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THE IMPORTANCE OF INTRAURBAN STRUCTURES OF THE ROMANIAN CITIES FOR CRISIS AND EMERGENCY SITUATIONS MANAGEMENT

Ioan IANOŞ*
Andreea-Loreta CEPOIU*

Abstract: The basic hypothesis of the study is that intra-urban structures have an important role not only in the occurrence of emergency and crisis situations, but especially in their management. Given the growing complexity of internal structure of cities through processes of permanent complication, the need for conjugating the modernization, rehabilitation and regeneration plans with contingency plans for emergency situations appears. Romanian cities' experiences show that chaotic interventions in urban structures make the management of extreme situations difficult. Therefore, the decision makers must work together with specialists from different fields when implementing local urban development policies. In such a context, the main steps in emergency and crisis situations management as well as the feedback's importance for the future are individualized. For nearing the site of the rapid intervention forces should not be omitted the outskirts or the suburban areas, sometimes more convenient in terms of accessibility for vulnerable urban areas.

Keywords: intra-urban structure, emergency situation, crisis, management, Romania

1. INTRODUCTION

The increase in the territorial complexity, in the context of over saturation of urban environment, makes difficult both the timely detection of occurring failures and the individualization of the pre-crisis situations, as well as the academic analysis of the dynamics of these spaces. If the numerous case studies undertaken on urban environments were related directly or indirectly to the risks and natural or anthropogenic events (Bălteanu D., Alexe Rădița, 2001; Grecu Florina, 2006; Sorocovschi V., 2003; Surdeanu V., Sorocovschi V., 2004), we have proposed emphasising the importance of intra-urban structures in terms of emergency situations and pressing crises.

Such an analysis has not been undertaken so far in the Romanian geographical literature, considered to be under other components of urban space. However, we believe that the structure of a city, especially of large ones, should consider avoiding the appearance of emergency situations and crises that could cause serious damage and human casualties, but also the early intervention in the case of their occurrence. Such a vision must be clearly translated into the general urban planning, which is the instrument of short and medium term development of any city. In this respect, city zoning by establishing areas with distinct functions, ensuring from the start a direct

* University of Bucharest, The Interdisciplinary Center for Advanced Researches on Territorial Dynamics (C.I.C.A.D.I.T), Regina Elisabeta 4-12, Bucureşti, e-mail: office@cicadit.ro

accessibility and also alternatives to reach any point of the urban space, as well as the avoidance of the incompatibilities are a matter of efficient intra-urban structuring.

The case of Bucharest, where the street networks modernization is chaotic, without taking into consideration the event of emergency situations or crises, created and will always create big problems to those who have to intervene in such situations. The lack of direct cooperation between the Street Administration and the Inspectorate for emergency situations can be catastrophic for some urban areas. Moreover, the present paper aims to demonstrate the need for collaboration of all local institutions of any city, especially in the case of cities with over 2 million inhabitants.

2. URBAN CRISES AND EMERGENCIES - GENERAL CHARACTERISTICS

Crisis and emergency situations management is a dynamic process that begins long before a critical event erupts and continues for a period of time after the event ended. This process can be divided into three stages: a proactive one during which measures are taken to minimize the chances of producing a crisis, a reactive one, meaning the direct intervention to keep to a minimum the effects of a crisis / disaster and the third, reflective, leading to the individualization of the mistakes in the intervention process and to improve the alarm-warning and intervention systems. Each of these steps has different characteristics, assuming different approaches from those who manage urban dynamics and urban development processes.

Since crises result most often from the operation of known factors, other than in the case of an unpredictable event, a situation that causes catastrophic nature events or property damage can be often identified before. Consequently, the management must be operated before, during and after the crisis in close correlation with the stages mentioned above.

In terms of their genesis, crises are divided into two categories, natural crises (originating in various natural disasters, epidemics, etc...) and anthropogenic crisis (explosions, conflicts, terrorist attacks etc...). Crises are not always based on the occurrence of an emergency and do not necessarily represent an imminent threat to man or his property. An emergency situation may degenerate into crisis unless a timely intervention is made to remove the elements that could increase the crisis. A perverse form of crises generation from emergency situations is known through the intervention of some interest groups or media. Frequently, especially in anthropogenic crises, a crisis could occur from the excess of zeal of the authorities having oppressive, discriminatory or asymmetric interventions, relative to its initial shape.

