Criminal Policy based on Hazards Science
"A Case Study of the Floods of 2019 in Khuzestan and Shiraz"

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Introduction

The purpose of this study is to analyze the pathology of criminal policy based on the Hazards Science to the pathology of the common areas of this science with criminal law. Hazards Science of securing health against potentially dangerous events has become increasingly important in criminal sciences in general and criminal policy in particular. Lawmakers seek to address possible threats posed by some crimes as comprehensive laws for future generations and events. In this regard, the legislator seeks to delineate, with offenses and penalties, directions to reduce the potential costs of environmental offenses to individuals, and communities.

On this basis, if the concern of risk, namely the preservation and promotion of environmental and human health and the effort to take care of prenatal care, enters into the field of criminal policy, maximum protection for humans and the environment can be achieved. Recently, floods that according to experts, have been facilitated by human factors and weak regulatory measures, have increasingly demonstrated the weakness of penal regulations and criminal policy. However, based on considerations of Hazards Science, to what extent and in what dimensions can this science be considered as the underlying cause of the floods and the criminal responses appropriate to these behaviors?

The method of this study is a library with a descriptive-analytical tool while studying various sources, giving practical examples, especially in the field of recent floods in Khuzestan and Shiraz. Finally, as a result of the pathology of penal policy based on risk knowledge considerations, this discussion has the potential to arise in various aspects of criminal law, from criminalization of risky behaviors to responding to such behaviors as well as outlining the appropriate structure. In terms of science, Hazard is a strategic priority. Previous studies have shown that floods, behaviors, and failures by competent authorities play a key role in changing the environment and lack of proper decision-making have been recognized in non-criminal regulations, and acceptable responses.

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Therefore, in order to a criminal policy be efficient, fair and humane at the same time, it is necessary to use different types and amounts of penalties in predicting and enforcing criminal offenses commensurate with the variety of offenses affecting the flood, the variety of offenders, and the different conditions of the offense. Consider the core of superior criminal policy, which is to bring justice to society. Another consequence is that criminal responses should be predicted as compensatory damages to victims affected by the flood. In addition, given the subjective concern of Hazards Science in the areas of quality improvement and mitigation of potential threats to humans and the environment in the form of floods, the scientific approach to hazards and its classifications can attract experts in the field of criminal policy to develop effective systematic penal laws and strengthen their preventive practices.

Keywords: Criminal policy, Hazards Science, flood, criminalization, compensation, protection and prevention.

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Local Radio and Natural Disaster (Investigation of Khuzestan Radio Performance in Media Coverage of Nowruz 98 Flood)

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Introduction

Radio is one of the most useful means of media communication in times of crisis. Local radio stations have an even bigger impact on news and information, due to their monopoly on local news, direct access to crisis, quick access to reliable local resources, and easy access to rare and momentary information. In addition, more local citizens have access to local radio stations than anything else. Such parameters make local radio stations an essential tool for agencies in dealing with hazards and crisis management.

In the early days of Nowruz 1398, two rainfall systems within a week spanned the country's western and southwestern provinces. Given that during the first system rains, the water level in the dams of Karkheh, Dez and Karoon rivers was flooded and flooded Lorestan province, with the second wave of precipitation prediction. The most concern for the Khuzestan province was created, when there was a high probability of water overflow, rivers flooding, flooding of Khuzestan plain and so on. With this forecast, Khuzestan province entered the pre-crisis phase, when the onset of this rainstorm brought the province into crisis and declared a state of emergency. Therefore, how the crisis media management and coverage, on local radio (Khuzestan Radio) as one of the effective media during the crisis, was studied from 4 April to 21 April by qualitative content analysis method with the analytical-descriptive approach.

Flooding is one of the most complex and destructive natural phenomena that cause a lot of damage every year. [1] Most unexpected natural disasters and the need for rapid and accurate decision-making and implementation of operations provide a process and knowledge called "crisis management" that includes a set of activities before, after, and when disasters occur to reduce impacts and possible vulnerabilities of disasters [2].

Radio as a communication device has proven itself well. According to UNESCO (2013), one of the prominent features of radio is its high level of influence so that radio can affect more than 95% of the audience and it also creates a high level of trust [3].

