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INTRODUCTION POSSIBILITIES OF INCREASED ENVIRONMENT PROTECTION ASPECTS IN THE DEVELOPMENT PROCESS OF ARMED FORCES – SECURITY, ENVIRONMENTAL SECURITY AND RESEARCH & DEVELOPMENT PERSPECTIVES

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ABSTRACT: *The environmental security as a new and increasingly important dimension of security and the holistic approach relating to its handling are informing more and more the security-related thinking and activities of states, international stake holders and non-governmental organisations. It represents a special level of maturity and the increasing responsibility of human society when individuals and their groups of various size, perceiving the effects of the environment and human activities on each other, are eager to act in an organised and coordinated manner for stopping disadvantageous processes and eliminating the damage caused. The effects of environmental security on research, development, and innovation activities are increasing in proportion to the intensity of effects of environment and humans on each other. In case of militaries, those new or increasingly predominating environmental effects which influence the implementation of operations push the defence-related research, development, and innovation capacities of the defence sphere towards procedural, material, and technological reforms. The author's goal was to explore the relevant relations/connections between the environmental security trends and the contiguous capability development of armies.*

KEYWORDS: *security, environmental security, defence related research development and innovation*

INTRODUCTION

Similarly to other organisations and stake holders in the defence arena the national armies cannot make themselves independent from regional and global civilization and natural processes and from their effects – like climate change, decreasing accessibility of potable water, degradation of arable areas, the acceleration of the increase of human population – which can fundamentally effect everyday life, the present and the scientifically forecastable future of societies.

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National armies, as special purpose subsystems of societies, gain their human resources and meet material needs as the results of reproduction and production capabilities of a given society. Although their societal roles and tasks are implemented through special organisational structures and by special equipment systems, procedures and methods, the armies bear the burdens together with other subsystems of society resulting from the above mentioned civilization and natural courses.

On the other hand, the societal subsystems not only suffer from the negative effects of the above civilization and natural processes but also – in different manner and degree – contribute to or directly create them. It is true for armies, as well.

The question arises if an army – having its own human resources, special equipment systems, special organisational structures and special knowledge base – is capable of contributing to those pan-societal requirements and needs to reduce locally, regionally, or even globally those negative effects of civilization and natural passages which hamper societies in prosperity and survival.

The answer to the above question lies in the expedient, timely, effective, moreover, successful development of renewal capabilities. The renewal and prosperity as goals and at the same time as means materialized in the triad of research development and innovation. Armies together with the whole society bear the burdens of the negative effects of civilization and natural processes while they actively act in order to prevent, to cease or to defend against the consequences of them. Their responses – armament development, elaboration and implementation of operational and material standards – are special in nature but at the same time they fit well to the system of responses and reactions given by the whole society.

GOALS

In order to explore if it is feasible to develop the national armies in a manner that military-technical requirements resulting in capabilities needed to implement the fundamental tasks of the armies are met, and at the same time developments and capabilities made can contribute to the improvement of environmental security, as a first step it is necessary to study the relevant trends and results achieved in the areas of security, environmental security, and defence/military related research development and innovation (R&D&I).

The primary goals of this paper are as follows:

– to explore the relevant relations/connections among the above science and research areas;
– to present a short summary of relations between environmental security and security policy, and environmental security and defence/military related R&D&I activities and trends;
– to give a conclusion of the above and a possible way ahead of the possible involvement of militaries in the management of environmental security-related issues.

The ensuing nature of legislation, the holistic and comprehensive approach to and the comprehension of the security in the post-Cold War era, and the ever rapidly changing speed of societal and technological innovation provide the framework for that interdisciplinary field, which gives space to the examination of a matrix which consists of security policy relations, defence/military related capability development and the environmental security. Each of the three components of the above matrix has an abundance of analysable source materials, there are lots of attempts to explore the interdependencies among them, having in mind the identified new tendencies in the global and regional security environment.

METHOD USED

After setting out the analytical framework – the matrix of three analysed components – the paper will examine the components one after the other. The main method used throughout this paper is content analysis. The author assumes that the comprehension of content and the conditions of creation of relevant texts sooner or later lead the researcher up to the recognition of those historical, technological and societal correlations which are important for drawing the proper lessons learned. This paper, mainly from a national perspective, but taking into consideration the determining foreign works, papers and courses of proceedings, as well, tends to explore the context among three unique areas, which at the same time have great influence on each other.

During the research period there was no primary data collection, the analysis based on secondary analysis of relevant books, independent studies, and political and legal documents mainly from the national and the determinative multinational arenas.

ENVIRONMENT AND SECURITY – NATIONAL AND INTERNATIONAL PERSPECTIVES

The environmental security as a term and as one of the organic parts of comprehensive and overall security appeared in the think tanks of national and international security policy thinking at the end of the Cold War. Making environment and security connected – or using another approach, the securitization of environment – is considered as one of the most significant steps towards securitizing non-military issues. Forasmuch during the hottest times of the Cold War era it seemed unimaginable that security could have non-military dimensions, so it was really a big challenge to widen the scope of the interpretation of security.

