

ANALYSIS AND ASSESSMENT OF THE IMPACT OF DISASTERS AND ACCIDENTS ON THE FUNCTIONING OF RURAL AREAS IN BULGARIA

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Abstract

This article is devoted to analyzing and assessing the impact of disasters and accidents on the conditions for the socio-economic and demographic development of rural areas in Bulgaria. The topicality of the topic is caused by the necessity of the new conditions of globalization to overcome regional and local risks related to the population's way of life. To a large extent, the processes of urbanization and the relocation of the population in urban areas lead to the creation of threats to its security, mainly by disrupting the reliability of the functioning of the natural-ecological and socio-economic systems. Therefore, rural areas and their potential for security and regional development must be strengthened. In this regard, it is important to create the necessary basic conditions for the life and development of the population - minimum infrastructure, taking measures to reduce natural and environmental risks through a system encompassing activities and facilities for monitoring, maintaining, and cleaning riverbeds and forests in sparsely populated areas in Bulgaria.

Key words: emergency, disaster, conditions, labor, rural, region, system, crisis, management

INTRODUCTION

In the context of dynamic processes brought about by globalization and the integration of national economies, population migration gives rise to a new type of problem in rural areas of the European Union. According to the urban-rural typology, in 2023 rural-dominated regions represent almost half (45%) of the area of the European Union. According to preliminary population data from Eurostat on 1 January 2024, only about 23% of the EU population lives in rural areas. Again, according to Eurostat, over the years 2015-2023, the population of predominantly rural areas has decreased by an average of 0.2% per year, while the population of intermediate regions has hardly changed. On the other hand, the population in predominantly urban areas grew by 0.5% on average per year. During the same period, the number of elderly people grew rapidly. The population of people aged 65 and over grew by 1.6% each year in predominantly urban and intermediate regions. However, the fastest growth in this group is among residents of predominantly

rural areas (1.8% per year) [32]. Rural development is the "second pillar" of the Common Agricultural Policy (CAP), which reinforces the "first pillar" of income support and market measures by strengthening the social, environmental, and economic sustainability of rural areas. In countries in transition like Bulgaria, there is a wide range of problems to be solved in rural areas. Still, we will focus on the importance of crisis management, or mainly disaster and accident management, as a factor for the functioning of rural areas, and hence the population's good health. The solution to such a range of problems is linked to the different rates of increase in economic development, which leads to increasing disparities between different territorial communities. In other words, the different rates of economic development in countries such as Bulgaria also set the daily difficulties in terms of optimal functioning of rural areas, and the human capital problems in them lead to the deterioration of the civil security system. In practice, today civil security is changing its focus and depends mainly on preventive

measures of the government to deal with disasters, accidents, crises, epidemics, and not least terrorist acts in urban areas [32]. The agricultural and non-agricultural parts of the rural area form a separate entity from the urban area is characterized by a strong concentration of residents and vertical and horizontal structures. Thus, in the context of rural development, the ability of rural development action to respond to current and future challenges, such as climate change and generational change, while continuing to support European farmers to achieve a sustainable and competitive agricultural sector, also comes to the fore. The approach is further complicated by the necessity to differentiate between rural and urban areas. A distinction that is particularly challenging in countries such as Bulgaria. This is because, for example, the municipality of Stara Zagora includes an urbanized urban area and 52 predominantly rural villages. The traditional distinction between urban and rural areas in a country is based on the assumption that urban areas, as defined in that country, offer a different standard of living and usually a higher economic standard of living. The term rural does not have a common definition across countries, making it difficult to compare rural areas globally or even nationally. In this context, this report examines the concept of governance from the perspective of a systems approach, according to which governance is a system that brings together a set of interrelated elements whose functioning is subordinated to a clear and well-defined objective. This system unites two main elements - the object and the subject of management [35]. It can be assumed that the activities of planning, commanding, organizing, coordinating, and controlling are indivisible and should be considered as a whole rather than as separate and independent of each other. In the present exposition, we will try to combine, rural-governance-crisis management (disaster, emergency, and health). Here is the place to emphasize that the model of interaction: public sector - crisis management - business - population is based on ensuring normal conditions for quality functioning of the territorial system. Thus, the

living environment in rural areas needs mechanisms to maintain a high level of security in the face of reduced demographic potential and difficulties in securing the financial resources for preventive action towards early recovery from disasters and accidents in these regions. In general, all European regions have distinct mechanisms for responding to crises resulting from disasters, accidents, and catastrophes. In this direction, the European Union in 2013 started to assess the risk of disaster occurrence in individual European countries [28].

