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CONCEPT OF THE PROJECT OF IMPROVING THE ORGANIZATIONAL STRUCTURE OF CBRN UNITS FOR USE IN CASE OF NATURAL DISASTERS BASED ON EXPERIENCE FROM FLOODING IN THE REPUBLIC OF SERBIA IN 2014

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Abstract: *The paper presents the concept of a project of improving the organizational structure of the Serbian Armed Forces - a units of the Chemical-Biological-Radiological-Nuclear Service, which would be based on experiences from natural disasters, specifically on experiences from floods in the Republic of Serbia in 2014. The paper presents a description of the problem and the project, the needs for the project are formulated, the objectives, as well as the usefulness and activities of the project are determined, the interested parties for the implementation of the project are identified and the expected results are given. At the end, conclusions were drawn and a proposal was made for further improvement and development of the mentioned project.*

Key words: *project concept, organizational structure, CBRN Service, natural disasters, flood*

1. INTRODUCTION

Natural disasters happen suddenly, very quickly and with a disproportionately high intensity, regardless of time, geospace and degree of vulnerability. These natural and extreme events are difficult to predict, make reacting, controlling and regulating the situation very difficult and often exceed the limit of endurance during the period of occurrence. The consequences of natural disasters are manifested by endangering the safety, life and health of a large number of people, material and cultural assets and destroying the environment.

Based on numerous geological, meteorological and other measurements, scientists predict which natural disasters could hit the Earth in the near future, as well as the areas that are particularly at risk. Although the Republic of Serbia belongs to countries of medium risk, analyzing the events in the past period, it can be seen that the geospace of the Republic of Serbia is seriously threatened by the consequences of natural disasters. According to statistical data, the most common natural catastrophic events in the world, on average annually for the period 2001-2020, are floods with 45.66% (Centre for Research on the Epidemiology of Disasters - CRED, 2022). It is certainly the most common natural disaster in the geospace of

the Republic of Serbia. The floods that occurred in the Republic of Serbia in 2014 are one of the major natural disasters in that geospace. Eliminating the consequences of this natural disaster required the involvement of a large number of state entities, and therefore the Ministry of Defense and the Serbian Armed Forces with their capacities.

In addition to many entities of the state that are involved in eliminating the consequences of natural disasters, the Serbian Armed Forces also fulfills its role through specialized units CBRN (Chemical-Biological-Radiological-Nuclear) Service. As such, with the current organizational structure, CBRN Service occupies a special place in the organizational temporary structures of the state, which are formed to respond to disasters, and especially for the elimination of the consequences of natural disasters.

Experiences from the floods in the Republic of Serbia in 2014 favor the improvement of the organizational structures of all responding entities, in order to develop new capabilities and more successfully eliminate the consequences of natural disasters. The paper presents the concept of the project for improving the organizational structure of the units of the Serbian Armed Forces, specifically the CBRN units for use in the event of natural disasters, based on experiences from the operation to help civil authorities during the floods in the Republic of Serbia in 2014.

2. CONCEPT OF THE PROJECT

The concept of the project should contain a clear description of the project problem and formulation of project needs, defined goals, activities, stakeholders and expected results (Jovanovic, 1995), which is described below.

2.1. Description of the problem and formulation of project needs

The Serbian Army, with its capacities, plays a major role in dealing with the consequences of natural disasters, and its engagement is one of the special traditions of the armies in our area, so the saying "the army will do that" is often encountered among the people (Simovic M. 2016, p. 101). Historically speaking, there have been several natural disasters where the army has shown its capabilities and played a leading role in relation to other subjects of the state that participated in solving the problem, which was also the case in the emergency situation during the floods in 2014.

A more recent example of the use of units of the Serbian Armed Forces to assist civil authorities in responding to and eliminating the consequences of natural disasters occurred in 2014, when large-scale floods occurred in the geospace of the Republic of Serbia, which led to the introduction of a state of emergency in the entire country. The floods that occurred as well as the response to them gave a signal for the analysis, review and improvement of the existing protection and rescue system in the Republic of Serbia (Terzic M. Glisic D. & Cvetkovic Z. 2019. pp. 174). In order to improve the existing system of protection and rescue in the Republic of Serbia, it is possible to take the normative-legal and strategic-doctrinal bases of the use of the Serbian Armed Forces in such situations, in order to determine the legal basis for its use, to determine the organizational and functional links of the Serbian Army and other subjects of protection and rescue (Terzic M. Glisic D. & Cvetkovic Z. 2019. pp. 175), but we should definitely look at the implementation itself and its improvement, through the improvement of organizational structures for responding in emergency situations. The system of protection and rescue in situations like the one that happened in 2014 requires detailed analyses, risk assessments, undertaking the necessary preventive measures and the development of protection and rescue plans, but regardless of everything, it especially requires the selection of forces, their integration and joint engagement during protection and rescue and elimination of the consequences of natural disasters.

