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PODNEBNE SPREMEMBE KOT IZZIV ZA VOJSKO

CLIMATE CHANGE AS A CHALLENGE TO THE ARMED FORCES

Povzetek Grožnje za nacionalno varnost postajajo vse bolj različne in pojavljajo se dejavniki, ki jih prej nismo pričakovali. V zadnjih desetletjih smo ekstremne okoljske dogodke, ki so posledica podnebnih sprememb, vedno bolj zaznavali kot grožnjo. Sem spadajo naravne nesreče, povezane z vremenom, podnebjem in/ali vodo (neurja z močnim vetrom, ekstremne padavine, vročinski valovi in ekstremni mraz, gozdni požari, suša itn.). Vojaške sile pri izvajanju operacij vse bolj ovirajo težke okoljske razmere, poleg tega pa je uporaba vojske pri obvladovanju nesreč postala nepogrešljiva. V prispevku avtorja preučujeta vpliv s podnebjem povezanih nesreč na nacionalno varnost in uporabo vojaških sil.

Ključne besede *Podnebne spremembe, ublažitev, prilagoditev, vojska, varnost.*

Abstract Threats to national security are becoming more and more diverse, and factors are emerging which we did not expect. In recent decades, we have increasingly perceived extreme environmental events resulting from climate change as threats. This includes natural disasters related to weather, climate and/or water (windstorms, extreme precipitation, heat waves and extreme cold, wildfires, droughts,..). Military forces are carrying out their operations while being more and more affected by difficult environmental circumstances, and in addition their use in disaster management has become indispensable in our times. In this paper, the authors examine climate-related disasters' impact on national security and on the use of military forces.

Key words *Climate change, mitigation, adaptation, military, security.*

Introduction

For years now there have been endless debates about the consequences of climate change, how it could affect national security, and what the possible answers to these challenges are. Some experts say that there are factors in the process of climate change which could have unforeseen effects at this time. Based on our present knowledge, these factors will change over time due to increasing adaptation capabilities or the factual features of forthcoming weather extremes (Schwartz, Randall, 2003).

The relentlessness of the stress and violence caused by climate change threaten nations' security in ways for which we are not yet ready, even though international experts have been warning us for decades now. In the past, most conflicts emanated from national pride, based on religious or ideological differences. Now, however, military conflicts are more likely to start due to the absence or shortage of natural resources: energy sources, food or drinking water. This shift in the threats greatly influences the vulnerability of countries, and the warning signs for national security are also changing.

Opinions are divided on when and at what level the shortage of natural resources and nature's threats will lead to armed conflicts between states. Some say that these challenges alone have the capability of initiating a war. Others think that the primary effect will be conflicts between states which formerly faced social, economic and political tensions. But one thing is certain enough – sooner or later, environmental problems will grow to a global conflict.

The founder and president of the Pacific Institute for Studies in Development, Environment, and Security, Peter Gleick, selected three fundamental challenges, which – in his opinion – could lead to threats against national security:

- Increasing scarcity of drinking water, aggravated by severe floods and droughts;
- Food shortages due to decreased agricultural production;
- Difficulties in the acquisition of strategic resources, further aggravated by the presence of frequent and increasingly severe storms (Gleick, 2020).

The extent of warming in the Carpathian Basin is greater than the global average. The number and length of extreme cold periods here are strongly decreasing while the frequency of heat waves is, as expected, increasing. The number of storms associated with wintertime cyclones will probably decrease in this area, but their intensity will increase.

In summer the heat puts a heavy strain on the human body, especially when it is combined with the low wind speed or high humidity characteristic of the high-pressure anticyclones that build up in the summer. In addition, it is likely that conditions will be favourable for the formation of spontaneous thunderstorms in the summer, during which stormy gusts, even hurricane-force gusts, may occur.

Knowledge-driven development and adaptation are essential to mitigate the damage caused by extreme weather events associated with climate change. This requires the development of hazard warning and weather monitoring and measurement systems, and the cooperation of experts and services involved in the monitoring, analysis and forecasting of dangerous phenomena.