Today, in the age of communication and information, and with the

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advancement of technology, radio has played a significant role alongside other media in crisis management [4]. Khojasteh (2005) considers the role of the media in the management and control of each crisis, especially in natural disasters, consisting of three basic stages: pre-crisis training (exposure phase), during a crisis (support and correction), and after a crisis.

Research Methods
The method used in this study is a combination of qualitative content analysis and descriptive-analytical approach. Holsty introduces content analysis, including any kind of research technique for making inferences by systematically and objectively identifying specific features of messages [5]. The qualitative content analysis emphasizes the symbolic, discursive, contextual, or narrative dimensions of media texts [6].

Qualitative content analysis methods with the inductive approach have been used to derive planning categories based on flood crisis issue in Khuzestan province.

The Statistical Society in this study was all programs of this network during the crisis period from April 4 to April 21.

Sampling Method
The purposeful sampling research is to select all the programs that cover the crisis in the target period. In this study, we used two methods of triangulation and validation by participants that are common in qualitative methods to increase validity.

Findings
A) Pre-crisis stage
In the "pre-crisis" phase, the topic of the crisis was dealt with in the form of "speaker and presenter", "news", "expert and guest", "reporting" and "public communication". Overall, the templates used at this stage did not have good timing and versatility, and they should have used other programming templates as well.

Table 1. Categories and Subcategories

pre-crisis measures									main category
attention to all areas	How to Access RadioPay	Considering the Critical Role	Communication with Other Centers	Use of New Formats	Related and Warning forms	Special Issues	Used items	information and training	Sub-issues

B) During crisis stage

The results of the studies show that the sound of the center of Khuzestan, with comprehensive coverage of the crisis, showed to its audience that it was aware of the crisis and that the audience understood the crisis and were aware of their difficulties to make effort to help them. In the "during crisis" phase, although crisis-related programs were broadcast from the center all the time, overall the templates used were not well-diversified, and they were appropriate to use other programming formats.

Table 2. Categories and Subcategories

Functions during the crisis									The main category
Pay attention to specific times	Speed of communication and type of communication	Quick notification	Paying attention to cultural heritage	Observe the principle of honesty	Special molds	Media Interactions	Fighting gossip	Comprehensive coverage	Sub categories

C) Post-crisis phase

In the "post-crisis" phase, as in the previous two stages, the templates used lacked diversity and timeliness, and report formats and roundtables had a greater share of crisis-focused programs.

Table 3. Categories and Subcategories

Post-crisis measures							The main category
Keep track of promises	Restore mental health	Holding a roundtable	Notification to reduce alarm	How to handle responsible organizations	Strengthening solidarity		Sub categories

Conclusion

The Khuzestan flood was one of the few crises in the country that had given the necessary warning to various centers a few days earlier. The media, and especially the local media, played a key and unworkable role in controlling and managing the flood. In the early moments of Khuzestan radio, however, the crisis started to take its toll and the focus was on planning.

The results indicate that Khuzestan Radio has been programmed in three stages of this study during the crisis. In the pre-crisis phase, it focused on issues such as "information and education" and "specialty allocation" and it was appropriate to "deal with other centers that have experienced this crisis and have experience in the field", "Attention to all areas of the province", "Training on how to access radio in times of crisis". In the "during the crisis" phase, the following categories of "attention to particular times", "speed of communication and type of communication", "prompt information", "observance of the principle of honesty", "media interactions", "fight against rumors" were appropriately compensated. It was also worthy of attention under the heading of "attention to cultural heritage" and in the "post-crisis" phase of this radio in paying attention to the sub-categories of "strengthening solidarity", "how to deal with responsible organizations", "restoring mental health" and "Information to Reduce Alarms" has taken a good approach.

Keywords: natural disaster, Flood, Khuzestan, Local radio.