In principle, all the activities carried out over a critical threshold are likely to generate emergency situations such as crisis. Addressing these urgent or crisis situations is a process with differential degrees of complexity, compared to the potentially affected mass, but while it was detected. In general, four main steps can be individualized at the level of such actions, seeking crisis and emergency situations management (Fig. 1).

A first step is to mitigate the amplifying effects of an emergency or crisis situation and to increase the intake of the blocking ones. The interest is that its solution is long a term one, therefore, even if on short-term the strategy of rapid removal of the imminent "outbreak" is adopted, no compromises should be made to block, alleviate or remove them on long and ultra-long term.

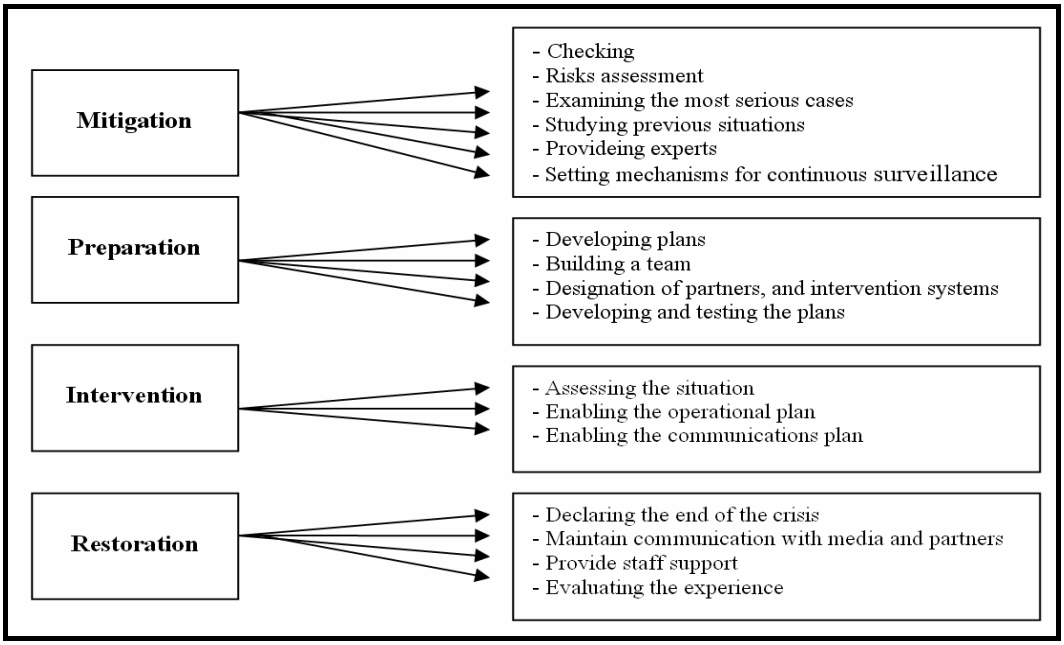

Fig. 1 Model of the management of emergencies and crisis process
***Source*:** La gestion des crises et des situations d'urgence:
Un guide pour les gestionnaires de la Fonction publique du Canada, 2003

The second step is to prepare for an effective intervention when a crisis or emergency situation occurs. In this respect, risk awareness is essential in relation to which the possible forms of its realization must be detected and anticipated.

The third stage is the intervention itself. This involves actions taken to keep at a minimum the period of outburst and the consequences of the emergencies and crises that arise. The resources allocated to resolving them should be permanently accessible and the instruments of intervention should be immediately functional.

The last step is to restore the initial situation or to create a more performant one in terms of socio-economic efficiency. This step may require renouncing certain structures, which proved to be the cause or helped spread these events, but also building new structures with high stability and efficiency.

