

### Economic component in the causes and consequences of emergencies

Trush, Oleksandr Olegovich; Gorovyi, Dmytro Anatoliiovich

Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

#### Empfohlene Zitierung / Suggested Citation:

Trush, O. O., & Gorovyi, D. A. (2018). Economic component in the causes and consequences of emergencies. *European Journal of Management Issues*, 26(3-4), 126-135. <https://doi.org/10.15421/191813>

#### Nutzungsbedingungen:

Dieser Text wird unter einer CC BY Lizenz (Namensnennung) zur Verfügung gestellt. Nähere Auskünfte zu den CC-Lizenzen finden Sie hier: <https://creativecommons.org/licenses/by/4.0/deed.de>

#### Terms of use:

This document is made available under a CC BY Licence (Attribution). For more information see: <https://creativecommons.org/licenses/by/4.0>

UDC classification: 614.84

JEL Classification: C25, C M12

## Economic component in the causes and consequences of emergencies

O. O. Trush<sup>‡</sup>,  
D. A. Gorovyi<sup>#</sup>

**Purpose** – to elucidate the «economic nature» of an emergencies, to expand the list of reasons for the formation and consequences of the emergencies, taking into account the economic component, and to provide a description of their interrelation in this process.

**Design/Method/Approach.** This work evaluates and summarizes studies that provide economic characteristics and assess the causes and consequences of a emergencies.

**Findings.** An analysis of previous studies on emergencies pointed to a limited focus on economic issues associated. In this paper, the authors substantiated the feasibility and proposed to highlight the economic component in the management of prevention of emergencies, in the management of minimizing negative consequences and to consider this component in the classification of types of emergencies. This work focuses on the causal link between economic costs for the prevention, elimination and elimination of the effects of emergencies (economic losses) in the emergency management system. The examples have proved that all of the emergency preceding processes are economical, that emergency actions are limited to an economic factor, and that emergency situations can have economic consequences. An economic component can be both a cause and a consequence of an emergency. At the same time, the economic causes of emergencies directly affect only the economic consequences (inflation - impoverishment of the population), and their impact on the remaining consequences - indirect, due to the impact of other factors-consequences.

**Theoretical implications.** This research identifies a new classification group "economic circumstances" in the classification of types of emergencies for the causes of the emergence and spheres of manifestation of the consequences.

**Practical implications.** The isolation and systematization of the economic component of emergencies allows us to take into account the economic factor in the development of appropriate prevention algorithms, actions in emergencies or actions to eliminate the negative effects of these events.

**Originality/Value.** The originality of the work is to illustrate the connection between the cause of emergencies and each of its manifestations with the help of the fan matrix. This approach has allowed a clearer outline and a clear indication of the causal relationship in the processes associated with the emergency situation. For example, a causal relationship with the types of emergencies based on the economic component is illustrated with the aid of a fan matrix.

**Research limitations/Future research.** This research is the basis for further improvement of approaches to the estimation of economic indicators of emergencies taking into account the proposed classification groups of types of emergencies.

**Paper type** – theoretical.

**Key words:** classification, fan matrix, causal relationship, expenses for overcoming of consequences, insurance, management.

<sup>‡</sup>Oleksandr Olegovich Trush,  
Ph.D. in Public Administration, Professor,  
Vice-Rector for Scientific and Pedagogical Work,  
National Technical University "Kharkiv Polytechnic Institute",  
Kharkiv, Ukraine,  
E-mail: [a\\_trush@ukr.net](mailto:a_trush@ukr.net)

<sup>#</sup>Dmytro Anatoliiovich Gorovyi,  
Doctor of Economics, Professor,  
Professor of Economics and Marketing Department,  
National Technical University "Kharkiv Polytechnic Institute",  
Kharkiv, Ukraine  
E-mail: [digoro@ukr.net](mailto:digoro@ukr.net)

**Reference** to this paper should be made as follows:

Trush, O. O., Gorovyi, D. A. (2018). Economic component in the causes and consequences of emergencies. *European Journal of Management Issues*, 26(3-4), 126-135. doi:10.15421/191813.

## Економічна компонента в причинах і наслідках надзвичайних ситуацій

Труш Олександр Олегович<sup>‡</sup>,  
Горовий Дмитро Анатолійович<sup>‡</sup>

<sup>‡</sup>Національний технічний університет «Харківський політехнічний інститут», Харків, Україна

**Мета роботи** – з'ясувати «економічну природу» надзвичайних ситуацій (НС), з урахуванням економічної складової розширити перелік причин формування та наслідків НС, описати їх взаємозв'язки у цьому процесі.

**Дизайн/Метод/Підхід дослідження.** Оцінка та узагальнення досліджень, які надають економічні характеристики та оцінюють причини та наслідки НС.

**Результати дослідження.** Аналіз попередніх досліджень з питань НС вказав на обмежене зосередження на економічних питаннях. У даній роботі обґрунтовано доцільність і запропоновано виділити економічну складову в управлінні запобіганням НС, в управлінні мінімізацією негативних наслідків НС і розглянути цей компонент в класифікації видів НС. Зосереджено увагу на причинно-наслідковому зв'язку між економічними витратами на запобігання, ліквідацію та усунення наслідків НС (економічних втрат) в системі управління НС. На прикладах доведено, що економічний характер мають усі процеси, що передують НС, що дії під час НС обмежені економічним чинником, а також що НС можуть мати економічні наслідки прояву. Економічна компонента може бути як причиною, так і наслідком НС. Разом з тим, економічні причини НС прямо впливають лише на економічні наслідки (інфляція – зuboжіння населення), а їх вплив на решту наслідків – побічний, через вплив решти факторів-наслідків.

**Теоретичне значення дослідження.** Виокремлено нову класифікаційну групу «економічні обставини» в класифікації видів НС за причинами виникнення та сферами прояву наслідків.

**Практичне значення дослідження.** Виокремлення та систематизація економічної компоненти НС дозволяє враховувати економічний чинник під час розробки відповідних алгоритмів запобігання, дій під час НС або дій з усунення негативних наслідків цих подій.

**Оригінальність/Цінність/Наукова новизна дослідження.** Зв'язок між причиною НС і кожним її проявом проілюстровано за допомогою віялової матриці. Такий підхід дозволив більш чітко окреслити та наочно показати причинно-наслідковий взаємозв'язок у процесах, пов'язаних з надзвичайною ситуацією. Для прикладу за допомогою віялової матриці проілюстровано причинно-наслідковий зв'язок типами НС з урахуванням економічної компоненти.

**Обмеження дослідження/Перспективи подальших досліджень.** Це дослідження є основою для подальшого удосконалення підходів до оцінки економічних показників НС з урахуванням запропонованих класифікаційних груп типів НС.

