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THE COMPLEXITY AND METHODS OF CITIZEN EMERGENCY PREPAREDNESS

A LAKOSSÁG VESZÉLYHELYZETI FELKÉSZÍTÉSÉNEK KOMPLEXITÁSA, MÓDSZEREI

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Abstract

Every citizen has the right to know the dangers in his/her surroundings, to master the applicable rules of protection and behavioral norms. He/she has the right and the duty to contribute to disaster relief also. This involves as well as requires public hazard education and real-time public hazard communication. Education and communication can save lives. Before, during and after the damage event, the population must be provided with information, guidance, moreover, its interpretation and effective implementation has to be educated.

In this publication, the author attempts to present the current inquiries and information gathering methods. Taking into account the legal background, he analyzes the basic requirements and rules of domestic hazard education in prevention, preparation, defense (intervention), restitution and reconstruction periods. He gives suggestions to enhance current content of methods for improving the population's self-rescue skills and for improving public hazard education.

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Keywords: *disaster management, public hazard education, disaster management cycle, social media*

Absztrakt

Minden állampolgárnak joga van arra, hogy megismerje a környezetében lévő veszélyeket, elsajátítsa az irányadó védekezési szabályokat, magatartási normákat. Joga és kötelessége, hogy közreműködjön a katasztrófák elleni védekezésben. Ez magában foglalja, illetve megköveteli az állampolgárok felkészítését és a valós idejű tájékoztatását. A felkészítés, tájékoztatás életet menthet. Egy káresemény bekövetkezte előtt, alatt, után, a lakosságot információkkal, útmutatásokkal kell ellátni, azok értelmezésére és eredményes végrehajtására fel kell őket készíteni.

Szerző jelen publikációban kísérletet tesz arra, hogy bemutassa a jelenkori tájékozódási igényeket és információszerzési módszereket. Elemezze a jogszabályi háttér figyelembe vételével a hazai lakosságfelkészítés alapkövetelményeit, szabályait a megelőzési, felkészülési, védekezési (beavatkozási), helyreállítási-újjáépítési időszakokban. Javaslatot tegyen a társadalom önmentési képességeit növelő, lakosságfelkészítői módszerek aktuális tartalmainak bővítésére.

Kulcsszavak: *katasztrófavédelem, lakosságfelkészítés, tájékoztatás, katasztrófa-menedzsment ciklus, közösségi média.*

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INTRODUCTION

Every citizen has the right to know the dangers in his/her surroundings, to master the applicable rules of protection and behavioral norms. He/she has the right and the duty to contribute to disaster relief also. This involves as well as requires public hazard education and real-time public hazard communication. Education and communication can save lives. Before, during and after the damage event, the population must be provided with information, guidance, moreover, its interpretation and effective implementation has to be educated.

In this publication, the author attempts to present the current inquiries and information gathering methods. Taking into account the legal background, he analyzes the basic requirements and rules of domestic hazard education in prevention, preparation, defense (intervention), restitution and reconstruction periods. He gives suggestions to enhance current content of methods for improving the population's self-rescue skills and for improving public hazard education.

LOCATION OF PUBLIC HAZARD EDUCATION IN DISASTER MANAGEMENT CYCLE

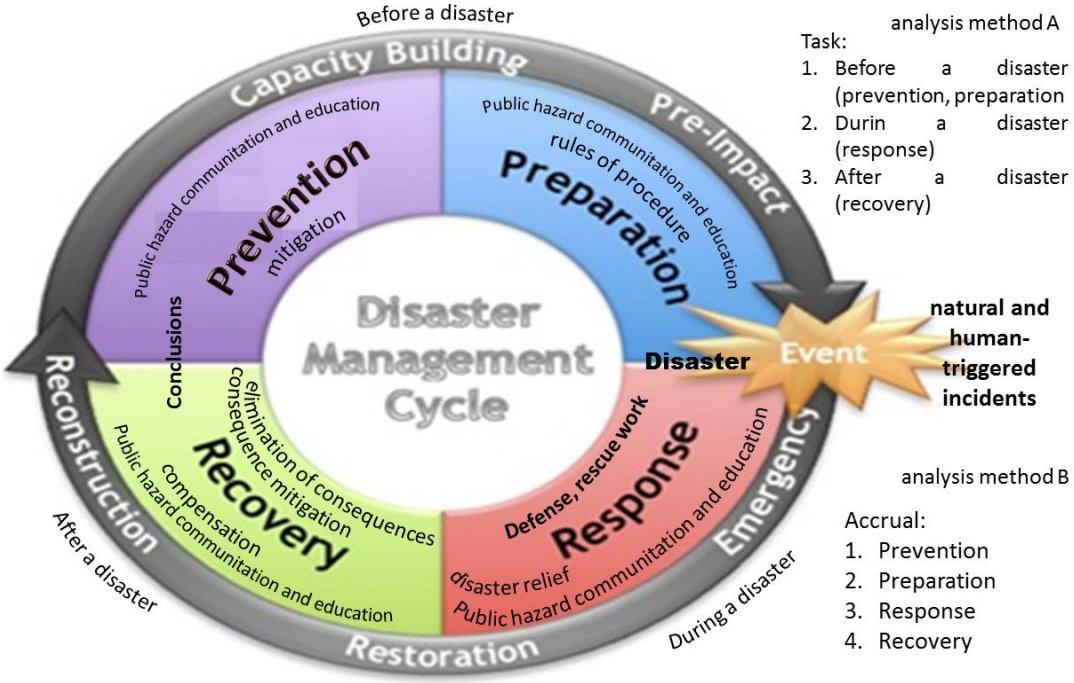

Figure 1 Time cycle of disaster management
(Created by László Teknős, 2018)

On figure 1, time cycle of disaster management can be seen. The circle process can be divided into four phases. The first one is the prevention, which means reducing the likelihood of causes of disasters; this is the main period for hazard education and hazard communication. Furthermore, the conditions of other phases are prepared here. Since impacts, emergencies and injuries cannot be prevented, public hazard education appears as a preventive principle, but in a separate phase. This will be the connection between prevention and response (reaction).

Public hazard education is a complex activity, which is, on the one hand, an activity system that includes the public education for emergencies, which includes the rules of action and

conducts to be followed, the suitability for self-rescue to save people and material goods, and through well-directed exercise, improving the knowledge to its skill level. On the other hand, it is to be aware that population can cause emergencies if it is careless or it is lacking of knowledge. The purpose of this activity is to establish a safety culture and to create self-defense attitude. The main objective of public hazard education is to present the most dangerous threats of local areas and to make the most commonly known behavioral norms to be followed in case of emergency.[1] [1]

The national disaster management task system can be divided into three parts, such as prevention, protection and reconstruction. According to the author, public hazard education and communication should be an integral part of each period, but due to its complex system of activities, legal regulation, interdisciplinary professional nature and significance, it is considered as a separate period. This is the fundamental societal self-protection mechanism of all cycles.

