International Journal of Innovation in Agriculture Sciences and Rural Development
Vol.5, NO.3 , P:1-9
Received: 19 September 2025
Accepted: 03 April 2026

Developing a structural behavioral theory of urban flood crisis management[1]

[1]**Karamatolla Ziari**
[1]Professor of the Department of Geography and Planning, Faculty of Geography, University of Tehran
[2]**Seyyed Abbas Rajaei**
[2]Associate Professor, Department of Geography and Planning, Faculty of Geography, University of Tehran
[3]**Rasoul Darab Khani**
[3]PhD in Geography and Urban Planning, University of Tehran

abstract
The consequences of floods are one of the heaviest losses caused by natural disasters. The source of floods is natural factors such as heavy rainfall, accumulation of water flow, human factors such as closing water channels, clogging of drainage channels, improper land use and deforestation in floodplain areas. Flood losses are also generally divided into two categories: financial and human. If we want to manage the urban flood crisis To be successful, we must accept the existing realities of each location and, based on the natural, social, economic, cultural, and managerial realities of each urban location, conduct relevant studies using selected methods. Before selecting a method, we must review and present the relevant academic and supporting theory. If the selected research areas, have similar characteristics, the presented theory can be easily generalized. The present study has been prepared and organized with the aim of providing a suitable theory for improving urban flood crisis management. The research output indicates that using natural, social, economic and managerial indicators for the case study and the case city The research can be carried out by developing structural behavioral theories and using the selected method to arrive at the flood crisis management model of the studied city, and the aforementioned theory can be used as a supporting theory for the research.

Keywords: Flood, Crisis Management, Behavioral School, Structural School, Realism

Introduction

Natural disasters cause changes in environmental conditions, changes that disrupt people's lives, have devastating effects on settlements, and impose extensive economic, social, and environmental damage on societies. The important point in this regard is to adopt measures and strategies to reduce possible damage. According to Weichselgartner, disaster occurs within society, not within the environment, and is referred to as an obstacle to development (Weichselgartner, 2001). From a theoretical perspective, a sustainable society has the ability to withstand extreme geophysical processes and recover quickly after their occurrence. Therefore, sustainability relies on careful planning and organization of community capacities, which helps both to correct and improve the effects of disasters and to facilitate the recovery processes afterwards. A comprehensive planning approach should consider mitigation strategies to reduce risk and exposure, post-disaster plans to promote short- and long-term recovery, and a careful examination of the structural and cognitive factors that influence the effectiveness of programs (Tobin, 1999). The destruction of people's sources of income, living facilities, and centers of activity leads to increased economic and physical damage. In addition, natural disasters directly affect social welfare by destroying infrastructure and public property and disrupting the normal functioning of society (Yodmani, 2000).

The techniques used in crisis management can be divided into the following categories:

A- Preventive techniques: From a macro-strategic perspective, in implementing reactive functions, crisis response strategies must be designed and implemented in a way that prevents the occurrence of repeated incidents and the emergence of related contexts (Aron, 1985: 33). Scientists in advanced countries are always thinking of theoretical and practical measures to engineer a safe society with a low crisis-generating coefficient. B- Combined techniques: Some advanced countries have adopted a combination of different techniques at different stages of a crisis. These countries have considered crisis management in three specific stages:

[1] Responsible author of the article; This article is taken from Rasoul Darabkhani's doctoral thesis entitled "Presenting a Model for Urban Flood Crisis Management in Ilam", University of Tehran (Kish International Campus).

International Journal of Innovation in Agriculture Sciences and Rural Development
Vol.5, NO.3 , P:1-9
Received: 19 September 2025
Accepted: 03 April 2026

- Before the crisis (determining and predicting the focus of the crisis, corrective measures to prevent the crisis from occurring, identifying crisis points or solving specific problems).
- During a crisis (taking additional measures, coordinating relevant organizations, creating parallel flows, neutralizing special threats).
- After the crisis (compilation of experiences, etc.) (Moghimi, 2015).