Extreme weather is causing serious social and economic damage throughout the world. The 2021 Report of the Intergovernmental Panel on Climate Change (IPCC) paints a dark picture for the future. This latest report clearly states that man's responsibility for accelerating climate change cannot be disputed. Human activity has radically changed the climate of the planet and all its systems. In addition, some processes have been placed in a positive feedback loop from which there is no way out (e.g. rising ocean temperatures, the retreat of the Greenland ice sheet, and sea level rise). In at least 2,000 years, there has not been as much warming as there is today. A very important finding of the analysis is that it also evaluates complex weather events. One such is the combination of droughts and extreme heat waves, which do not allow the affected communities to recover, as the natural disasters quickly follow one after another. In addition, for the first time, it takes into account solar radiation management, i.e. geoengineering work, which carries a serious risk; such interventions can change the distribution of precipitation, either deliberately or innocently, and the reduction of warming may be different in different parts of the planet, so there may be areas where the situation is worsening (IPCC, 2021).

By 2018 the European Union had already taken a position that climate change has direct and indirect impacts on international security and stability, mainly affecting the most vulnerable groups, threatening livelihoods and increasing environmental pressures and the risk of disasters, which in turn increase the risk of migration and socio-political unrest (Council Conclusions, 2018).

Today, climate change is mentioned as a security issue in defence policy documents in more than half of the countries worldwide. The first document of this kind was released in the United States in 2007, and a four-year defence review in 2010 also identified climate change as a national security threat. The 2014 review discussed this topic in a comprehensive manner, giving an analysis of climate change's impacts on military installations, military operations and adaptation issues. For the latter, the Pentagon also prepared a detailed guide, setting out the following goals:

- Identify and assess the impacts of climate change in the defence sector;
- Coordinate resources within and outside the defence sphere in this area (Department of Defence, 2014).

At the defence ministers' meeting in Paris in 2015, they agreed that global warming was »as much a security problem as an environmental problem« (Bryant, 2015).

It is worth reviewing in which areas climate change affects the everyday life of military forces, as this is how we get closer to necessary and possible adaptation. One grouping of this survey could be as follows:

- The impact of climate change on military installations, manpower and military technology;
- Reducing emissions from the defence sector;
- Increased consideration of the impacts of climate change in the development of a defence strategy;
- Possible contribution of military forces to the tasks involved in human security and disaster management;
- Possible tasks of military forces in preventing conflicts caused by climate change and eliminating the consequences.

Based on the above, it is difficult to dispute that these are phenomena affecting the security of nations and the daily lives of their citizens. Accordingly, climate change issues are gaining more and more attention in NATO.

1 NATO'S RESPONSE TO CLIMATE CHANGE

The related NATO core document is the Green Defence Framework, which was established in 2014. In this, they focused on three nodes: further increasing the operational efficiency of NATO forces through changes in energy use; increasing the sustainability of forces and operations; and meeting environmental expectations with fewer resources. This also includes the NATO Smart Energy Programme (2015), the most important result of which is to state that reducing fuel consumption and replacing it with alternative energy is essential from an operational point of view, as it is not only a cost-effective method and improves operational mobility, but is also a safety solution (Nyitrai, 2018).

There is full agreement among Member States that a comprehensive assessment of the context of climate change and security and the impact of the issue on NATO activities should be part of the Alliance's dialogue. Accordingly, one of the outcomes of the March 2021 meeting of NATO foreign ministers was to discuss the issue of »Climate and Security« and to draw up a related action plan. The Member States also agreed that the issue should be addressed at the summit in 2021, all the more so because, in line with Secretary-General Jens Stoltenberg's vision for NATO 2030, this topic will also play an important role in the new strategic concept (Stoltenberg, 2021).