In most of the cases, the events reach only the lowest, the so-called daily activity threshold of the bodies involved in disaster management, therefore for the elimination process, the least-level response of organizations created for this purpose are sufficient. Continuous and strictly coordinated co-operation between local governments and public bodies is generally not necessary. For large-scale events (e. g. catastrophes), defense management actors are widely applied, with activation of higher management levels. This cycle already belongs to the defense-intervention period. Although there are home specialists who divide the national defense periods into three parts (normal period, disaster risk, special legal order), but according to the author, two additional elements can be added to disaster alarm levels based on the following.

During national defense, five periods are separated. These are (see Figure 2):

- regular operation - basic function, basic activity
- event occurred
- protracted event
- disaster risk–transition between regular period and special legal order
- emergency–special legal order

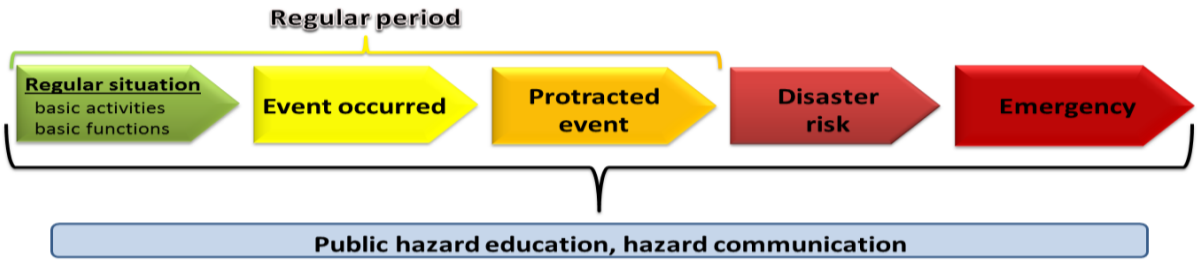

Figure 2: Determination of national defense periods in the aspects of disaster management (Created by László Teknős, 2018)

The fourth period involves the tasks of restoration and reconstruction, which means restoring the original conditions. There is a damage, a post-disaster situation where, after the

[1] Under the provisions of Act No. 62/2011 on certain rules for the protection from disasters, (XII.29.) Ministry of Interior Decree VI. chapter describes the requirements of disaster preparedness, the purpose of disaster preparedness and the preparation of civil protection organizations. The VII. Chapter describes disaster management education of administrative managers and participants in disaster response and national defence.

experiences have been deducted, new elements, methods and tasks are integrated into the prevention phase. This can be described as a circular process.

Overall, it can be stated that, as regards the time cycles of disaster management, the period of public hazard education is manifested as a separate element, mainly with regard to prevention-centric aspects and criteria, but it is also observed that public communication must appear in each period (see Figure 1) and in each defense method, (see Figure 2).

PUBLIC HAZARD EDUCATION IN THE DISASTER MANAGEMENT TASK SYSTEM

Professional disaster management was established on January 1, 2000 and was then reorganized in 2012 into an integrated national disaster management organization. This transformation was promoted by several new legislations. New legal regulations and government policies have imposed the need to strengthen preventive and administrative work, enhance responsiveness, and protect the lives, physical integrity and material benefits of the population. New legal regulations and government policies have demanded the need to strengthen preventive and administrative work, enhance responsiveness, and protect the lives, physical integrity and material benefits of the population. Civil protection is one of the most important tools and task systems for protecting the population.2

From the tasks of civil protection related to disaster management published in the act CXXVIII of 2011 on disaster management and amendments of related acts, according to the topic of present paper, the following should be highlighted:

- Public education about the normative behavioral rules during defense – section 52. a)
- Establishment and preparation of civil protection organizations – section 52. b)
- Communication, warning, alert – section 52. c)

Public education about normative behavioral rules during defense

According to section 1 (2) of the CXXVIII of 2011 on disaster management and amendments of related acts, every citizen and person has the right to know the disaster in his or her environment, to acquire the relevant protection rules, furthermore to have the right and duty to contribute to disaster relief. To be able to maintain these rights and duties, citizen should be prepared. Public hazard education should cover not only the population that is likely or in fact is at risk, but also those who get in contact with emergencies during their occupation (emergency preparedness). [2] It is important not only to know the rules of normative behavior during emergencies, but also to raise awareness of citizens in order to avoid by themselves the mechanisms of action that can cause further damage or even an emergency. The preparation can shape the population's view and way of thinking during preparing and the defense. People need to be taught and motivated by delivering the necessary knowledge, developing skills and providing resources in order to be able to defend themselves against disaster risk, furthermore to perform self-rescue during events as far as possible. [2]

[2] Civil protection: a system of overall social task and action systems designed to protect the lives of the population and to preserve living conditions in the event of disasters or armed conflicts, and prepare the population to overcome its effects and to create conditions for survival.

Figure 3 Residential information demonstrating normative behavioral rules
(Created by László Teknős, 2015)

Establishment and preparation of civil protection organizations

Detailed rules on preparation of civil protection organizations in the field of disaster prevention are set out in Interior Minister Decree no. 62/2011. (XII.29.). According to the legislation, the preparation takes place in theoretical and practical form. Theoretical training consists of basic training, 8 hours of professional training, vocational training and executive training.

<table>
<tr><th>Type</th><th>basic training</th><th>professional training</th><th>executive training</th></tr>
<tr><td rowspan="10">Content</td><td>basic elements of disaster management and civil protection system</td><td>the task of certain civil protection unit and organization</td><td>basic knowledge training</td></tr>
<tr><td>civil protection obligation, civil protection organization</td><td rowspan="2">the tasks to be carried out in their position, implementation and procedural order</td><td rowspan="2">knowledge required to carry out according to their position</td></tr>
<tr><td>rights and obligations related to civil protection</td></tr>
<tr><td>risk mitigation, risk assessment and risk management plans</td><td rowspan="3">the dependence of unit and organization, the order of management, report, command in units and in the organization</td><td>leadership theories</td></tr>
<tr><td>alert and communication, as well as bodies and organizations involved in the management and command</td><td rowspan="2">rules of application of civil protection organizations</td></tr>
<tr><td>civil protection tasks</td></tr>
<tr><td>bodies and organizations participating in defense,</td><td rowspan="2">specialized bodies and organizations, and</td></tr>
<tr><td>protective capital equipment, personal protective equipment</td></tr>
<tr><td colspan="2">labor and work safety</td></tr>
</table>

Table 1 Professional contents of basic training, professional training, leadership training
(Created by László Teknős, 2018)

Practical training of civil protection organizations involves the practical application of the skills acquired during the preparation process, the practice of operations of the rescue co-operation and the implementation and control of their temporal mobilization.

Communication, warning and alert

The Government Decree no. 234/2011 (XI. 10.) on the implementation of Act 2011 CXXVIII details the rules of communication, warning and alert.
Methods for public alert and public communication:

- first of all with notice of public interest, in accordance with the provisions of the act on media services and mass media,
- with the tools of the residential alarm system, [3]
- if technical conditions are available, using electronic communications services,
- in the usual way in place (voice announcer, messenger, wall stickers),
- other locally available fools which are applicable for alert and emergency communication, such as loudspeaker facilities for broadcasting of law enforcement agencies or individuals,
- simultaneously if it is required or possible.

Application order of alarm devices:

The public may be alerted by the alert system of disaster management, by engine syndicates, local alarm system, by electronic devices, by local authorities using local facilities, also by other alarm devices, as well as public service broadcasting, including radio and television stations.