**Тип статті** – теоретична.

**Ключові слова:** класифікація; віялова матриця; причинно-наслідковий взаємозв'язок; витрати на подолання наслідків; страхування; управління.

## Экономическая компонента в причинах и последствиях чрезвычайных ситуаций

Александр Олегович Труш<sup>‡</sup>,  
Дмитрий Анатольевич Горовой<sup>‡</sup>

<sup>‡</sup>Національний технічний університет «Харківський політехнічний інститут», Харків, Україна

**Цель работы** – выяснить «экономическую природу» чрезвычайных ситуаций (ЧС), с учетом экономической составляющей расширить перечень причин формирования и последствий ЧС, описать их взаимосвязи в этом процессе.

**Дизайн/Метод/Подход исследования.** Оценка и обобщение исследований, которые предоставляют экономические характеристики и оценивают причины и последствия ЧС.

**Результаты исследования.** Анализ предыдущих исследований по вопросам ЧС указал на ограниченное сосредоточенность на экономических вопросах. В данной работе обоснована целесообразность и предложено выделить экономическую составляющую в управлении предотвращением ЧС, в управлении минимизацией негативных последствий ЧС и рассмотреть этот компонент в классификации видов ЧС. Внимание сосредоточено на причинно-следственной связи между экономическими затратами на предотвращение, ликвидацию и устранение последствий ЧС (экономических потерь) в системе управления ЧС. На примерах доказано, что экономический характер имеют все процессы, предшествующие ЧС, действия во время ЧС ограничены экономическим фактором, а также НС могут иметь экономические последствия проявления. Экономическая компонента может быть как причиной, так и следствием НС. Вместе с тем, причины НС прямо влияют только на экономические последствия (инфляция - обнищание населения), а их влияние на остальные последствия - побочный, из-за влияния остальных факторов-следствий.

**Теоретическое значение исследования.** Выделена новая классификационная группа «экономические обстоятельства» в классификации видов НС по причинам возникновения и сферами проявления последствий.

**Практическое значение исследования.** Выделение и систематизация экономической компоненты НС позволяет учитывать экономический фактор при разработке соответствующих алгоритмов предотвращения, действий при ЧС или действий по устранению негативных последствий этих событий.

**Оригинальность/Ценность/Научная новизна исследования.** Связь между причиной НС и каждым ее проявлением проиллюстрировано с помощью веерной матрицы. Такой подход позволил более четко определить и наглядно показать причинно-следственную взаимосвязь в процессах, связанных с чрезвычайной ситуацией. Например с помощью веерной матрицы проиллюстрировано причинно-следственная связь типами НС с учетом экономической компоненты.

**Ограничения исследования/Перспективы дальнейших исследований.** Это исследование является основой для дальнейшего совершенствования подходов к оценке экономических показателей НС с учетом предложенных классификационных групп типов НС.

**Тип статьи** – теоретическая.

**Ключевые слова:** классификация; веерная матрица; причинно-следственная взаимосвязь; расходы на преодоление последствий; страхование; управление.

## Introduction

Modern statistical data show that the number of emergencies has increased recently in the world. The reasons for this are climate change, the emergence of new technology and the growing demands for management of this technology as a result of scientific and technological progress, increasing the population of the world and changing ecosystems, increasing the number of military conflicts and the emergence of new "hybrid" threats. Separately, one must distinguish an economic reason. Increasingly there is information about the underfunding of preventive measures to prevent the onset of man-made disasters. In addition, more and more often the very economic reasons lead to the emergence of new emergencies. Thus, attempts by the French government in autumn 2018 to raise fuel prices triggered mass protests that had become riotous and contributed to the emergence of emergencies.

Everything in big spheres shows the consequences of emergencies. So, the Tohoku region, North-East Japan, was hit by a gigantic earthquake that occurred in the Pacific Ocean near Tohoku, and later - a gigantic tsunami. These dangers have caused enormous damage on the eastern coast of Japan. Such a loss had a strong impact on both recovery and economic activity in the country as a whole (Mimura, Yasuhara, Kawagoe, Yokoki, & Kazama, 2011).

Each new manifestation of emergencies requires, in the event of their occurrence, the use of effective management mechanisms for the rapid resolution of emergencies and the development of measures to prevent the emergence of new emergencies. This, accordingly, requires some economic costs.

In this connection, it becomes necessary to increase the attention to the economic factors related to the emergencies, which can cause them or come along with others as a result of them, the separation of the economic components of the emergencies for their prevention and withdrawal.

## Theoretical background

An overview of scientific research on emergency management and its economic basis allowed to reveal the following.

Ukrainian researcher V. Yevdokymov and his colleagues described the peculiarities of management of economic activity in emergency situations (Yevdokymov et al., 2016).

Also, these problems are devoted to the work of foreign authors. The predominant work of American and German researchers is the principles and construction of emergency management (for example, the work of J.E. Trainor (Trainor, & Subbio, 2014), McElreath et al. (2014) and M. Jansen (Jansen, 2010). Chinese researchers led by Zhou, Huang & Zhang, 2011, using fuzzy logic, determined the factors that influence the effective management of the emergencies.

Questions of the assessment and accounting of the economic components of the emergencies are in principle not new. As in the whole world, and in Ukraine, in recent years, many researchers have been involved. Yes, V.O. Vasiichuk (Vasiichuk et al., 2010), V.V. Mogilnichenko (Mogylnichenko, 2008) touched upon the cost of civilian protection during emergencies. The state of the accounting and analytical system for managing economic activity in emergency situations was considered by Hrytsyshen and Polyak (Hrytsyshen, & Polyak, 2016). Ye.V. Khlebystov conducted a comparative analysis of Ukrainian and international practices to assess the consequences of emergencies (Khlobystov, Zharova, & Voloshyn, 2009). From the questions of assessment to the issues of forming mechanisms for minimizing the economic consequences of accidents and disasters passed in his work G.M. Ploskonos (Ploskonos, 2003).

A separate direction of research of scientists is devoted to economic losses from emergency situations. Yes Y.A. Opanasyuk in

his work proposed principles for assessing the environmental and economic damage from emergency situations (Opanasiuk, & Melnyk, 2013), M.I. Bublyk has developed a methodology for estimating industrial losses in industrial enterprises in a modern economy (Bublyk, & Koropetska, 2012).