It can be safely said that flooding in Iran is a widespread phenomenon, and almost all regions of the country have directly or indirectly experienced some kind of damage caused by it. Of course, what is certain is that in the past, the frequency of flooding was much less than it is now, and fewer cities and villages were affected by it have been a problem. On the other hand, the severe destruction of the natural environment and the development of population centers indicate that in any case, the frequency of floods and the number of flood-prone areas are on the rise, and in the absence of a plan,

Planning and implementing infrastructure projects to solve the root cause of flooding, this issue has become a bigger problem year after year and finding a solution will be more difficult. Due to the lack of a centralized flood information bank, the relevant statistics and figures are not up to date, and obtaining new statistics from some devices, due to the change of managers, is sometimes difficult. It is very difficult. The purpose of reviewing the statistics, in any case, is to emphasize the importance of the subject collected in this section. Of the total of 934 consecutive flood events from 1972 to 1996, 113 were of very important importance, 124 were of important importance, 198 were of moderate importance, and 499 were of ordinary importance. Fars Province suffered the most financial losses with a financial loss of $342.3 million, and Tehran Province suffered the most human losses with 398 people. Also, there were 13 floods in Ilam Province during the mentioned years, which resulted in $12.7 million in damage and 14 deaths (Ministry of Manpower, 2016). Also, the flood of 2015 caused about 6 trillion rials in damage and the death of 7 Elamite citizens. (Ilam Red Crescent Society, 2015) The city of Ilam is located in a mountainous plain and is surrounded by highlands. This has limited the physical development of the city. On the other hand, with a brief look at the city's development stages and the flood risk zoning map, it can be said that the city's horizontal development directions are inappropriate and it is a flood-prone city. For this reason, it has incurred costs and losses over the past years. Therefore, with Considering the statistics of damage and casualties from floods in previous years, it can be said that the current state of flood crisis management in Ilam city is completely traditional. Research has been conducted on flood crisis management and the current issue, some of which are mentioned below:

Schnabel et al. (2014) in an article titled; Common measures in the structural approach to dealing with floods, referring to several European case studies, have examined the existing structural measures to cope with flood events in a number of cities along the Danube River. Finally, suggestions are provided for improving flood risk management in flood-prone areas (Schnabl, 2014).

Ogier, Adam, and Perez (2019) in an article titled: Investigating a structural approach to flood management in coastal metropolises in developing countries; the research results indicate that the following should be prioritized for research: new ways to exploit the large and growing CMDN population, designing quantitative techniques for Identifying and minimizing the consequences of slums on flood control outcomes, defining theoretical perspectives on flood management in CMDN, and conducting case studies to evaluate empirical methods and validate proposed theories (Ogie and Perez, 2019).

Ziari et al. (2024); In the article Analysis and Pathology of Flood Crisis Management in Ilam City, the identification of the current status of flood crisis management in Ilam City has been examined in three stages before, during, and after the event; According to the opinions of specialists and experts, the urban flood crisis management of Ilam has had an undesirable situation in the three mentioned stages. According to the results of the analysis of the data obtained from the quantitative and qualitative sections of the article, it can be concluded that according to the opinions of the respondents in both the qualitative and

International Journal of Innovation in Agriculture Sciences and Rural Development
Vol.5, NO.3 , P:1-9
Received: 19 September 2025
Accepted: 03 April 2026

quantitative sections, the situation of the crisis management system The flood situation in Ilam city is unfavorable in three stages (before the crisis, during the crisis, and after the crisis). These results indicate that the measures taken in this regard are partial measures and the status of the Ilam urban flood crisis management system is based on traditional models and lacks an appropriate scientific model. Therefore, the results confirm the supporting theory of the article (traditional perspective on crisis management(Ziari et al,2024)

Ziari et al(2023); In an article examining the flood crisis management of Ilam city in the current situation, they have come to present a suitable model of flood crisis management to reduce the effects of urban floods. The aforementioned research is of an applied type and its research method is based on the futures research method. Investigating the status of urbanization and development The city of Ilam and its effects through the method of futurism and the Ed Wizard scenario; data related to the crisis management model was collected through questionnaires and in-depth interviews with experts and specialists. The results of the studies show that urban planning and especially urban management during the periods in question have not been able to provide proper supervision over Physical development of the city and preservation of the river's privacy in the city. On the other hand, the structural measures of urban management in creating urban canals and waterways show that executive plans with appropriate studies on flooding in the city of Ilam have not occurred. Therefore, using the MigMac software, 36 key factors affecting the current state of crisis management The flood in Ilam city was extracted and scored, and considering these factors, an appropriate crisis management model for Ilam city was presented as an example of the less developed cities of Iran. Now, considering a general description of the current state of flood crisis management in Ilam city, the present study aims to present, among the theories and perspectives related to crisis management, a perspective and theory that is appropriate to the natural, social, economic, and managerial conditions of Ilam city(Ziari et al 1402).