At the case of emergency, radio is the most flexible, most-reachable medium; especially in a well-localized emergency, local radio plays an important role. At an early stage of emergency, the information service of the concerned population needs to be solved in close cooperation with official bodies, it has an important role in the later rehabilitation and in the re-launch of community's life.

Respondents in the area of public alert and emergency reporting work together to provide credible, accurate and prompt information, in which they coordinate the main areas of information, the streamlined flow of information, the population directly and indirectly affected, and international impacts.

At the case of emergency, it is necessary to indicate the occurrence of the event and its disappearance and to inform the population immediately about behavioral rules, the measures envisaged, their implementation and the emergency incident in order to prevent and mitigate threatening effects. [4] Depending on the available alert or information system, text messages or specific siren signals must be used to indicate the likely occurrence of the event or its outbreak, and to inform the public about the behavioral rules to be followed, after the assessment of the notifications, in the event of a disaster risk during the preparations and in the event of an emergency, in order to save the material goods necessary for human life and subsistence. [5]

For alarming the population, the current legislation defines two cases, such as disaster alarm [6] and air warning. [7] Ordering and unlocking the disaster response through broadcast transmitters – with 5 seconds interruption – is repeated three times.

The air warnings an alarming activity which is applied in the event of an unexpected air raid or its immediate danger to the country, the Hungarian Defense Forces, law enforcement agencies and other organizations involved in organized defense are applied, targeted

preventive defense of citizens and personal injury, damage prevention and reduction of damages.[3]

GENERAL PRESENTATION AND COMMON RULES OF PUBLIC HAZARD EDUCATION AND COMMUNICATION

Public hazard education is operated in three different periods (see Figure 1)

- prevention
- response
- recovery

In terms of temporality, the largest part of public hazard education can be related to the prevention period (since normally there are normal temporal events). Here, not only it is necessary to prepare the population for action mechanisms to be followed during an emergency event, but also to assist them in developing their self-defense skills and to be aware of how they can avoid the emergencies.

Suggested content of preventive preparation without the need for completeness:

- Awareness of types and characteristics of the threats (reasonable danger mapping), local dangers and prevention tasks, special phenomena (e. g. extreme weather).
- Consciousness, psychic preparation.
- Legal background, system and significance of disaster protection, responsibility of the citizen during the period of prevention, emergency management, and restoration, the civil protection obligation, establishment of civil protection organizations.
- Knowledge of alarm signs, the ways of informing, the possible ways and tasks of complex protection, the tasks of emergency management in a local context.
- The tasks of restoration, specifics, actualities, helping organizations, normative behavioral norms, etc.

Public hazard education is feasible with:

- Educational presentations, reports and evaluations
- Informative presentation of disaster protection devices
- Visiting Professional Firefighters' Commands, Disaster Management Guards
- Providing leaflets and brochures
- Publishing written and electronic media
- Announcing drawing contest
- Organizing disaster relief camps
- Disaster management youth competitions
- Disaster relief exhibitions
- Organizing competitions in educational institutions
- Disaster Response Population Preparatory Event with Joint Organizations
- own nationwide disaster relief preparatory event
- Educational exhibition
- Disaster relief demonstrations

[3] According to the section 6. B of Ministry of Interior Decree 16/2013. (V. 9.), professional disaster management organizations participate in the preparation and implementation of air warning during the performance of their defense tasks.

Public hazard education directly before the event

Provide targeted and specific knowledge of the perception of threats, the possibilities of defense, the use of methods, means of alerting and information, special organizations and their tasks, cooperation and enhancement of capacity.

In an emergency situation, information plays an important role. Delayed official information will worsen the chances of survival of the population and increase the likelihood of damage and human losses. Emergency communication can save people's lives and help reduce future damage. Emergency communication includes information which supports life and security of property. Interpreting the information with an interactive map is more easily "embedded" in the mind of the citizen, making it easier to memorize the information. In addition, visualization makes the raw text easier to understand. By providing an interactive map of the information leaflets, it is possible to support the people's willingness to rescue themselves. If you know where to go or to ensure your own and your family's safety, you will follow the requirements yourself and increase your chances of survival.

Article 34, section 1 of the Disaster Relief Act lists the methods of warning and alerting the public, among which the first is published in accordance with the provisions of the Public Communications Act, the Media Services Act and the Mass Media Act.

The article 32, section 6 of the Act CLXXXV of 2011 on Media Services and Mass Media and on the Law of the Media (Media Act) provides that public service broadcasters (including: m1, m2, Duna, Petőfi Rádió), the community and the highly influential media service provider (RTL Klub, TV2) body are obliged to share the announcements of the Disaster Management if it informs about the likely occurrence of events endangering or damaging to human life or property security, the mitigation of the consequences of such events already occurring, and the tasks to be performed. (...) The publishing obligation is also borne by the media service provider of a local media service operating in the broadcasting area of these events.

The rules for emergency information are set out in Government Decree no. 234/2011. (XI.10.) "On Disaster Management and the Amendment of Certain Legislation Related to CXXVIII. (1) of the Act on the Implementation of the Law on the Protection of the Rights of the Child, according to which the methods of alerting and warning the general public are as follows:

- Firstly, by publishing a public announcement, in accordance with the provisions of the Act 2010 CLXXXV. (6) on Media Services and Mass Media, if it is justified by the decision of the disaster management body and has been communicated in due time by the media service provider, the public service broadcaster shall publish its public broadcasting program. The obligation in this paragraph is also borne by the media service provider of the social media service. [8]
- With the tools of the residential alarm system.4
- In the case of technical conditions, application of electronic communications services.
- In usual way (voice announcer, messenger, wall stickers).

[4] Residential alarm system: residential alarm system, alarm notification, storm warning systems and the tools and equipment that are closely related to the operation of territorial organs of the professional disaster management body and is operated by it. These can be: residential alarm endpoint, residential alarm alert endpoint, storm endpoint, special endpoint. [9]

- With devices available for localization of alarms and emergency communication via other means, such as law enforcement agencies, loudspeaker devices for the broadcasting of individuals, and handheld hands-free devices
- If required and appropriate, simultaneous application of the previous points.

Personal requirements for hazard communication:

- Using more personal, more interactive methods of public communication.
- The communicators and announcers need to acquire appropriate behavior-psychological and sociological knowledge.
- It is necessary to assess and understand the behavioral-psychological, social-psychological and cultural-psychological characteristics typical of the locals.
- The organizers and executives possess the right knowledge and empathic behavior to effectively inform the vulnerable population.
- The operator must be an experienced, suggestive, confident, intelligible, relaxed person.
- Teaching methods for preparing communicators: training, vocational training.