Unlike other natural disasters and natural disasters that appear suddenly and are short-lived, floods last a disproportionately long time, which can be seen on the example of the May floods, in the period from May 14 to 23, 2014. Floods in Serbia appeared after heavy rainfall that affected the central part of the Balkan Peninsula in the second half of May 2014. Extreme rainfall hit the geospace of the Republic of Serbia and over 100 liters of rain fell per square meter in 24 hours. Absolute daily and monthly rainfall maxima were recorded, and by May 16 it fell in Belgrade (258.4 l/m^2), Loznica (283 l/m^2), Valjevo (250.94 l/m^2) and Smederevska Palanka (202, 5 l/m^2) (Government of the Republic of Serbia, 2014, pp. 118). This was also the rainiest month in history. Floods threatened about 1.6 million people in 38 municipalities in central and western Serbia, and damages were estimated at 1.5 billion euros, which is about 5% of Serbia's gross domestic product (Plavsic J. Vladikovic D. & Despotovic J. 2014. pp. 32). Dozens of people died as a result of swollen rivers, landslides and water, and a state of emergency was declared on May 15. During these events, the city of Obrenovac was the hardest hit by the floods, and it was estimated that 90% of the city was flooded, which resulted in the evacuation of the entire population. The size of the floods is also indicated by the fact that the flood wave on the Sava river near Sabac reached a water level of 660 cm, which is the highest water level of this river in that city, since records have been kept (Plavsic J. Vladikovic D. & Despotovic J. 2014. pp. 28). The state of emergency on the territory of the Republic of Serbia remained in force until May 23, 2014, when the Government of the Republic of Serbia adopted the Decision on its abolition on the territory of the Republic of Serbia, except in 2 cities and 17 municipalities, which were directly threatened (Government of the Republic of Serbia, 2014. pp. 3).

The natural disaster of 2014. had the proportions of a natural disaster and required the involvement of various state entities. The floods were a "practical test of the abilities" of the Emergency Situations Sector, the Emergency Situations Staff, the Serbian Armed Forces and other state entities in the protection and rescue of people and material goods. The public did not have a dilemma, "should we have an army or not", because its existence and engagement in the third mission of the Serbian Army (Supporting civil authorities in confronting security threats - 2nd task: Helping civil authorities in case of natural disasters, technical and technological and other accidents), practically tested (Simovic M. 2016. pp. 102). During the floods, the Serbian Armed Forces, with its permanent and temporary units, carried out the following activities in only the first phase: evacuation of the population, reception and treatment of vulnerable persons, water supply, delivery of food and emergency supplies, engineering works on the construction and strengthening of embankments and roads, installation of bridges crossing points, biological decontamination, veterinary surveillance, rehabilitation of landslides, water pumping, military police work, medical care and coordination of rescue teams of foreign armed forces. More than 2,500 members of the army and 185 larger assets were engaged daily, and 553 aircraft flights were carried out with about 200 hours of flying (Simovic M. 2016, pp. 104).

The CBRN unit with 2 platoons and 8 teams was engaged in the biological decontamination of the terrain. Together with public health institutes and specialized companies, disinfection was carried out in more than 10 cities, with the center of gravity in Obrenovac. On that occasion, 85 members of the army were engaged with 26 tank cars for decontamination, and 1,217 buildings and 2,318,110 m^2 of land and roads were decontaminated (Simovic M. 2016, pp. 106). With a part of their capacities, CBRN units were also engaged in water supply, together with other forces of the army. Water supply was realized on the territory of 14 municipalities, with 31 water tanker cars, with a total of 556 daily engagements of tankers and delivered 2665 m^3 of water (Simovic, 2016).