Summarizing this review, it can be noted that the focus of the research was on approaches to emergency management, assessment of emergency response costs and emergency response. In some studies, scientific articles and books, emergency reports separately indicate the economic factors of emergencies and separately - the economic areas of the emergence of emergencies. The causes and consequences of emergencies associated with economic factors were not well understood. The connection between these two categories is not cached. Our analysis points to facts that confirm the link between economic causes and the economic consequences of emergencies. And such facts are more than expected by the authors. Therefore, there is a clear need to determine the relationship between economic and emergency consequences, especially in the context of limited actions to avoid emergencies due to lack of funds.

## Problem statement

Purpose - to elucidate the «economic nature» of an emergencies, to expand the list of reasons for the formation and consequences of the emergencies, taking into account the economic component, and to provide a description of their interrelation in this process.

## Methods and information sources of research

In this work methods are used, in particular, general sciences: induction, deduction, analysis, synthesis, scientific abstraction and generalizations - for the formation, substantiation and development of the formalized conceptual-categorical research apparatus; a comparative analysis, a theoretical generalization of a causal relationship - to determine the differences between the causes of the occurrence and the consequences of manifestations of emergencies; a system approach - for the development and substantiation of the system of constructing fan matrices; specific: semantic analysis - for analyzing the flow of publications to determine the methodological basis for determining the economic causes and consequences of emergencies; processing expert information - to determine the key factors in the construction of fan matrices; project priority - for the construction of fan matrices and the formation of conclusions based on them. Information sources of research are the scientific works of domestic and foreign scientists on the problems of assessment and management of emergencies, regulatory documents and the legislative framework of Ukraine and other countries on the classification of emergencies.

The distinction between the social and purely economic causes of emergencies and the establishment of communications identified in the Code of Civil Protection of Ukraine (Kodeks tsyvilnoho zakhystu Ukrainy, 2018), the types of emergencies among themselves (with the involvement of a new feature) were carried out with the help of a fan matrix (the matrix of S. Cordonsky) (Kordonskyi, 2011).

"Fusion matrix - a table used in methodology, semiotics, classification theory for the description of taxonomies and ontologies" (Veyernaya matritsa, 2018). Its essence lies in the fact that such a matrix has a "level structure", that is, it allows the presentation of information in the form of a certain set of levels (by structure, management or functioning), makes it possible to consider each concept as an organization level from the derivative of the fan matrix. In addition, the fan matrices are substantially limited, since the scope of their interpretation can not go beyond the limits defined by the earlier levels (organization, structure, management, operation). Fighting matrices allow to build

ontologies of scientific pictures of the world; to predict the existence of concepts (objects, phenomena) and relations between levels of research; generate partial (partial) picture of the world, based on the basic picture of the world; to simulate (to set character sets) structures of different levels, to operatively represent (solve) the so-called paradoxes of belonging. "The virtuosity of the matrix is manifested in the fact that its fragments, taken according to certain rules, are deployed in derivatives from the original table of structure that retain its logic" (Veyernaya matritysa, 2018).

## Results and discussion

The "Emergency Law" adopted in the UK defines an emergency situation as depriving the public of sources of vital needs and requiring special action and opportunities (Civil Contingency Act, 2004). This definition should meet the challenges, risks and threats faced by each state in the new millennium.

Based on the already existing definition of maritime and man-made emergencies (Nadzvychna situatsiia, 2018), under an emergency situation of an economic nature (economic emergency), we consider the situation as a result of the government's false economic actions, the use of economic sanctions by other countries, hybrid hostilities, impoverishment of the population and loss of savings, unemployment and bankruptcy of enterprises and organizations, withdrawal from the country of investors, depreciation of the national currency and securities.

To identify the economic nature, causes and consequences of emergencies associated with economic factors, the authors of this work have studied the classification of emergencies.

Classification is not only important for science, but is also one of the main components of thinking.

Separate results of investigations of the classification of emergencies are given in the works of G. M. Haramdi (Kharamda, 2012), V.C. Zhidetsky (Zhidetsky, Dzhyhyrey & Melnykov, 1999), VS Dzhigireya (Dzhyhyrey & Zhidetsky, 2000), V.E. Goncharuk, SI Kachana SM Orla and VI Puzli (Goncharuk, Kachan, Orel & Putsylo, 2004), Ya.O. Serikova (Sierikov, 2007), D.Yu. Polkovnychenko (Polkovnychenko, 2014), D. Mladana and V. Tsvetkovicha (Mladan & Cvetković, 2010) and many other authors. GM Haramda (Kharamda, 2012) proposes a classification of the causes of emergencies, which highlights economic. Among these reasons, he defined: "imperfection of technical means and technological processes, environmental change due to nature use (pollution, exhaustion of resources), poverty (wearing equipment, lack of funds for modernization, prevention)" (Figure 1). However, this interpretation, in our opinion, is incomplete and controversial.

In work D.Yu. Polkovnychenko (Polkovnychenko, 2014) identified two groups of contradictions: "between nature and society and within society." In turn, in the second group of contradictions, that is within the society, it is possible to conditionally identify a set of socio-political, including military-political and socio-economic contradictions, on two levels: interstate (international) and in-state. "However, in the general author's definition of emergencies, he does not already distinguish economic reasons: "Using such grouping and considering emergency situations as a consequence of the intensification of contradictions in the absence or lack of effectiveness of the mechanism for managing the development of society, we can distinguish four classes of emergencies: military-political and social -Political conflicts; natural disasters; man-made disasters; emergency situations of the "combined type", that is, those with a mixed natural-technological (epidemic of oncological diseases, lung silicosis, etc., as well as landslides, desolations, etc.), natural-social (some mental illness) nature".

D. Mladana and V. Tsvetkovich (2010) proposed another approach to classification - the ability to manage emergencies through means of prediction and influence (Table 1). However, this classification is

not emphasized directly on economic rather than on purely managerial actions.

In countries of the world, emergencies are classified and at the legislative level, depending on the causes, scales, consequences, etc. Depending on the geographical location, the specifics of the legislation or customs of the country, each country has its own peculiarities of such classification (Emergency, 2018).

For example, in the United Kingdom, the types of emergencies are distinguished according to the facility, which includes emergency situations: emergencies that threaten life, health, property or the environment (Emergency, 2018).

Similar to British, there is the Chinese classification of emergencies, but unlike Britain, only three factors are taken into account: depending on the threats to life, health and the environment. According to the legislation, life threatening is considered to be an emergency situation with the highest priority, because "nothing is more important than human life" (Jinji qingkuang, 2018).

In the United States, there is no single federal classification. The type of emergencies is different for each state, which local authorities control and manage emergency situations. For example, in Texas, emergency situations are classified into 4 levels depending on the degree of impact on them (supervised by specialist personnel; uncontrolled but occurring on small territory; an uncontrolled situation requires an additional protection zone; an entirely uncontrolled situation) (Emergency Classification Levels & Responsibilities, 2018).