The specialized literature provides several models for managing emergencies and crisis, especially in the last year. Such a model could be the one that can manage conflict situations, starting from the idea that a conflict could degenerate into a major crisis. According to this model (Iano I., 2004), the next steps could be individualized (Fig. no. 2):

a) The identification of the dysfunction, which requires some experience in the field and

b) the ability to select the dysfunctions with great chances for the generation of major events.

c) The individualization of the set of measures and conscious intervention to reduce the chances that a major failure to turn into an emergency and, further, or directly into crisis;

d) Risk awareness (anticipation and memory) of a crisis;

e) The preparation of the framework and specific tools for rapid and effective intervention on the arising moment and during the crisis and the simulation of the responses of populations, of special forces and decision makers in the event of a crisis;
f) The intervention itself;
g) Monitoring the post-crisis evolution, in order to mitigate at a minimum its consequences;
h) Studying the entire complex of events and interventions to increase the efficiency of the activities that prevent similar crises and the measures and intervention activities when the crisis reached its climax.

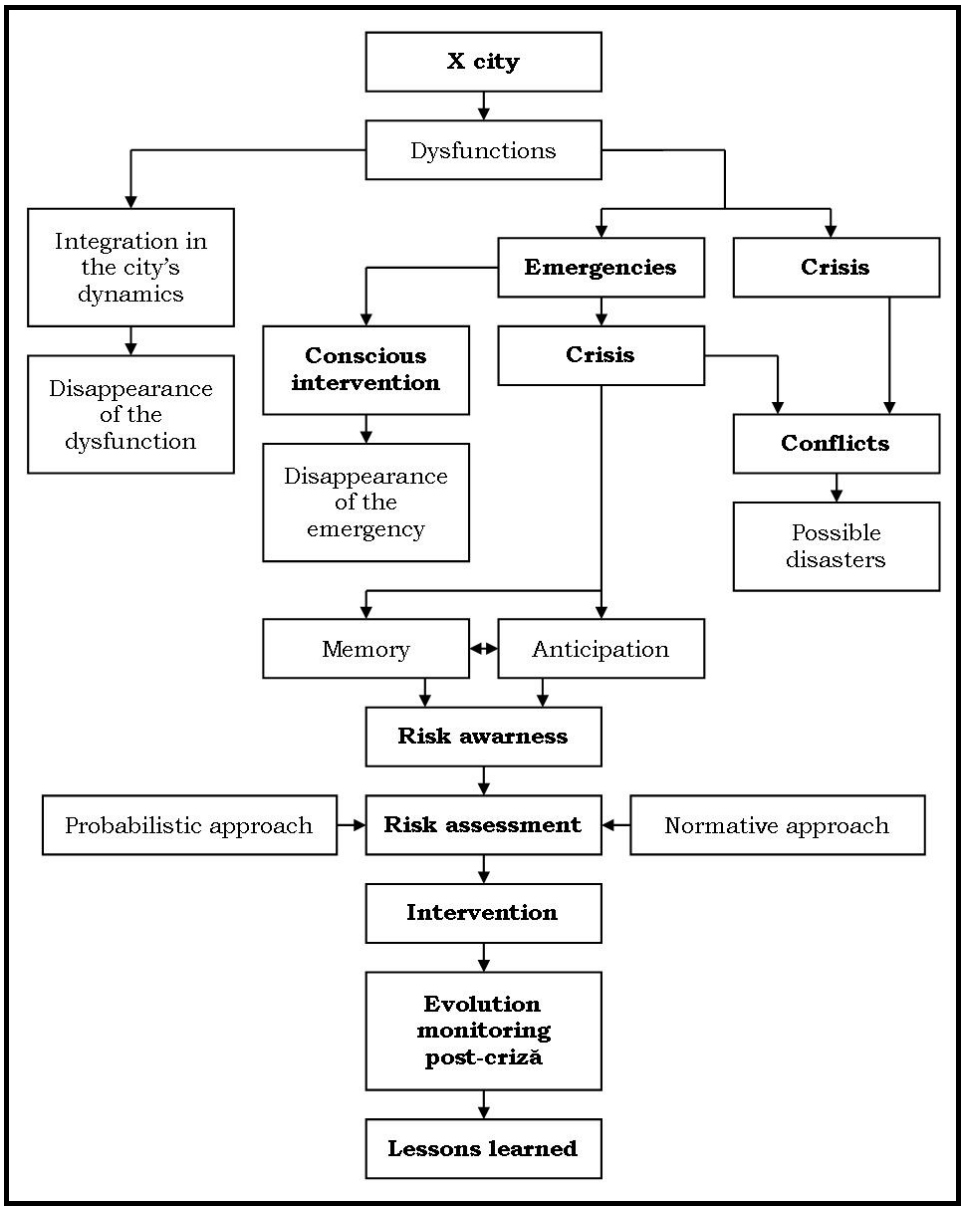

Fig. 2 Steps in emergency and crisis management (after Ianoş I., 2004)

If we confine ourselves to the strict management of emergency situations, we should consider the special situations that require an emergency treatment (Mitroff I. and Anagnos G., 2000). Such situations are usually unexpected, even if the possibility of such events was known, or was known a few days or hours before their imminent appearance. In the emergency treatment, the teams participation to restore the previous situation or to minimize the effects requires rapid decisions and driving them to the complete and immediate resolution key points. In this regard, we could distinguish several sets of actions to:

a) a rapid intervention of specialized forces, by using efficiently the tools and framework for action available;

b) ensure the unique and unitary coordination of the typical intervention activities;

c) informing quickly and completely the decision makers about the actual situation and some similar situations;

d) reducing and even eliminating the dilettantism and the interventions with high risk of failure;

e) reducing the risk of the event amplification.

After the end of the extreme outburst of the event, which required specific measures of emergency treatment, several priorities are to be considered, including:

a) organizing the activities after the resolution of the event to resume the economic activities and reduce the state of shock of the population;

b) analysis of the causes that have determined the development of such a situation;

c) up-grading of local, regional or national policies to reduce the risk of similar events.

3. INTRA-URBAN STRUCTURES IN ROMANIA – DEFINITION, TYPE, MANAGEMENT