One of the first influential pioneers of this paradigm changing is Barry Buzan who in his paper entitled *New Patterns of Global Security in the Twenty-First Century*[2] while analysing the changes in international relations – mainly between the Centre and the periphery and from the point of view of security – just after the end of the Cold war era gave the following definition of security: "Security is taken to be about the pursuit of freedom from the threat and the ability of states and societies to maintain their independent identity and their functional integrity against forces of change which they see as hostile."[3] Further analysing the main components of security (military, political, economic, societal) he also gave the definition of the then "brand new" component of security, the environmental security: "Environmental security concerns the maintenance of the local and the planetary biosphere as the essential support system on which all other human enterprises depend."[4] Buzan declared that the five factors above were the main focus points of ongoing discourses on security and while all of them could be analysed independently, there were strong interconnections, moreover, interdependencies among them. At the end of his paper Buzan jumped to the conclusion that although the majority of environmental issues doesn't belong to the classical territory of security, the serious changes in global climate and their prompt harmful effects on the existence of human communities on one hand and the altering resilience

[2] Buzan, B. "New Patterns of Global Security in the Twenty-First Century". *International Affairs* 67/3. 1991. 431–451.

[3] Buzan. „New Patterns of Global Security in the Twenty-First Century". 432.

[4] Buzan. „New Patterns of Global Security in the Twenty-First Century". 433.

capacities and capabilities of states, regions, and local entities on the other hand would soon lead to the conclusion of capable governmental and non-governmental organisations that the potential cross-border humanitarian tensions and crises resulting from climate change could be handled by the classical politico-security set of tools.

Decades after the first steps in the securitization of environment-related issues, in a more mature theoretic milieu Roland Dannreuther in his book entitled *Nemzetközi Biztonság (International Security)*[5] dedicates a separate chapter to backing up with arguments that the usage of the term "environmental security" is necessary and useful since it draws attention to the fragile but important nature of the connection among human beings and environment. He points out that although environmental challenges are different in nature compared to traditional security ones, at the same time – since more and more politically dominated nowadays – they can easily result in the traditional response to a security threat, namely the engagement of armed forces *(environment shortages – violent conflicts)*. Dannreuther emphasises that it is necessary to distinguish between the handling of local, regional, or global problems. He stresses on – using the examples of water security and oil security to clearly demonstrate – that parties involved – societal groups, rival elites and states themselves – do not shrink back from the employment of violence in order to obtain resources and/or to assure the security of supply. On the other hand, the author points out that to solve regional or even global environmental security related issues it is more common to use cooperation via international organisations rather than open confrontation.[6]

With a well-established theoretic foundation available and having the pressing impacts of the climate change in each inhabited area of the world, the urgent environment-related topics requiring prompt solutions begin to appear increasingly on the agendas of national, intergovernmental, non-governmental, and supranational organisations and their specialized bodies.

The *2010 Strategic Concept of NATO,*[7] which has still been effective for more than a decade, analyses the environmental issues mainly from operational and planning perspective. It was established that "Key environmental and resource constraints, […] will further shape the future security environment in areas of concern to NATO and have the potential to significantly affect NATO planning and operations."[8] Among others, the document puts special emphasis on energy security which is closely connected to environmental issues, such as carbon-dioxide emission of military installations and equipment, and availability of renewable energy resources. On the other hand, via crisis prevention and crisis management operations – in order to prevent potential and high scale inland/cross border humanitarian catastrophes using methods and capabilities typical for military – the politico-military organisation as a whole and the allies individually could be highly involved in resolving situations resulting from harmful changes in the environment.

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5 Dannreuther, R. Nemzetközi biztonság [International Security]. Budapest: Antall József Tudásközpont, 2016. 165–189.

6 Dannreuther. Nemzetközi biztonság. 190–208.

7 "Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organisation". NATO. 2010. http://www.nato.int/lisbon2010/strategic-concept-2010-eng.pdf, Accessed on 11 December 2020.

8 "Strategic Concept…". 15.

In its forward looking final report entitled *NATO 2030: United for a New Era*[9] the independent Reflection Group, appointed by the Secretary General of NATO, assessed the main trends and their impacts that will likely have formed the operational environment of NATO as a whole by 2030. One of the main findings of the report is about climate change. It declares that "Climate change will continue to shape NATO's security environment. […] It should build on efforts to include climate and other non-military threats […] in NATO planning on resilience and crisis management […]."[10] Among its recommendations the document emphasises that "NATO should monitor and assess the impact of climate change on security in the forthcoming decade and increase its situational awareness of threats […]".[11] The general climate related findings and the resulting recommendations of the report – mainly ones which have direct influences on littoral operations – are in line with the relevant findings (sea-level rise, melting of arctic ice, frequency of extreme weather phenomena, etc.) of the *State of the Global Climate 2020,*[12] a provisional report of the World Meteorological Organisation.

The high profile importance and currency of the climate related security issues are very much reflected by the *Brussels Summit Communiqué,*[13] issued by the heads of state and government during the June 2021 NATO Summit. In paragraph 58 of the document the leaders declare that "Climate change is one of the defining challenges of our times."[14] During the summit the leaders endorsed the Action Plan to NATO Agenda on Climate Change and Security by which the Alliance will increase its efforts to adapt to the changing climatic conditions. In order to adapt to the changes in climate NATO intends to fully take into account climatic related considerations when conducting defence planning, capability development, and exercise related work.