In an emergency situation, hazard communicator officers cooperate to provide credible, accurate and prompt information, in which the main areas of information, the streamlined flow of information, the population directly and indirectly affected, and international impacts are coordinated. [6]

The Interior Minister Decree no. 62/2011. (XII.29.) "on certain rules of protection against disasters" IX. chapter describes that public hazard education for domestic population can be divided into two groups:

- Active hazard education
- Passive hazard education

	Active	**Passive**
period	• once a year in settlements qualified as I. disaster class • three times a year in settlements qualified as II. disaster class	The branch office shall hold an open public day at least once a year.
modes of implementation	• Issuance of brochures • Publication of information leaflets in local press, local government newspaper, county newspapers, local and regional television, cable television, local radio, and publication of internet information surfaces • By organizing residential forums • Other public events held in a settlement (town and village cap)	• A Providing accessible information for printers and electronically accessible information to those who are interested • Providing open day
content	• Preparing the population for detecting alarm methods and signals • Normative behavioral norms • Forms of assistance • Risks of natural and technological threatening the area • Possible ways of remedying hazards	• Content of communication during

Table 2: Groups of domestic public hazard education[5]

[5] In settlements where the national or ethnic minority reaches 5% of the total population or which is a tourist center, a part of the information leaflet issued or published in the form of active publicity have to contain alerts

Public hazard communication during emergencies

The Interior Minister Decree no. 234/2011. (XI. 10.) "on the disaster management and the related amendments to certain legislations of the act CXXVIII. 2011", article VII. section 34 (1) describes alerting methods and emergency communication.

Essential elements of public hazard communication: [10]

- Depending on available alert or information system, primarily by means of textual communication (in the public interest), in accordance with the provisions of the Act on Media Services and Mass Media, or with certain siren signals, the eventuality of the event must be indicated in order to save human lives and subsistence material (disaster alert), and promptly inform the general public about normative behavioral rules.
- The disaster risk, the emergency situation, event management, defense, normative behavioral rules, civil protection measures, ordered restrictions, and further information providing in the restoration period require further information.
- Other facilities include the use of residential alarm systems (residential alarm, alarm information, storm warning systems and devices and equipment connected to them), electronic communications services (with technical equipment) and traditional customary methods (loudspeakers, wall hangers, law enforcement agencies , the use of hands-free handsets, etc.).

Content of residential information sheet

The content of residential information sheet, which should be included in all information material based on different situations:

- Describe the situation
- Determining the population and area concerned
- Describe the rules to be introduced immediately (behavioral rules)
- Provision of protective equipment
- Relocation, evacuation and reception
- Related to the previous point: determining assembly locations, describing the contents of the evacuation packet
- Presentation of opportunities for getting closed
- Shelter protection (access, address)
- Define the location of personal defense
- Description of health regulations and insurance
- Reading administrative decisions (ordering public work, restricting traffic, etc.)

Further information should be kept in accordance with the order of defense, taking into account the evolution of events.

Public hazard communication after restitution

Restoration is a set of actions and activities to be carried out at the time of or after the elimination of damage, basically during the "restoration" period, which is to be carried out in order to reach or approach the state before the occurrence of a critical event and to determine responsibility, compensation and fact-finding tasks, allowing: [11]

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and codes of conduct to be followed in minority language or has to be published in the world language. People with disabilities should be provided appropriate guides and aids.

- Eliminating the damage and consequences.
- Normalization of basic provision and public service providing the conditions of life.
- Re-establishing the conditions of practice of citizen's rights, human rights, and obligations laid down in the Hungarian Fundamental Law (to restore the situation in which citizens can exercise their rights).
- Collecting and summarizing experiences.

The "reorganization" of everyday life requires fast and accurate information flow, uniform handling of cases, coordinated activities, and how the population is prepared to do what to do in order to make recovery and reconstruction as soon as possible and with less losses. They have to know the losses, the degree of reversibility and irreversibility of processes. [12]

Elements of communication:

- Provision of damage, insurance data, information
- Sharing area information - road closures, relocation, etc.
- Ensuring the availability of authorities, municipalities, and other important bodies

The preparation activity of this period is only effective if the protective and restorative content framework of emergency preparedness has been developed in the preceding period.

ACTUAL METHODS OF PUBLIC HAZARD COMMUNICATION AND EDUCATION NOWADAYS

In today's world, the Internet is already the cornerstone of communication. The number of internet users is increasing. The snowfall of March 2013 showed that the population wanted to receive timely and reliable information that supports their security. During the flood of Danube June 2013, it was observable that people with social media profiles searched and shared information about the hazard situation on their computers or smartphones. Lack of information or bad, misleading information on the above-mentioned events resulted in people hesitation, wrong decisions, panic-like behaviors.

In order to prove the justification for the programs written on smartphones, it is necessary to examine the frequency of domestic Internet traffic.

Investigating the frequency of domestic internet use

Strategopolis Ltd. made a telephone questionnaire survey conducted by the National Media and Communications Authority (hereinafter: NMHH) on the mobile Internet habits of adult society and its mobile Internet service perception at the beginning of this year. During the survey, 1019 randomly selected adults were asked about their mobile Internet marketing habits and other issues related to the mobile market. [13]

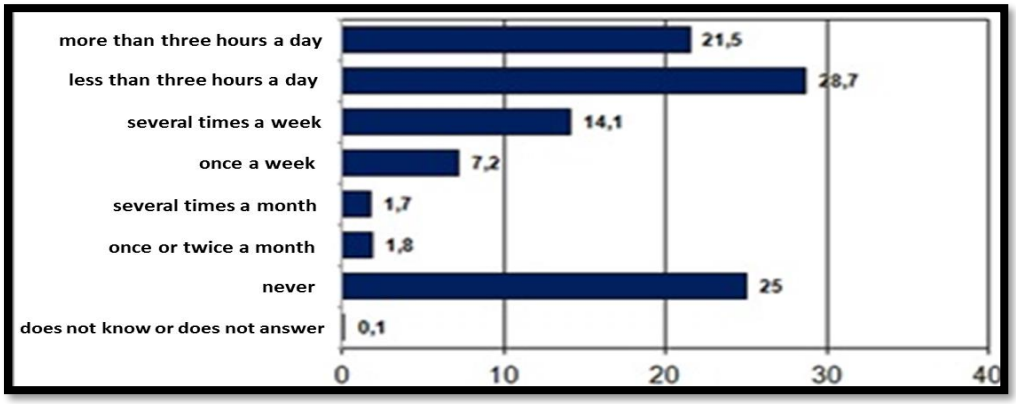


Figure 4 How frequently do you use internet? (%)

Looking at the frequency of Internet usage, half of the population (50.2%) is online every day, with the largest share (28.7%) who use the Internet less than three hours a day and more than one fifth (21.5%) spend more than three hours on the internet each day. 14.1 percent of the respondents are on the Internet more than once a week, and 7.2 percent are those who just surf once a week. Monthly, a total of 3.5 percent of the population browse the Internet, including 1.7 percent several times in a month, 1.8 percent once in a month or less. However, a quarter of the population does not use the Internet at all. The proportion of those who did not respond was insignificant, 0.1 percent.

Presentation of mobile applications

It is important to analyze the habits of domestic population so that the social support of mobile applications can be determined.