In addition, rural areas should move towards digitization. This means the automation and robotics introduction of production using high-performance machines and digital technologies to strengthen the rural farmer. The goal is to record every process on every machine and be able to generate it as a coverage map. This information should be able to be visualized and cross-referenced on top of other layers of information. This approach will enable farmers to digitally monitor their tillage practices and plan future operations. However, this should be done by building an integrated environment where they can anticipate possible crises, rains, hurricanes, disasters, and other events that may affect business development. Therefore, all economic actors in rural areas must be aware of the philosophy and foundation of socio-economic life in rural areas [27]. As understood by the World Health Organization (WHO), disasters and catastrophes are natural phenomena or human activities that pose or pose a threat to the lives of populations at different scales but often have very severe consequences for local development and the lives of populations. It is important to note that phenomena such as earthquakes are among the most dangerous natural disasters, as they cause enormous damage, realized in a short time. Another event associated with the disruption of the territorial system is flooding, which is a natural disaster, it is accompanied by an increase in water masses per unit area. Flooding is most often a temporary inundation of a land area or territory with a huge amount of water due to the rise in the level of water basins and riverbeds and, more recently, from

large amounts of rainfall. Of course, in rural areas, water sources are important because of their agricultural profile and the need to carry out a range of activities related to the irrigation of individual crops and plantations. The reasons for the rise in the level of these water bodies can be various - intense rainfall or snowmelt, dam breaks, dike breaches, high waves, or human activity. It is another matter that, through their behavior, the public sector and local businesses are called upon to create the conditions to minimize the potential for flooding by implementing a series of activities and measures to maintain reliable infrastructure. There is a need for the whole environment surrounding communities to be monitored. Based on the assessment of the condition of critical infrastructure, it is also necessary to plan for the construction of new infrastructure and to renovate and develop it by implementing targeted programs to prevent water disasters, end the practice of turning ravines into landfill sites, and organize annual sanitary logging. It has been observed so far that due to the deterioration of infrastructural facilities, the problems of rural development are creating conditions for several problems related to the level of public works, leading to the deterioration of the regional environment and hence the quality of life. This means in rural areas to clearly understand the motive of programming and planning regional policies and measures to improve infrastructure. Overcoming the challenges associated with negative processes and a deteriorated living environment is a serious challenge for the management of the European Union, and access to funds is easier, and the public sector and local businesses must have the necessary experience and capacity to implement successful projects that are sustainable over time. This is the place to identify grant application forms that provide a variety of approaches to applying to the EU institutions. Structuring mechanisms and programs through which the European Union aims to improve the lives of people in rural and border regions, mountainous areas, disaster areas, flood areas, etc., so as not only to overcome the effects of the problems but also to create new economic opportunities for the affected

populations. It is worth stressing here that, given the demographic characteristics of rural areas, more resources need to be allocated thereby continuing to implement innovative practices and policies that implement preventive regional policies linked to a series of preventive activities. Thus, in line with this policy, there is a special concern for rural areas in the countries of the European Union. This concern intensified in the 1980s, after the adoption of Greece (1981), Portugal, and Spain (1986), when rural areas were associated with values such as the preservation of nature and the improvement of life in them, as well as attempts to impose new agricultural activities and policies to develop the potential of several rural areas [5]. Following the adoption of a specific map entitled 'European rural map', the following definition of rural areas was given: rural area means continental or coastal land, including villages and small towns, where the majority of the land is used for agriculture, forestry, aquaculture and fisheries, economic and cultural activities of the inhabitants of these regions (crafts, industry, services, etc.), the function of recreation and leisure of an extra-urban nature or nature conservation and other uses.

Another aspect of orienting regional policies towards settlements is their characteristics and scope. In this direction, it is important to note that the concept of village (or rural) represents a territory (an area with land) in which a certain number of the population lives [26]. Here we should emphasize that the rural space is not a homogeneous entity, and it is not an abstract space either although the multitude of concepts and definitions given by specialists refer to the same physical (geographical) space. Thus, the implementation of targeted policies in rural areas often requires the application of solutions that are balanced, ecological, pragmatic, and efficient. This directly corresponds to the new vision in rural areas to ensure a well-fed and thriving society, responding to new issues such as climate change, animal welfare, food safety, and sustainable use of natural resources. Here, we can draw on the 2013 reform through which the European Union sought to respond to

these demands by including greening payments, which increased the sustainability of agriculture. Also, a fairer distribution of aid, which limited the budget for large farms, and additional support for smaller farms through better targeting of income support. In rural areas, it was agreed to create incentives for young people to start a career in agriculture [6]. In practice, these reforms are difficult to implement because funding is available for machinery and technology, and rural areas are not building think tanks, innovation labs, special technology schools, etc. In this direction, for a better crisis management, there is a need to establish regional units of leading firms for evaluation, analysis, and monitoring and reforms should have direct practical application on the development of institutional environment in rural areas besides increasing the expenditure on rural development projects [1]. In this context, this article is devoted to analyzing and assessing the impact of disasters and accidents on the conditions for the socio-economic and demographic development of rural areas in Bulgaria.