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Investigation and Extraction of Building Demolitions due to Earthquake using High Resolution Satellite Images

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Abstract

Earthquake is one of the natural disasters that if occurs strongly in high population areas, will create great human catastrophe. Earthquake can provide considerable life and financial devastating effects, especially in urban regions. Observation of damaged buildings map is crucial for crisis management experts and helps them guide rescue teams to damaged locations in short period of time. Remote sensing and geographic information system is an efficient tool of rapid survey of condition of damaged buildings after the earthquake in urban regions. This research has been conducted with the aim of identification of demolished buildings due to earthquake by very high resolution satellite images and comparison of available efficient methods. To achieve these goals, very high resolution satellite images of Bam city, before and after the earthquake, and the observed damage map of the region were used. In this study, the best and the most appropriate textural indices were chosen after calculation of textural features of images by statistical analysis of logistic regression and correlation. Then, the condition of buildings demolition was classified by optimum obtained textural values and implementing Multilayer Perceptron (MLP) neural network systems, Adaptive Neuro-Fuzzy Inference System (ANFIS), and Support Vector Machines (SVM). Finally, the accuracy of all the presented techniques were compared with each other and the best proposed technique was selected and presented. According to the results, all the three MLP, SVM and ANFIS methods were good for classification of degrees of buildings demolition, but ANFIS method was better with 1% in overall accuracy, 4% in kappa coefficient, and 1.7% in RMSE.

Introduction

Occurrence of natural disasters, especially in urban regions, causes abundant life and financial damages. Earthquake is one of the natural disasters that if occurs strongly in high population areas, will create great human catastrophe. The rescue of people from under debris and damaged regions after the earthquake

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leads to a reduction in life losses, but this subject can have the maximum efficiency only when the fast rescue operations have plan and goal. This is one of the most important concerns of crisis management managers in every country. Buildings are among regions with the highest destruction by earthquake.

To obtain buildings demolition map, one can perform through ground operations and identification groups with high accuracy, but this needs plenty of time and requirements. Recent advances about satellites from spatial, spectral, and temporal resolution point of view and even advance in image processing areas also has provided the observation possibility of changes in target regions through image analyses. Remote sensing (RS) and Geographic Information System (GIS) is an efficient tool for fast surveillance on damaged buildings in urban regions after the earthquake.

The goal of this research is identification and extraction of buildings demolition due to earthquake by investigation of textural features of terrains in image and comparison of building demolition classification techniques and presentation of the best technique considering the study area.

Methods and Materials
The case study in this research is Bam city, one of the cities of Kerman province located in Iran country. On Friday, January 05, 2004 at 5:26 (local time) a 6.6 Richter scale and a depth of 8.5 Kilometers earthquake occurred in Bam city and lasted for 12 seconds. QuickBird satellite images with 61 centimeters resolution were used in this research. Demolition map was also utilized as a helping data (ground) for determination of location of buildings and a basis for assessment of this study that Yamazaki et al. provided this map as intersections of location and condition of degrees of buildings demolition [16].

To perform more accurate calculations, initially a pre-processing step performs on raw data before processing on images. Considering the goal of this research, buildings are required to be extracted out of images before and after the earthquake. Then, the textural features of images were extracted and the best textural descriptors for determination and identification of buildings demolition were selected by statistical methods. To achieve demolition map, there is a need to models for classification and identification of degree of demolition. In this research, three Multilayer Perceptron (MLP) Neural Network, Adaptive Neuro-Fuzzy Inference System (ANFIS), and Support Vector Machines (SVM) techniques were employed and finally an accuracy evaluation and comparison of these techniques have been done.

Discussion and conclusion
After extraction of buildings from images and calculation of textural features, mean obtained numerical values for every constituent pixels of building has been calculated for results assessment and added to building descriptive table as

a quantitative parameter and then all of the descriptors were normalized. In determination of the demolition due to earthquake by texture analysis, one can employ the assumption that the demolished areas have more irregular texture than the normal areas [8]. In this research, overall eight descriptors, including statistical first order and Haralick textural descriptors were implemented. Then, by logistic regression, the best texture was chosen that Variance, Dissimilarity, Homogeneity, and Contrast descriptors were used in identification and rehabilitation of demolished and normal buildings with the highest accuracy than the others. The models and techniques were also run by 206 educational samples and chosen textural images as the four input layers. The outputs are classification of degrees of buildings.