In view of the significant upheavals in recent history of Serbia (military actions, significant displacement of population) in this country, the criteria for classification of emergencies are: time (unexpectedness, rate of development of events); socio-ecological consequences (human sacrifices, epidemics, mass destruction of cattle, preparation of production, use of a significant amount of natural resources); socio-economic consequences (big conflict, high risk, provoking internal political instability, domestic political events, increasing inter-ethnic tensions, expressed international instability, economic consequences (significant economic losses and the threat to financial and material resources, violations of the regular transport system, the need for significant material costs and compensations, the formation of funds, the need to use a large number of methods to prevent situations and eliminate the consequences); the body Management (Unpredictable Situations in Management) (Vanerna situatsija, 2018). Despite the presence in the EU of a single emergency management body - the European Center for Monitoring and Information on Emergencies - there is still no single classification of emergencies in the EU. For different countries, the classification varies. In Germany, emergency situations are classified according to the principle of responsibility for resolving the situation, due to the fact that there are a large number of services in this country (civilian, military, and even volunteer) who should come to the rescue in the event of an emergency. In addition, the government of the country distinguishes between emergency situations such as: general emergencies for health, fires, accidents or water saving with a message by telephone 112; general emergencies in other threats and accidents with police reports by telephone 110 or using the emergency call system 734; Emergencies in the Alps with the alert of the mining rescue service; dangerous events in the railroad with the notification of an emergency manager of Deutsche Bahn, accidents in mines, emergency situations in underground caverns and caves; other disaster cases with notifications of it (Notfall, 2018). A simpler classification of emergencies is used in Finland: criminal offenses, natural disasters (fires, marine accidents, earthquakes, floods, tornadoes, tsunamis, volcano eruptions), man-made disasters (collapse of structures through fires, explosions (terrorism) or bad design, air crashes, car accidents), administrative emergencies (terrorism, war) (Pelastustoiminta, 2018). In the Czech Republic a multilevel classification of emergencies is used, the classification types of which are given in Table 2.

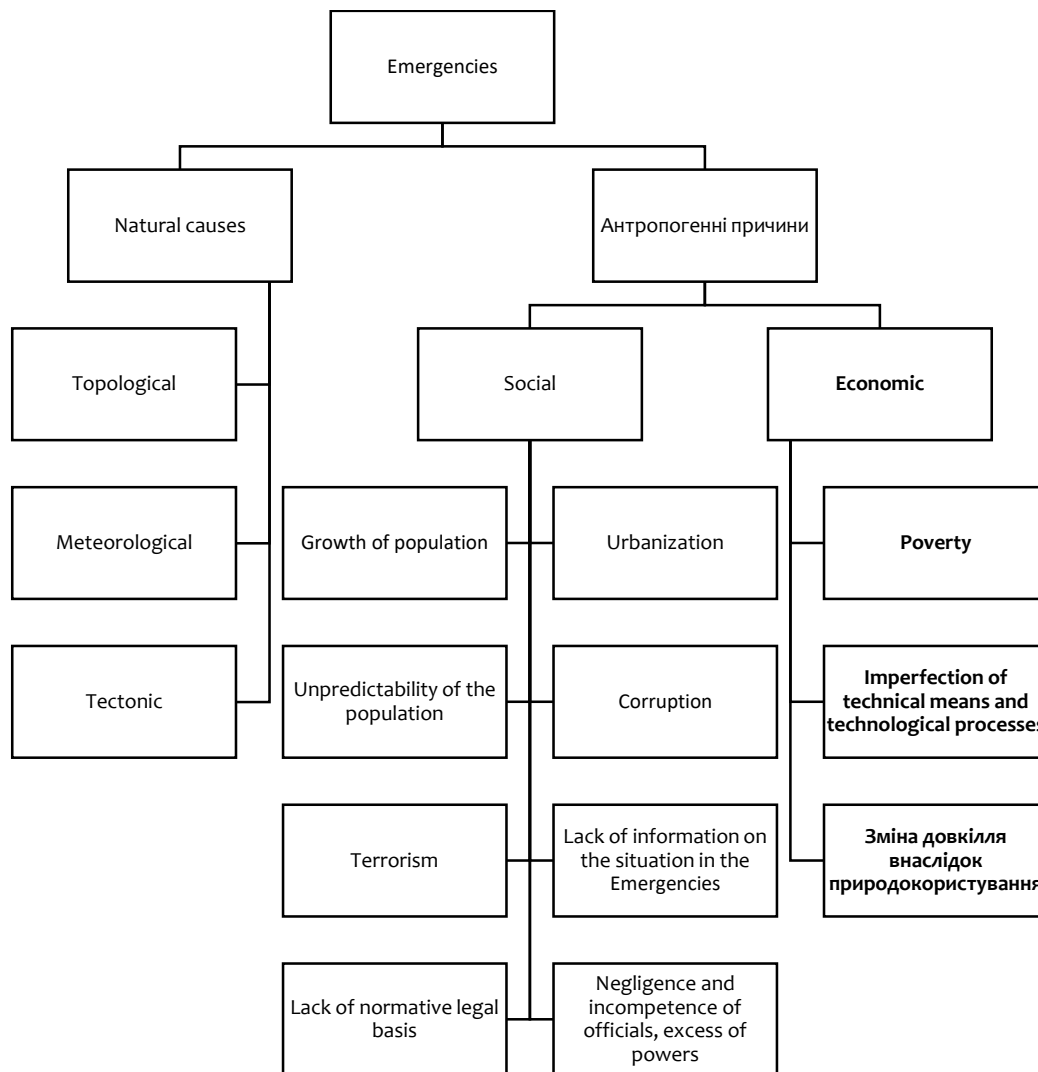


Fig. 1. Classification of the causes of emergencies by G.M. Haramda (Kharamda, 2012)

Emergencies classification, presented in the work of D. Mladan and V. Tsvetkovich

Table 1

Ability to predict	Possibility of influence on the emergencies c	
Predictable	Managed	Unfinished
Unpredictable	Traditional emergencies	Uncertain emergencies
	Unexpected emergencies	Fundamental emergencies

Source: basis of ( Mlađan & Cvetković, 2010 ).

Types of NA in the Czech Republic

Table 2

events caused by natural phenomena	
local (flood, earthquake)	abiotic (storms, fires caused by natural phenomena)
global (eg, super misfortune, pandemic)	biotic (epidemic, pest infestation)
extraordinary events caused by a person	
unintentional (technical failure, accident, negligence)	military (military attack of another state)
intentional (sabotage, terrorism, war)	non-war (unrest, social or economic reasons)
Emergency situations with mixed cause	

Source: basis of ( Mimořádná událost, 2018 ).

