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FOR THE HOMELAND

HUNGARIAN DEFENCE FORCES

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István Hottó

"WE LIVE IN A HISTORIC SITUATION..." INTERVIEW WITH CHIEF OF DEFENCE GENERAL DR. GÁBOR BÖRÖNDI

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ABSTRACT: *Lieutenant General Dr. Gábor Böröndi[1] (he has been a general since 20 August 2023) was appointed chief of the HDF General Staff[2] as of 4 May 2023 by the head of state – on the proposal of Defence Minister Kristóf Szalay-Bobrovniczky and the government. Since he holds his position as chief of defence, serious and discernible changes and developments have taken place in the Hungarian Defence Forces (HDF). During this period burdened with wars, the guaranteeing of Hungary's security carries new, unprecedented challenges. Therefore, the goal of armed forces development is to create modern, combat-ready, well-armed, complex and digitalised armed forces. In the interview, the author asked the chief of defence how he sees the past, present, and future of the Hungarian Defence Forces, what he thinks about the fundamentals of Hungary's defence and the experiences and lessons learned from the Russo-Ukrainian War. (The interview was on 2 February 2024.)*

KEYWORDS: *combat-ready armed forces, new challenges, new armed forces model, military technological modernisation, territorial defence, reserve force, public relations*

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[1] General Böröndi has several decades of extensive senior military leadership experience in both national and international contexts; he is a qualified lawyer and military leader with a certificate. He acquired his general staff academic degree at the National War College of National Defense University (Washington D.C.) in 2017.

[2] The HDF General Staff (GS) is a strategic-level planning-organizing body responsible for preparing Hungary for military defence and also for managing the top and operational-level tasks of the Hungarian Defence Forces' military activity. The General Staff manages the HDF, which ensure the independence of Hungary, as well as the protection of its territory, borders, airspace, and cyberspace; carry out joint defence and peacekeeping tasks deriving from international agreements; and are engaged in humanitarian activities, in harmony with the rules of international law.

CIVIL CONTROL, INTERACTIVE COOPERATION

General, the Committee on Defence and Law Enforcement of the National Assembly supported your appointment to Chief of Defence with one abstention and eight votes in favour in its session on 2 May 2023. What was the reason for the unanimous trust of the MPs?

► The ministerial nomination, which was a great honour; the support by the government; and hopefully my preparedness in military, vocational, and leadership skills. Before my position in Brussels, I was the second-in-command of the HDF and in foreign missions, I worked as a military representative of Hungary to the NATO and EU Military Committees. My appointment is the peak of military career as the chiefs of defence can serve their country in the highest rank, as four-star generals. At the hearing before the Committee on Defence and Law Enforcement, I talked about us living in a deteriorating security environment, the most important security challenges and risks, how the HDF should be organized in light of these, what the most important tasks and junctures are, and how I see the future of the HDF. The members of the Committee were greatly interested in the Russo-Ukrainian War and the related activities of NATO and the EU. In this regard, I was in a privileged situation as during my work as a military representative in Brussels, I learned much about the Euro-Atlantic international organizations and gained personal experience in decision-making procedures and international political and military preparatory work for decisions. As there is a conventional war going on close to the borders of NATO's Eastern Flank, we carried out real-world tasks with the Alliance. It was edifying to see the creation of deterrence and defence plans in the Euro-Atlantic region, the importance of professional representation of the national positions, and how the Alliance's decisions should be "translated" to guarantee Hungary's security and defence.

What are the significant focal points of the cooperation between the Committee on Defence and Law Enforcement of the National Assembly and the Hungarian Defence Forces?