The city is the place of strong concentration of population and economic activities, spatial expansion and functional complication leading to an emphasis on their vulnerability and the complication of activities for an effective management. Usually, cities are the targets of an increasingly impoverished rural population, the immigrant groups, but also of interest groups that are forced to live in a relatively limited physical space, with resources that have a permanent tendency to exhaust. Therefore, the competition for resources is particularly acute in the cities favouring the possibility of occurrence and amplification of some seeds of the crises (Voldman Daniele, 1999).

In addition to these assumptions, the ones resulted from the characteristics of the physical space in which they lie should be mentioned, and recently, the city has become "object of political or cultural blackmail" (Troncotă T., 2004). In this sense, the terrorist actions hinder the communication at community level, create a state of permanent tension and decrease their focus on solving problems of poverty, segregation and discrimination, of reducing the environmental impact and so on.

It is known that the operation of a city is based on a constant external mass, energy, information and capital intake. Using these inputs, which it processes, they provide the environment with outputs, which can return as positive or negative feedbacks and may affect its future dynamics. The city response from environmental interventions, including its own outputs, varies in

relation to the differential ability of urban centers to integrate the change.

The structure of urban space has an important role in shaping the lifestyles in the cities. The influence of this space is exercised by several factors: shape, size, degree of occupation of land, the concentration of population, of economic activities etc. Seen in such a manner, cities encompass, in their dynamics, a number of shortcomings or dysfunctions that may give rise to conflict situations (Ianoş I., 2005) that require urgent intervention or even to crisis.

The intra-urban structures are those distinct entities in the urban area characterized by a certain coherence and synergy. The attempts to generalize the urban structures have been numerous over time: the model of Burgess or concentric structures, Hoyt's model or the wedge structures; Garisson and Ullman's model or multiple nuclei model, along with other models with lower generalization level (Bailly A., 1984).

In regard to the scale of manifestation, the emergencies and crisis can be at macro structural level or at micro structural level. At the macro- level, they may be generated by the changes in the economic profile of a city, by the appearance of a substructure belonging to industrial activities (previously nonexistent), for example, or by the disappearance of such a structure. At micro-level, there are either the reflexes from the macro- level of some crisis situations, or the ones generated at this level and that through their amplification can lead to the generation of emergencies or major crises.