In Ukraine, the types of emergencies are defined in the Code of Civil Protection of Ukraine (Kodeks tsyvilnoho zakhystu Ukrayiny, 2018) and the Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Procedure for Classifying Emergencies by Their Levels" (Postanova Kabinetu Ministriv Ukrayiny, 2013), which distinguish four main types of emergencies depending on the magnitude of the consequences of the emergency (Kodeks

tsyvilnoho zakhystu Ukrayiny, 2018) or territorial distribution (Postanova Kabinetu Ministriv Ukrayiny, 2013) (state, regional, local, object) and 4 main reasons depending on the nature era origin of events that may lead to their origin (man-made disasters, natural disasters, social, military) (Kodeks tsyvilnoho zakhystu Ukrayiny, 2018).

At the same time, in the modern world, the fifth cause of emergencies is becoming more and more significant - economic. After all, news from the sources of information show that inflation (for example, in Venezuela 2017-2018), impoverishment of the population through financial pyramids (for example, in Albania in the 1990's), depreciation or loss of savings (Russia, 1993), own miscalculations of government officials or false economic development strategies (Chile, 1973), the hybrid economic challenges of neighboring countries (sanctions, boycotts, blockades, embargoes, etc.) (Libya, 2009-2011) can also be a source of emergencies. The causes of emergencies are not always clear and often coincide (Spiegel, Le, Ververs, & Salama, 2007). For example, A. Sen (1999) argued that hunger is usually caused by a lack of purchasing power, but not necessarily by drought or as a consequence of a food shortage. But these factors can aggravate the low level of solvency of the population (Sen, 1999; Spiegel, Le, Ververs, & Salama, 2007). In many cases, effective response, impact and management of emergencies prevention, emergency operations, and emergency response minimization are possible only with appropriate economic support for these processes, the differences in economic costs that depend on the type of

emergencies. Depending on the type of emergencies, the economic costs of processes associated with them vary.

However, from our point of view, in all these works insufficient attention is paid to the study of the nature of emergencies, taking into account their "economic nature", because:

- 1) the economic causes of the emergence of emergencies are not clearly defined or included in the social (socio-political);
- 2) not all factors that may trigger the emergence of emergencies for economic reasons are identified;
- 3) there are not clearly defined consequences of emergencies, which, in their turn, may have both economic causes and economic manifestations.

To better distinguish between social and purely economic causes of emergencies, the authors attempted to link each other with all types of emergencies (involving a new feature), defined by the Code of Civil Protection of Ukraine (Kodeks tsyvilnoho zakhystu Ukrainy, 2018), using a fan matrix (matrix S. Cordonsky) (Kordonskyi, 2011). Such a matrix, proposed from the research perspective, is given in Table 3.

Table 3

**Types of Emergencies under the Civil Protection Code of Ukraine and the Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Procedure for Classifying Emergencies by Their Levels"**

By nature of origin (reason)	Territorial distribution			
	state level	regional level	local level	object level
economic ( new feature )	+			
military	+	+		
social	+	+	+	
natural nature	+	+	+	+
man-made nature	+	+	+	+

Source: General of authors .

The constructed matrix shows a clear distinction between "economic" and "social" causes of emergencies. Economic causes are an event of the state level, since their consequences will affect all citizens of the country, and the social cause of the emergence can create an emergency situation in the territorial distribution of not only the state but also the lower level - regional, local, or even object (local).

An example of such emergencies in the world can be considered as follows:

- 1) Ulster crisis - social (more precisely, socio-political), conflict of Catholics and Protestants in Northern Ireland (part of Great Britain) - regional level (The Troubles, 2018);
- 2) genocide of the Tutsi people in Rwanda is social, but the level of coverage is the whole country (Rwandan genocide, 2018);
- 3) impoverishment of the population and the change of power in Libya (as a consequence of sanctions against the regime of Muammar Gaddafi) - an economic cause (Muammar Gaddafi, 2018);
- 4) constant riots with human victims in the face of significant inflation in Venezuela due to the economic strategy of the government of this country, an economic reason (Economy of Venezuela, 2018).

When conducting classifications of emergencies, some scholars suggest taking these signs into account (Bereziuk & Lemeshev, 2011): "The general cause of occurrence, type of manifestation, scope, effects, timing and extent of manifestation."

Of particular interest in this is the category of "consequences" that manifest themselves in the emergence of new emergencies. Traditionally, the effects of manifestations of emergencies include technogenic, socio-political, environmental, and economic (Bedriy *et al.*, 1997). However, V.P. Knyazeva, N.S. Scanavy and T.V. Averchenko (Kniazeva, Scanavy & Averchenko, 2002) also distinguish those that can be called historical. Historical consequences of emergencies should be considered as leading to the decline and looting or distortion of cultural-historical heritage (destruction of architectural objects, loss of religious or cultural values, etc.).

At the same time, the economic consequences of emergencies should be considered such that lead to direct material losses (losses) of the state, economic entities, communities, population. Economic consequences can be manifested in events of all levels of consideration of emergencies: state, regional, local, and even object because of the fact that at each level the event requires direct spending of funds to eliminate it, it causes certain direct losses. At the same time, the amount of money costs depends precisely on the level of emergencies (Table 4).

Table 4

**Matrix correlation between the types of emergencies on the results of their appearance and spatial distribution of**

As a consequence of manifestation	Territorial distribution			
	state level	regional level	local level	object level
historical	+			
socio-political	+	+		
man-made	+	+	+	
ecological	+	+	+	+
economic ones	+	+	+	+

Source: General or authors .

At the same time, we believe that the historical consequences of emergencies can only be at the state level, since cultural heritage is the gain of all people and the whole state, because they are kept in state museums, are protected by the state, and some objects of cultural heritage are even recognized as the property of world civilization (Cultural Heritage, 2018).

Justification of the expediency of the category of historical and economic consequences of the occurrence of emergencies can also be disclosed with the help of the fan matrix given in the table. 5, - a combination of types of emergencies as a consequence of their manifestation and types of necessary expenses.

Table 5

**Types of Emergencies  
by the consequences of their manifestation and types of necessary expenses**

As a consequence of manifestation	Types of necessary expenses			
	on insurance from the onset of the event	to cover direct damage from the event	for prevention (except for insurance)	for the elimination of the consequences
historical	+	+		
socio-political	+	+	+	
man-made	+	+	+	+
ecological	+	+	+	+
economic ones	+	+	+	+

Source: General or authors .