In its 2008 report entitled *Report on the Implementation of the European Security Strategy*[15] (ESS) the Council of the European Union mentions energy security and climate change among the global challenges and major threats. As far as energy security is concerned, it states that since the publication of ESS during the past years the energy dependency has increased. The amount of oil and natural gas exploited by the EU member states reduced which will result in the fact that by 2030, 75% of the oil and natural gas used by the EU will be imported. The import comes from a limited number of countries and a lot of them face stability threats. So the EU will face several challenges which are different in nature and require the solidarity of member states and the responsible participation of them in the solution of problems. Regarding the climate change, the report states that it is a threat

[9] "NATO 2030: United for a New Era: analysis and recommendations of the Reflection Group appointed by the NATO Secretary General". 25 November 2020. https://www.nato.int/nato_static_fl2014/assets/pdf/2020/12/pdf/201201-Reflection-Group-Final-Report-Uni.pdf, Accessed on 18 January 2021.

[10] „NATO 2030". 14.

[11] „NATO 2030". 42.

[12] "State of the Global Climate 2020: Provisional Report". World Meteorological Organisation. 2020. https://wwfbr.awsassets.panda.org/downloads/final_state_of_the_global_climate_2020___provisional_report.pdf, Accessed on 11 December 2020.

[13] "Brussels Summit Communiqué". NATO. 14 June 2021. https://www.nato.int/cps/en/natohq/news_185000.htm, Accessed on 21 June 2021.

[14] „Brussels Summit Communiqué". 19.

[15] "Report on the implementation of the European Security Strategy: Providing Security in a Changing World". In European Security Strategy: a Secure Europe in a Better World. Brussels: Council of the European Union, 2009. 7–26. DOI: 10.2860/1402

multiplier. Natural disasters, the damage of environment, the struggle for resources increase the chance of possible conflicts, especially in those circumstances where poverty and the growth of population are resulted in humanitarian health, political and security consequences, including the increasing migration, as well.

A barely timely but a really European reaction to the phenomena of our ever changing 21st century's natural, societal, economic, and security environment was the *EU Global Strategy*[16] in 2016. The standing ambition of the document is to give a vision for a stronger Union. Due to its nature, the strategy needs periodic reviewing by all the relevant stakeholders and cooperative bodies/organisations. The document itself has a very strong societal, economic, and development focus by nature but at the same time (pro)actively reacts to security related issues as well. It lays stress upon enhancing energy and environmental resilience. In order to join the environmental security discourse it declares: "Climate change and environmental degradation exacerbate potential conflict, in light of their impact on desertification, land degradation, water and food scarcity."[17] It also calls for harmonized EU-level and regional cooperation among willing member states in order to utilise the limited human and financial resources more effectively on one hand, and to develop and devise sustainable answers to the challenges emerge in the neighbourhood of the Union on the other hand.

By issuing *The World Climate and Security Report 2021*[18] of the International Military Council on Climate and Security (IMCCS)[19] the main goals was to inform the decision makers about those climate security practices and tools which try to address effectively the climate related security issues and phenomena. Through surveys, case studies, and risk analysis the report presents relevant lessons learned and recommend tool sets in order to prepare the relevant stake holders to make the necessary steps in a timely manner to address effectively the regional and global climate-related security issues. Just to reference back to the above presented European Union's measures introduced to establish the regulatory, financial, and capability bases of handling the climate-related societal, economic, and security issues that emerged along the European borders, the ICCS's report accordingly points out the climate related risks (climate hotspots around Europe, migration, energy transition, etc.) for Europe, and presents a comprehensive roadmap to handle them in short, medium, and long terms.[20]

The *National Security Strategy of Hungary "Secure Hungary in a Changing World"*[21] (NSS) came into effect on 21 April 2020 replaced the former – and outworn – one which had been created in 2012. In its Introduction, the document stresses that "Since publication of the National Security Strategy of Hungary in 2012 the global security environment

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16 "Shared Vision, Common Action: A Stronger Europe: A Global Strategy for the European Union's Foreign and Security Policy". June 2016. https://eeas.europa.eu/archives/docs/top_stories/pdf/eugs_review_web.pdf, Accessed on 8 October 2020.

17 "Shared Vision, Common Action". 27.

18 "The World Climate and Security Report 2021". Center for Climate and Security. 2021. https://imccs.org/wp-content/uploads/2021/06/World-Climate-and-Security-Report-2021.pdf, Accessed on 24 June 2021.

19 International Military Council on Climate and Security (IMCCS) is a group of military leaders, security experts and security institutions dedicated to analysing the security risk of a climate change.

20 „The World Climate and Security Report 2021". 54–65.