MATERIALS AND METHODS

The research methodology is set by the object which is rural areas. In addition, the processes taking place in rural areas may have positive or negative outcomes. This gives the important methodological point that rural areas have their own framework and development potential, it is just that in this case only partial processes or phenomena are presented that pour on rural areas and change the picture. This approach needs to be institutionally regulated with the development of the necessary indicator framework of rural conditions so that we can get a comprehensive picture of the rural situation through indicators. The authors' idea is to look at the vulnerabilities and opportunities for disaster and disaster prevention in rural areas, but also to assess risk management in rural areas. The management of this system determines the state and development of rural areas in Bulgaria, but this approach can also show the state of rural areas in other parts of the EU.

The approach should look at key normative documents, and incorporate data on demography, history, climate, etc. by analyzing the crises that have occurred in rural areas (small settlements), and accidental events that have created conditions part of the environment that are highly vulnerable and poorly protected [7]. The collection of data from multiple and heterogeneous users created serious challenges for the old centralized systems. Today, as a result of rapid development, Blockchain technology now provides the capabilities to quickly integrate information from disparate sources and quickly transform it into useful information. The main objective of the authors is to analyze and assess the state of the system to prevent and overcome crises of various nature [3]. The authors will achieve the goal thus formulated by using a variety of approaches and methods. These can include territorial, normative, and system approaches, which include the analysis of causal relationships, statistical, descriptive, and analytical methods, induction and deduction, and analysis of normative documents. Information provision includes public databases such as the National Statistical Institute, electronic websites of municipalities, etc. In addition, we can assume that the assessment of disasters and accidents can also be presented on the basis of logarithmic regression, which was derived as an evaluation method by a group of researchers. They do an experiment based on the characterization of countries by types of natural disasters, economic losses, mortality and other indicators that help analyze eight types of natural disasters related to droughts, earthquakes, extreme temperatures, floods, volcanoes, forest fires and land slides. This study also emphasizes the impact of human development indicators such as per capita income and human capital (level of education) on natural disaster deaths (total deaths, total affected and total economic losses) in 79 selected countries based on the use of dynamic panel data analysis [25]. This is a way also to evaluate these processes and phenomena and to be able to argue and show a comparative assessment of disasters

and accidents. Here is the place to add that the research thesis that the authors put forward is that rural areas are exposed to greater risks of disasters and accidents, given the fact that the working conditions are field conditions and given the climatic anomalies, not always informational and technological improvements are fully effective, so there is a need to work for continuous improvement of the effective disaster prevention and management system, as the problems with accidents and accidents in rural areas must go with the imposition of correct public policies that have a significant impact on formation of quality prevention and influence on local communities and economic participants, in order to be able to effectively and everywhere overcome crisis events and deterioration of living conditions [29].

RESULTS AND DISCUSSIONS

Current Bulgarian legislation defines a disaster as "an event or a series of events caused by natural phenomena, accidents, accidents or other extraordinary circumstances that affect or threaten the life or health of the population, property or the environment to an extent that requires the taking of measures or the participation of special forces and the use of special resources. Thus, the more remote areas and peripheral settlements due to the lower level of urbanization, sufficient capacity and human resources have their own problems for preventive and organizational activities to deal with disasters and accidents at the local level. In addition, it can be noted that most rural areas in Europe are undergoing a profound change, driven by the intensification of urban lifestyles and the depopulation of villages. On the other hand, urbanized territories are formed around a city, around which are located at least 4-5 settlements with a gravitational zone of about 10-15 kilometers. However, they have their own needs and a development framework that has its own local problems and difficulties. This creates a complex system of settlements that have different problems and a need to find common solutions to similar problems.