Intra-urban dynamics is recorded on inherited structures, but it is the result of the exponential growth of human pressure and its forms, taking into account the processes of globalization and the gradual reduction of non-renewable or slow-renewable resources.

The morphological structures. The urban morphology results from the projection in physical space of urban "objects", this being found in the horizontal and the elevation plane. The density of built space has a direct impact on urban morphology and history makes its mark on the morphological structure. Ancient times are found in central areas, where urban structures, although very valuable, are also the most vulnerable. Historical values imply, in crisis or emergency situations, specific interventions to reduce to a minimum the losses, including through the intervention itself. Therefore, the types of intervention should be different in historic areas from those without heritage values. It can't be used the same amount of water in the event of a fire at a museum, as in an ordinary fire at a regular building. Even if it is about higher costs of interventions, using other types of substance, it is worth the investment because it saves values.

More recent buildings, with other parameters and found especially in the suburbs, fall into urban areas with a more suitable morphology for ordinary emergency interventions. Instead, the implant of modern buildings, very high compared to other nearby buildings and in areas with heritage values, presents a huge risk in case of emergencies: fires, earthquakes and so on. In this regard, the difficulties encountered when a fire took place in the new building with 17 floors, located within the perimeter of the Armenian Church in Bucharest are well known.

The morphology implies the adequacy of the interventions, taking into account the characteristics of physical infrastructure, the degree of concentration of buildings and streets sizing. The urban structure and texture, in the case of irregular, circular, rectangular, linear, radial-concentric plans etc. are those which allow or prevent the rapid intervention.

The functional structures. The urban functions are defined by the types of activities taking place within the urban space. For Romania, one of the causes of some deep subsequent changes was the ownership change that took place in late 1940 and early 1950, when almost all means of production (industrial enterprises), including land and a part of the buildings were given to the state. Even if sometimes individual property on immovable property seemed to exist, the state was the one that could decide at any time on it and on the related land. The nationalization of the means of production in 1948 and the increasing limitation of individual property to extinction were important moments in the subsequent dynamics of urban life. The overwhelming dominance of the state ownership totally reduced the private and local communities' initiative in urban development.

Basically, the fate of urban communities was in the hands of policy decision makers at central level, which decided the type of economic activity to be developed, the volume of housing construction, their location, the way of supply etc. These decision makers were seeking to regulate from outside the internal functioning of a city, about which they had some statistical information which they deliberately ignored.

Another reason was the high degree of ruralisation of the country (in 1948 the rural population was 76.6% of the total), which under the communist regime was a brake on achieving a "new society". Therefore, it was considered that its change requires direct fundamental interventions to stimulate the urban growth. The urban growth was achieved subsequently through the collectivization of agriculture and socialist industrialization. These two processes, with clear effects on cities, especially large and medium-sized, made the economic life of the village and the city artificial, where they created new structures more or less compatible.

Among the causes of the arising of the functional breaks, Romanian cities' particularities had a special role. The geographical location in relation to some raw material resources, on which depended the achieving of a basic policy of the state (for example, energy independence) was essential in the sudden changing of the urban functions. In this regard, the breaks generated in the internal structure of some cities, such as Moineşti, Anina, Motru, Rovinari and so on are significant.

The change in the economic profile of the city, at first mainly agricultural and of services (especially for small and medium towns) occurred with a high intensity. This produced a total disturbance of the initial urban life (Titu, Mizil, Dorohoi, Filiaşi, Haţeg, Beclean, Agnita, Miercurea Ciuc, Slobozia etc.), the cities subsequently seeking to mitigate functional disorders generated between the main urban substructures.

The main urban activities in the Romanian city until 1989 were the industrial ones, located on the so-called industrial sites, more or less outlined. Extensive industrialization has generated real "urban bombs", taking into account their effect, in geometric progression, on the growth of urban vulnerability. In this respect, fires and explosions occurred on some industrial sites in the country resulted in human casualties and serious damage are well known (Ploieşti, Făgăraş, Craiova etc.).