21 1163/2020. (IV. 21.) Korm. határozat Magyarország Nemzeti Biztonsági Stratégiájáról [Government Decree no. 1163/2020. (IV. 21.) on the National Security Strategy of Hungary].

has gone through fundamental changes. Those processes extremely appraise the necessity of security related thinking and the identification of answers to new challenges raised."[22] It emphasises that "One of the most determining specifications of processes having influence on security is that their formation development and influence are very hard to predict which results in a growing uncertainty."[23] Among national conditions the NSS expresses the importance of agriculture as the foundation of food production and the reserves of drinking water, it points out the relation between the geographical location of Hungary and the environmental damage taking place in the neighbouring countries. Presenting the security environment of Hungary the document emphasises that "the rivalry among powers expands more and more on global common goods: there are increasing struggles in progress for the control of […] international waters and the resources to be found there".[24] It points out that "the scantiness of the most important goods necessary for existence even in short or middle term could be resulted in significant conflicts among or within states. The more and more growing requirement for natural resources involves heavy environmental damages, increasing exhaustion and deterioration of reach of resources which could lead to further tensions. The sustainability of development, the assurance of the stability of societies together with the achievable results cause ever-growing difficulties."[25] Based on the above it can be stated that the current NSS attaches high importance to the relations of security resulting from the interactions between humans and environment, it considers the environmental resources as values and fundamentals, at the same time it points out that vital resources could be limited sometimes, so they are as of critical importance for the progress of the society.

Based on and in accordance with NSS the just issued *National Military Strategy of Hungary*[26] (NMS) emphasises that it is necessary to strengthen the national resilience capabilities, and as part of the pan-governmental efforts, the Hungarian Defence Forces mainly by their wide-ranging logistics infrastructure and capabilities have to be prepared to take part in operations in the territory of Hungary to manage the consequences of subsequent natural catastrophes relating to the climate change.

Tyler H. Lippert in his PhD thesis entitled *NATO Climate Change and International Security*[27] recommends a look-ahead analysis to NATO, where he points out the probability of security consequences stemming from climate change. He states that the environmental changes triggered by the climate change threaten with high probability all the factors of security, undermine the quality of life, increase migration, could result in political instability, and weaken the resistance of states and those capabilities of states as well by which they can handle effectively the emerging problems. Lippert emphasises that while not all the effects and consequences are known so far one can be afraid of the possibility that the unfavourable changes that may happen in the environment during the 21st century could result in considerable instability, and international organisations like NATO have to have

[22] 1163/2020. (IV. 21.) Korm. határozat. Section 1.
[23] 1163/2020. (IV. 21.) Korm. határozat. Section 2.
[24] 1163/2020. (IV. 21.) Korm. határozat. Section 48.
[25] 1163/2020. (IV. 21.) Korm. határozat. Section 61.
[26] 1393/2021. (VI. 24.) Korm. határozat Magyarország Nemzeti Katonai Stratégiájáról [Government Decree no. 1393/2021. (VI. 24.) on the National Military Strategy of Hungary].
[27] Lippert, T. H. "NATO, Climate Change and International Security: a risk governance approach". Dissertation presented in October 2016 in partial fulfilment of the requirements of the doctoral degree on public policy analysis. RAND PARDEE Graduate School, 2016. DOI: 10.7249/RGSD387

inevitable roles to handle it. He states, although the capabilities of NATO are convincing it is of high importance to improve its policies and capabilities suitable for handling the risks of environmental security effectively.

The International Peace Bureau, the oldest international peace association of the world, in its information sheet in 2002, entitled *The Military's Impact on the Environment: A Neglected Aspect of the Sustainable Development Debate*[28] stated that the stresses caused by military activities in the environment were not emphasised enough so far. The ongoing international brainstorming on the sustainable development resulted in excellent occasions to present the military dimension. It pointed out that while military activities caused imbalance in several areas (environmental stress) of the physical environment, the contribution to the general damage of the environment did not receive enough attention. The reason behind was that states applied double standards: it was not their intention to make the military transparent and accountable in areas where the control of state organisations and that of civil society was realised.

ENVIRONMENTAL SECURITY

In order to fully understand the importance of environmental security as one of the elements of the overall security on one hand, and the reason and the exact period of time when the conceptual integration took place, it is necessary to clarify the evolution of the environmental security as a term, with regard to the development of the related theories since the end of the Cold War: practically during the last little more than three decades.

László Halász and László Földi in their university textbook entitled *Környezetbiztonság*[29] *(Environmental security)* clearly describe the evolution and the content of the term environmental security. According to it, from the general meaning of security – the lack of danger, or the knowledge that one has all the necessary defence capabilities against threats – through a precise list of aspects of security while reaching the requirement when the analysis of interactions among human groups, communities, and the natural and man-made environment, the gradual comprehension of casual relations and finally the recognition of the possible consequences that made it necessary to create the term of environmental security. The authors proceeded cautiously during the creation and introduction of the term, inasmuch as they paid very much attention to the presentation of the environment content (environment protection and nature protection) and the presentation of the process when the actors of the international professional and political community reached the recognition that the environment and the effects coming from it are significant elements of security.

The information sheet of the International Peace Bureau[30] presents thematically the effects of military activities on environment – peace time pollution of air, soil and water; immediate and enduring effects of armed conflicts (nuclear explosion, the lack of anti-mining activities in agricultural areas in Africa and Asia, the backwardness of disposal of

[28] Hay-Edie, D. et al. "The Military's Impact on the Environment: A Neglected Aspect of the Sustainable Development Debate: a Briefing Paper for States and Non-Governmental Organizations". Geneva: International Peace Bureau, 2002. 1–2. http://www.ipb.org/wp-content/uploads/2017/03/briefing-paper.pdf, Accessed on 8 October 2020.