Behavioral and structural theory

Among the first responses to the Flood Control Act of 1936 was the authorization of state agencies to cooperate in financing and reviewing plans for approved projects. The New York State Congress in 1936 created a special flood control ordinance, and in the same year Pennsylvania allocated funds for use by the Department of Forests and Waters. The Flood Control Act of 1936 abruptly halted many census activities. Cooperation in reservoir construction ceased, except in New York, where the state continued to acquire land on behalf of the federal government, and in that case the remaining cooperation in land surface and canal improvements was simply administered by municipalities and counties without the participation of census agencies. From 1917, federal activities expanded slowly until 1936, when the National Policy of Federal Assistance was established. The policy initially encouraged state and international agencies to provide flood protection, but in 1938 this trend was reversed, and federal responsibility for all flood protection programs, including reservoirs, was extended. Early efforts within the country placed great emphasis on identifying the benefits of flood protection and assessing the costs, as interest peaked during the rapid drainage and development of the region in the first two decades or so of the 20th century. Federal surveys prior to the 1930s paid little attention to cost-benefit analysis. Beginning in Much more detailed studies of these factors were conducted in the 1930s, and the trend is now toward greater detail and precision. Despite these and many other changes in policies regarding public assistance for flood protection, the basic approach has remained essentially the same. "Is flood protection permissible?" is the question. Throughout the entire period under review, public actions have expanded in response to the gradual expansion of the flood threat. The flood problem has four basic elements. These are: (1) flood hazard, (2) environmental characteristics of the floodplain, (3) human occupancy of the floodplain, and (4) the adjustment of human occupancy to flood hazard. Each of these There are some cases in every flood problem, its nature. To achieve a satisfactory solution to such problems, each one must be considered

International Journal of Innovation in Agriculture Sciences and Rural Development
Vol.5, NO.3 , P:1-9
Received: 19 September 2025
Accepted: 03 April 2026

(Moghimi, 2015). Behavioral rotation has three main theoretical foundations. First, citizens' motivation to take adaptive measures that they can understand well. Second, individual adaptive measures and actions that are effective in reducing flood risk, and third, individuals who have the necessary capacities to implement these measures and actions. In our view, if these three assumptions are If they are not sustained, the household fails to reduce risk and, as a result, the behavioral shift cannot create new patterns and adequately reinforce existing patterns. With these interpretations, the argument of scientists (including geographers, psychologists, sociologists, economists, engineers, and environmental experts) is that the behavioral shift and the problems Its sub-set should be the subject of more and more new research and studies. To begin this discussion, we first turn to a concept that scientists call "intellectual catchments," which is defined as "areas that scientists consider their own domain and in which they collect data, apply methods, or refer to theoretical models." Each of these intellectual catchments reflects This is one of the three hypotheses we have outlined earlier. Psychologists and other experts in human behavior focus on socio-psychological factors when estimating the extent of adaptation measures (hypothesis 1). Economists, engineers, and quantitative risk analysts look at the range of flood impacts and try to narrow this range. Their effort is to quantify the effectiveness and efficiency of adaptation measures at the household level. is estimated (Hypothesis 2). Human geographers and sociologists also seek to answer the question of whether individuals have the necessary capacities to adapt and cope with the consequences of floods (Hypothesis 3). Each of the thought-provoking frameworks is composed of a series of different assumptions, theories, and methods. Our attempt is to estimate In each of these thought-provoking areas, to what extent does the empirical evidence support the hypotheses put forward? So, we will start with studies that have an empirical basis, leaving aside for now those studies that are mainly based on modeling. The following are the scientific limitations for each of the thought-provoking areas. We highlight and offer suggestions for future research. This area of thought focuses on identifying factors that shape people's motivations to engage in adaptive behaviors. We use the term "adaptive behavior" to refer to actions that aim to prevent or minimize the consequences of flood disasters. We use.