So, from the economic point of view, the historical consequences of manifestation of emergency situations are only direct losses, and it is almost impossible to determine the costs of preventing or eliminating the consequences. However, you can insure historical objects of cultural heritage for their (possibly partial) restoration and restoration. Although the newly built object will be only a copy of the historical, and the object of cultural heritage will be lost (as, for example, Michael's Golden-domed cathedral in Kiev). Instead, the economic consequences of emergencies are not only a direct economic loss (for example, a depreciation of savings) but can also be insured (by converting part of funds into other currencies or liquid assets). In addition, funds can be used to prevent the economic consequences of emergencies (currency interventions on the interbank exchange to stabilize the national currency) and their elimination (subsidies, material assistance to the population, subventions to local budgets).

The economic consequences of emergencies are manifest in their manifestations. At the same time, one and the same problem may require a long time to solve, and can be solved instantly. For

example, the steady growth of the foreign exchange rate during 2014 in Ukraine was not quickly stopped by the government. Opposite panic in the currency market at the end of December 2018 was resolved in a few days. However, in our opinion, it is more interesting to combine with the help of the fan class of the classification of emergencies "for the causes of occurrence" and "the consequences of their manifestation" and creation (Table 6). cause-effect relationship.

From the philosophical point of view, the categories "cause" and "consequence" generalize and distinguish one of the concrete and specific forms of this relationship. So, every phenomenon or group of interacting phenomena generates other phenomena. At the same time, the phenomenon that causes other phenomena to life, speaks to the other as a cause. In turn, the cause itself generates a consequence, because "the cause is a phenomenon, the thing that directly causes, generates another phenomenon, which is called a consequence" (Nadolnyi, 1997). That is, there is a certain chain of cause-and-effect relationships between certain previously identified groups of emergencies.

Table 6

**The matrix of cause-and-effect relationship between types of emergencies classified according to the causes and effects of manifestation**

As a consequence manifestation	For reasons of origin				
	military	social	man-made nature	natural nature	economic ones
historical	+	-	-	-	-
socio-political	+	+	-	-	-
man-made	+	+	+	-	-
ecological	+	+	+	+	-
economic ones	+	+	+	+	+

Source: Summarized by the authors.

This combination allowed to determine the direct and indirect effects of each cause of emergencies on the corresponding effects of manifestation. After all, the causes of maritime emergencies (military emergencies) can have only direct consequences: historical (destruction of cultural values), socio-political (revolution), man-made (destruction of industrial objects), environmental (environmental pollution) and economic (inflation, impoverishment of the population due to the loss of property).

At the same time, the economic causes of emergencies directly affect only the economic consequences (inflation - impoverishment of the population), and their impact on the remaining consequences is indirect, due to the impact of other factors-consequences. For example, due to the depopulation of the population (economic reason), mass disorder begins (socio-economic crisis) and robbery and destruction of cultural heritage objects (historical consequences). Or due to the impoverishment of the population (economic reason) there is a shortage of funds

for education (socio-economic crisis), which causes technological, historical or environmental consequences of emergencies. Direct effect in tabl. 4 is marked with "+", and the side is marked with "-".

It should also be noted that the direct impact of manifestations of emergencies can cause not only negative but also (in some cases) positive effects (including in economic terms). For example, the change of tyranny by democracy as a result of the revolution, the destruction of an environmentally harmful object as a result of hostilities, etc. While side effects have only negative consequences (for example, the destruction of historical objects, trade facilities or property of people through mass riots, caused in turn by rising fuel prices in Paris in the fall of 2018).

Separating the economic component in emergencies and informing the public about it will make it possible to realize economic risks, and this affects decision-making and behavior of people.



The economic consequences of emergencies are decisive in assessing such a macroeconomic indicator as the capacity of the state. After all, the capacity of the state should be evaluated, firstly, from the point of view of solving the main task of systemic transformations - deepening the market transformation of the economy and preventing the economic causes of emergencies (Trush, & Litvinenko, 2008). The determinants of this process are the institutional provision of policy reforms, the completion of the process of forming a ramified market infrastructure, the establishment of an effective legislative field and stable rules of economic activity. Another problem is sharply eliminated - elimination of existing deformations in property relations, ensuring legalization of its main forms, political support and reliable state protection of private property, interests of business partners and creditors, national capital in general, since property issues often appear to be the main stimulant of popular discontent and the emergence emergencies (for example, the crisis of car owners on a foreign registration). The state should actively interfere in this process, to assume the main burden of responsibility for its results. It is, in the end, about the formation of the necessary critical mass of reforms in the short term, which will allow the Ukrainian economy to develop in the long run on a self-sufficient market basis.

Secondly, the capacity of the state should be assessed also from the point of view of its ability to provide (with all available tools, including regulatory means) the creation of economic, political and social preconditions for realization of the existing (and potential) competitive advantages of the Ukrainian economy. In a situation where such advantages can not be realized on the basis of market self-regulators because of the absence of the latter, the state should act as an entity that strengthens the emerging market mechanisms to refine what the market is not able to do at the moment itself. By such steps the state can create new economic causes of emergencies.

Thirdly, the realization of competitive advantages must be realized in strengthening the position of the domestic market, the establishment of an innovative model for the development of the Ukrainian economy, the development of energy saving mechanisms and structural policies, and overcoming the accumulated over the years of independence of reproductive strains, since a stable internal market ensures that both social and economic causes of emergencies.

Fourthly, it requires a rethink and the logic of macroeconomic stabilization. It is also one of the determining factors of the state's capacity to act. In previous years, the macroeconomic stabilization rate was applied to monetary policy. However, Ukraine's own experience, as well as the experience of other post-socialist countries, demonstrates the limited ability of reliable stabilization of money purely by monetary instruments. Increasingly, the social and even psychological factors contribute to the stabilization of the course of the domestic currency.

Fifth, the strengthening of the effectiveness of the state is associated with a significant increase in its impact on the development of the social sphere. The basis of this is the reliable protection and state support for the socially unprotected sections of the population, as the main driving forces for the emergence of social and economic causes of emergencies.

## Conclusions

The analysis of previous research on NA issues pointed to a limited focus on the economic issue of the National Assembly. In this paper, it is proposed to identify the economic component in the management of emergency prevention and emergencies in order to minimize the negative consequences. The examples have proved that all processes preceding emergency situations are of an economic nature, actions in emergency

situations are limited by an economic factor, emergency situations can have economic consequences. An economic component can be both a cause and a consequence of emergencies. At the same time, the economic causes of emergencies directly affect only the economic consequences (inflation - impoverishment of the population), and their impact on the remaining consequences - indirect, due to the impact of other factors-consequences.