The Secretary-General made the following proposals on climate change:

- NATO should become the leading international organization for understanding, mitigating and adapting to the impacts of climate change;

- To achieve this goal, NATO needs to address how climate change is affecting NATO facilities and critical infrastructure, as well as how it affects operations and other activities. NATO can serve as a fundamental organization for the allies in identifying, monitoring and discussing the security impacts of climate change;
- NATO must take the lead in adapting to climate change. Member States must reduce climate vulnerability and adapt to NATO's traditional functions, including defence planning and capability development;
- Emissions from military operations should be examined in order to reduce their volume and at the same time improve operational efficiency. The Alliance should lead the way in reducing emissions in the military sector and contribute to achieving carbon neutrality by 2050;
- Consideration should also be given to the launch of a regular, high-level global climate and security dialogue from 2022, where Member States, partners and other countries can meet and discuss the security impacts of climate change.

As we can see, the challenge posed by climate change has many implications. On the one hand, NATO cannot withdraw from international cooperation, and the changing security environment is affecting the functioning of the Alliance; while on the other, the protection aspect remains a priority and cannot be overridden by possible climate change expectations. The challenges posed by climate change must nevertheless be addressed, in both the areas of planning (analysis and assessment) and of implementation (adaptation); the latter is true for both capability development and for the increasing number and complexity of tasks. Civil-military cooperation is appreciated as a more and more important supporting element of the military forces and their leaders.

The Secretary-General's special attention to this issue was demonstrated when he brought the subject up again in presenting the Alliance's annual activity report of 2020 in Brussels on 16 March 2021. Jens Stoltenberg stressed that only strengthening transatlantic unity can guarantee the security of allies, and cooperation between NATO members to address the challenges facing the Alliance is now more important than ever. Among these challenges, the Secretary-General highlighted the destabilizing behaviour of the Russian leadership, China's growing economic and military strength, terrorist threats, and increasingly sophisticated cyber attacks, as well as the security threats of climate change (Portfolio.hu, 2021). The fact that the idea of handling climate change as a threat had widespread support even before the NATO summit is evidenced by nothing less than the words of the US Secretary of State, who strongly supported the inclusion of climate change's effects on security in the NATO agenda. In his introductory speech, Antony Blinken highlighted that climate change could amplify a wide range of emerging threats, especially mass migration, so its management at NATO level is fully justified (Halmai, 2021).

The Secretary-General constantly keeps his ideas on climate change on the agenda. Co-organized by the Brookings Institution, NATO and the German Institute for Foreign Affairs (Deutsche Gesellschaft für Auswärtige Politik (DGAP)), a video

conference was held on 4 June 2021 with the NATO Secretary-General, who outlined the main objectives of the NATO@2030 package in nine points. At the June 14 summit, Stoltenberg called for a clear political commitment to significantly reduce military emissions, thereby contributing to climate neutrality. He cited global competition, sophisticated cyber attacks, terrorism, nuclear weapons and the security impacts of climate change as the most significant challenges, aware that no country can tackle these on its own, which is why cooperation in NATO is needed.

The declaration on the NATO summit also focused on climate change, as expected. The signatories of the document referred to it among the security threats: »The current strategic environment and the Covid pandemic underline the importance of NATO-EU cooperation in the face of current and emerging security challenges, in particular in the areas of resilience issues, new and disruptive technologies, security implications of climate change, disinformation and handling of increasing geostrategic competition« (Brussels Summit Communiqué, 2021).

Speaking about the Brussels meeting on 14 June 2021, they stressed the importance of NATO being the leading international organization in understanding and adapting to the impact of climate change on security. Another objective is to reduce greenhouse gas emissions from military activities and facilities without deteriorating personnel safety, operational efficiency, and deterrence and defence positions. The task was assigned to the Secretary-General to set a realistic, ambitious and concrete target for reducing greenhouse gas emissions from NATO's political and military structures and facilities, and to assess whether net zero emissions can be achieved by 2050. Furthermore, he must initiate regular high-level climate and security dialogues to coordinate the exchange of views and further measures.