Based on the above, CBRN Service occupies a special place in the organizational temporary structures of the state that are formed to eliminate the consequences of natural disasters and disasters. Among others, the tasks that the CBRN units performed during the May floods in the Republic of Serbia were biological decontamination (basic - expert specific task) and water supply (auxiliary task). In all engagements during the May floods, CBRN units successfully completed all assigned tasks. During the engagement, CBRN units used their peacetime organizational structures and, in addition, formed several matrix organizational structures in the form of temporary teams, adequate to the newly created situation. With the matrix model of the organizational structure, jobs from the basic functional or divisional organizational units were merged, in order to form temporary structures, which are problem-oriented for the performance of specific and temporary (project) tasks. One of the main advantages of the matrix model of organizational structure is flexibility. Temporary matrix compositions are basically very flexible, due to the temporary nature and changeability of composition and quick adaptation to new tasks and projects. The matrix model of the organizational structure is the most suitable for carrying out certain security tasks, such as eliminating the consequences of natural disasters. By forming temporary matrix formations from CBRN units, the aim is to obtain flexible teams, which are adaptable to new situations, focused on the function and the task, thus also on a specific goal, which is to eliminate the consequences of natural disasters.

On the basis of experiences from floods and realized engagements to eliminate the consequences, it is necessary to analyze the forces used by the CBRN units and consider the possibility of improving the organizational structure for engaging in operations to assist civil authorities in eliminating the consequences of natural disasters and disasters and the possibility of forming dedicated teams, which would be equipped, trained and ready for emergency response.

The formation of the aforementioned teams - temporary compositions of the matrix organizational structure from the CBRN units, during the realization of the set tasks for the execution of biological decontamination after the May floods, represent a good example of use on the basis of which the concept of the project of improving the organizational structure of the CBRN units for use in the event of natural disasters is based.

2.2. Determining the goals and activities of the project

Project goal:

Improvement of the organizational structure of the forces of the Serbian Armed Forces - the CBRN unit for use in the event of natural disasters, based on the operation to support the civil authorities during the floods in the Republic of Serbia in 2014.

Project activities:

- To analyze the existing organizational structure of the forces of the Serbian Armed Forces - the CBRN unit for use in the event of natural disasters based on the operation to support the civil authorities during the floods in the Republic of Serbia in 2014.

- To analyze all the activities that were implemented by the specialized CBRN units in the operation to support the civil authorities during the floods in the Republic of Serbia in 2014.

- Determine the necessary activities - capabilities of the organizational structures of the Serbian Armed Forces - CBRN Service that need to be developed in order to apply them in the event of natural disasters and disasters.

- Analyze the possible existence of capabilities of other forces of the Serbian Armed Forces, as additional forces to the CBRN Service formations, for use in the event of natural disasters and disasters, based on the required capabilities.

- Based on the current and desired state of the organizational structure, determine the procedures to achieve it.

- Analyze the need for equipping with modern means, needed to carry out operations to support civil authorities in case of natural disasters and disasters.

- On the basis of all previous analyses, model and form the organizational structure of the forces of the Serbian Armed Forces – the CBRN unit for use in operations to support civil authorities in the event of natural disasters and disasters.

- After analyzing the need, possibly call for a tender and acquire all the necessary modern means and equipment for the CBRN Service to carry out operations to support civil authorities in the event of natural disasters and disasters.

- Carry out the necessary further personnel training for the execution of the operation in question.

All the mentioned activities of the project would take place according to certain dynamics of work in accordance with the time plan of the project (Terzic, Sipka. & Stojanovic, 2015). After defining the project activities, the sequence and relationships between the activities would be determined. Determining the sequence of activities includes considering the reasons for possible interdependencies and different types of dependencies, which indicates the sequence of project activities (Avlijas, Avlijas, 2018). Determining the interdependencies between activities has a great impact on the development of the project timeline, e.g. does one activity have to be finished before another can start, can several activities be performed at the same time and can they overlap (Avlijas, Avlijas, 2018).

2.3. Project stakeholders

Stakeholders are all entities that are directly or indirectly involved in the project in some way, i.e. are interested in achieving the set goal of the project. These are subjects that are influenced by the project or have an impact on the project. In this project case, the following interested parties are identified:

- Ministry of Defense of the Republic of Serbia;
- Serbian Armed Forces General Staff;
- Serbian Armed Forces CBRN units;
- Military Medical Academy;
- Ministry of Internal Affairs of the Republic of Serbia;
- Emergency Situations Sector;
- Headquarters for emergency situations (republican, provincial, district, city, municipal);
- Local governments;
- Ministry of Health of the Republic of Serbia;
- Military schools in the Republic of Serbia;
- Scientific and research institutions, which study the field of security.

2.4. Expected results - usefulness of project implementation

Improved capabilities for engagement, through the structuring of the forces of the Serbian Armed Forces – CBRN units for use in operations to support civil authorities in the event of natural disasters and disasters are the expected results of the project. Also, the implementation of this project would achieve significant improvements in coordination with other forces that participate in solving the consequences of natural disasters, as well as the rationalization of forces, which would contribute to reducing the overall economic needs for the operation.