At the same time, rural areas need a significant improvement of the urban way of life by improving infrastructure and logistics at a local scale. It is characteristic of rural areas in most Eastern European countries that they are looking to develop their new economic profile as an upgrade to their agricultural foundation. This process leads to frequent contrasts in the development of the regions and the need for quality regional policies that lead to infrastructural and economic order. Thus, problems are created at the level of public works, which in turn leads to other problems related to the quality of services, education, culture, transport and the functioning of regional business. This leads to a need for a better medium-term setting of the regional development goals of rural areas. The process of searching for one's own image and sustainability of settlements often negatively affects the available human capital and pushes it towards migratory mobility. On the other hand, the deterioration of infrastructural provision and the lack of clear development programming leads to depressed development of rural areas, which makes public institutions and businesses less efficient. This further emphasizes the problems of a local nature, and hence the possibilities for effectively dealing with the disasters and accidents that any region may be exposed to. Thus, not solving a number of problems and the emergence of new ones leads to the vulnerability of the territories of rural areas from disasters and accidents. On the other hand, rural areas have a number of current problems to solve, which makes them vulnerable in terms of delineating groups of policies and activities related to village improvement and preventive action against disasters and accidents. Therefore, it can be concluded that rural areas should implement quality policies for improvement, solving spatial and social problems. In addition, the driver of local development is the regional business, which has its own approach to human capital and achieving the well-being of the respective rural area. In general, however, business and the public sector often do not realize their shared role to take some kind of preventive action against possible future

disasters, accidents and problems with critical infrastructure. Here is the place to emphasize that, in practical terms, the sustainable development of rural areas is achievable when there is a symbiosis between business and public administration regarding the construction of a quality infrastructure environment [14]. Failure to achieve this symbiosis leads to the danger of crises and the creation of an unstable environment. In rural areas, it is necessary, in terms of crisis management, to assume that the object of management is the rural area (including the settlement and the land) on the territory of a municipality or district, in which dynamic changes or events can occur that change drastically their surroundings. This leads to the occurrence of a change, and from there to the implementation of a policy to regulate the change that has occurred in our surrounding environment. Often, events such as disasters and major accidents have a significant impact on the established socio-economic process and conditions of normal development, leading to a change or an emergency situation that has an impact on the population and settlements in rural areas [33]. Here we can give an example of a "crisis of a local nature" (a situation that may lead to a significant and sudden reduction and/or temporary interruption of the supply of energy products according to Annex A, Chapter 3.4 of Regulation (EC) No. 1099/2008 and heavy fuels caused by extraordinary events on the territory of the rural area (within a given country) including as a result of temporary technological and/or other difficulties. Due to their remoteness and quality infrastructure in the winter months, a number of territories often fall into the hypothesis of a crisis of Another issue is that such a phenomenon can also be defined as a change in the established state of life, covering territories, objects, sectors and spheres of the economy and public life or the environment, caused by human activity or natural phenomena, as a result in which the conditions for existence and for carrying out activities in the changed environment are severely violated. In other cases, we consider extreme weather conditions, both in frequency and magnitude.

Such is the case in Louisiana, which has recorded the fastest sea level rise in the 21st century. In this case, the problem of rapid and sustainable recovery and crisis management arises. This is often related to preventive activities to deal with disasters or accidents, or conducting a series of training and preparing the population for these complex events [15]. Thus, regulating public relations related to the prevention, control and overcoming of the consequences of crises, public administration in rural areas must accept the concept of "crisis" by regulating the principles and requirements for management in crisis conditions, so as to regulate the construction and functioning of a system of crisis management in rural areas.

On the other hand, the variety of terminology used about the various processes and phenomena in agriculture brings the term 'situation' to the fore. A situation is understood as triggering the need for a response of the public management system that guarantees the state of society, the functionality of the public sector, and the vitality of the local population. It is therefore essential to elucidate the meaning of the term "health" and its implications for the public development of settlements. The population health status is of paramount importance for regional rural development. At the same time, the role of the regionalist is to manage territorial processes and find a balance in crises, disasters, accidents, catastrophes, etc. This process is about finding the balance between concepts. Therefore, it is necessary to introduce a relatively consensual term such as "disaster medical insurance [9]. It is necessary in rural areas to have the necessary functional connections in the security system at the regional level at the vertical and horizontal network level, without detailing the duties of individual departments in the crisis management process. The latter are expected to be determined by by-laws and in rural crisis management plans. The main response measures are the different types of operations - humanitarian, search and rescue, emergency rescue, firefighting, anti-terrorist and other specialized police operations, which are carried out depending on the forecasts and

real parameters of the crises that may arise. [17, 5].

In order to develop the prevention process, it is necessary to have the necessary critical mass of participants in the process in the form of volunteers and interested persons, but rural areas in Bulgaria have been depopulating in recent years.

This process leads to a reduction in human potential and the possibility of greater efficiency in the implementation of preventive actions. At the same time, emigration from rural areas also leads to the impoverishment of these regions, which is expressed in an increase in significant socio-economic differences compared to urban areas and, on the other hand, a limitation of the basic living conditions in them. [18]. Table 1 can trace the population dynamics in villages and cities from 1900 to 2010, and this trend is maintained now (Table 1).