According to the results, by running the aforementioned models and comparison of overall accuracy, kappa coefficient, and RMSE, it has been determined that all the MLP, SVM, and ANFIS methods are similar for classification of degrees of buildings demolition, but have minor differences in accuracy, so that maybe by a look at demolition maps, the differences are not clear and there is a need to more precision. Totally, neuro-fuzzy method was better than the other two methods with 1% difference in overall accuracy, 4% in kappa coefficient and 1.7% in RMSE. However, the ANFIS method reached the first rank with minor difference. The superiority of this method can be interpreted because of combination of the neural network system and fuzzy logic concepts and simultaneously implementation of both of them.

Keywords: Earthquake, Building Demolition Map, Multilayer Perceptron (MLP) Neural Network, Adaptive Neuro-Fuzzy Inference System (ANFIS), and Support Vector Machines (SVM).

Prioritizing Different Methods for Participation and Education of People to Predict and Warning Flood in Iran

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Abstract

Flood is considered as one of the most destructive natural hazards in the world that results in a lot of costs, especially in developed countries. Therefore, dealing with this hazard and its risk, two kinds of essential actions should be applied, including structural and non-structural methods. Forecasting and flood warning techniques are effective non-structural methods that developing them is related to different methods of people participating and their educating. In this paper, these methods are prioritized based on their effects on the development of forecasting and flood warning in Iran. First, alternatives (methods of people participating and their educating) and criteria are determined. Afterwards, experts' opinions about the situation of each alternative to each criterion are collected and an appropriate decision making method is applied to rank the alternatives. Finally, the method of holding meeting with people in flood plains is ranked as the first alternative. Creating observation markers from previous occurred floods is selected as the second alternative. Visiting plants and industrial sectors in flood plains and giving necessary warnings to industrial owners, installing signs to show flood potential on the public building, paper publication in newspapers, presenting flood instructions in the form of manual, brochures, etc., trial maneuvers, face-to-face interaction, methods for distributing flood information through manuals, brochures, etc., as well as awareness advertisements on the radio, and interviewing with flood managers are ranked third, fourth, fifth, sixth, seventh, eighth, ninth, and tenth, respectively.

Introduction

In this paper, different methods about participating and educating people are ranked based on their effects on flood forecasting and its warning. Managers, usually, consider different criteria in the process of their decision-making.

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Therefore, they should apply methods known as multi-criteria decision-making (MCDM) methods [1]. These methods are applied to identify and evaluate alternative and rank them. In this paper, an appropriate MCDM method is used to prioritize different methods of participating and educating people. Method with the least negative impact on the development of forecasting and flood warning system is selected as the best alternative [2].

Materials and methods
In this research, flood occurring in Iran, from 1989 to 2018, and 1959 to 1988 are studied by a statistical survey. Afterwards, flood statistics are compared in these two periods [3]. Considering the necessity of implementing suitable flood forecasting and warning systems, these different methods should be prioritized for the development of these systems. In this paper, a suitable MCDM approach (Shannon entropy and TOPSIS) are applied to rank these alternatives [4].

Discuss and Results
After confirming the validity and reliability of the questionnaire by 15 experts, from statistical population of water resource engineers, agricultural engineers, natural resources engineers, natural disasters engineers, urban engineers and urban planners, and geomorphologists, a valid and reliable decision matrix is distributed among experts to determine the status of each alternative relative to each criterion. Afterwards, an appropriate MCDM method based on Shannon entropy and TOPSIS is applied to prioritize alternatives. Finally, the method of holding meeting with people in flood plains is ranked as the first alternative. Creating observation markers from previous occurred floods is selected as the second alternative. Visiting plants and industrial sectors in flood plains and giving necessary warnings to industrial owners, installing signs to show flood potential on the public building, paper publication in newspapers, presenting flood instructions in the form of manual, brochures, etc., trial maneuvers, face-to-face interaction, methods for distributing flood information through manuals, brochures, etc., as well as awareness advertisements on the radio, and interviewing with flood managers are ranked third, fourth, fifth, sixth, seventh, eighth, ninth, and tenth, respectively.