[29] Halász L. and Földi L. Környezetbiztonság [Environmental security]. Budapest: Nemzeti Közszolgálati Egyetem Hadtudományi és Honvédtiszt Képző Kar, 2014.

[30] Hay-Edie et al. "The Military's Impact on the Environment". 3–7.

unexploded military ordnance; chemical agents and burning oil wells alongside the Persian Gulf area; the immediate and enduring effects of the deployment of weapons of mass destruction; militarization of space; the effects of military installations (barracks, airfields, shooting and drill grounds) on the environment and on the quality of life of people living in the surrounding settlements.

The principle of sustainable development – a concept introduced by the World Commission on Environment and Development in 1987, with the so called *Brundtland Report*[31] – points out the special connections among environment, security, and the evolution of human society which – preserving the opportunity of development – represents environmental security substantially and in a wider meaning.

The United Nations' resolution, widely known as *Sustainable Development Goals of the United Nations*[32] (UN), set its overall goal as "We are determined to take the bold and transformative steps which are urgently needed to shift the world on to a sustainable and resilient path."[33] The ambition of this high priority document is to provide a framework of 17 Sustainable Development Goals (SDG) and 169 targets by which in a 15-year timescale the international community can trigger suitable and tailored actions in order to achieve the overall goal set out. In its Preamble the document declares that the parties "are determined to protect the planet from degradation […] and taking actions on climate change, so that it can support the needs of present and future generations."[34] Later on in the vision part it adumbrates a future where "[…] envisage a world in which consumption and production patterns and use of all natural resources […] are sustainable."[35] From the 17 SDGs Goal 13 deals with "[…] action to combat climate change and its impacts".[36]

The European Union in its *EU Global Strategy of 2016* takes the responsibility to set an example to carry out commitments on sustainable development and climate change. It declares clear commitments on increasing the necessary financial resources and on creating/modifying the regulatory bases in order to implement the Sustainable Development Goals of the United Nations.[37]

György Seres in his essay entitled *Fenntartható fejlődés – fenntartható nemzetvédelem*[38] *(Sustainable Development – Sustainable National Defence)* gives a special interpretation of the connections among environment, security and national defence. Putting humans in the very centre and having the correlation between support and jeopardy, the author examines the interactions by the societal environment, the economic environment and natural environment on each other and on human beings. After systematically analysing the correlation

[31] "Report of the World Commission on Environment and Development: Our Common Future". United Nations. 1987. https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf, Accessed on 24 February 2021.

[32] "A/RES/70/1: Transforming our world: the 2030 Agenda for Sustainable Development". United Nations. 2015. https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E, Accessed on 24 February 2021.

[33] "A/RES/70/1". 1.

[34] "A/RES/70/1". 2.

[35] "A/RES/70/1". 4.

[36] "A/RES/70/1". 14.

[37] "Shared Vision, Common Action". 40.

[38] Seres, Gy. „Fenntartható fejlődés – fenntartható nemzetvédelem [Sustainable Development – Sustainable National Defence]". Hadmérnök V/4. 2010. 322–339. http://www.hadmernok.hu/2010_4_seres.php, Accessed on 24 July 2020.

giving the title of the essay the author made an attempt to create a working definition, and says: *[the sustainable national defence is]* "The establishment of a national defence system proportional to threats without provoking increased threatening, and without damaging the economic, social and natural environment, without the prevention of the evolution of the sustainable development."[39]

The narrowly interpreted term of environmental security means the strained access to resources which in a consequence of endangering the sustainable development can be resulted in conflicts. The scarcity of natural resources, the inability to access limited or non-exploitable (or exploitable but only in a non-economic way) resources at the level of a given technological development, and all the human activities aimed at obtaining them, which by nature represent environment damage, do not recognise state borders and could be a reason of interstate conflicts. The limited access to or the scarce resources have consequences for the effective and efficient operation of militaries, which – by nature are energy- and technology-sensitive systems – even in the last century were accepted as the traditional means to settle interstate conflicts.

Decree 1/2014. (I. 3.) of the Hungarian Parliament on the National Development 2030 – National Development and Regional Development Concept[40] (Decree I.) states, "[…] in order to fulfil the goals and priorities of the national development and regional development policy the Concept formulates horizontal considerations on one hand, which are represented in comprehensive economic, environment, and societal considerations, which must be enforced throughout the whole regional development, program planning, and implementation process […]".[41] Such horizontal considerations determined by Decree I. are the sustainable development – sustainable increase among the principles of resource consumption, the quality-quantity preservation of natural resources, and the preservation and improvement of the natural conditions and values. The Concept determines four long-term comprehensive development goals by 2030 and one of them is the "sustainable consumption of natural resources, preservation of our values, and protection of our environment".[42] In order to fulfil the comprehensive development goals the Concept determines thirteen specific goals and within them seven intersectoral policy goals. One of the policy goals is the "preservation and sustainable consumption of strategic resources, the protection of our environment".[43]

Decree I. determines the elaboration of policies for the different sectors in order to enable them to fulfil all the provisions of the Concept.

Decree 27/2015. (VI. 17.) of the Hungarian Parliament on the National Environment Protection Programme for the period of 2015–2020[44] (Decree II.) comprises the comprehensive framework of the environment policy goals and measures of Hungary for the related time period. Decree II determines the Hungarian environment protection goals, the necessary tasks and resources to achieve them, paying attention to the capacities of the country, the in-

[39] Seres. „Fenntartható fejlődés – fenntartható nemzetvédelem". 326.