► This is not really a cooperation between the Committee on Defence and Law Enforcement and the Ministry of Defence/Hungarian Defence Forces as the Committee exerts civilian control over the armed forces on behalf of the National Assembly. I find this controlling function especially important; we have a reporting obligation to the Committee but we can also initiate a consultation. From this aspect, we can also talk about cooperation because the opinions and experiences of MPs regarding the discussed topics – such as development concepts, procurements, the state of the armed forces, etc. – are really important; not only because of the political approval and support but also to improve the quality of proposals. Therefore, we, military leaders, highly appreciate the constant assistance provided by the Committee as an elected political body that observes and assesses the HDF from the outside and gives political advice regarding their functioning and the directions of their further development. These civilian experiences and the interactive cooperation are beneficial to us, so we provide many possibilities and forums – in the form of exercises, military technology demonstrations, unit visits, etc. – for the Committee to help them form a thorough opinion.

THE ROLE OF MILITARY FORCE HAS GAINED IN VALUE

General, you used the expression "change of pace" in connection with the necessary development of the Hungarian Defence Forces several times, during which the armed forces received a noticeably new image, paired with a different attitude. Besides praising these changes, you also criticised them several times. What accounts for and can explain your sense of mission, strong commitment to, and conviction about the future modernisation of the Hungarian Defence Forces and the security of Hungary?

► We live in such a historical situation that there has been a war going on in our neighbouring country for more than two years. Nonetheless, we are no longer used to it in Europe since the end of the Balkan Wars. In the Cold War, the two existing political, economic, and military blocs were not only opponents but also kept one another at bay due to the balance of power. After the collapse of the Soviet Union, the great powers and the international organizations were able to deal with conflicts, and a peaceful development began. This gave a sense that wars had irrevocably disappeared from Europe. Here I have to recall the first, 2003 European Security Strategy, the first sentences of which say "Europe has never been so prosperous, so secure nor so free. The violence of the first half of the 20th Century has given way to a period of peace and stability unprecedented in European history". After two decades, we can already see that history has refuted this idea. Due to the Russo-Ukrainian War, the security situation in Europe deteriorated, moreover, I could say that the security of the whole world did not improve, either. The Russo-Ukrainian War is going on and the Israel-Hamas War keeps the Middle East, as well as the Western and Islamic worlds anxious. The number of smaller armed conflicts and clashes is increasing, and the countries of the world are spending more on their militaries (USD 2243 billion in 2023) than on the fight against climate change or projects serving sustainable development. Meanwhile, the role of military force has been revalued in this world lacking security.

For me, these events and processes give strength and commitment to developing the Hungarian Defence Forces, so that they can be ready to fight in a possible armed conflict – alone or together with the allies – if needed, to protect the Hungarian national interests and safeguard the security of the people. Therefore, armed forces development has a real stake today: available resources must be spent in a way to reach development and modernization goals. Today there is a strong political will to create combat-ready armed forces in Hungary and we, soldiers are striving to carry out this political task. The government does not only define goals but also allocates significant budgetary resources – this year, HUF 1309 billion – to the modernization of the HDF. We already met the NATO requirements in this field last year, as our defence budget attained the 2% GDP guideline established by the Alliance. In the past 30–40 years, either of the two – political and financial – requirements for armed forces modernization was always lacking, but there were times when neither was available. However, now there are both political goals and budgetary support. We are part of a historic possibility as we do not only live to see the role of military force gaining in value but we can also be part of the creation of the combat-ready and modern armed forces in Hungary.

What significant changes and developments were introduced in the past year, since you were appointed Chief of Defence?

► Following my appointment, I laid particular emphasis on training, so that the preparation of our soldiers reaches the highest possible level. Without well-trained and motivated soldiers there are no modern, up-to-date armed forces. The peak of the training was the international and national Exercise Adaptive Hussars 23 in November 2023, in which not only the soldiers of the HDF and the NATO member states participated but we also involved the civilian public administration, which was unprecedented in the past 30 years. Thus, we tested not only the HDF but also the whole national defence system of Hungary. At the exercise, the cooperation between the armed forces and the defence public administration covered several fields: we used civilian economic resources and services, airports and facilities, and made reservists enlist. All these were already carried out under the new defence legislation. It is important to emphasize that defending the country is not the exclusive task of the armed forces, the national strength is much more than this. It includes the economic opportunities of the country, the national defence public administration system, the law enforcement and national security bodies, and even the Hungarian citizens. Defending the country is everybody's duty! As Lajos Kossuth said in December 1848, "All up for the defence of the country!"