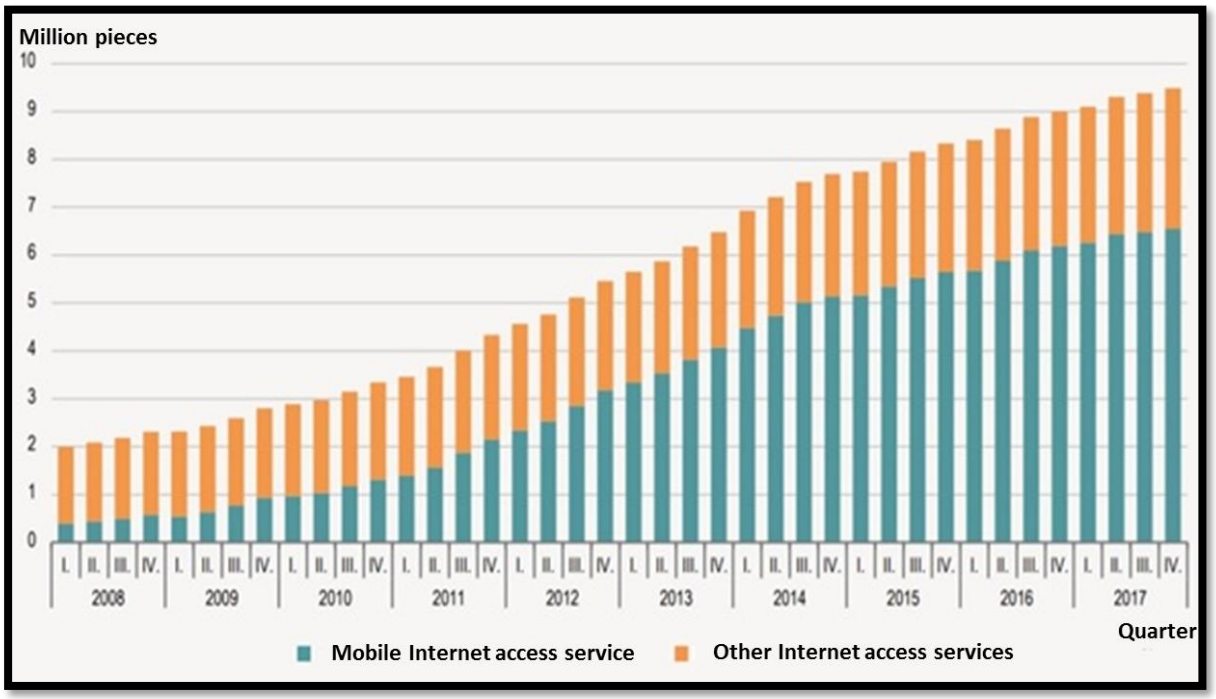


Figure 5 The development of mobile Internet and other Internet access services between 2008 and 2017

At the end of the IV. quarter of 2017, the volume of wire subscription subscriptions (2.8 million) exceeded the base period by 4.7 percent. Within this, the most significant technology for the 50 percent was the cable-based subscription, the number of which was 4.0, the optical networks increased by 19 percent, while the xDSL subscriptions decreased by 3.4 percent. Within the Internet subscriptions, the combined ratio of xDSL, optical and cable subscriptions (29 percent) did not change practically any year. [14]

Strategopolis Ltd. conducted a telephone questionnaire survey between January 25 and February 3, 2013, during which 1019 randomly selected adult adults were interviewed.

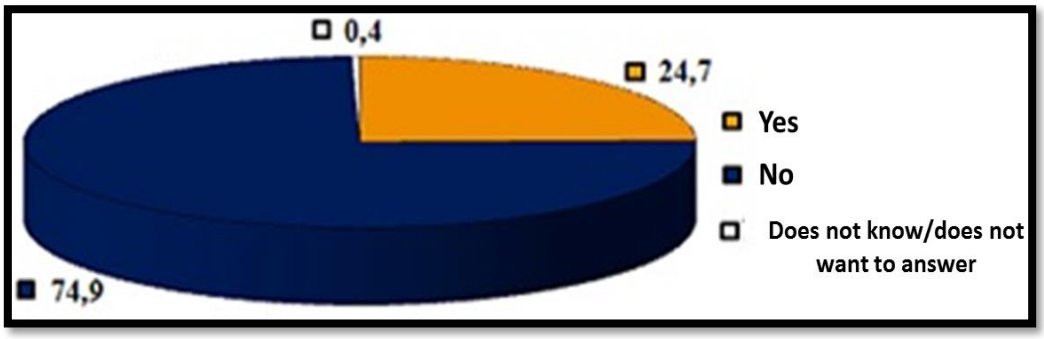


Figure 6 Rate of mobile internet users

Although almost one quarter (24.7%) of the respondents use mobile Internet, most of the Hungarian population (74.9%) does not use such services yet. [15]

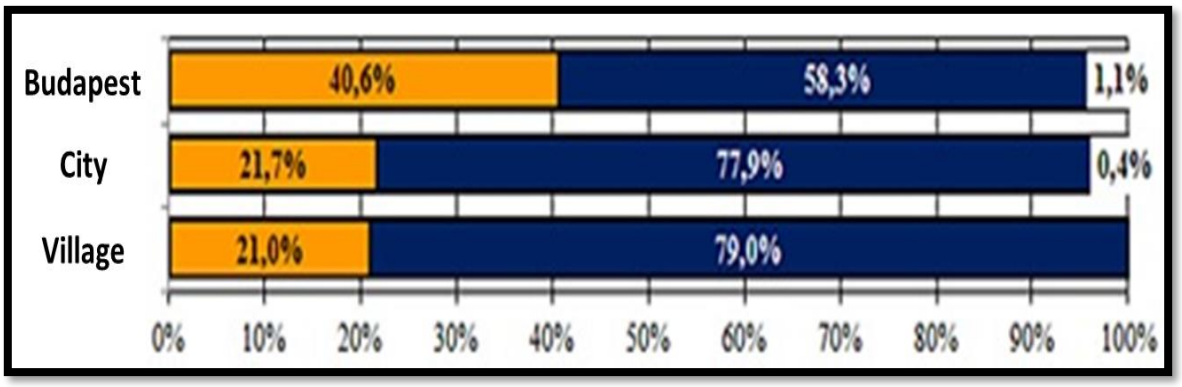


Figure 7 Where do most people use mobile internet? [15]

In Budapest, there are twice as many users (40.6%) as mobile internet users, as in rural towns (21.7%) or in villages (21%). 86 percent of adult Hungarian Internet users, namely nearly 4 and a half million, use smartphones in our country. The survey was conducted by eNET in October 2016 in the framework of eNET-Telecom's "Report on the Internet Economy" survey on the surface of the VeVa online research community, based on 868 fill-in data. The data does not reflect the entire population, but the group of people over the age of 18 who are regularly online. [16]

Taking into account 21st century technologies[6] and social relationships[7] applications for smartphones emerged as a new method of emergency communication. Due to the rapid spread

[6] Laptop, notebook, netbook, smart phone, tablet, wifi system, etc.
[7] Social media: Facebook, Instagram, Twitter, Google+, YouTube, Wikipédia, Reddit, LinkedIn, Tinder etc.

of smartphones and tablet PCs, organizations and other bodies[8] involved in disaster prevention have recognized that applications need to be created in order to inform the public on the basis of their own professional profiles and, as far as possible, to inform the most members of society. They have found that delivering emergency information and short-term weather forecasts to users can significantly increase the security of the population and citizens. Examples of such applications are: Emergency Response Service (VÉSZ) based on the joint development of BM OKF, RSOE and Microsoft Hungary, which serves the immediate, up-to-date, targeted information of the population. [2]

Meteora, [9] a nationwide available and free of charge application developed by the National Meteorological Service, can run on tablet computers, providing critical weather and beforehand authentic weather and hazard warning information for the population and the media.

