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DOI:10.33179/BSV.99.SVI.11.CMC.22.3.7

PRAVNA PRIZADEVANJA MADŽARSKE ZA VEČJO ODPORNOST NA PODNEBNE SPREMEMBE

HUNGARY'S LEGAL EFFORTS TO STRENGTHEN CLIMATE RESILIENCE

Povzetek Tudi Madžarski je, podobno kot drugim državam, vse pomembnejše, da ima ustrezno podlago za prilagajanje na ekstremne vremenske pojave, ki jih povzročajo podnebne spremembe. Kot strateški odziv na te izzive je bilo v zadnjem času razvitih več pravnih in tehničnih predpisov. V tem procesu sodeluje tudi obrambni resor, zato so v prispevku na primeru madžarskih obrambnih sil izpostavljeni primarna okolijska tveganja, povezana z vojsko, in nekatere možnosti za »bolj zeleno« delovanje oboroženih sil. Majhna država, kot je Madžarska, teh neželenih globalnih procesov ne more ustaviti, si pa prizadeva omiliti posledice in se čim bolj prilagoditi spremembam. Tako lahko tudi poveča svojo odpornost na podnebne spremembe.

Ključne besede ***Podnebne spremembe, prilagajanje, odpornost, bojevanje, varnost.***

Abstract It has become important for Hungary, like other countries, to have a proper background in order to adapt to extreme weather phenomena caused by climate change. Several legal and technical regulations have been developed recently as strategic answers to these challenges. The defence sector also takes part in this process, so this paper highlights the primary environmental risks concerning the military, and presents some possibilities for the armed forces to be "greener", based on the example of the Hungarian Defence Forces. A small country such as Hungary, of course, cannot stop these unwanted global processes; the goal is to ease the consequences and adapt to the changes as much as possible in order to increase climate resilience.

Key words ***Climate change, adaptation, resilience, warfare, security.***

Introduction

Based upon global climate model forecasts, the average temperature will increase in the future both globally and in Hungary in such a way that the increment will exceed the extent of natural variability in each season of the year. Despite the increment of averages, there will still be colder years and seasons, but higher temperatures will be more typical. Model results predict that the highest temperature increases will be in the summer and autumn. Up to 2050 the increment will be 1.4-2.6°C in summer and 1.6-2.0°C in autumn compared to the reference periods, and up to the end of the 21st century the increase may approach +4°C in autumn, and even exceed in summer (NÉS-2, 2017, p 2). With regard to precipitation in Hungary, a 3-14% increase is predicted, based on the climate models.

The two main models adapted by the Hungarian Meteorological Service (the ALADIN-Climate and REMO regional climate models) predict totally different values for spring and winter: an increase or even a decrease could occur in either season, not exceeding 10% in the forthcoming decades (Bartholy, et al. 2008, p 255).

Involving more European climate models, it can be said that an increase in precipitation is predicted in wintertime with a certainty of 60% for 2021-2050 and more than 80% for 2071-2100 (which means that 60% and 80% of the models predict an increase in the territory of Hungary). For spring periods, however, even involving more models, the tendency is not so obvious; in the middle of the century, an increase is a bit more likely, but by the end of the 21st century an increase or even a decrease could equally occur (Halász and Földi, 2019a, p 81).

With regard to precipitation the picture is quite complex; model forecasts predict very different scenarios, for example, in the case of annual precipitation values, where even the direction of the change is not unambiguous (Kirovné 2020, p 83). A definite decrease is only predicted for the summer, where all the models show almost the same values (less than 5% for 2021-2050, and 18-43% for 2071-2100) (Szépszó, 2014, p 123).

