameters of the research based on the cross interaction matrix method for the classification of a 42x42 matrix in the form of a questionnaire. Then, by distributing the measurement tool among experts who are familiar and active in the field of urban regeneration in the city of Mashhad (15 experts and specialists active in the field of regeneration), they were asked, according to the mutual effects matrix method and based on the type of relationship between the variables in the case of If there is no effect between two indicators, the number is zero, if there is a weak effect between two indicators, the number is one, if there is an average effect between two indicators, the number is two, if there is a strong effect between two indicators, the number is three, and if there is a potential effect between two indicators Enter the P value to determine the relationship between two research parameters. In the next step, by integrating the opinions of experts and forming a matrix of mutual effects in the future research software environment, the completeness and accuracy of the data collection tool and research findings were measured. In the next stage, by forming effect-dependency maps and direct and indirect effect-dependency matrices, it was determined how the indicators communicate and influence each other and identify driving variables in the field of regeneration in Mashhad metropolis.

## Results and Discussion

In this research, in order to investigate the actual and potential relationship between the primary parameters of the research, the matrix of mutual effects, which is generally in the form of an  $n \times n$  matrix, was used. Therefore, in this research, a 42x42 matrix was formed based on the logic of the matrix of cross-reciprocal effects. In the next step, the questionnaire of mutual effects was completed by a group of experts active in the field of recreation to determine the degree of effectiveness between research elements. Then, by forming the matrix of mutual and structural effects in Make Mac software, the relationships between the variables in the Make Mac software environment were defined and specified. The results of the preliminary analysis of the cross interaction matrix show that out of 1160 values calculated in the initial

interaction matrix by the experts, 347 cases have a strong influence, 344 cases have a medium relationship and influence, 466 cases have a weak relationship and influence, 604 cases There is no connection and effect and 3 cases have connection and potential effect. Also, in relation to this research, the saturation index is equal to 65.75 with two rotations of the data, which indicates the relatively high correlation and influence of the research variables on each other, and indicates the appropriate efficiency of the research tool.

Based on the results of the research, it can be said that the housing micro-dense variable (V1) with a score of 83 has the most influence on other sustainable urban regeneration variables. After that, the variables of lack of a comprehensive urban management system (V27) with a score of 81, weakness in the residents' demands (V32) with a score of 80, a high proportion of non-durable plaques: the age of the building, structure (V2) with a score of 76, lack of a sense of pride in Among the residents (V26) with a score of 75, the neighborhood ranks second to fifth in terms of the amount of influence in the process of sustainable urban regeneration in Mashhad. In terms of effectiveness, the results of the research showed that the housing micro-dense variable (V1) with a score of 84 has the highest effectiveness over other sustainable urban regeneration variables. After that, the variables of weakness in residents' demands (V32) with a score of 82, citizens' low knowledge and awareness of technical laws and urban planning and renovation stages (V9) with a score of 74, a high proportion of unsustainable plaques: the age of the building, structure (V2) With a score of 73 and the low credibility of the neighborhood in the minds of citizens, other regions with a score of 73 are ranked second to fifth in terms of the degree of influence in the process of sustainable urban regeneration in Mashhad. Also, the variables of inappropriate disposal of surface water (V41) with a score of 24, air pollution (V42) with a score of 24 and lack of public transport lines and stations (V20) with a score of 21 have the lowest impact in the process of sustainable urban regeneration in They have the city of Mashhad.

## Conclusion

Regeneration with the aim of all-round social, economic and urban development of inefficient, worn-out and informal neighborhoods and areas can become a platform for sustainable development at the city level. Since the first step in the realization of sustainable regeneration is to identify the factors and parameters affecting it, therefore, in this research, the factors affecting sustainable regeneration in Mashhad city have been analyzed. In general, examining the results of the research indicates instability in the status of the

studied variables in the city of Mashhad. For this purpose, the following suggestions are presented: 1- Using expert forces in local development offices; 2- Efforts to synergize the organizations and institutions involved in regeneration in order to prevent the implementation of duplicate and parallel programs in the target areas; 3- Establishing a coordination secretariat to align and prevent partial actions of organizations and institutions involved in the process of regeneration in the metropolis of Mashhad; 4- Informing the residents of the target areas and areas in order to benefit and learn about regeneration programs.

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