[40] 1/2014. (I. 3.) OGY határozat a Nemzeti Fejlesztés 2030 – Országos Fejlesztési és Területfejlesztési Koncepcióról [Parliament Decree no. 1/2014. (I. 3.) on the National Development 2030 – National Development and Regional Development Concept].

[41] 1/2014. (I. 3.) OGY határozat. Section 3.

[42] 1/2014. (I. 3.) OGY határozat. Section 4. c)

[43] 1/2014. (I. 3.) OGY határozat. Section 5. ag)

[44] 27/2015. (VI. 17.) OGY határozat a 2015–2020 közötti időszakra szóló Nemzeti Környezetvédelmi Programról [Parliament Decree no. 27/2015. (VI. 17.) on the National Environment Protection Programme for the period of 2015–2020].

terest and development of society, and the international responsibilities. Within the predictions determining the operation and development of the Hungarian Defence Forces (HDF) for a long time it states "[…] there could be problems resulting from the consequences of global warming which could manifest themselves in increasingly powerful struggles for natural resources, increasing migration, and strengthening inclination to violence […]".[45]

Regarding the environment as a strategic influencing aspect the analysis states that from the perspective of defence and security the protection and sustainment of environment are of critical importance. Radical intervention in environmental processes may lead to troubles in societal courses, the use of chemical agents as weapons or in weapons makes vast territories uninhabitable and wasteland. The long term thinking about the environment (urban areas, space, sea, land, air), including living nature as well, is an important aspect of weapon planning and training. It declares, that during the forthcoming decades the climate change will result in a considerable disintegration force thus it may lead to conflicts.

The disturbances in food supply, the increasing lack of potable water, the reduction of biological diversity, the competition for minerals and energy sources will challenge the global cooperation system and the balance of power. The climate change and the rising sea level threaten both individuals and population living on coastlines, resulting in extensive and massive waves of migration and threaten the survivability of whole societies.

Imre Dobos, Tünde Tátrai, Gyöngyi Vörösmarty in their working paper entitled *Fenntartható beszerzés*[46] *(Sustainable Procurement)* analyse the consequences and effects of sustainability-related decisions made by companies on procurement procedures and on the networks of their suppliers.

During the interpretation of the term of sustainability nowadays we focus on sustainable development, societal responsibility, and nature protection, so those processes are worth examining as well, whose purposes are to meet the requirements and needs of society on one hand, and to realise and support the goals of the above substantial elements on the other hand.

Procurement is a system of tasks and processes whose primary goal is to support large administrative and production units to acquire the required stuffs and services on a societal scale according to strict regulations of related laws and rules. Since the decision-making is generally dominated by rational arguments,[47] one can raise the question if the procurement related decision-making procedures of the military are dominated by the same rational arguments as in the case of civilian companies. The answer can be complex, due to the special goals, equipment, and "product" (sc. security), but at the same time there are several points and arguments which during the decision-making process made by the actors of either the civilian or the military side – paying special attention to the three above mentioned

[45] 27/2015. (VI. 17.) OGY határozat. Section 2.3.

[46] Dobos, I., Tátrai T. and Vörösmarty Gy. „Fenntartható beszerzés [Sustainable Procurement]". Corvinus University of Budapest, Faculty of Economy Science, 2010. http://unipub.lib.uni-corvinus.hu/151/1/VorosmartyDobosTatrai117.pdf, Accessed on 8 October 2020.

[47] Dobos, Tátrai and Vörösmarty. „Fenntartható beszerzés". 3.

elements of sustainability – are considered, as well. The issue of green procurement can be such an argument,[48] which has a great importance for sustainable development.

The analysis of sustainable procurement points out the innovation potential, which is generated by the requirements of society as a whole, the business and economy ecosystems, and by the consumers paying very much attention to sustainable development, urging suppliers to invent and develop novel procedures and materials.[49]

ENVIRONMENTAL SECURITY − DEFENCE/MILITARY RELATED RESEARCH DEVELOPMENT AND INNOVATION

If we search for the framework of the defence/military related research, development, and innovation (R&D&I), which determines the foundation of the capability development of the military – moreover its relations with the environmental security – in a long term, we cannot make a big mistake if in the spirit of the holistic approach we reveal those wide range relations, that point out the systems where the environmental security related R&D&I activities are realized.

In the *Brussels Summit Communiqué* of heads of state and government participating in the June 2021 NATO Summit, pointing out that the climate change is one of the most determining factors influencing the forthcoming decades, leaders take a commitment on implementing the necessary technical and armament developments in order to cope with operational challenges caused by the climate change. One of the main challenges determining directly the operations of NATO troops is energy security,[50] which has many links to environmental security. The document declares that a stable energy supply needs diversified energy resources therefore the development of novel technological procedures and equipment is of great importance to make NATO troops increasingly independent from fossil energy resources, and at the same time it is also necessary to research into new technologies to explore the opportunities of renewable energy sources.