Another great task was to find new personnel for the armed forces, probably the most well-known example of which was the "Man to the hardware!" recruitment campaign. The infantry battalion of the HDF 30th Mechanized Infantry Brigade in Hódmezővásárhely, which is equipped with armoured Lynx infantry fighting vehicles, was brought to full strength with the help of such a countrywide advertisement, as well as the 1st Self-propelled Artillery Battalion of the HDF 1st Armoured Brigade, the artillerymen of which are preparing for performing tasks with PzH 2000 tracked, self-propelled howitzers. We could try to recruit as we had done before, recruiting in each part of the country at the same time, with the same salary and working conditions, but it did not work. We must know that all armed forces in Europe are striving to increase their manpower, and so are the Hungarian Defence Forces. Our related indicators are constantly improving, which is just as important as procuring combat equipment. However, we can create combat-ready armed forces only by carrying out multiple tasks at a time, which include writing field manuals and doctrines, forming an up-to-date organizational structure, training, modern leadership, and creating appropriate financial, technical, and infrastructural conditions. All this must be done in a way that conforms to the requirements of interoperability, the cooperation with the allies.

The chiefs of defence of several Western states expressed their appreciation for the coordinated military exercise and they shared the opinion that there has not been an exercise in their countries with such close cooperation, involving the public administration.

► If we think about it, without the Russo-Ukrainian War, it would have been unimaginable in Hungary, too, because everybody likes to live in peace; and if war, armed forces, or arms enter the civilian sphere, where people live their everyday lives, that triggers – if not fear – a certain reticence in each case. What can we think of? For example, if soldiers are located in student hostels or schools currently out of order, combat vehicles are refuelled at gas stations, or a bakery receives an order to bake bread immediately for five thousand people and give it to the HDF, these are novelties in the civilian sphere as simi-

lar situations could not have been encountered before. During Exercise Adaptive Hussars 23, it was relatively easy as the major phases took place in the three counties of North-eastern Hungary, where people are geographically the closest to the Russo-Ukrainian War. They directly feel the effects of the war going on in their neighbourhood and know that this crisis can escalate anytime, which would affect Hungary as well. Therefore, people living there accept the exercise and understand its necessity. The public bodies, NGOs, and citizens in Zala County were also understanding because the region has a long-standing military history. Organizing such cooperation is more difficult in Western Europe because there, people live further away from the armed conflict and do not feel the direct threat. It is true that they also meet refugees from Ukraine and hear about the European Union supporting the country's defensive fight and buying ammunition for the Ukrainian armed forces but the direct threat does not become part of their everyday lives to such an extent as here, in Hungary. Processing and analysing the lessons learned during the exercise is currently in progress, and we are going to initiate legislative changes based on them to enhance the cooperation between the military and civilian bodies and delegate supply and service tasks to the allied forces more robustly. We saw what worked well and what was problematic. I think more should be done for the use of economic services, calling in reservists, and better meeting the demands of the civilian public administration and the HDF.

What are the fields where the legislative changes that you mentioned became necessary?

- We are examining numerous issues the solution of which would strengthen national defence and the more effective implementation of which would multiply the power of the HDF. One of these issues is calling in reservists with priority, which requires the soldier's intention to enlist and also the employer's support. Although there is a compensation mechanism for both parties – the soldier and the employer –, a more encouraging system is needed. Or, there are cases when the HDF need civilian – shipping, logistical, or transportation – services but the fulfilment is delayed due to bureaucratic difficulties. We made proposals for a simplified decision-making procedure, accounting methods, and changes facilitating task solving. Based on the lessons learned in the war, we would also like to simulate unusual civilian tasks in the future that do not occur in peacetime, such as shutting down critical infrastructural elements that cover a large area for a longer time, civil defence provision for internally displaced people, and providing help in case of mass casualty incidents. Possible supplementary regulations needed during a state of war must be considered so that the country can operate or conduct secure combat activities in domestic territories, e.g., in the fields of cooperation among public administration bodies and NATO commands or the treatment of prisoners of war. For example, I find it essential to revise the rules of military justice in light of the new special legal order. I trust that due to the state of emergency operation, the review and amendment of legislation will take a shorter time than usual. However, we also know that despite this, the legislative process is long and can only be the result of mature legal solutions.