In Hungary climate change has caused more extreme weather events (heatwaves, high winds, thunderstorms and rainfall, drought, flash floods, etc.), and their social and economic consequences are more serious than the changes in average temperatures and annual precipitation values. A significant increase is also predicted with regard to extreme heatwaves (when a heat alert is officially issued in Hungary), with a small deviation between the two models. In the past reference period the number of summer days with extreme heat was 3.4 on average annually, and the forecast increase is 3.6-10 days for the forthcoming decades and 14-20 days towards the end of the century. Models show that the warmer south-south-east territories will be more affected than the colder, northern part of Hungary (Halász and Földi 2019a, p 82).

1 REACHING THE SECOND NATIONAL CLIMATE CHANGE STRATEGY IN HUNGARY

In 2003 the Ministry of the Environment, together with the Hungarian Academy of Sciences, commenced the project "Global climate change: domestic effects and answers" (VAHAVA) to reveal most of the positive and negative consequences of climate change and to try to provide answers to the emerging domestic problems. It was a 3-year programme to analyse the domestic effects of global warming in the present, in order to suggest countermeasures for the future. The main points were the protection of the atmosphere, and adaptation to the effects of climate change.

The programme's declared aims were preparation, prevention, mitigation and rehabilitation to the effects of climate change. The most important tasks were the gathering and spreading of information, communication of international knowledge, assisting related domestic activities, and organizing meetings and conferences. The main goal of the VAHAVA project was to develop a scientific base for the National Climate Change Strategy (VAHAVA 2005, p 48).

The completion of the National Climate Change Strategy (NÉS) was specified by the national regulations based on the United Nations Climate Convention and its Kyoto Protocol. In order to meet national commitments the 1st National Climate Change Strategy was planned for the 2008-2025 period. Its aims were to be completed by the National Climate Change Programme which is developed and renewed every 2 years.

The 1st National Climate Change Strategy designated 3 main directions in the mid-term climate policy of Hungary:

1. Making regulations appropriate for European and international requirements in order to decrease or at least to prevent a future increase in greenhouse gas emissions. Limiting greenhouse gas emissions by a decrease in total energy demand through the transformation of production and consumption structure, focusing on less energy demanding approaches and areas (MITIGATION).
2. Elaborating the main elements of adaptability to the unavoidable ecological and social consequences of climate change (ADAPTATION).
3. Giving information to citizens in order to boost the environmental awareness of society.

In evaluating the NÉS programme, it was seen that the directions of the desired activities were not totally clear within the NÉS. The means of strengthening the adaptation capabilities was not declared. In the area of mitigation, the strategy properly showed the status and tendencies of domestic greenhouse gas emissions and the strategic goals, and the necessary measures were elaborated in accordance with them; but when it came to the adaptation, the objective was not made in detail, only in some individual areas:

– The protection of ecosystems and nature conservation,
– Human health,
– Water management,
– Agriculture and silviculture,
– Settlement and county development, the human environment.

This weakened the NÉS, as the two main areas had different emphasizes (NÉS 2008).

After the evaluation of the NÉS, the Second National Climate Change Strategy, NÉS-2, was introduced in 2015. It had two comprehensive objectives:

1. Subsistence and sustainable development in the changing world;
2. Recognition of our capabilities, possibilities and limits (NÉS-2 2017, p 4).

2 STRUCTURE OF NÉS-2, WITH SPECIAL EMPHASIS ON ADAPTATION

The Second National Climate Change Strategy confirmed that the NÉS was developed with competent professional grounding, but it did not take account of the regional differences in the global effects of climate change, or that the regional differences in social-economic systems can result in different adaptation potentials in particular territories. According to this recognition, during the development of the NÉS-2 the following terms were determined:

– Regional differences should be taken into consideration during the status evaluation, the determination of objectives and the dispatch of measures;
– During the evaluation of the Domestic Decarbonization Pathway and the National Adaptation Strategy, the coherence and equality of the mitigation and the adaptation parts should be guaranteed;
– The development of the population's approach to climate change should be strengthened. This could provide the third pillar of efficient intervention, beside the prevention of climate change's negative effects and the strengthening of adaptation capabilities;
– A decision support system should be developed with the improvement of the National Adaptation Geographic Information System (NATéR) to support local and central governmental planning;
– The objectives and measures declared within NÉS-2 should be integrated into the development policy programme documents, and proper indicators should be selected in order to evaluate the usefulness of subventions.