Everyone should recognize that climate change is one of the defining challenges of our time. It is a multiplier of threats that affect allied security both in the Euro-Atlantic area and in the wider Alliance neighbourhood. Climate change is testing resilience and civilian preparedness, affecting the planning and resilience of military installations and critical infrastructure, and creating more difficult conditions for military operations.

The meeting adopted an action plan on the implementation of the NATO Climate Change and Security Agenda, which will increase awareness, adaptability, and mitigating and informing activities, while ensuring a credible deterrence and defence arrangement and maintaining priorities for the security, operation and cost-effectiveness of military personnel. In order to raise awareness, NATO should assess the impact of climate change on the strategic environment and on missions and operations annually. To adapt to climate change, NATO must incorporate climate change considerations into the full spectrum of its work, from defence planning and capability development to civilian preparedness and exercises. In order to contribute to climate change mitigation, NATO, drawing on the best practices of the allies and taking into account their different national circumstances, must develop

a methodology to help the allies measure greenhouse gas emissions from military activities and facilities, which can contribute to the formulation of voluntary targets to reduce such emissions. Besides this, NATO will also strengthen discussions with partner countries and international and regional organizations dealing with climate change and security issues (Brussels Summit Communiqué, 2021).

2 THE RELATIONSHIP BETWEEN CLIMATE CHANGE AND THE OCCURRENCE OF NATURAL DISASTERS CLOSELY LINKED TO IT

Protection against a noticeable increase in natural disasters places a heavy burden on military strength. It allocates resources, increases military output, requires special preparedness, influences training and preparation, and is integrated into strategic planning.

It is therefore essential to examine the frequency, causes, nature and impact of natural disasters on society. In this analysis we look at cases related to weather, climate and water (meteorological and hydrological disasters such as windstorms, extreme temperatures and precipitation, floods, droughts, inland inundation, etc.). We used the results of the analysis carried out by the World Meteorological Organization in 2021 for our analysis (World Meteorological Organization, 2021).

The report examines the period 1970-2019. The study is a good way to draw longer-term conclusions because of its huge numbers; 11,072 climate-related natural disasters occurred over those 50 years, resulting in 2.06 million deaths and \$3.67 trillion in damage.¹ These are incomprehensible figures, but they show that serious changes have begun in nature, mainly due to climate change.

The report focuses on assessing the situation along the two aspects of deaths and damage, always projecting trends into the ten most devastating disasters, broken down into six geographical areas. Our writing is not intended to judge aspects of the report or the classification of disasters that have occurred; we accept them unreservedly.

It is not accidental that the 50-year analysis selects and highlights natural disasters related to climate change, weather and extreme watercourses, as this group accounts for 49.52% of all disasters during the period under review. These events account for 45% of all deaths and 74% of all economic damage; that is 115 deaths and \$202 million of damage a day over 50 years.

The analysis details the natural disasters that occurred during the period under review. From this we can see that the number of natural disasters occurring in our environment, including material destruction, broken down over a ten-year period, is

¹ A total of 22,326 disasters were reported during the period under review, with 4,607,671 deaths and \$4.92 trillion in economic damage.

constantly increasing. The exception to this is the last ten years (2010-2019), when there was a noticeable decrease in the number of disasters. At the same time, thanks to evolving forecasting systems, the loss of human lives is steadily decreasing (see Table 1).

Table 1:
Data on global climate-related disasters in 1970-2019
(Source: Made by the authors based on the data of the WMO Atlas.)

Periods	Values of	Number of disasters	Number of deaths	Economic damage (\$ billion)
1970-1979		711	556,000	175.4
1980-1989		1,410	667,000	289.3
1990-1999		2,250	329,000	852.3
2000-2009		3,536	329,000	942.0
2010-2019		3,165	185,000	1,381.0

The large number of natural disasters shows exactly how much of a burden these tasks are for military forces, in terms of both the involved forces and the equipment. The figures also suggest that without the use of the military it would be hard to measurably mitigate the consequences of the disasters. The assessment of disasters by type also provides guidance on the preparation required by military forces.