General, you are a soldier, a chief of defence, and a lawyer in one person. How are legal activities and aspects present in the Hungarian Defence Forces?

- I would like to strengthen this field by all means, but the Ministry of Defence is in charge of its regulation. The General Staff has a legal and administrative directorate and there

are also military lawyers serving with the units, who help the leadership work of the commanders, guarantee the legitimate functioning of organizations and the legitimacy of commanders' legal practices – such as disciplinary and damage settlement cases, etc. However, I would like to enhance the education of the law of war at the university faculties of public governance and law. I find it important to form a more dynamic military lawyer mindset, without which the defence administration system cannot develop fast enough to meet the government's intentions, nor can it improve the efficiency of civilian and military crisis management. What I would really like to change is the teaching of the law of war, not only at the Ludovika University of Public Service but also at other universities. Without this, strengthening the military lawyer mindset and gaining a wider knowledge of the international law of war is unimaginable. For instance, in the university courses, we scarcely deal with the Geneva and Hague Conventions, the law of war, and the prisoner of war status – the legal training only touches upon these important subjects. However, as we saw in the war crimes in Srebrenica during the Yugoslav Wars in July 1995 or the Bucha massacre in the Russo-Ukrainian War in March 2022, these tragic events can unfortunately become part of everyday life. Lawyers, criminal lawyers, and humanitarian lawyers have to be prepared to prevent and handle such sad and unacceptable events. We have begun to discuss with the law faculties of universities, the Hungarian Red Cross, and humanitarian NGOs how we could change this field of education. Besides, we have contacted several international legal institutions because there are outstanding military law courses in Greece and Switzerland, for instance.

THE MILITARY CAREER IS OPEN TO EVERYONE

Military career might be appealing to women due to the legal work involved. What are the expectations from female soldiers in the Hungarian Defence Forces?

► There is a complete equality of rights for female soldiers in the Hungarian Defence Forces because they have the same rights and responsibilities as males, the requirements, allowances, and supplies are also the same in case of equal rank and position. As for the same requirements, there cannot be a difference in qualification, preparedness, physical performance, or military virtues. The career path is open to servicewomen just as it is to their male counterparts. We have female generals, dozens of colonels, numerous senior officers, and women are present in each category of personnel. Women can also serve in combat positions; it is only performance that matters. We have female tank platoon commanders, fighter pilots, and transport aircraft pilots. It is true that the ratio of women is primarily high in the fields of logistics, health care, CIS, law, finance, and personnel policy but combat support and service support branches – where servicewomen also serve – are also part of the operation and warfare. Therefore, there is no discrimination, which I personally consider particularly important. I am really glad and proud that we can provide military careers to men and women without discrimination in both domestic and foreign service.

As for the Swiss military model, what kind of experiences and patterns can be integrated into the Hungarian Defence Forces?

▶ The Swiss military model in practice means that each Swiss citizen is obliged to do military service. Until the age of 32, every Swiss soldier is also a reservist and keeps their uniform, full equipment, and personal weapon at home but there were times when they also kept ammunition there. The armed forces are relatively small – with 3,100 professional soldiers and 18,000 conscripts – but they maintain an outstandingly powerful, reserve system – with 120,000 reservists, who can be mobilised immediately. Each citizen is prepared and trained strictly, reservists are called up and mobilised constantly, and serving the homeland is a recognised activity. The model is based on the neutral status of Switzerland, recognised by international law, and its positive historical experiences. Switzerland is one of Europe's most militaristic countries, which – similarly to Israel in the Middle East – can mobilise 200,000 soldiers in a short time.