Such actions can be taken before, during, and after a flood (Kuhlicke, 2019). Structuralism in geography has existed more as a regenerative concept of enthusiastic critics than as a distinct and complex school of thought. However, for some time in the late 1970s and In the early 1980s the pace of change increased, the interaction between geography and social theory intensified, and, not coincidentally, a disintegration appeared in what still remained a relatively coherent landscape. The ideas of structuration theory, realism, and locality, to which many geographers turned, usually came from points outside the discipline. were entering, but political-economic geographers quickly began to create new twists, apply them differently, and then add new dimensions. The quality of theoretical discourse became a hot topic as space and environment increased. In many ways, the conflict between different positions that emerged in the 1980s, It was an essential part of improving the intellectual product in an age when people began to listen. With the impetus that structural theory provided, the discussion of structure and representation could not remain at the level of individual agency. It had to move towards an analysis of social structure, and in particular how the institutions that Their purpose is to enforce a particular order and a particular vision of social reality. There is no doubt that the reproduction of capitalism involves the coercive good of coercion aimed at enforcing worker discipline. It is also undeniable that many state institutions and civil society transmit several strands of capitalism as one of their functions: production, reproduction, consumption, etc. Rather, it suggests that capitalist modes of reproduction in these institutions are less direct than previously thought, leaving a number of social relations relatively intact and creating a variety of sites from which it is possible to generate opposition and change. Beyond this, processes The means by which capitalist reproduction is ensured are not only negative constraints, but processes in which individuals participate positively. They

International Journal of Innovation in Agriculture Sciences and Rural Development
Vol.5, NO.3 , P:1-9
Received: 19 September 2025
Accepted: 03 April 2026

are based on consent as well as coercion. This theory challenges the behaviorist school on several key points:

1- The disasters that occur frequently in poor countries are increasingly related to the fact that they require continuous responses and reactions and must always be fought against, and these countries are limited due to the lack of sufficient resources in this fight and in responding appropriately to it.

2- There is a claim and comment that the victims of a disaster are not at fault for the misfortunes and misfortunes that befall them, that they necessarily either lack sufficient understanding of the disaster or engage in unreasonable and irrational behavior. They will not have the necessary time to immediately deal with the disaster and sufficient resources to repair the damage caused by the disaster.

3- In this perspective, it is believed that when a disaster causes harm, compensating for it and giving conventional responses exacerbates underdevelopment and contributes to backwardness and isolation (Moghimi, 2015).

Research method

The type of basic-applied research and its method of investigation is descriptive-analytic. One of the most important goals of researchers and their research is to examine and evaluate theories. A number of scientific researches are conducted with the aim of testing theories so that if they are successful, their foundations become stronger. The present research is in this direction and with a descriptive method.The analysis has collected relevant sources and documents in line with structural behavioral theories. Using library and documentary methods and by browsing existing texts and sources, relevant materials in this field have been compiled.

Developing a structural behavioral theory of urban flood crisis management

It can be said that in order to optimally manage the different stages of a disaster, various approaches are used, which can be basically classified into two groups: the developmental or community-based approach and the traditional or support approach. The approach that has received attention in recent years is the developmental or community-based approach. In this The approach aims to increase the ability of society to adapt to the harmful consequences of hazards by building capacity and empowering members of society, and by attracting participation in taking measures that lead to risk reduction, to increase the ability of society to prevent, confront, and deal with disasters, and ultimately return to the initial state gave(March, 2001:5-7). The use of a community-based approach to disasters began in Southeast Asian countries over the past two decades. The pioneers of this approach were non-governmental organizations, institutions Humanitarian and government organizations have been responsible in various countries in the region. Another approach, which is referred to as the traditional or logistical approach due to the presence of a central support system, uses a command and control approach in all stages of disaster management, especially in the response phase. In this approach With a hierarchical top-down organizational structure, there is little use of stakeholder participation in the community. Relevant studies indicate that the aforementioned approach, due to the lack of participatory elements, leads to failure in prevention, preparedness, and response that is disproportionate to basic needs. In addition, due to the implementation of unnecessary and overlooked programs and measures, the opinions of members of society have led to dissatisfaction with the performance of the responsible organizations. (Wilimott, 1989) Considering the shortcomings and limitations of the traditional approach, it seems that the community-based approach is more applicable in disaster management. The use of this approach allows for bottom-up organization that is coordinated and parallel with The hierarchical approach works from top to bottom, identifying problems and challenges, and by involving local communities in analyzing the current situation, identifying environmental hazards, determining the level of vulnerability, and engaging them in various stages of disaster management, the community's existing capabilities and capacities are increased. Furthermore, in the event of a disaster, the aforementioned approach utilizes the facilities and resources of the affected community and their cooperation to return to the previous situation, and in this way, local communities not only become creators of part of

International Journal of Innovation in Agriculture Sciences and Rural Development
Vol.5, NO.3 , P:1-9
Received: 19 September 2025
Accepted: 03 April 2026

the plan, but also become involved in making important decisions and implementing them. (Abarquez, 2004). Today, researchers must adopt a realistic approach based on real-life scenarios and general conditions and an honest perspective so that policy and planning guidelines are achievable. If models are presented based on the existing reality of societies, the path towards the formation of predictable theories with practical applications is paved.