Another popular weather application is the Időkép website. Its main profile is monitoring the current weather. The difference between Meteora is that it sends alerts to the user based on different weather conditions.

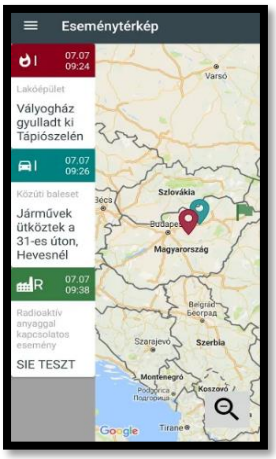
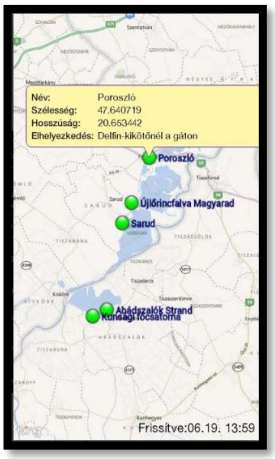
Meteora	**VÉSZ**	**TAVIHAR Widget[10]**	**Hydroinfo**
National Meteorology Service	RSOE	RSOE	National Water Warning Service
			

Table 4. Information-assisted programs installable on mobile tools

Presentation of social media, importance in public hazard education and communication

Social media has become part of everyday life, [17] infiltrating workplaces and homes. A generation that was born into the revolution of infocommunication technologies was formed, through which it became socialized and started to use these new tools skillfully. For them, social media, the use of smartphones is an everyday activity. They spend most of their time on these devices, on content sharing and keep contact on these platforms.

[8] Jointly involved in disaster prevention: Act CXXVIII. (1) of: those involved in disaster relief will provide the citizens with information, life, physical integrity, material goods and the environment.
[9] More information about the application: http://meteora.met.hu/
[10] Tavihar is a program of information on the hikes of Hungary's navigable lakes, which can be run on mobile devices that can be continuously tracked.

GfK Hungária's Digital Connected Consumer survey in 2012 measured Hungary's Internet usage on an average of 207 minutes (nearly 3.5 hours). A year earlier it was 201 minutes. The image of Ipsos's 2013 research, which defines the average social media usage in 2.8 hours, further delights the image. When we break down data for age groups, it turns out that the average daily usage of people under the age of 35 is 4.2 hours, the age between 35-49 is 3.1 hours, and those over the age of 50 spend 2.3 hours on a social network.

The international statistics of SocialTimes (Global Information Center for Social Media) reveal that Hungary has a very high profile in social media use in the global competition: 46.19% of the population, namely 4.6 million, actively use Facebook. For comparison, the penetration rate in the United States is 57.35%. The age distribution is shown in Table 5. According to We're Social's survey in 2018, the use of social networking sites in Hungary amounts to 5.81 million, of which 4.8 million are those who use Facebook also on the phone. [18]

Sex	**13-18**	**19-25**	**26-35**	**36-45**	**46-55**	**56-65**	**65+**
Male	380.000	520.000	560.000	420.000	182.000	186.000	68.000
Female	380.000	500.000	560.000	480.000	260.000	240.000	74.000
All	**760.000**	**1.020.000**	**1.120.000**	**900.000**	**442.000**	**426.000**	**142000**

Table 5 Age and gender distribution for Facebook users. (Created by: László Teknős, 2015)

It can be stated that the above data legitimizes social media research. A large number of users have the potential to be left out, but they cannot be ignored (to name a few: marketers, political organizations, government, national security organs, etc.). From the above data, it is clear that social media is used by the 19-35 age group, the most striking layer that is young, the more capable and for disaster management, can be the largest staffing pillars.

This more than two million user layer should be addressed through social media, and can be involved in disaster management system for Hungary's as a civil protection force. There are also tremendous opportunities in public hazard education, according to the age distribution of the table. The age group of 13 to 35 years old accounts for nearly 3 million users. From this it can be stated that with this well-run long-term social media strategy this huge human being can be an active participant in the successful consolidation of security culture. By winning the current young generation, a large number of human resources can be provided to disaster relief, young people whose approach will shift to sustainable development, self-defense and effective cooperation with authorities. Social media has a tremendous power potential, and many times there is a tremendously high power centered on virtual space.

Social media can assist in the prevention period in preparing for disaster risk and emergency situations. There are preventive solutions that are no longer new to the hazard education so far, but the novelty may be that the collection of today's information society is heavily reliant on the Internet, so the social media created for contacts and news sharing also provides information that supports security to carry it. In the prevention, the media also facilitates the work of the hazard education mentors, with the help of bilateral communication and shared information, in writing dialogues can pass off.

In terms of social needs, social media is an important means of communication. Websites, for example, with a Facebook page, provide greater bilateral communication, such as between population and disaster management. The well-developed web interface provides mainly one-way communication. The information material is provided and recorded by residents, but they can only ask their questions in a separate submenu, and they receive the answer much more later, if they receive at all. The moderator or admin (personally always the leader of the group) can respond to the newsletters and newsletters shared on the Facebook interface, and

may respond by the protocol approved by the Civil Protection Superintendent (or the person responsible for the press release). At one time, more people can ask questions to get answers within a short period of time, commenting on each other's questions, ensuring multidirectional communication. Social media is suitable for raising awareness.

Web sites are slower in this aspect, and even the public information they provide is slower because the authority is not forced to provide information more frequently. Conversely, in community media, ongoing public reactions, questions, comments, and requests for help force the authorities to respond, to inform the general public (this is mostly a case of catastrophic events and massive casualties). Social media is more frequent due to the events, the more frequent postings, than the websites (there is no activity, there are no terms, because the news, sharing is unilateral).

Can social media be used as education and preparation tool?

In 2011, in the United States, the FEMA (Federal Emergency Response Agency) used the community media to inform the public during Hurricane Irene. In the year 2012, at Hurricane Sandy, government agencies and FEMA communicated preventive measures to the general public through communication with the community.