The de-structuring of industry after 1989 was accompanied by a reduction of urban vulnerability and an increase in the stock of free space determined by the liquidation of many industrial enterprises of the past. On the other side, this

apparent reduction of the urban vulnerability has been offset by the increasing negligence in technological processes, causing numerous interventions in emergency situations (Bucureşti, Piteşti, Iaşi, etc.).

The urban segregation that followed the social mixing process promoted until 1989, resulted in new cuttings of the residential area. The residential area was qualitatively fragmented, resulting in asymmetric urban development through preferences for certain urban areas. The administrations' efforts failed to prevent the degradation of residential area of some districts, although more recently, within their areas social segregation processes occur through the emergence of areas with very different status. The current dynamics of the residential area is very complex, contradictory and non-selective. Thus, the residential area fills free spaces, formerly industrial or warehouse spaces, devours green spaces, or self-devours, in the conditions of the replacement of old residential buildings with more modern and luxurious ones.

In these conditions the potential risk in industrial zones decreased, especially the one related to technical, technological and social risks. The typology of the sources of crises decreased instead others emerged determined by the mobility increasing. This increase in the population mobility from residence to workplace, by doubling or tripling of the vehicle traffic, causes increased pollution and urban congestion, resulting in big problems for urban residents, if the fluency of traffic, the improvement of car park, etc. are not ensured. The remaining industrial areas with high technological risk in some cities, involves a more pragmatic approach, taking into account the relatively small distances between industry and residential area location; this kind of situation requires the implementation of a clear correlation between the location of the rapid intervention forces and the most vulnerable areas.

The crises are practically an advance element in the production of a disaster. Crises management in intra-urban structures requires a detailed knowledge of all the dysfunctions that occur at some point in the dynamic of a city, an assessment of their impact on the entire city or on its parts (Lagadec P., 1993). Any negligence in their close monitoring may cause enormous damage to the community.

Supposing that in a city at a time a minor malfunction arises. It has two perspectives: one, of being integrated into the overall processes of change common to every town, and the second to increase and to become a major malfunction, which can degenerate into an emergency. The urban community can observe at this stage and estimate its effects and can intervene to mitigate it and then to remove it. If it is disregarded or not considered as a priority, it can turn into a broad crisis for the city.

Knowing the real size of this crisis is a duty of specialized institutions or structures that a community possesses. They can not intervene to resolve the crisis that may turn into a disaster and may lead to the systemic disappearance of the city. Even if it is not a physical extinction, but a deep structural one, the initial city doesn't find itself in the new configuration it gets in a post-disaster stage.

If the community is aware of the danger of such a crisis, then the real size of the risk, to which the city is subject in the case of failure of a timely intervention, can be achieved. On the basis of collective memory, of the written one or of the experience of other communities there is a risk estimation to which is subject the city in question. In addition, the analysis of the string of foreseen events, based on the same kind of crisis, can lead to the estimation of the

moment when the risk occurs, of possible damage size, of the area that may be affected, etc. These will be sufficient grounds to argue the need for a real estimation of the risk and of the intervention of the protection systems. These systems involve projects to implement actions leading to mitigate and resolve the crisis occurred. Thus, the initial city retains the optimal structure for effective functioning, but, due to the changes occurred within this time, it will not be identical to that of the starting time.

In the monitoring process, the general supervision of urban dynamics, the compliance with rules established by law or by general urban and regional plans, or decisions of local councils, must be ensured. Also, the specialized agencies with specific tasks in monitoring risks must develop specific standards by types of risk activities and to continuously adapt it to local realities, depending on the experience achieved in risk management, but also on the progress made in studies taken on certain types of risks.

4. THE ROLE OF THE ADJACENT EXTRA-URBAN AREAS IN THE TREATMENT OF EMERGENCY SITUATIONS AND CRISIS

In the case of large cities, the distances in time from one side to another, from the place of means and intervention forces storage to the various objectives that are subject to an emergency, require taking into account the adjacent extra-urban areas. These spaces may be useful in the relocation of some activities with high potential for the generation of some crisis or emergency. Urban adjacent spaces may be new areas of rapid intervention forces location in certain peripheries or pericentral areas, due to the shorter distances in time. Such locations may have subordinated urban areas, which constantly monitor to reduce the probability of risk or certain events occurrence.