Table 1. Population in towns and villages in Bulgaria from 1900 - 2011

Years of censuses	Total	In cities	In villages
1900	3,744,283	742,435	3,001,848
1926	5,478,741	1,130,131	4,348,610
1934	6,077,939	1,302,551	4,775,388
1965	8,227,866	3,822,824	4,405,042
1985	8,948,649	5,799,939	3,148,710
2001	7,928,901	5,474,534	2,454,367
2011	7,364,570	5,338,261	2,026,309

Source: National Statistical Institute, NSI [20].

These basic conditions are related to the basic services provision such as health, education, infrastructure, and respectively the establishment of a system of prevention from crises, disasters, and accidents. This process is not isolated and is known not only in Bulgaria but also in many countries. This is evidenced by studies of rural areas in Asia where the relationship between rural disasters and emergencies and the emergency response system is analyzed [20]. Traditionally, the main economic activity in rural areas is agriculture. And agriculture is highly susceptible to natural disasters as evidenced by some studies [7]. The impact of natural disasters can be reduced through preventive activities in rural areas. This way, the challenges that arise because of the disasters are combated [4].

A more targeted analysis shows that our nation's territory, including the urbanized areas in Bulgaria, shows that rural areas account for nearly 81.4% of the national territory. This statistic is derived from the definition used by the Rural Development Program [29]. Thus, out of 266 municipalities in Bulgaria, 231 are rural (at LAU 1 level). These areas are home to 23% of the country's population, indicating that they are much less densely populated and have a greater concentration of natural resources [22]. At the same time, a territorial classification is used in the EU to consider urbanization at the district level, and according to this classification, there are 28 districts in Bulgaria, which are divided into three types: predominantly rural (15), intermediate (12) and predominantly urban (1) (Map 1).



Map 1. Map of rural-urban areas on NUTS 3 level according to EU definition 2010.

Source: [9].

According to the Institute for Market Economics in Bulgaria in a study dedicated to rural areas, some important secondary characteristics are highlighted [33]. The analysis is based on quantitative methods with the calculation of an index reflecting their position relative to the national average in terms of 4 indicators - average wages per employee, unemployment rate, levels of total economic output, and value-added per capita. Based on this, an analysis is carried out and it is established where each district stands compared to the national average. Based on this and on the variance that exists within the regions themselves, a methodology is used to assess the ability of these regions to achieve positive growth in some of the indicators

examined, to remain at their average level at which they are, or even to worsen their situation.

The socio-economic development of rural and urban areas shows differences, with rural areas performing much worse on important socio-economic indicators, compared not only with predominantly urban regions but also with intermediate regions.

According to the survey results, a positive result from a region implies a better performance compared to the national average, while negative values indicate a situation falling short of the national average. The Synthetic Socio-Economic Index scores the predominantly rural areas of the country much lower than the average score, by about 35% (index minus 0.35).

As we can see from the data for the period 2010 - 2020 there is a reduction in floods, landslides, and fires.

Floods were reduced from 651 (2010) to 100 in 2020 (Table 2).

Table 2. Floods in Bulgaria 2010 - 2020

	2010	2011	2012	2018	2019	2020
Number	651	382	692	84	108	100
Damages in BGN thousands	38,882	206,659	20,898	28,384	21,173	16,664

Source: NSI [15].

Landslides have decreased from 59 to 24 (Table 3).

Table 3. Landslides in Bulgaria 2010 - 2020

	2010	2011	2012	2018	2019	2020
Number	59	76	72	27	31	24
Damages in BGN thousands	2,182	224,790	17,384	6,248	8,101	154,996

Source: NSI [20].

Fires have also declined over the period, being reduced from 1,630 in 2010 to 754 (Table 4).

Table 4. Fires in Bulgaria 2010 - 2020

	2010	2011	2012	2018	2019	2020
Number	1,630	2,185	3,010	480	521	754
Damages in BGN thousands	2,239	2,186	1,437	1,703	194	281

Source: NSI [20].

There were 41,348 crisis events over the entire period (Table 5).

Table 5. Crisis events in Bulgaria by group for the period 2010 – 2018

Reason for crisis event (by group)	Crisis number
Natural disasters	5,969
Fires	15,977
Accidents and disasters	19,151
Pollutions	132
Other natural and anthropogenic crisis events	119
Total	41,348

Source: NSI [20].