The new programme declared mitigation-adaptation double objectives to correct the weakness of its predecessor. It contains a "Decarbonization Vision" with the slogan "*Transition to sustainability":* In order to create and maintain economic competitiveness and advancement together with social well-being with special attention to climate change, Hungary is committed to the transition to a low-carbon economy. The main reason is not about conforming to international obligations, but the national strategic goal of intention towards sustainability:

– Decrease in dependence on fossil fuel energy sources;
– Increase in the ratio of material and energy-saving technologies;
– Increase in the use of renewable energy sources.

Hungary's greenhouse gas emissions have changed in several stages since 1990. At the beginning of the 1990s, the cessation of the former socialist heavy industry (responsible for the majority of the emissions), the transformation of the structure of the economy, and the decreasing output of agriculture together resulted in a drastic decrease in greenhouse gas emissions. In the next period, the change from coal to natural gas in industry and an efficiency increase conserved this favourable process until today, while still allowing the economy to grow. The world financial crisis which began in 2008 also had a huge negative effect on the Hungarian economy (almost 9%), resulting in a further decrease in emissions.

The second half of the objectives pair is the "Adaptation Vision", which has the slogan *"Prepare for the unavoidable, prevent the avoidable!"* With regard to the effects of climate change, Hungary is one of the most vulnerable countries in Europe. To avert the negative natural, social and economic consequences of climate change the tasks of adaptation and preparedness, especially in the areas of water management, security of agricultural yield, protection of our natural values and human health, even in the short term, are built in to our political planning and economic decisions. The tasks of domestic decarbonization and climate adaptation are completed by a climate approach-shaping programme.

The aims of NÉS-2 refer back to the objectives, mirroring the scheme concerning mitigation-adaptation:

1. *"Subsistence and sustainable development in the changing world"* Climate change endangers our national (natural, human and economic) resources, so the related aims here are: to provide good conditions for living in Hungary with the conservation of our natural resources (soil, drinking water, biodiversity) and cultural values, and the protection of human health. To provide sustainable development based on the careful and efficient use of our resources, the changing lifestyles of our citizens, and the resolution of territorial differences.
2. *"Recognition of our capabilities, possibilities and limits"* The recognition of the phenomena, natural effects, territorial features and social-economic consequences of climate change needs comprehensive analysis based on scientific methods. To decrease uncertainty in planning and to support decision-making processes, complex monitoring systems and informatics based analysis-evaluation mechanisms are required, which are also suitable for measuring the effectiveness of countermeasures. To reveal the possibilities of emission reduction and cost-efficient adaptation, dedicated research, development and innovation activities are required (NÉS-2 2017, p 6).

3 CORRELATION OF CLIMATE CHANGE AND THE ARMED FORCES

In general, military activities create hazards for ecosystems and the environment. It is obvious that military operations during wartime can cause great environmental damage, but armed forces exist and operate even in peacetime, and in a modern society it is unthinkable for soldiers' everyday activities to carry ecological hazards. "Warfare ecology", as a quite new principle, tries to cover every part of military activity in its investigation in order to reveal areas where armed forces can become more environmentally friendly, or just simply "greener" (Padányi and Földi, 2014, p 48). If we follow this principle, we can distinguish three periods of military activity in the timeline of a conflict:

– Military preparation;
– War (the armed conflict itself);
– The post-war rehabilitation period.

Each part contains several key elements (such as infrastructure, governmental, logistical, etc.) which can affect both the efficiency of warfare and the ecological consequences. As a new aspect, the problems for the military caused by global climate change can also be included in all of this.