Looking at the nature of disasters, we find that the most common type in this group is flooding (sea or river) at 44%, followed by windstorms (tornadoes, tropical cyclones, etc.), which account for 35%. The most lives are claimed by windstorms (39%) and droughts (34%). The droughts of 1980-1989, when more than 650,000 people lost their lives, were particularly devastating. The main causes of economic damage are windstorms (54%) and floods (31%).

Analyzing the ten most devastating climate-related natural disasters we can draw some conclusions. According to the data, most of the deaths occurred in Africa (650,000 people), the primary causes of which are droughts on the one hand, and tropical storms on the other. The United States suffered the most economic damage (\$526.47 billion), with hurricanes that hit almost every year.

3 CLIMATE-RELATED DISASTERS IN EUROPE

In the last 50 years, 1,672 climate-related natural disasters have been recorded in Europe. They killed 159,438 people and caused \$476.5 billion in damage. Although floods (38%) and storms (32%) were the most common, heat waves caused the most deaths, with 148,109 deaths (93%) during the study period. In the area of economic damage, floods (36%) and storms (44%) caused the greatest losses in Europe. Extreme

heat waves in 2003 and 2010 claimed the most victims, with 127,946 people killed in the two natural disasters (80% of the total).

If we look at the 50-year-old data for Europe on a timeline, we can see that there is a measurable, continuous increase in the number of natural disasters up to 2009, followed by a decrease in the last ten years. Compared to 1970-1979, the number of these cases increased tenfold in the period 2000-2009.

With regard to the distribution of the number of deaths, in the 20 years beginning in 2000 the losses increased by orders of magnitude, with 94% of all deaths (149,485 people) falling during this period. For economic damage, the period 1990-2009 was the worst, when the damage amounted to \$307.4 billion, which is 64% of the total damage (see Table 2).

Table 2:
Data on climate-related natural disasters in Europe between 1970 and 2019 (Source: Made by the authors based on the data of the WMO Atlas.)

Periods	Values of	Number of disasters	Number of deaths	Economic damage (\$ billion)
1970-1979		62	2,275	24.1
1980-1989		179	3,365	58.3
1990-1999		370	4,313	155.9
2000-2009		597	82,919	151.5
2010-2019		464	66,566	86.6

The ten most devastating climate-related natural disasters caused 81% of all deaths (129,333) and 23% of the economic damage (\$111.52 billion); the former is dominated by heat waves, the latter by floods and windstorms. The most devastating event in Europe was the 2010 heat wave that hit Russia, killing 55,736 people. In economic terms, the devastating flooding in Germany caused significant damage, reaching \$16.48 billion. These figures suggest that all the forces and means available – including military forces – must be used both in the home area and in the case of cross-border disasters.

Concerning the occurrence of natural disasters, the situation had not changed in 2021; we could still count on extensive events causing serious material damage around the world. Table 3 summarizes the ten climate disasters that caused the most economic damage in 2021. It may be thought that there is more extreme weather on other continents, but as we can see, Europe is also affected, as two of the ten worst disasters happened here.

Table 3:
The most
damaging
climate disasters
in 2021
(Source: Study:
10 biggest
climate disasters
of 2021 cost
\$170 billion. 17
December 2021
(Falconer, 2021).