Dealing with the connections between efficient energy provision and sustainable operations in NATO it is unavoidable to mention the NATO Energy Security Centre of Excellence (ENSEC COE), which has the mission to provide "[…] comprehensive and timely subject matter expertise on all aspects of energy security".[51] One of the most important trends followed thoroughly by the ENSEC COE is the analysis of the context between increased consumption of renewable energy sources by military troops and their possible effects on the environment.[52]

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[48] Within the framework of related laws and regulations to show favour on purpose toward products and services which environmental footprint (consumption of energy and raw materials from the perspective of quality and quantity; the percentage of recycled materials in the final product; the length of transportation chain, the fit into the all-round economy) is smaller than products made according to traditional ways and technologies (working term for green procurement created by the author)

[49] Dobos, Tátrai and Vörösmarty. „Fenntartható beszerzés". 29–35.

[50] „Brussels Summit Communiqué". 19.

[51] "2020 COE Catalogue". NATO Allied Command Transformation. December 2020. 30. https://www.mgeometoc-coe.org/sites/publications/article/Documents/coe-catalogue-2020.pdf, Accessed on 29 September 2020.

[52] Vainio J. „Changing Security Aspects for Future Security Systems: Renewable energy and possible risks at the local, regional and the global levels." Energy Security: Operational Highlights 12. 2019. 7.

Péter Fodor in his essay entitled *A NATO és energiabiztonság*[53] *(NATO and Energy Security)* elaborates the topic of energy security – which is one of the critical aspects for societies as a whole and for the continuous operation of militaries – from the perspective of NATO as a politico-military organisation, paying very much attention to tasks implemented by militaries in order to maintain energy security. Fodor – after a short introduction of roles played by fossil and renewable energy sources and the nuclear energy in the operation of different societal subsystems but with special emphasis on the energy requirements of the economy and the population – points out that the disposal of different accessible energy forms is a critical factor from the perspective of the expected operation of all societal subsystems. Consequently, even a short interruption in the energy supply can have a negative effect on a segment of society, or even on the operation or the security of society as a whole. The essay, while elaborating on the connections between energy security and military, presents in detail the question of security of supply, as well.

The analysis by the NATO Science and Technology Organisation entitled *Science & Technology Trends 2020–2040 Exploring the S&T Edge*[54] contains the outlook of the science and technology community of the Alliance, focusing on trends and processes which will fundamentally determine the operational environment, the capability development directions, and the political decision making of the Alliance and its member states. The document, concentrating mainly on the developing and promising disruptive technology developments and areas and their possible effect on each other, analyses the strategic drivers which will fundamentally determine the R&D&I and the operational environment of NATO. Among the strategic drivers there is a specific stress on the environment.

In its *Annual Report 2020*[55] the European Defence Agency (EDA) devotes a separate chapter to energy and environment related issues. EDA emphasises the importance of continuing and promoting collaborative research and innovation efforts into sustainable energy, while continuing the preparation of sets of short-, medium-, and long-term concrete actions addressing the link between defence and climate change.[56] Under the auspices of EDA there is an ongoing Energy and Environment Programme (EEP)[57] with the clear aim to support the participating Member States (pMS) towards an increasing resilience to – inter alia – environmental change. Expert level bodies like the EDA Energy and Environment Working Group (EEWG) focus their efforts on implementing the tasks arising from the EU *Climate Change and Defence Roadmap*[58] having one of the main goals to support EU and the pMS to make climate policy implications "[…] an integral part of the EU's thinking and action on issues such as defence research and development […]".[59]

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[53] Fodor, P. „NATO és energiabiztonság [NATO and Energy Security]". Hadmérnök IV/3. 2009. 168–179. http://www.hadmernok.hu/2009_3_fodor.php, Accessed on 24 July 2020.

[54] "Science and Technology Trends 2020–2040: Exploring the S&T Edge". NATO Science and Technology Organisation. March 2020. https://www.nato.int/nato_static_fl2014/assets/pdf/2020/4/pdf/190422-ST_Tech_Trends_Report_2020-2040.pdf, Accessed on 10 May 2020.

[55] Annual Report 2020. Brussels: European Defence Agency, 2021.

[56] Annual Report 2020. 20.

[57] An EDA programme to analyse the complex nature of energy and environmental factors in the defence sector and to offer a detailed approach to pMS.

[58] "Climate Change and Defence Roadmap". European External Action Service. 6 November 2020. https://data.consilium.europa.eu/doc/document/ST-12741-2020-INIT/en/pdf, Accessed on 24 June 2021.

[59] „Climate Change and Defence Roadmap". 3.

One of the centrepieces of EDA energy and environment related initiatives and actions is the *Military Green*[60] which is used as an umbrella by the agency for developing more responsible and more effective capabilities for the military, capabilities which use resources in a more sustainable way.

The *Permanent Structured Cooperation*[61] (PESCO), established by Article 42 of the Treaty of the European Union and launched in 2017 by twenty-five pMS, represents a qualitative development in defence cooperation within the EU with the aim to contribute to the implementation of EU Level of Ambition in security and defence. The main difference between PESCO and other forms of EU cooperative development projects is the binding nature of commitments undertaken by the twenty-five PESCO nations. Among the 46 PESCO projects the Energy Operational Function project deals with the development of new energy supply systems for camps deployed in joint operations and with the insurance of taking into consideration energy issues during operational planning and the development of armaments systems.