Incorrect assumptions are considered as an obstacle to the process of change, and the task of theorists is to anticipate fundamental distinctions among ideas, concepts, or principles that can be used to identify real resources and use them in the process of theory development. Individuals and societies (developed, developing, and underdeveloped) with They are different from each other, and it can be said that the dimensions and causes of urban floods and the vulnerabilities caused by them, the crisis management system, and the flood crisis management patterns are different in them and vary from one society to another. The amount of damage and casualties caused by urban floods in developing countries is very high, and the reasons for this are almost the same in these countries. Our country (Iran) is one of the developing countries, and it can be said that it has almost the same conditions in terms of managing the urban flood crisis as other societies in third world countries. Therefore, we need to carefully examine a wide range of dimensions, systems, and patterns of urban flood crisis management in different communities. Once this initial step is taken, theoretical progress can be promoted and, using previous studies conducted in different communities, a tailored theory can be presented to improve urban flood crisis management based on real-life scenarios and the overall conditions of the city in question. According to the behavioral school; the extent of damage and casualties caused by floods depends primarily on nature; overgrazing of livestock, cutting of trees, loss of vegetation and other natural factors play a major role in the damage and casualties caused by floods. In the aforementioned school, flood control, planning and implementation using various methods (management, construction and non-construction) are considered. Therefore, with emphasis on this school Natural, physical, and management indicators and related variables can be selected to present a flood crisis management model for the city under study and with the selected method (Table 1). Structural school; human-centered school and It is social. In this school, the increase in disasters caused by floods in cities of less developed countries is mostly due to the lack of attention of officials and managers to the poor and low-income groups. The growth of poverty in these countries makes the citizens of the cities of the mentioned countries more vulnerable to floods; thus, poverty causes the citizens of the cities of these countries to live in unfavorable urban areas (areas that are highly vulnerable to floods). (which has flood risks) for residence and house building. Therefore, in times of floods, they suffer great losses and casualties. The officials and managers of these countries also do not have a specific response, reaction, or action to manage the crisis in times of the aforementioned crises. Since the underdevelopment of these countries is not fleeting and temporary, and It can be said that it is permanent and this intensifies the underdevelopment of these countries. Among the reasons for not confronting the aforementioned crises, we can mention the inappropriate science and technology and its poverty in third world countries. As mentioned, the structural school is a human-centered school, so by emphasizing this school, social, economic indicators and relevant variables can be used to present a model for managing the flood crisis of the city in question. The study selected (Table 1). According to the above, the theory used in the present study can be called the behavioral and structural theory of urban flood crisis management, because it has been developed based on the facts of how to deal with flood crisis management in the city under study (attitudes and actions).

International Journal of Innovation in Agriculture Sciences and Rural Development
Vol.5, NO.3 , P:1-9
Received: 19 September 2025
Accepted: 03 April 2026

Table 1 - Examination of the status of behavioral and structural schools in terms of dealing with floods

Theory	type of attitude	Theoretical framework (objective)	method	Indicator
behavioral	nature oriented	Flood control planning and implementation	Management Construction Non-construction	Natural Physical Management
structural	Human-centered (social)	Increasing capacity and ability to reduce vulnerability	Increasing capacity and ability to reduce vulnerability	Social Cultural Economic

References: 1- Nojavan, 2016 2- Moqimi, 2015 3- Authors' inferences

Table 1- Examining the situation of behavioral and structural schools in terms of dealing with floods

International Journal of Innovation in Agriculture Sciences and Rural Development
Vol.5, NO.3 , P:1-9
Received: 19 September 2025
Accepted: 03 April 2026

conclusion

There are many theories and much research in the field of flood crisis management. In the work of abstract theorists, more attention should be paid to how abstract theory can be applied to possible situations. This, in turn, has led to a more precise formulation of theory by realists, who The aim is to capture the causal powers of natural, social, economic, and managerial relationships in a wide range of situations. Perhaps the greatest impact of realism has been in promoting the thoughtful conduct of empirical research. Approach Realism deals with the assessment of what is possible. Therefore, empirical and case studies and research should be based on existing, innovative, synthetic or compiled realistic theories. ran is a developing country and it can be said that it has almost the same conditions in terms of urban flood crisis management as other third world countries. Therefore, we need to carefully examine a wide range of dimensions, systems and patterns of urban flood crisis management in different societies. When this initial step is taken, theoretical progress can be promoted and using previous studies Conducted in different communities, the appropriate theory was presented to improve urban flood crisis management based on real-life scenarios and the general conditions of the city in question. Accordingly, and considering the materials mentioned in the text of the article; the research output indicates that if a researcher wants to present a flood crisis management model for the city under study, he can do so by recognizing the realities of natural, social, economic, managerial indicators, etc. The city under study uses the structural behavioral theory of urban flood crisis management as the supporting theory for its research.