Flash floods, some of which even take victims, seem to pass us by less and less often. If we look at NSI data, we see that in 10 years - from 2010 to 2023 - there have been more than 100 such events. Most of them are in the Sliven region, followed by Blagoevgrad and Kardzhali region. animals) and not rarely there are human casualties. Thus, in rural areas, we are witnessing climate change and anthropogenic impacts on the riverbanks, such as the growth of residential and commercial buildings in flood plain terraces. Another problem is emerging due to reduced numbers of animals decreasing the natural water-holding capacity of the soil caused by land use, contributing to an increase in the likelihood of flooding and its adverse effects. The threat of climate change makes this need even more urgent.

There are studies in which heat waves have been observed in recent decades [22]. In practice, the duration and intensity of heat waves creates conditions for fires [22]. These findings were proven in 2024, when the summer heat wave was very prolonged, leading to a sharp increase in average temperatures and the risk of fires. As a consequence, in the mountainous areas, which are the least populated rural areas, a series of fires occurred that were difficult to contain for weeks. An interdisciplinary approach is needed to address this challenge. This calls for the combined efforts of the country's scientific potential and the executive to build lean systems for flood prevention and sustainable flood risk management to protect and mitigate the effects of floods.

Rural areas in Bulgaria are characterized by a high degree of landslide and erosion-abrasion activity. According to estimates, the funds

required for the study of landslides in the country, including the design, strengthening, and monitoring of such occurrences are more than BGN 1,800 million. Funds have also been earmarked for landslide prevention and counteraction under the Operational Programmer "Environment", but these funds have been difficult to spend effectively over the years. Active landslide processes are a danger to all plant and animal species. Because landslides overwhelm vegetation, disturb natural bird habitats, and affect the population of animal species. However, very often the issue of biodiversity conservation is overexposed, and in this case, there are other, more significant, risks in rural areas, because they often lack the means to restore them.

Forest fires will continue to increase in frequency due to climate change and they will increasingly affect areas that have not been considered at risk of such natural disasters in the past. Preliminary figures for the first three months of 2024 show a near doubling of fires compared to the same period last year, but fortunately, they have not resulted in as much forest destruction. Rural areas in Bulgaria are usually the most affected.

The data show reductions in crises, but the consequences are usually significant. It is therefore important to carry out preventive activities that are regulated by national legislation. According to some experts, Bulgaria is characterized by a well-developed legislative base, but there is a process of transition towards a system of equal evaluation of prevention, preparedness and recovery activities [10].

The normative analysis shows that three laws regulate the functioning of the national crisis management system. The main law is the Law on the Management and Functioning of the National Security Protection System [9]. On the other hand, the public relations related to ensuring the protection of life and health of the population, and the protection of the environment and property in disasters is the Disaster Protection Act [17]. The third law that was in effect was the Crisis Management Act, which was repealed [18]. Linked to these laws are a disaster risk reduction strategy and plan. The National Strategy for Disaster Risk

Reduction 2018-2030 [20], which sets the direction of action until 2030, outlines a coherent framework to adequately reduce existing risks and prevent new ones from occurring, enhance preparedness and response capabilities, and rapidly recover from disasters while adhering to the principle of "build again but better". To implement the national strategy, a National Disaster Risk Reduction Program 2021-2025 has been adopted to promote the resolution of several disaster-related issues, but the program is largely under-resourced. Measures to prevent or reduce the consequences of possible disasters on the territory of Bulgaria, as well as measures to protect the population, and the distribution of duties and responsible authorities and persons for these measures implementation are set out in the National Disaster Protection Plan. The Bulgarian State has certain deficits in implementing consistent policies in rural areas and acquiring the capacity to do so. The basic principles of disaster protection articulated in the legislation are the right to protection of every person, the priority of saving human life over other protection activities, the publicity of information on disaster risks, and the activities of the executive authorities in disaster protection. In recent years, the occurrence and accidents of the disaster have shown a low level of preparedness in the State and municipalities [14]. There is a need to establish regional centers and networks between municipalities in rural regions to combat disasters and emergencies and to conceptualize a new way of approaching prevention and staffing regional centers and rescue services. The measures are necessary because the consequences of such crises take years to overcome.