Adequate use of forces, with an emphasis on expertise, abilities and proper choice of organizational structure for specific activities, will contribute to a more efficient and effective elimination of the consequences and the achievement of the set goals. The expected results of this project would be beneficial both to the units of the Serbian Armed Forces themselves - specifically CBRN Service, and to other state structures, and especially the Emergency Situations Sector, headquarters and local self-governments, which are the bearers of activities to eliminate the consequences of natural disasters.

3. CONCLUSION

Normative-legal regulation and the establishment of an efficient system for a unified and integrated response to natural disasters and disasters, as well as the support of state institutions, represent a major organizational challenge in real circumstances. Selection of adequate composition, coordination and unification of all subjects and activities is the main goal of responding and eliminating the consequences of the situation. The role of CBRN units certainly occupies a significant place in eliminating the consequences of natural disasters. That is why it is important, by analyzing the engagements carried out during the floods in the Republic of Serbia in 2014., to conclude what is the optimal organizational structure of CBRN units for use in natural disasters and whether the existing one can be improved. All previous engagements, especially during the elimination of the consequences of the May floods in 2014, were carried out by CBRN units with civil institutions, by forming special teams. Their experiences represent a positive model for subsequent civil-military engagements and cooperation in response to natural disasters and the basis for a project to improve the organizational structure of CBRN units for use in the event of natural disasters.

The engagement of the CBRN unit and their organizational structure for eliminating the consequences of natural disasters is primarily determined by the type and level of the natural disaster, the consequences that the natural disaster left behind and the capabilities of other forces involved in solving the situation. However, there is certainly a real need for already organizationally formed forces and resources, which would be trained and ready to react before natural disasters and disasters occur.

In order for the civil authorities, who are responsible for the response to a certain emergency situation, to be able to successfully confront the emerging threat, the integration of all forces - participants, coordination and proper use, must be one of the capabilities they possess. The project aims to improve the organizational structure of the CBRN units of the Serbian Armed Forces, as a segment of the use and assistance to civil authorities in crisis situations, to achieve a certain contribution and help the leading state entities in reaching the mentioned capability, and based on the experiences from engagement in the operation to eliminate the consequences of floods in Republic of Serbia in 2014 (biological decontamination and water supply). The project of improving the organizational structure of the CBRN units of the Serbian Armed Forces can be further improved by analyzing other natural disasters and disasters where the forces of the Serbian Armed Forces – CBRN units were used, supplementing and implementing project goals and activities.

REFERENCES

Avlijas R., Avlijas G., (2018). Upravljanje projektom, Univerzitet Singidunum, Beograd, ISBN: 978-86-7912-672-6.

Centre for Research on the Epidemiology of Disasters (2022). Emergency Events Database (EM-DAT): The International Disaster Database, Disasters Year in Review 2021. Cred Crunch, Issue No.66, april2022.UC Louvain, Brussels, Belgium. Available from https://www.emdat.be/publications,https://cred.be/sites/default/files/CredCrunch66.pdf

Government of the Republic of Serbia (2014). Izvestaj Vlade o elementarnoj nepogodi – poplavi koja je zadesila Republiku Srbiju i merama koje su preduzete radi spasavanja stanovnistva i odbrane ugrozenih mesta od poplava, Available from http://www.parlament.gov.rs/upload/archive/files/lat/pdf/akta_procedura/2014/2220

Jovanovic P., (1995). Upravljanje projektima, Fakultet organizacionih nauka, Beograd.

Plavsic J. Vladikovic D. & Despotovic J. (2014).Hidrometeoroloski aspekti poplava u maju 2014. na slivu reke Save i u Srbiji, Voda i sanitarna tehnika, Vol. 5-6/2014, pp. 21-34 Available from https://grafar.grf.bg.ac.rs/bitstream/id/3322/1019.pdf

Simovic M. (2016). Iskustva Vojske Srbije u vanrednim situacijama 2014. godine, Vojno delo, Vol. 6/2016.

Terzic M., Glisic D.&Cvetkovic Z., (2019). Obavestajna priprema podrucja ugrozenog elementarnim nepogodama, tehnicko-tehnoloskim i drugim nesrecama i upotreba snaga Vojske Srbije, Vojno delo, Vol. 3/2019.

Terzic M., Sipka B. & Stojanovic S. (2015). Kontraobavestajna zastita timocke operativno geografske celine – koncept projekta, 19. Internacionalni simpozijum iz projektnog menadzmenta – YUPMA 2015, Zlatibor, 12-14.06.2015.