The practical significance of the results of the study is that the isolation and systematization of the economic component of emergencies allows us to take into account the economic factor in the development of appropriate prevention algorithms, actions in emergencies or actions to eliminate the negative effects of these events, to improve approaches to the assessment of economic indicators of emergencies from the emphasis on the causal link between the economic costs that precede the emergency situation (the cost of preventing emergency situations), the economic costs of eliminating emergencies and the economic consequences of emergencies (loss or expense management) in the emergency management system. All this will help ensure a comprehensive and coordinated response to emergencies.

The value of the results of this study is that with the isolation of the economic component of emergencies, further development of methodological approaches to the classification of types of emergencies. In the types of emergencies categorized on the basis of "causes of occurrence," the authors proposed to take into account the group of factors of the occurrence of emergencies - economic circumstances, and in types of emergencies, classified by the "emergency response" - taking into account the groups - economic and historical. This grouping, unlike the existing one, allows us to focus on economic problems related to emergencies and to take into account the economic component when developing management decisions regarding its prevention, elimination, and minimization of consequences.

The results of the research can be applied at different levels of government from the state to the object during the formation of policy and planning of economic costs for the prevention of emergencies, for action in emergencies and for reducing or eliminating the negative effects of these events.

## References

- Bedriy, Ya.I., Dzhyhyrey, V.S., Kydysyuk, A.I., Ohrynskyi, P.I. et al. (1997). *Bezpeka zhyttyediyal'nosti. Navchal'nyy posibnyk [Safety of life. Teaching manual]*, Afisha, Lviv, Ukraine (in Ukrainian).
- Bereziuk, O.V. & Lemeshev, M.S. (2011). *Bezpeka zhyttyediyal'nosti [Life Safety]*, VNTU, Vinnitsa, Ukraine (in Ukrainian).
- Bublyk, M.I. & Koropetska, T.O. (2012). *Otsynuyuvannya tekhnohennykh zbytkiv promyslovykh pidpryemstv v umovakh formuvannya evolyutsiynoyi ekonomiky [Estimation of technogenic losses of industrial enterprises in the conditions of evolutionary economy formation]. Visnyk NU «Lvivs'ka politekhnika». Problemy ekonomiky ta upravlinnya [Bulletin of the National University "Lviv Polytechnic". Problems of Economics and Management]*, 725, 32-41 (in Ukrainian).
- Civil Contingencies Act (2004): A Short Guide, Cabinet Office, Civil Contingencies Secretariat, London, 2-3.
- Cultural heritage (2018). Available at: [https://en.wikipedia.org/wiki/Cultural\\_heritage](https://en.wikipedia.org/wiki/Cultural_heritage).
- Dzhyhyrey, V.S. & Zhidetsky, V. Ts. (2000). *Bezpeka zhyttyediyal'nosti. Navchal'nyy posibnyk [Life Safety. Teaching manual]*, Afisha, Lviv, Ukraine (in Ukrainian).
- Economy of Venezuela (2018). Available at: [https://en.wikipedia.org/wiki/Economy\\_of\\_Venezuela](https://en.wikipedia.org/wiki/Economy_of_Venezuela).
- Emergency (2018). Available at: <https://en.wikipedia.org/wiki/Emergency>.