Thus, the correlation of climate change and the military becomes a very complex problem. On the one hand, the military was (and still is) one of the largest polluters, so is at least partly responsible for the problem. On the other hand, carrying out military operations in a changing environment is always a great challenge. So, we can say that military activities contribute to climate change, while climate change causes more and more problems for the military. It is clear that the consequences of climate change affect military operations at the strategic and tactical, planning and operational levels, touching personnel, equipment, infrastructure, training and exercises (Padányi and Földi, 2014, p 49).

Even in the event of extreme meteorological conditions, military forces must keep their operational capabilities working with modern, sensitive technical equipment and weaponry. Such meteorological extremes are becoming more common because of climate change. Humidity, water itself, strong winds or sudden temperature changes can cause corrosion, short circuits or structural tensions and deformations (Halász, 2013, p 57).

There are decision supporting systems for commanders to help in collecting necessary information about the possible effects of weather conditions, but sudden and extreme weather phenomena can cause extra challenges for military meteorologists.

4 RELATED IMPROVEMENT PROGRAMMES IN THE HUNGARIAN DEFENCE FORCES

The main task of the Hungarian Defence Force (HDF) is the protection of the national sovereignty of Hungary. To complete this task, soldiers need extended professional training and exercises. This training and the exercises inevitably impact the environment, while the HDF must follow the governmental environment politics and must obey the rules and follow the related legal regulations. In Hungary, it is the decision of the Government to reduce the ecological footprint of the military, so it must be part of the country's climate protection strategy.

One of the main areas of necessary change is the modernization of the military infrastructure, where the main targets are the rationalization of energy consumption and the reduction of harmful emissions. These can be achieved by improvements in heating and lighting systems; the complete energetic reconstruction of buildings' heat insulation and ventilation systems; the wide range application of renewable energies (especially photovoltaic systems); and the economical use of drinking water (Padányi and Földi, 2014, p 50).

There are approximately 14,000 buildings to manage, in nearly 1,700 military installations with 15 million cubic metres of internal volume in Hungary. The Hungarian Ministry of Defence has started the "Green Barrack" programme to modernize the energy consumption of the military infrastructure in order to reduce military emissions and ease its impact on climate change, while improving the use of renewable energy sources and developing other environment protection aspects. The main elements of this ongoing programme are research into and application of renewable energies, improvement in heating systems, energetic reconstruction of buildings with new ventilation and heat insulation systems, improvement of lighting with more economic solutions (e.g. LED lamps), economic use of drinking water with utilization of rainwater, and other different environment protection projects (Kovács, 2013, p 71).

Within the framework of the Governmental Reform Operative Programme, the data digitalization of military procurements and improvements in data supply processes have begun, with the aim of turning all the procurement data of the HDF from paper storage to digital form and integrating it into the Military Procurement Information System, enabling a wide range of military procurement processes to be conducted electronically.

Running under the Environmental and Energy Efficiency Operative Programme, there are several projects for the energetic improvement of military installations to renovate designated buildings of the HDF on their bases. These building investments involve changing doors, windows and other openings to modern types, post-insulation of outer walls and slab structures, and installations of individual solar energy based power generators in order to minimize the costs of energy consumption.

The decision for the installations under the monetary supervision of the Ministry of Defence, in order to decrease the necessary amount of procured energy, is to build more electric power generators based on renewable sources, and in this way decrease CO2 emissions. This project is on a nationwide scale, with minor power generators to be installed on 13 different military sites with a total performance of 409 kW (Galambos, 2018, p 40).

Because of the negative effects of global climate change, improvements are necessary in several other areas concerning the performance of the armed forces, as these effects have both long-term and immediate consequences to security. For example, the number and severity of natural disasters is growing all over the world, causing new challenges for forces and organizations taking part in disaster management, including the military. Within the extremes, the main primary phenomena are:

– Extreme high (or cold) temperatures;
– Extreme precipitation (prolonged rainfall or snow, storms, thunder, blizzards, supercells);
– High winds or windstorms, or tornados.