Type of disaster	Location	Economic damage (\$ billion)
Windstorm (Hurricane Ida)	United States of America	65
Flood	Europe	43
Snowstorm	United States of America	23
Flood	China	17.6
Flood	Canada	7.6
Extreme cold	Europe	5.6
Windstorm (Cyclone Yaas)	Asia	3
Flood	Australia	2.1
Windstorm (Typhoon In-fa)	Philippines, Japan, China	2
Windstorm (Cyclone Tauktae)	Sri Lanka, Maldives, India	1.5

4 DEPLOYMENT OF ARMED FORCES AS AN ANSWER FOR EMERGING CLIMATE-RELATED DISASTERS

Cross-border military cooperation in disaster defence is not unprecedented in Europe. In 2003, a government decree was issued in Hungary announcing the creation of a Multinational Technical Battalion in order to prevent the danger caused by flooding on the river Tisza and to eliminate the consequences. Hungary, Romania, Slovakia and Ukraine agreed to jointly take action against natural disasters that threaten their citizens and material goods, using their soldiers to do so. The Battalion is not a permanent organization; its elements are designated and made available by the parties upon formal request. Each country participates in the work with a technical squadron (no more than 200 people), with the staff jointly provided. The Battalion conducts an annual cooperation exercise at different locations (Hungarian Government Decree 44, 2003).

The Tisza Multinational Technical Battalion's most recent annual exercise, called »Blonde Avalanche«, was in Slovakia in October 2021. According to the exercise scenario, several weeks of heavy rains in Slovakia had caused flooding and the battalion was mobilized to protect the affected areas.

The armies of other European countries are also active participants in disaster management. Without the need for completeness, here are a few examples from last year:

- The Belgian Army was immediately deployed during devastating flooding in the country (August 2021). To mitigate the effects of the extensive and damaging natural disaster (37 people were killed and hundreds injured, more than 15,000

people were made homeless, and at least 500 houses were destroyed), military engineer and medical units were the first to arrive on the scene. They participated in rescue, transportation of aid and the first medical assistance, and later helped in cleaning up the ruins and rebuilding.

- In Bulgaria, forest fires caused serious damage in 2021, so army forces and equipment were used to prevent the spread of fires. Both ground troops and the Air Force were involved in the operations.
- In Denmark, the military forces are one of the primary disaster response groups, but only in the event of large-scale disasters that exceed the capabilities of local forces and other responders. They are involved in preventing floods, forest fires and other disasters, eliminating the consequences and mitigating the damage.
- In the summer of 2021, serious forest fires raged in Italy, which were fought with extensive cooperation by local authorities, including the Italian Armed Forces. Air Force equipment was primarily involved in extinguishing the fires, with 300 flying hours and hundreds of thousands of litres of fire extinguishing liquid.
- Montenegro also struggled with forest fires in 2021. Air Force pilots flew 130 hours and delivered tens of tons of water to the area.
- Floods raged in the Netherlands in 2021. Soldiers laid more than 60,000 sandbags, and participated in clearing the rubble and debris and making the roads walkable. Dutch soldiers also participated in the fight against forest fires in Albania. Two Dutch helicopters (together with a Czech plane) helped the locals to defend themselves in extreme heat (euromil.org, 2021).

Conclusion Unfortunately, the forecasts do not bode well for Europe. According to them, the cost of annual damage from the seven most significant climatic extremes (heat waves and extreme cold, droughts, wildfires, river and coastal floods, windstorms) is increasing year by year. Climate change could cause the damage to increase six-fold by the middle of the century and tenfold by the end of the century. Critical infrastructure components are vulnerable to varying degrees and the costs of damage are also very diverse. Economic losses may be greatest in industry, transport and the energy sector.

Today, 44% of the damage is related to river floods and 27% to windstorms, but in the future the rate of droughts and heat waves is expected to rise sharply from the current level of 12%, and will account for nearly 90% of the damage caused by weather extremes by the end of the century.

In our opinion, the threat posed by climate change – in particular due to the increasing number and intensity of natural disasters – places an increasing burden on the armed forces. Preparations for this cannot be underestimated, and these challenges must be met in the areas of strategy development, training, preparation, organization and technical development. Recognizing this, NATO has also stated that alliance engagement in this area is essential, helping Member States to adapt and reduce emissions without reducing the efficiency of their operations.

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*Prispevki, objavljeni v Sodobnih vojaških izzivih, niso uradno stališče Slovenske vojske niti organov, iz katerih so avtorji prispevkov.

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