Conclusion
Flood is known as one of the most destructive natural hazards in the world. Therefore, it is necessary to take appropriate actions against the flood, including structural and non-structural methods. Non-structural methods are more economical and environmental friendly. Forecasting and flood warning techniques as non-structural methods should be developed in Iran that is related to people participating and their training. Therefore, prioritizing these methods based on their effects on the development of flood forecasting and flood warning

in Iran. Ranking these methods is done by appropriate MCDM method based on Shannon entropy, and TOPSIS. By applying this method, the method of holding meeting with people in flood plains is ranked as the first alternative. Creating observation markers from previous occurred floods is selected as the second alternative. Visiting plants and industrial sectors in flood plains and giving necessary warnings to industrial owners, installing signs to show flood potential on the public building, paper publication in newspapers, presenting flood instructions in the form of manual, brochures, etc., trial maneuvers, face-to-face interaction, methods for distributing flood information through manuals, brochures, etc., as well as awareness advertisements on the radio, and interviewing with flood managers are ranked third, fourth, fifth, sixth, seventh, eighth, ninth, and tenth, respectively.

Keywords: Flood, Non-structural management, Flood forecast,Flood warning, TOPSIS.

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Reducing the Flood Hazard Zone in the Kashan Plain Watershed through the Implementation of the Risk Land use Planning Scenario

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Introduction

The plains of flood rivers are among the critical points of the flood. The Kashan Plain Watershed is one of the cases that has been flooded in numerous years. There has been many economic and financial losses in the residents of this watershed. Achieving and resolving environmental management problems in the watershed scale requires an integrated approach in evaluation and management, in which the processes and all the biophysical and socio-economic effects are considered (1). In the last decade, in a comprehensive action with a subtle and flexible combination of empirical models of evaluation of capabilities, the environmental and legal support of some pioneering countries with the approval of the law required the interference of natural disasters in the context of each development program. The new horizon of the Risk land use planning paradigm was opened, and logistic link to the efficiency of the programs and realization of the multilateral goals of sustainable development, and management of its environmental hazards was accelerated drastically (2).

In recent years, several researches in the field of Flood Risk Zoning (3,4), Impact of Land Use Change on Flood Risk Area (5,6,7,8) and Effect of Intensive Use Scenario on Flood Risk Area are presented. In this study, the risk zone of flood in watershed was determined, and the new risk land use planning approach were presented based on the uses of 1985 and 2017 as a management scenario for improving the watershed.

Materials and Methods
Study Area
Kashan Plain Watershed has an area equal to 5574 square kilometers. It is

located south of Qom Plain, and Salt Lake, and south west of the mountains of Vulture, and east of sand dunes of The High-Rise rig of Kashan. The climate of the study area is classified according to the Domarten method in the lowland areas except the arid or desert climate, and in the highland areas except the semi-arid climate.

Research Methodology
Effective parameters in flood hazard zoning
There are various factors that can be effective on floods based on available data from the region; 11 effective slope percentage, elevation classes, lithological units, fault distance, distance from waterways, soil type, Stream Power Index (SPI), Topographic Wetness Index (TWI), Ground Curvature, Land Use, and Rainfall, which were selected for 1985 and 2017. Afterward, their raster maps were prepared with 30 * 30 cell dimensions.

Modeling Flood Hazard using EBF Model
The obtained weights were applied to the relevant layers. Then, using the mapping functions, the final map of flood hazard zonation was obtained.

Model Validation
A set of technical validation points (64 points, 30% of the total points) were used to validate the flood risk forecast map. The flood points were overlapped with the final map using a GIS software.

Risk Land Use Planning
In preparation of the Risk Land Use Planning, the standardization was conducted based on two fuzzy logic (0TH1) for Criteria and Boolean (0 or 1) for limitations. In the next step, the criteria and limitations were weighted according to their importance and their impact on selecting appropriate location using Analytical Hierarchy Process (AHP) method. Further, the procedure was performed by evaluation of power for 8 uses of forestry, rangeland, agriculture, aquaculture, extensive tourism, centralized tourism conservation, and rural development by combining information layers (criteria) with Weighted Linear Combination (WLC) (8).

Discussion
Flood Hazard Zoning
Finally, to prepare the flood potential map in the study area, eleven maps resulted from the GIS environment were used. The final map was classified in four different areas of potential, including low, medium, high, and very high potential zones. The results showed that from 1985 to 2017, the area of low and middle class decreased by 5.8% and 4.07%, respectively, and increased by 2.22% and 2.543% respectively. The study of Goodarzi and Fatehifar (1398) corresponds to the Azarshahr Tea watershed.