The supply of forces, armaments, and equipment with energy fundamentally influences operational security and the continuation of mission implementation of militaries. Melinda Zsolt in her essay entitled *A védelmi szféra zöldítése – nemzetközi kitekintés*[62] *(Going Green of the Defence Sphere – an International Outlook)* examines the special but at the same time forward-looking projection and trends of environmental security and energy security. The author predicts the opportunity for reforms of military within the defence sphere in the dichotomy of new types of technologies and alternative energy sources. The author states that "Modern military is characterized by huge energy dependence since with the spread of novel equipment, modernisation of technology, systems become more and more complex with increased energy needs […]".[63] The essay examines one by one those economic, financial, logistic, and technological advantages which can inspire the R&D&I community as a whole, including military, to develop new and provident technologies and to use alternative energy sources. It also analyses the limits which in many cases – especially on operational areas – are not compatible with the energy usage and storage requirements of intensive combat actions. It mentions that one has to take into consideration geographical and climate limitations when planning the use of energy from renewable energy sources. Furthermore, the essay presents those programmes and development of the US, NATO and the EU which can lead militaries "going green".[64]

CONCLUSION

It can be stated that security related thinking and activities of states, international and non-governmental organisations are inspired by environmental security as a comprehensive approach related to one of the newest and most important dimensions of security.

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[60] Military Green: Energy and environment at the European Defence Agency. Brussels: European Defence Agency, 2012. DOI: 10.2836/13547

[61] "Protocol (No 10) on the permanent structured cooperation established by the Article 42 of the Treaty of the European Union". Official Journal 115. 275–277. 2008. EUR-Lex – 12008M/PRO/10 – EN (europa.eu), Accessed on 24 June 2021.

[62] Zsolt, M. „A védelmi szféra zöldítése: nemzetközi kitekintés [Going Green of the Defence Sphere: An International Outlook]". *Felderítő Szemle* XVI/3–4. 2017. 188–201.

[63] Zsolt. „A védelmi szféra zöldítése". 188.

[64] Zsolt. „A védelmi szféra zöldítése". 190–197.

Environmental security, when examining the relation between humans and environment, connects increasing dimensions of security, multiplies their effects on each other, and initiates or at least influences processes which in many cases and at least at first glance are unpredictable and untreatable in a human scale, and as a consequence could materialize in global challenges for the whole civilization.

In environmental security related security policy considerations, military power is increasingly represented as the settler of conflicts related to environmental security on one hand, and as a direct creator of environmental security problems on the other hand.

It is possible to draw the conclusion that it represents a special level of maturity and the increasing responsibility of human society when individuals but even more their greater and lesser groups perceiving the interactions between environment and human activities, are eager to act in an organised and coordinated manner for stopping disadvantageous processes and for eliminating damage caused. But the success awaits yet.

The military, as an active and organised part of communities, due to its operational specifications is able to cause and at the same time suffers from environment-related problems.

The military has its own special capabilities – like command and control, logistics and medical corps – through which it can directly take part in the elimination of negative natural and societal effects and security imbalances. Militaries, as traditional depositories of the restricted interpretation of security, this way can be directly involved in the creation and sustainment of one of the relatively new elements of security: environmental security.

It is concluded that the influence made by environmental security on research, development, and innovation activities is increasing in the ratio of the intensity of the mutual impact made by humans and the environment.

The primary motivation of R&D&I is the requirement of users, the emergence of needs where the existing affordable and economically utilizable technological procedures and equipment are not able – or only in a limited manner – to meet the relevant requirements and needs.

In case of the military and defence sphere as a whole, the new and acutely predominating environment effects which influence the implementation of operations urge and force them to develop and invent novel material and operational procedures, and to implement new and forward looking materiel standards. And it is true seen from different perspectives.

On one hand, tasks are changing, ranging from the prevention of the escalation of civilization crisis into conflicts, or if they have occurred, as a last resort of conflict resolution, to support the civil society against harmful environmental effects, with the special capabilities and equipment in military inventory. On the other hand, the natural and as a consequence the man-made environment are about to dramatically change. Since negative trends and tendencies (climate change, water crises, and degradation of arable soil) disregard state borders, depending on their order of magnitude, there is an urgent need for cooperation on a regional, continental or a global scale in order to effectively manage them, and this is a big challenge for the R&D&I community as well.

With the above threefold analysis (sc. security, environmental security, and R&D&I), the summarised findings and estimations, as a first step it is reasonable to state, since the environmental security and the armaments development concurrently have different and at least partially compatible goals it is expedient to analyse further if it is feasible to develop military capabilities in a way to meet both environmental and military requirements at the same time and within a reasonable and executable timeframe and budget.

One can easily think that the period of time since the end of the Cold War has been more than enough to at least establish the global framework to give harmonised answers to the

challenges arising from the global climate change. The truth is that despite all the efforts made so far, we are not closer to the required solutions at all.

The fundamental security policy and societal changes that happened in the region of NATO and the EU, the apparently unstoppable negative tendencies in the global climate, and the lack of real and feasible willingness to create harmonised structures with enough resources to take just the first steps to handle effectively and in a timely manner those natural, societal, and humanitarian crises which directly or indirectly stem from environment-related tendencies show that we are not ready yet. However, one thing is certain, there is no other way but move forward.

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