Socio-economic resilience is determined by access to basic resources and is one of the most important factors in predicting the coping capacity of communities at risk i.e. their ability to 'absorb the blow' and 'recover' after a disaster has occurred [37]. Socio-economic vulnerability and (lack of) resilience can be caused by contemporary social and economic conditions, but are more often rooted in long-term historical processes

[8]. Depopulation is more pronounced in rural areas with lower economic development, leading to the emergence of so-called "ghost towns" semi-abandoned areas with insufficient infrastructure and limited access to basic services [23]. Based on the rural development data, it follows that the lack of population and the deficit of targeted government policy do not help to shape visions and understandings of prevention activities at the municipality level to deal with disasters and emergencies. On the other hand, there is a need to create good living conditions in rural areas, which is directly linked to the provision of different types of services and the continuous improvement of lifestyles. These services also include preventive activities to limit crises of various kinds. The link between the socio-economic performance of regions and the territorial classification by type of urbanization is quite pronounced and rural areas, even at the district level, are much more deprived and with worse socio-economic indicators than other types. In reality, only 5 districts have higher than the national average socio-economic index values and this indicates that the stratification is very high and as a territory about 75% is below the average socio-economic index values [21]. In practice, socio-economic factors such as income inequality and poverty levels, employment patterns and livelihoods, as well as access to services and social inclusion, can determine the long-term impact of disasters on certain population groups and the potential for recovery of affected populations [19].

The analysis of rural areas in Bulgaria shows a low level of education and health services provision. Very often there is no medical center or doctor in small settlements. The same applies to territorial fire safety services, police, and other institutions providing basic services [13]. Having a prepared rural health care management system in disaster situations has an important and decisive role in achieving high efficiency. In rural areas, the activity of medical forces and means (teams, formations and facilities) is structurally determining in the medical provision of the population in complex working conditions, difficult accessibility and shortage of medical

resources. In rural areas, it is necessary to build a system of medical assistance that would create conditions for the effectiveness of emergency medical assistance. The creation of "Regional Assistance" with direct Euro funding will allow to reduce the complexity of the procedures for applying the national legal and regulatory framework in crisis management, especially in rural areas and in the fulfillment of international obligations. With the formation of the "Regional Assistance" system and a special phone for rural areas, emphasis will be placed on the speed and security of assistance, as well as working with volunteers and paramedics for prevention and increasing the effectiveness of the system of rapid and urgent assistance in rural areas. One can also think about creating a special law in the field of crisis management in rural areas to assist the population and to build mechanisms for effective access to medical care. The accumulation of practice and the creation of structures to regulate the relationship between state authorities, private commercial companies, and non-governmental organizations in the management of crises, disasters and emergency situations is a necessary condition in rural areas. Thus, it is necessary to achieve a level of efficiency in rural areas that can be applied sustainably. The requirements for prevention and the implementation of targeted policies in rural areas should be universal, both for the health system in terms of medical insurance and for the actions of other authorities to manage the protection of the population in disasters. Prevention activities are an important part of crisis management, especially in rural areas, as well as the preservation of life and health of the rural population [16]. The management of the rural crisis management system, including prevention, requires system characteristics such as rigidity, flexibility, continuity, and operability. In 2014, the Commission proposed the introduction of a common standard and mechanism for the prevention and management of disasters and emergencies, including the preparation of response and management scenarios [28].



Fig. 1. National risk assessment according the European Commission.
Source: [28].

Assessing country risks is a process that should be seen as much broader than assessing individual risks. Adequate assessment involves - acquiring relevant and correct information, identifying the risk and implementing an adequate assessment system, considering which benefits to preserve and potential impacts, developing realistic scenarios, providing useful and usable results (Fig. 1) [28].

It is important to note that the establishment and maintenance of an operational picture of the general and medical situation is indispensable for effective medical management. This includes activities to collect, collate, synthesize, and summarize disseminated information about the disaster and the general and medical situation created from all relevant information sources [11]. Achieving a common operational picture allows all entities involved in the management of an incident to have the same information on the timing, actual damage and consequences, resources available on and off the scene, the status of requests for assistance, and any other data needed to support decision-making at different levels [3]. In addition, an operational picture of the medical situation is needed by the authorities managing the overall protection activities at national, district, and municipal levels, NGOs, private sector organizations, critical infrastructure owners and operators, and all other organizations and individuals who have a role in managing and containing the effects of a disaster for effective, consistent and timely decisions.