Risk Land Use Planning Map
Based on the 1985 and 2017 flood hazard maps, the high and very high floodplains cover most of the catchment area. This indicates the need to prioritize conservation use in the risk management scenario.

Conclusion

In this study, the probability map of flood risk was prepared for both 1985 and 2017 land use. Then, in order to manage the flood risk, the new approach of risk land use planning was introduced. The results show that despite decreasing rainfall from 1985 to 2017, the floods during this period especially increase around Kashan, Aran, Bidgol, and surrounding villages. This concludes that climate change adaptation-based disaster management; containment of illegal land use change in risk land use planning of Kashan Plain Watershed for sustainable development. According to the results, more dire conditions will prevail in the region in the future. Therefore, it is recommended that organizations consider strategic flood prevention plans and prioritize risk planning.

Keywords: Flood hazard, EBF model, Risk land use planning model, Kashan plain watershed.

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Temporary Housing Model Based On Grounded Theory Method
(Case Study: the City of Sarpol-e Zahab, after the November 2017 Earthquake)

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Abstract

Severe earthquakes always disrupt people's lives by damaging the residential sector. In the process of disaster resettlement, after the emergency, shelter phase in the first weeks until permanent housing usually, takes one to two years, temporary housing is needed to resettle people and return them to normal life. Despite the effective role, this period has played in the process of community recovery. In past experiences especially urban disasters, have often been neglected and accompanied by economic, social, and environmental challenges.

The purpose of this study is to present a model of temporary housing through a comprehensive and systematic view of the constituent dimensions and its influencing factors. For this purpose, with the exploratory approach, and the qualitative method of the Grounded Theory, the temporary housing process in Sarpol-e zahab was studied simultaneously during the year and a half of the November 2017 earthquake. Research data were collected through participatory observation and in-depth semi-structured interviews with 78 key informants including officials, experts, local informants, and people. Theoretical and purposeful sampling continued until theoretical saturation and data were analyzed by MaxQDA software in three stages of open, axial, and selective coding, extracting 33 axial issues and selecting the core issue as "Transitional settlement", the final model is presented.

The findings of the study indicate that the topic of post disaster temporary housing is an easy and hard issue that, despite the prevailing assumption, has many complexities. The main challenge of "temporary housing" is related to its clear definition. The use of the word "housing" restricts the subject of physical dimension, during the period. The psychological, social and economic recovery of the affected is less addressed and the term "temporary" makes it less attentional. Therefore, the model of "transitional housing" seeks to better understand it by explaining the components of temporary housing and the factors, which affecting it. From a systemic perspective, the temporary accommodation process consists of the dimensions of "policy, planning and management of transitional settlement, designing and implementing temporary

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housing, and dismantling" that affected by three categories of "disaster conditions", "context characteristics" and "Intervening systems" such as "safety culture, crisis management system, emergency and permanent housing, donors, insurance, media and economic and political pressures". According to the results, the most fundamental strategies to improve future programs are to adopt a holistic and process-based approach transitional resettlement (from emergency to permanent) and pre-disaster planning in preparation phase that can enhance recovery and resilience of the community.

Introduction
After any destructive disaster, emergency shelter is provided in the first few weeks. However, it takes more than one year the permanent housing to be prepared. So, in the meantime, "temporary housing" is provided to help people resume their life and routines. However, despite the effective role this period has played in the process of community recovery, in experiences especially urban disasters, have often been neglected and accompanied by economic, social, and environmental challenges. Researchers often attribute these challenges to the lack of pre-disaster planning and an appropriate model. Therefore, this study aims to present a temporary housing model based on the case study of Sarpol-e Zahab. Sarpol-E Zahab, located in the west of Iran, is the nearest city to the epicenter of 7.3 Richter earthquake on November 12, 2017, which suffered from 8316 residential units destroyed, and 11475 units semi-damaged. The government through two strategies of granting containers and rental assistance provided temporary housing. At the same time, large groups of charities, NGOs and some celebrities mobilized, and various plans were proposed by specialists. In addition, many affected households began to build shelters using salvaged or indigenous materials. Due to the complexity of urban issues, large number of population and tenants in Sarpol-e Zahab, the fear of frequent aftershocks, and the timeliness of reconstruction, this experience had many challenges and also worthful lessons to be learned.