- Emergency Classification Levels & Responsibilities (2018). Available at: <https://www.ci.la-marque.tx.us/176/Emergency-Classification-Levels-Responsi>.
- Goncharuk, V.E., Kachan, S.I., Orel, S.M. & Putsylo, V.I. (2004) Otsinka obstanovky u nadzvychaynykh sytuatsiyakh. Navchal'nyy posibnyk [Assessment of the situation in emergencies. Teaching manual], Vydavnytstvo NU «Lvivska politehnika», Lviv, Ukraine (in Ukrainian).
- Hrytsyshen, D.O. & Polyak K.Yu. (2016). Suchasnyy stan oblikovo-analitychnoyi systemy upravlinnya hospodars'koyu diyal'nistyu v umovakh nadzvychaynykh sytuatsiy [The current state of the accounting and analytical system of management of economic activity in the conditions of emergency situations], *Visnyk ZHDTU. Seriya: ekonomichni nauky [Bulletin of the ZhDTU. Series: Economic Sciences]*, 4 (78), 61-75 (in Ukrainian).
- Jansen, M. (2010). Startseite des Studiengangs Katastrophenvorsorge und -management. Available at: [www.kavoma.de](http://www.kavoma.de) (in German).
- Jǐnjí qǐngkuàng (2018). Available at: <https://zh.wikipedia.org/wiki/紧急情况> (in Chinese).
- Kharamda, G .M. (2012). Tsyvilnyi zakhyst: Navchalnyi posibnyk [Civil Protection: Teaching manual], NTU, Kyiv, Ukraine (in Ukrainian).
- Khlobystov, Ye.V., Zharova, L.V. & Voloshyn, S.M. (2009). Metodychni pidkhody do otsinky naslidkiv nadzvychaynykh sytuatsiy: porivnyal'nyy analiz ukrayins'koyi ta mizhnarodnykh praktyk [Methodological approaches to the assessment of the consequences of emergencies: a comparative analysis of Ukrainian and international practices]. *Mekhanizm rehulyuvannya ekonomiky [Mechanism of economy regulation]*, 4, 1, 24-33 (in Ukrainian).
- Kniazeva, V.P., Scanavy, N.S. & Averchenko, T.V. (2002). Okhrana okruzhaiushchei sriedy [Environmental protection], Logos - Razvitie, Moscow, Russia (in Russian).
- Kodeks tsyvilnoho zakhystu Ukrayiny [The Code of Civil Protection of Ukraine] (2018). Available at: <http://zakon3.rada.gov.ua/laws/show/5403-17>.
- Kordonskiy, S. (2011). Veyernyye matritsy kak instrument postroyeniya ontologiy [Fan matrices as an ontology construction tool]. South-East Publishing House, Washington, USA (in Russian).
- McElreath, D., Doss, D., Jensen, C., Wigginton, M., Nations, R., Van Slyke, J. & Nations, J. (2014). Foundations of Emergency Management (1st ed.). Kendall-Hunt Publishing Company, Dubuque, IA, USA.
- Mimořádná událost (2018). Available at: [https://cs.wikipedia.org/wiki/Mimořádná\\_událost](https://cs.wikipedia.org/wiki/Mimořádná_událost) (in Czech).
- Mimura, N., Yasuhara, K., Kawagoe, S., Yokoki, H., & Kazama, S. (2011). Damage from the Great East Japan Earthquake and Tsunami - A quick report. *Mitigation and Adaptation Strategies for Global Change*, 16(7), 803–818. doi:10.1007/s11027-011-9297-7. (<https://link.springer.com/article/10.1007/s11027-011-9297-7#citeas>).
- Mladan, D. & Cvetković, V. (2010). Classification of Emergency Situations. Available at: [https://www.academia.edu/11135696/CLASSIFICATION\\_OF\\_EMERGENCY\\_SITUATIONS](https://www.academia.edu/11135696/CLASSIFICATION_OF_EMERGENCY_SITUATIONS).
- Mogylnichenko, V.V. (2008). Zakhyst naselennya i terytoriy vid nadzvychaynykh sytuatsiy. T. 3. Inzhenerno-tehnichni zakhody tsyvilnoho zakhystu (tsyvil'noyi oborony) ta mistobuduvannya [Protection of the population and territories from emergency situations. T. 3. Engineering and technical measures of civil defense (civil defense) and urban planning], KIM, Kyiv, Ukraine (in Ukrainian).
- Muammar Gaddafi (2018). Available at: [https://en.wikipedia.org/wiki/Muammar\\_Gaddafi](https://en.wikipedia.org/wiki/Muammar_Gaddafi).
- Nadolnyi, I.F. (1997). Filosofiya. Navchalnyi posibnyk [Philosophy. Teaching manual], Vikar, Kyiv, Ukraine (in Ukrainian).
- Nadzvychaina sytuatsiia [Emergency] (2018). Available at: [https://uk.wikipedia.org/wiki/Надзвичайна\\_ситуація](https://uk.wikipedia.org/wiki/Надзвичайна_ситуація) (in Ukrainian)
- Notfall (2018). Available at: <https://de.wikipedia.org/wiki/Notfall> (in German).
- Opanasiuk, Yu.A. & Melnyk, Yu.M. (2013). Metodychni pryntsyipy otsinky ekoloho-ekonomichnoho zbytku vid nadzvychaynykh sytuatsiy [Methodical principles of estimation of ecological and economic damage from emergency situations]. *Ekonomika i upravlenie [Economics and Management]*, 5, 63 (in Ukrainian).
- Pelastustoiminta (2018). Available at: <https://fi.wikipedia.org/wiki/Pelastustoiminta> (in Finnish).
- Ploskonos, G.M. (2003) Kontseptual'ni pidkhody shhodo formuvannya mekhanizmiv minimizatsiyi ekonomichnykh naslidkiv avaryi i katastrof [Conceptual approaches to the formation of mechanisms for minimizing the economic consequences of accidents and disasters]. *Problemy informatyzatsiyi ta upravlinnya: Zbirnyk naukovykh prats [Problems of informatization and management: Collection of scientific works]*, 8, 94-98 (in Ukrainian).
- Polkovnychenko, D.Yu. (2014) Klasyfikatsiya nadzvychaynykh sytuatsiy: derzhavno- upravlinskyi pidkhid [Classification of Emergencies: Public Management Approach]. *Teoriya ta praktyka derzhavnoho upravlinnya [Theory and Practice of Public Administration]*, 1, 350-356 (in Ukrainian)
- Postanova Kabinetu Ministriv Ukrayiny «Pro zatverdzhennya Poryadku klasyfikatsiyi nadzvychaynykh sytuatsiy za yikh rivnyamy» [Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Procedure for Classifying Emergencies by Their Levels"] (2013). Available at: <http://zakon.rada.gov.ua/laws/show/368-2004-n> (in Ukrainian).
- Rwandan genocide (2018). Available at: [https://en.wikipedia.org/wiki/Rwandan\\_genocide](https://en.wikipedia.org/wiki/Rwandan_genocide).
- Sen, A. (1999). Development as freedom. New York, Random House.
- Sierikov, Ya.O. (2007). Osnovy okhorony pratsi. Navchalnyi posibnyk [Fundamentals of Labour Safety. Teaching manual], KHNAMH, Kharkiv, Ukraine (in Ukrainian).
- Spiegel, P. B., Le, P., Ververs, M.-T., & Salama, P. (2007). Occurrence and overlap of natural disasters, complex emergencies and epidemics during the past decade (1995–2004). *Conflict and Health*, 1(1). doi:10.1186/1752-1505-1-2. <https://conflictandhealth.biomedcentral.com/articles/10.1186/1752-1505-1-2>.
- The Troubles (2018). Available at: [https://en.wikipedia.org/wiki/The\\_Troubles](https://en.wikipedia.org/wiki/The_Troubles)
- Trainor, J.E. & Subbio T. (2014). Issues in Disaster Science and Management: A Critical Dialogue. Federal Emergency Management Agency Higher Education Program; Emmitsburg, MD, USA.
- Trush, O.O. & Litvinenko, I.V. (2008). Modernizatsiya ukrayinskoyi ekonomiky v umovakh hlobalizatsiyi [Modernization of Ukrainian economy in globalization conditions]. *Derzhavne budivnytstvo [Public Administration]*, 1. (in Ukrainian) Available at: <http://www.kbuapa.kharkov.ua/e-book/db/2008-1/doc/5/09.pdf>.
- Vasiichuk, V.O., Goncharuk, V.E., Kachan, S.I., & Mokhnyak, S.M. (2010). Osnovy tsyvilnoho zakhystu: Navch. posibnyk

[Fundamentals of Civil Protection: Teaching manual], National University "Lviv Polytechnic", Lviv, Ukraine (in Ukrainian).

Veyernaya matritsa [Fan matrix] (2018). Available at: [https://ru.wikipedia.org/wiki/Векерная\\_матрица](https://ru.wikipedia.org/wiki/Векерная_матрица) (in Russian).

Yevdokymov, V.V., Hrytsyshen, D.O. & Polyak, K.Yu. (2016). Informatsiyana model upravlinnya hospodarskoyu diyalnistyu v umovakh nadzvychnykh sytuatsiy: monohrafiya [Information model of management of economic activity in emergency situations: monograph], ZhDTU, Zhytomyr, Ukraine (in Ukrainian).

Zhidetsky, V. Ts., Dzhyhyrey, V.S. & Melnykov, O.V. (1999). Osnovy okhorony pratsi [Fundamentals of labor protection], Afisha, Lviv, Ukraine (in Ukrainian).

Zhou, Q., Huang, W., & Zhang, Y. (2011). Identifying critical success factors in emergency management using a fuzzy DEMATEL method. Safety science, 49(2), 243–252. , doi: 10.1016/j.ssci.2010.08.005.

Ванредна ситуација (2018). Available at: [https://sr.wikipedia.org/wiki/Ванредна\\_ситуација](https://sr.wikipedia.org/wiki/Ванредна_ситуација) (in Serbian).



This is an open access journal and all published articles are licensed under a **Creative Commons «Attribution» 4.0.**