Having an operational picture at the time of an incident helps to ensure the coherence of the entire disaster protection system [24]. In 2023, several rural municipalities (one located in central Bulgaria, at the foot of the Balkan Mountains; the others are located on the Black Sea but also in a mountainous area) were severely flooded as a result of rainfall. The floods caused serious damage to the infrastructure in the municipalities, from which they have not yet recovered. Services analyses show conclusively that the large tidal waves that inundate urban areas are caused by deforestation, and non-clearing forest areas and riverbeds, leading to the appearance of barriers that then unleash water on settlements. These cases show that there is a lack of preventive action by the state to prevent such disasters. Experience shows that subsequent recovery is difficult due to a lack of financial resources, administrative capacity, and people to do it [2]. Studies have been conducted in relation to the occurrence of fires and floods in Bulgaria [30]. The study analyzes the example of the city of Varna, where a huge flood occurred in 2014. It caused 11 fatalities and was a consequence of deforestation. Another study also examines the flooding in Asparuhovo (Varna), where good coordination between local and central government was observed [15, 12]. The following problem is found that after the reconstruction the basic living conditions are not created at a sufficient level, which reflects in a decrease in the quality of life. Maintaining the forest stock not only limits flooding, but on the other hand is linked to fire prevention. Bulgaria's proximity to the Mediterranean area increases the risk of fires, which requires risk assessment and preventive action. Using GIS systems, 3D modelling, mapping and sensor devices makes it possible to analyse such events and predict the direction and movement of fires. And this can improve the management and mitigation systems for disasters that occur [30]. The analysis and assessment of the impact of crises on rural development is strongly economic. On the one hand, rural areas are under-resourced, and this influences crisis management. On the other hand, the lack of

resources limits the development opportunities in rural areas [35, 24]. Usually, the state policy is not focused on rural areas, which appear peripheral to highly urbanized territories [36]. The case of Greece and rural development is similar. In Portugal, we can also observe similar phenomena due to the rural nature of the country [31]. In practice, the lower level of development in rural areas makes them vulnerable to disasters and accidents. It is therefore necessary to take targeted action towards these regions. The change in the politico-economic system has led to a change in the driving force of spatial planning in Bulgaria, including the rural areas of Bulgaria. For these reasons, the spatial development of rural areas after 2007 became extensive and unsustainable. Often rural areas have parts in a depressed state and are unmaintained and some places very poor condition. Rural development policy in Bulgaria is applied selectively by functional and investment designation. Legislative changes are needed to address the delayed implementation of the adopted spatial plans. Finally, it is good to assess the possibility of achieving sustainable agricultural development, but to a large extent, business must properly manage the process before and after the disaster. Thus, some of the leading researchers suggest that it is necessary to make a detailed analysis of the possible negative consequences in advance. This type of analysis will help to accurately identify the location, area and level of damage for each farmer. The most appropriate way to solve such tasks is through spatial data analysis through GIS and remote sensing techniques [34].

Bulgaria has a strong legal and institutional basis for disaster risk management. The system thus ensures long-term resilience to climate risks. In Bulgaria, significant efforts have been made to decentralise responsibilities for preparedness, prevention and response at district and municipal level, including building the necessary capacity at lower levels. Early warning, preparedness and response systems and capacities are well developed. One of the most significant challenges in the area of disaster risk

management and climate resilience are minimising financial shocks following disasters, and financing and undertaking systematic risk reduction efforts [19, 3].

CONCLUSIONS

The research results show that in practice the impact of disasters and accidents is significant in rural areas and the population living conditions are important to attract investment. Due to underdevelopment and lack of adequate infrastructure, we notice difficulties and conditionalities related to situation normalization in the respective territorial communities. In the first place, there is a lack of a financial instrument at the national level that would allow timely and decisive action to be taken when living conditions deteriorate. It is clear from the presentation that the emphasis on prevention is linked to the activities' organization to reduce the impact of disasters and accidents, without providing solutions to the case and ways of effectively restoring the quality of living conditions in rural areas. In practice, the integration of this complex set of activities and structures, in the process of disaster crisis management is only possible through competent pre-planning and assignment of tasks within the framework of general disaster protection regulations at the municipal and district levels [3]. As has become clear, there is a link between the level of development of rural areas in Bulgaria, the provision of different types of services for normal life in them, and crisis prevention preparedness [8,19]. Since the last census, it has become clear that the demographic situation in rural areas has severely deteriorated, and a process of demographic deserts has begun to form. The worsened demographic situation directly affects the possibilities of taking preventive actions and measures to reduce the risk of disasters [19]. Therefore, rural areas are more vulnerable, and when crises occur, it is difficult to overcome their consequences. Data analysis shows that rural areas in Bulgaria are sparsely populated and underdeveloped, outside the focus of the state, which determines the strong dependence of these

territories on emerging disasters and emergencies. It is necessary to develop the multifunctionality of rural areas, which means economic diversification and increasing the opportunities for employment of people in non-agricultural activities in the settlements and their lands. Also, to carry out training and project activities for the preparedness of economically active persons and the public sector to deal with disasters and accidents in rural areas. This will allow the regions to gain more experience and experts in disaster and accident prevention and crisis management in rural areas.

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