Since many organizations[11] use a Facebook[12] page, therefore, because of the nature of the task, within the tools of social media, Facebook can be the platform through which the population can be widely accessed. In the flood of June 2013, the official Facebook page of professional disaster management was visited by appr. 300,000 person, so it can be found out that, in the event of extraordinary catastrophes, the population is looking for disaster protection information, guidelines, etc. at the time of the event. [13]

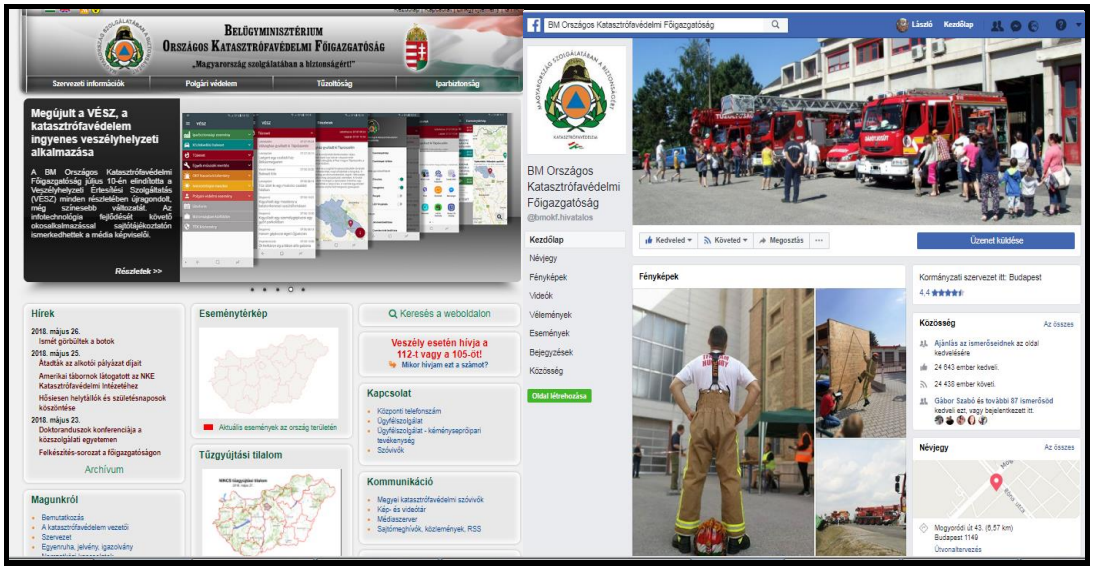


Figure 8 Official website (left) and Facebook page (right) of the National Directorate General for Disaster Management, Ministry of the Interior (Created by László Teknős, 2018)

[11] National Directorate General for Disaster Management, Ministry of the Interior (NDGDM), Hungarian Federation of Red Cross, Hungarian Defence Forces, RSOE, National Meteorology Service, etc.

[12] From the social media scene, only facebook (the most popular means of contact retrieving for home users in the internet) comes to the fore.

[13] On May 20, 2018, 24,438 people followed the NDGDM official facebook page.

Facebook is now available on mobile phones. This is helpful for public hazard communication. It can be expected that accessing Facebook via the phone will allow people to reach the required emergency information from anywhere, at any time, about road closures, about key data related to vulnerable areas, etc., which will help residents to get real-time information. This, in turn, requires that information security on Facebook should be kept in line with the situation. This information is something that affects also personal security, so tracking must be continuous for their own sake. For a citizen, collecting information on a continuous Facebook or website, he or she finds more information about his or her own security and less likely to be in trouble, so it does not affect the involved organization's work very significant. Additionally, if the citizen follows the information and behavioural norms on Facebook, it is more likely that he or she will not be in trouble or the problem will be easily solved. For example, the willingness of the community to engage in contact with the civil protection resources (races, lectures, exhibitions, events, etc.) addressing the traditional population is needed. Willingness to visit Facebook can be achieved through marketing and management. The goal is the continuous measurement and monitoring of the effectiveness of information transfer, preparation and information efficiency on the Facebook page. The possible measurements to be taken into account are: the number of fans, followers and comments, visiting ratios, the proportion of positive and negative ratings.

The current situation and major lessons of domestic emergency communication during public hazard education

With the development of information technology, the possibilities public hazard communication has widened. With the transformation of society, publicity and the need for wider access to public interest data play an increasingly important role. Getting information about communities has become more simple and faster now. While in the old days space and time played an important role in the transfer of information, these factors are no problem today. The Internet, beyond the physical dimension, has dismantled the bounds of constraint. Social Media has become one of the most important elements of this accelerated information flow. Due to the large number of Hungarian users (see previous subsection) it is indispensable that we also examine the domestic adaptation of the possibilities and methods provided by the social media in Hungarian defense mechanism, especially in public hazard communication. As the snowfall of March and the Danube flood of June, 2013 showed, there is a demand on the part of general public for the use of these new infocommunication technologies by the professional organizations. When the official Facebook page of professional disaster management during the flood of June 2013 is visited by approx. 300,000 person, it is assured that in emergency situations, the population is looking for information, guidelines, information from disaster management during the defense.

Providing credible information for the citizens may be life-saving during events caused by extreme weather. Generally, weather anomalies are complex, so negative impacts on population and material assets are expected, emergency communication cannot be prevented or bypassed because information can help to avoid panic-like, irrational "self-defense" actions of the population.

SUMMARY, CONCLUSION

With the development of information technology, the possibilities for informing the public have widened. Getting information about communities has become more simple and faster now. While in the old days space and time played an important role in the transfer of information, these factors are no problem today. The Internet, beyond its physical dimension, dismantled the bounds of constraint.

Due to the large number of Hungarian users, it is indispensable to examine in Hungary the adaptation of the possibilities and methods provided by the social media to the Hungarian defense mechanism, in particular the public hazard communication. As the snowfall in March and flood in July, 2013 showed, there is a demand for the population to use these new info communication technologies by professional organizations.

Social media can help prevent damage, disaster risk or emergencies during the prevention period. Preventive solutions can be made, which are no longer new to the public hazard education. The novelty, however, may be that the collection of information in today's society is heavily reliant on the Internet, so social media created for contacts and news sharing also includes the availability of security-capable information.

The disaster management was created to protect the population and the material goods of Hungary, which has been structurally reorganized in order to respond more effectively to current challenges. Within the three major areas of disaster management, civil protection is one of the most important defense tasks for the protection of the citizens. The snowfall situation in March 2013 and the flood event in 2013 assess the importance of the role of civil protection (primarily in information, training, volunteer management and coordination).

Preparations for Disaster Preparedness are intended to prepare for the implementation of the tasks specified in Section 52 of the Act on Disaster management, as well as, as far as possible, minimizing the adverse consequences of natural, technological and other causes of disasters, their remediation and restoration.

Public hazard education must take place during the pre-disaster (before occurrence) period. It is important that residents are prepared for recovery information and behavioral rules as well. Preparation should not be a periodic population protection program, it must be continuous, because awareness can only be provided through regular, repetitive knowledge transfer.

Younger generations use digital devices at the skill level. It has become part of their lives so much that most of them immediately share everything. The potential of community media (not only Facebook) to support disaster relief needs to be deeper and the author's proposal is to create a strategy which requires a coherent framework for joint application.

Overall, public hazard education and communication are not recent things. The professional disaster management organization took prevention, population information and civil protection training system over the predecessor state-level fire service. By combining and developing the two systems and approaches, the National Directorate General for Disaster Management Ministry of the Interior (hereinafter referred to as "NDGDMMI") developed the new foundations for public hazard education and communication. It has established a network of population training mentors and has established effective cooperation with the Hungarian Civil Protection Association. The HCPA contributes to the implementation of the volunteer population preparation system in the establishment and operation of the Emergency Retail Customer Service Information Centers (VELÜNK center established in Százhalombatta). With publications, organizing exhibitions and open professional days, the professional disaster management body seeks to draw the attention of a wider population to the disaster prevention opportunities, to the recommended forms of behavior in emergencies, and to other important information.