Sources

1- Aron, Rimov, 1985, Basic Stages of Thought in Sociology, translated by Baqer Parham, Tehran, Joint Stock Company Publishing House.

2- Ilam Province Red Crescent Society; Detailed report on Ilam flood, 2015

3-Kate Smith; Environmental Hazards, translated by Ebrahim Moghimi, Samt Publications, 2015

4-Ziari, Karametollah, Rajaee, Seyed Abbas, Darabkhani, Rasoul (2023); Ilam Urban Flood Crisis Management Model, Journal of Sustainable Development of Geographic Environment, Year 5, No. 9, pp. 72-89,

5-Ziari, Karamatollah, Rajaee, Seyed Abbas, Darabkhani, Rasoul (2024); Analysis and Pathology of Ilam Urban Flood Crisis Management, Safe City Journal, Volume 7, Issue 2, Serial Number 26,

6- Ministry of Power, Deputy of Water and Water Resources Affairs, Office of Technical Standards for Social and Environmental Engineering, Water and Water Resources (2016), Introduction to the Development of an Operational Plan for Flood Crisis Management, Plan for Preparing the Rules and Criteria for the Country's Water Industry, Publication No. 160

7- Nojvan, Mehdi; Salehi, Ismail; Omidvar, Babak; Fariyadi, Shahrzad 2016, Analysis of the theoretical approach to natural disaster management in Iran using the concept of meta-analysis, Quarterly Journal of Environmental Science and Technology 15-1

8- Abarquez, I. and Murshed, Z. (2004). Community-Based Disaster Risk

9-Christian Kuhlicke, Sebastian Seebauer, Paul Hudson, Chloe Begg, Philip Bubeck, Cordula Dittmer, Torsten Grothmann, Anna Heidenreich, Heidi Kreibich, Daniel F. Lorenz, Torsten Masson, Jessica Reiter, Thomas Thaler, Annegret H. Thieken, Sebastian Bamberg,2019, The behavioral turn in flood risk management, its assumptions and potential implications 2019, Austrian Climate Research Program, DOI: 10.1002/wat2.1418

10- March, G. (2001). Community: the concept of community in the risk and emergency management context. Australian Journal of Emergency Management. Vol 16 (1): 5-7. file:///C:/Users/A/Downloads/AJEM-16-01-02.pdf

11-R.I. Ogie, C. Adam & P. Perez,2019, A review of structural approach to flood management in coastal megacities of developing nations: current research and future directions, Journal of Environmental Planning and Management, DOI: 10.1080/09640568.2018.1547693

12-S. Schnabl - Mitja Brilly - Andrej Kryzanowski - Simon Rusjan,2014, Review Article: Structural flood-protection measures referring to several European case studies,

Natural Hazards and Earth System Sciences, DOI: 10.5194/nhess-14-135-2014
13- Tobin, Gham A. (1999). Sustainability And Community Resilience: The Holy Grail Of Hazards Planing ? Environmental Hazards 1: 13-25. https://www.sciencedirect.com/science/article/abs/pii/S1464286799000029?via%3Dihubhttps://doi.org/10.1016/S1464-2867(99)00002-9
14-weichselgartner , J.(2001), Disaster Miitigatioon : The Concept of vulnerability Revisted, Disaster Prevention and management, volume 10,Number 2,Pp85-94, DOI:10.1108/09653560110388609
15- Wilimott, P. (1989). Community Initiatives Patterns and Prospects. Policy Studies Institute, London.
16- Yodmani , S (2000),Disaster Risk Management and Vulnerability Reduction : Protecting the Poor : Paper Presented at The Asia and Pacific Forum on Poverty Organized by the Asian Development Bank,2000,8, https://www.adpc.net/V2007/IKM/ONLINE%20DOCUMENTS/downloads/PovertyPaper.pdf