The creation of specialized centers in different industries through industrial parks is an important objective to be achieved and also, an already covered journey for most of the European capitals (Cepoiu Andreea-Loreta, 2009). Industrial parks' advantages are multiple: increased employment of available work force, lead to the economic growth of villages and towns and contribute, at macro scale, to the development of a region by removing the isolation of localities. Industrial parks participate in reducing the regional disparities by: ensuring the preservation of the work force at local level, contributing to the image change of localities (construction and modernization of buildings, building networks of access roads, construction of water, electricity and gas networks, construction of sewerage networks), facilitating the creation of local and inter-local development policies, on the short, medium and long term, of the communes in a area with industrial and technological potential, boosting the local authorities' intervention through fiscal facilities, other than those given by state, to favor the growth of interest for the establishment of industrial parks, stimulating the local authorities in developing strategies to attract flows of investment, crucial to their diffusion in the territory.

5. URBAN MODERNIZATION, RESTRUCTURING AND REGENERATION, POTENTIAL OBSTACLES TO EMERGENCY TREATMENT

The intra-urban dynamics involves processes of modernization, restructuring, rehabilitation, regeneration, etc., which temporarily can block or reduce the effectiveness of the intervention force in case of emergency. The mentioned processes entail costs, meaning structural and functional changes in

each city. Costs increase exponentially if appropriate conditions for interventions in case of crisis or special situations are not set in the urban remodeling process. The interventions aim for extreme mobility of shock forces for emergency situations. This requires providing successive modernization and restructuring activities, which do not affect the speed of response to such situations. The infrastructure modernisation plans should be approved by institutions authorized in emergency interventions, in order to ensure the prevention of disasters, because of low accessibility. In other words, any temporary removal from service of an urban structure or an element must be accompanied by alternatives of functional taking over.

In the conditions of city population growth, by more and more people coming from rural areas with the hope of obtaining jobs in the city, the access to land and property market should be relatively possible for all social categories. The current difficulties in securing the purchase of homes or land are amplified, due to the low number of social projects for low-income population.

The unemployment is a labor market imbalance that affects the quality of life and generates adverse social effects, especially in the conditions of the current crisis.

In the same time, luxury residential areas, newly built in many cities in Romania, face infrastructure problems that, in case of possible natural crises can lead to real disasters.

The difficult access to different categories of services (supply, sanitation, education, commerce, etc.) can turn from a malfunction into an emergency, especially for small towns in Romania and for the mono-industrial ones, where the supply of services is a major problem.

The processes of urban restructuring should focus also on transport infrastructure, the population of the outskirts of cities encountering difficulties due to the lack or low number of vehicles ensuring the link with downtown and other destinations within it.

Today, heavy investments in cutting-edge machines that produce cheap, quality and in accordance with European environmental standards are done in the field of industrial activities, at least in the major cities in Romania. A majority of them, namely those which remove matter in the atmosphere above the threshold required by the European legislation will be forced to relocate the production outside the city. The other production units, which are not an important factor of pollution, will continue to operate, but only after they have entirely met the standards set by the EU acquis on air quality.

6. CONCLUSIONS

Through this paper we want to raise the awareness of local communities and of the decision makers to reconsider the urban structures as a key element in crises and emergency situations management. The general and zonal urban plans, as appropriate, must contain spaces for the forces and means of intervention location in case of emergencies. They must be located at points with maximum accessibility in the area of jurisdiction. Accessibility must consider at least two alternatives for each high-risk to fires areas, floods or earthquakes. An unique access may be wholly ineffective in the situation of a blocked street as a result of some events because it will lead to great delays in interventions.

All modernization, rehabilitation, urban restructuring works, during their implementation, should not prevent the intervention with maximum efficiency of

the special forces and means. In this regard maximum accessibility options should be provided, even imposing the relocation of means and / or intervention forces. Moreover, in the approval of modernisation plans for the intra-urban infrastructure, the way that ensure the access of the intervention forces in emergency situations should be made clear.

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