Primary phenomena can cause secondary consequences. In Hungary, the most common types are:

– Floods and inland inundation;
– Intense fires (including forest and wildfires) and increased explosion hazards;
– Damage to critical infrastructure, disturbances in public utilities and other supply networks, and deficiency situations (Halász and Földi, 2019b, p 392).

It is therefore also important to improve and modernize military installations providing disaster relief capabilities for the armed forces, because in the event of a serious natural or industrial disaster the HDF is one of the intervention forces both in relief and rehabilitation. Furthermore, in some complex disaster situations the military has unique and indispensable capabilities such as airlift, amphibious transport, or CBRN protection and decontamination. Modernization efforts are already going on within the framework of the Széchenyi 2020 programme, with coherent support from the European Union and the financial partnership of the government, affecting 25 of our military units. Seven new units have been formed and 18 are getting various capability improvements. A project to improve the HDF's disaster management and relief capabilities is focusing on the expansion and modernization of devices and materials necessary for flood protection. The investment contains procurements of modern information and communication systems, heavy amphibious transport vehicles, heavy land transport and carrier trucks, mounted field kitchens, high performance water and wastewater pumps, flexible fuel containers (up to 300 m3), mobile hazmat containers, CBRN IPEs, scuba diving sets, safety belts and coats and protective sheets. This investment will improve the efficiency of HDF forces in disaster relief activities, and the safety of our citizens (Defence Economy Office 2020).

Besides the capability improvement of the HDF, volunteer reservist area protection battalions are forming in order to have well-trained, capable forces to be implemented in every county in case of need. The soldiers of area protection forces undergo theoretical and practical training so that they can fortify the self-defence capabilities of local communities in both military defence and disaster relief (Földi and Padányi, 2018, p 59).

Discussion

The aims of the strategy listed above show the commitment of the Hungarian Government to creating a more secure environment, putting the emphasis on a wider use of renewable energy sources with a low carbon profile of the economy and a decrease in greenhouse gas emissions. Nature conservation and saving our environmental resources have also become of paramount importance. The country's most recent National Security Strategy (which came into effect on 21 April, 2020) also recognizes the challenge created by the global climate change as a major hazard in Hungary (Governmental Decree 1163/2020, p 2103).

Efforts towards better adaptation of the population, included in human health programmes, can increase people's climate resilience. A broad range of medical screening programmes to survey different climate sensitivities in our citizens, and nutritional and physical exercise consultancies and guidance as preventive measures can help to reduce climate change related illnesses. The final objective is to achieve a better standard of life and an even higher average life expectancy, even in the more difficult environmental conditions of the future.

Each field must play its own part in the efforts of society, even the defence sector. Following the vision of decarbonization of NÉS-2 in the areas of sustainability, especially decreasing our dependence on fossil fuels, the spread of material and energy saving technologies, and using renewables, several modernization programmes have been started recently, focusing on the peacetime activities of the armed forces. Besides other projects, the Green Barracks programme has also begun. Building alternative energy sources into the energy supply of military installations (such as biomass, biogas, solar and wind energies) is part of the programme, in order to use renewables to produce hot water, electricity and heat in military buildings. The use of green energy even extends to areas of operations and field camps (Kovács, 2013, p 74).

Warfare is a human activity which causes intense and long-lasting impacts on the biosphere. The local (or larger scale) degradation can be irreversible, so the consequences to the environment and society should be of great concern. Taking the number and extent of today's military conflicts into consideration, we can certainly say that the ecological footprint of warfare is way too large. Warfare ecology, as a new scientific approach, can help to better understand the problem, to analyse it, and to find environmentally friendly solutions (Krajnc, 2015, p 254).

Our scientific research, surveys and analyses can help to reveal more precisely the consequences of military activities both in wartime and in peace, and to provide more effective countermeasures to ease them.

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