Materials and Methods
Most previous studies were conducted after several years, examining a particular aspect, using deductive approach based on existing theories. Inversely, this research aims to study the subject coincidence with temporary housing period after 2017 earthquake in the city of Sarpol-e Zahab. It applied a systematic approach and qualitative-exploratory method of grounded theory, investigating from the perspective of different key informants to present the complexities of the temporary resettlement process in a model. Data were collected through extensive field studies and direct participatory observation of all temporary camps, and in-depth semi-structured interviews with 78 key persons including 13 officials, 19 experts, 40 local households, and 6 informants. The Theoretical

sampling was done purposefully, and ended with theoretical saturation. The process of data analysis was done by MaxQDA software in three stages of open, axial, and selective coding, extracting 33 axial issues and selecting the core issue as "Transitional settlement", the final model presented (Fig.1). To achieve the reliability of research, audit techniques and continuous data comparisons were used during investigation and analysis. In addition, procedures and contents were shared with some participants and experts to be reviewed, controlled and refined.

Discus and Results

The finding argues that the issue of "temporary housing" is an easy and complicated issue, and unlike the prevailing notion, it is not merely about providing a shelter, but there are many factors to address. The basic challenge seems to be related to its clear definition. The use of term of "housing" has often limited it to provision a house, and less attention has been given to psychological, social, and economic recovery of affected community. On the other hand, the word "temporary" makes this step inessential, as unlike emergency and permanent housing, it has not been addressed in the system of policy-making, planning and post disaster housing. While, based on findings, the temporary housing process is comprised of different components of "policy-making, strategies, financial aspect, allocation management, relocation, planning and design of temporary settlements, providing temporary housing, services and infrastructure, and dismantling". In addition, it is affected by three categories of factors: "disaster conditions", "contextual characteristics" and "intervening systems".
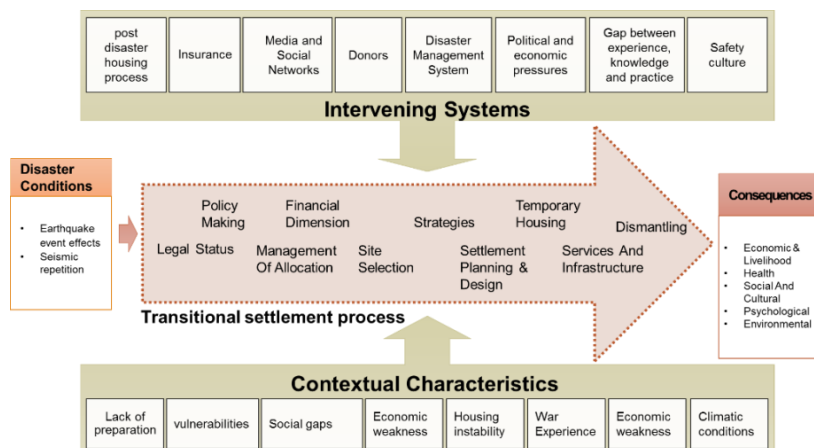

Fig. 1. Grounded Model of Transitional Settlement (Authors, 2019)

Conclusion

The concept of "transitional settlement" aims to emphasize the need to shift from temporary housing to residential complexes including housing, services and infrastructure, public spaces, and the diverse and changing needs of affected community during transitional period. The concept of "settlement" encompasses both strategies through management (such as granting rent assistants) and engineering (such as housing provision) for transitional housing. The word "transitional" also emphasizes the interrelationship between emergency, temporary and permanent resettlement measures. Based on findings, the most important suggestions to improve future plans are adopting a holistic and process-based approach to the issue of post disaster resettlement (from emergency shelter to permanent housing) and pre-disaster planning in the preparedness phase in order to promote community recovery and resilience.

Keywords: Temporary Housing, Temporary Housing, Transitional Settlement, Post-Disaster Resettlement, Sarpol-e Zahab.

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