Author is of the opinion that information to the public must be provided, so that in the content keywords must be hidden to reassurance. Regardless of what the situation is, psychological aid can save lives, restore sober thinking, bring people to normal levels of confusion, reduce uncertainty and build trust in the public, etc. Providing quick information save lives.

REFERENCES

[1] *62/2011. (XII. 29.) BM rendelet a katasztrófák elleni védekezés egyes szabályairól IX. FEJEZET 67.§.* https://net.jogtar.hu/jogszabaly?dbnum=1&docid=a1100062.bm&mahu=1 (Download: 17 May 2017)

[2] TEKNŐS L.: *A lakosság és az anyagi javak védelmének újszerű értékelése és feladatai a klímaváltozás okozta veszélyhelyzetben*. Doktori (PhD) értekezés. Nemzeti Közszolgálati Egyetem, Katonai Műszaki Doktori Iskola Budapest. pp.1-263. (2015) http://archiv.uni-nke.hu/feltoltes/uni-nke.hu/konyvtar/digitgy/phd/2015/teknos_laszlo.pdf (Download: 17 May 2017)

[3] HOFFMANN I. - KÁTAI-URBÁN I. - VASS GY.: *Vegyi- és sugárfelderítés katasztrófavédelmi technikai eszközrendszerének vizsgálata I. rész telepített rendszerek*. Hadmérnök, XI. Évfolyam 1. szám - 2016. március. pp. 89-97. ISSN 1788-1919. http://www.hadmernok.hu/161_09_hoffmanni_kui_vgy.pdf (Download: 17 May 2017)

[4] DUDÁS Z. – MUHORAY Á.: *Egyes lakosságvédelmi intézkedések felelősségi rendszere veszélyhelyzet esetén*. Műszaki Katonai Közlöny, XXVI. évfolyam, 2016. 3. szám. pp. 2-22. ISSN 1219-4166. http://hhk.archiv.uni-nke.hu/downloads/kiadvanyok/mkk.uni-nke.hu/PDF_2016_3sz/001_Dudas%20Zoltan-Muhoray%20Arpad.pdf (Download: 17 May 2017)

[5] BARTA V. L.: *Katasztrófavédelmi-tűzvédelmi igazgatás.* Rendészeti szakvizsga. pp. 1. 148. http://bmkszf.hu/dokumentum/2143/Katasztrofavedelmi_igazgatas.pdf (Download: 17 May 2017)

[6] *234/2011. (XI. 10.) Korm. rendelet a katasztrófavédelemről és a hozzá kapcsolódó egyes törvények módosításáról szóló 2011. évi CXXVIII. törvény végrehajtásáról*. https://net.jogtar.hu/jogszabaly?docid=a1100234.kor (Download: 17 May 2017)

[7] *290/2011. (XII. 22.) Korm. rendelet a honvédelemről és a Magyar Honvédségről, valamint a különleges jogrendben bevezethető intézkedésekről szóló 2011. évi CXIII. törvény egyes rendelkezéseinek végrehajtásáról*. https://net.jogtar.hu/jogszabaly?docid=a1100290.kor (Download: 19 May 2017)

[8] *2010. évi CLXXXV. törvény „a médiaszolgáltatásokról és a tömegkommunikációról*: https://net.jogtar.hu/jogszabaly?docid=A1000185.TV (Download: 19 May 2017)

[9] *2011. évi CXXVIII. törvény a katasztrófavédelemről és a hozzá kapcsolódó egyes törvények módosításáról.* https://net.jogtar.hu/jogszabaly?docid=a1100128.tv (Download: 19 May 2017)

[10] TEKNŐS L.: *A rendkívüli időjárás okozta veszélyhelyzetek és a kárterületeken végzendő polgári védelmi feladatok rendszere Magyarországon*. In: Aszódi Júlia; Szabó Ágnes; Hoffer Csaba; Rosta Petronella; Teknős László; Szabó Sándor; Tusori Szabolcs; Murai László Horváth Hermina Horváth Hermina (szerk.) Konferencia kiadvány: "Katasztrófavédelmi Díj" Tudományos Konferencia 2013. c. tudományos rendezvényen elhangzott előadásokhoz. Nemzeti Közszolgálati Egyetem, 2013. pp. 80-100. ISBN:978-615-5305-18-4. https://kvi.uni-nke.hu/document/kvi-uni-nke-hu/teknos-laszlo-a-rendkivuli-idojaras-okozta-veszelyhelyzetek-es-a-karterulet.pdf (Download: 19 May 2017)

[11] HORNYACSEK J.: *A települési védelmi képességek a katasztrófa-kihívások tükrében: A települések katasztrófa-elhárítási feladatai, a végrehajtásához szükséges helyi védelmi képesség alapvető területei, azok kialakításának folyamata*. Budapest: Biztonságunk Érdekében Oktatási- és Tanácsadó Tudományos Egyesület, 2011. 100 p. ISBN:978-963-08-2606-8. http://www.drhornyacsek.hu/sajat%20publikaciok/vedelmi%20kepessegek.pdf (Download: 20 May 2017)

[12] HORNYACSEK J. - CSÉPAINÉ SZÉLL P. - VERES V.: *Önkormányzati vezetők felkészítése a védelmi feladatokra: kézikönyv polgármesterek részére a települési védelmi feladatok ellátásához.* Budapest: Zrínyi Miklós Nemzetvédelmi Egyetem, 2010. 171 p. ISBN:978-963-7060-76-2. http://www.drhornyacsek.hu/sajat%20publikaciok/kezikonyv%20polgarmesterek%20reszere.pdf (Download: 20 May 2017)

[13] *Szinte mindenki tudja mi az a mobilinternet. 2013.* április 24. https://sg.hu/cikkek/96913/szinte-mindenki-tudja-mi-az-a-mobilinternet (Download: 20 May 2017)

[14] *Internetezés Magyarországon: a legfrissebb adatok.* 2018. március 10. http://kamaraonline.hu/cikk/internetezes-magyarorszagon-a-legfrissebb-adatok (Download: 20 May 2017)

[15] CZIPPERER D.: *Kik használnak mobilinternetet hazánkban*? 2013. május 11. http://hirek.prim.hu/cikk/97550/ (Download: 20 May 2017)

[16] HABÓK L.: *Négy és fél millióan használnak okostelefont*. 2017. január 25. https://www.hwsw.hu/hirek/56731/enet-kutatas-felmeres-okostelefon-mobil-hasznalat-olvasas-zene-video.html (Download: 20 May 2017)

[17] BÁNYÁSZ P.: *A közösségi média, mint az információs hadszíntér speciális tartománya.* Hadmérnök, XII. Évfolyam „KÖFOP" szám – 2017. október. pp. 108-121. ISSN 1788-1919. http://hadmernok.hu/170kofop_07_banyasz2.pdf (Download: 20 May 2017)

[18] KEMP, S.: *Digital in Eastern Europe*, In. We are social, 29-01-2018. https://www.slideshare.net/wearesocial/digital-in-2018-in-eastern-europe-part-2-east86865266 (Download: 20 May 2017)