Their approach is also characterised by the fact that the current Chief of Defence of Switzerland has previously been the number one leader of a bank in Singapore and he was selected and called home to take his current position with this background. There is high interoperability between the military and civilian spheres: one day, one is a factory manager, and on the next one, a regimental commander. They serve their time as soldiers and then return to the civilian sphere. The employer compensation created in Switzerland and the employee's obligation give the system solid stability when it comes to national defence or service in the armed forces. Each male citizen is involved in military service, regardless of vocation and social status. Most of them train themselves regularly, they attend rifle associations and clubs. Although the military threat to Switzerland is not too high, they can maintain the commitment to defending the country in this peaceful environment. I am convinced that Switzerland can be an example not only to Hungary but also to any NATO member or European state. The cooperation between the Hungarian Defence Forces and the Swiss armed forces is great. Next to former KFOR Commander Lieutenant General Ferenc Kajári, a Swiss military adviser served as a colonel. Hungary often offered (relinquished) responsible military leading (brigadier general) positions to the Swiss armed forces as being small, the Hungarian Defence Forces cannot maintain a constant rotating presence. The two armed forces cooperate in several fields, including peace partnership programs.

General, you have an exceptionally wide international outlook, which is indispensable in the leading position in a modern military. How can the different layers of military personnel be supported in acquiring the widest possible range of international experience?

▶ The Hungarian Defence Forces have 245 officer and NCO positions at the NATO and EU military commands and staffs. We regularly fill these positions and taking the four-year foreign missions into account, fifty soldiers take over the service in international positions yearly. We have nearly a thousand servicemembers doing armed foreign service, for example, more than 400 soldiers are participating in the KFOR operation in Kosovo. EUFOR in Bosnia and Herzegovina has been led by a Hungarian commander, Major General Dr. László Sticz since January 2024, and 280 Hungarian soldiers are currently serving there. Our soldiers also serve in Iraq. Previously, we were present in Afghanistan for nearly two decades, until the NATO mission ended in the Asian country.

We have immense foreign experience; we participate in numerous international military exercises each year. Besides, due to the Russo-Ukrainian War, there is also a multi-

national battle group in Hungary with American, Croatian, Italian, and Turkish soldiers serving together with Hungarians. We also have to mention the NATO Headquarters Multinational Division Centre (HQ MND-C), located in Székesfehérvár. The proportion of Hungarian soldiers on the staff is 80 per cent, the rest of the officers and NCOs are from eight NATO member states. Currently, HQ MND-C is led by a Slovakian commander, Major General Tibor Králik. Previously, this position was filled by a Croatian general. There are also other NATO forces serving in Hungary: the Heavy Airlift Wing (HAW) in Pápa, the Regional Special Operations Component Command (R-SOCC) in Szolnok, signal and headquarters elements in Székesfehérvár, and the NATO Centre of Excellence for Military Medicine (MILMED COE) in Budapest. Therefore, we have a wide circle of international relations with other armed forces, which requires the personnel's constant professional and (English) language preparation. During joint exercises, we practise cooperation with other NATO forces while carrying out international tasks, without which achieving and maintaining high-level interoperability would be unimaginable.

ADJUSTING TO THE CHANGING SECURITY POLICY SITUATION

What are the new challenges of the recent past deriving from Hungary's NATO membership and what can we expect in the future?

- There have not been as many changes in NATO in defence planning during the past thirty years as in these last two. The Alliance has prepared so-called regional defence plans, which focus on the defence of the Eastern borders. The defensive shield in each Eastern European country is provided by national armed forces and NATO forces stationed there. The goal is to create a deterrence and defence system with the necessary command, logistical, and support elements so that the Russian party can see that NATO wants to and is able to defend its member states. Nowadays, 90,000 soldiers are participating in Exercise Steadfast Defender 24 in the Eastern Flank, the Baltic countries, Bulgaria, Poland, Romania, Slovakia, and Hungary. With this exercise, NATO is demonstrating considerable force and creating a "shield" that can halt possible Russian offensive intentions. The exercise is also the first test of NATO's new armed forces model, which can deploy 300,000 soldiers within a month for the sake of collective defence, and within six months, it can deploy 500,000 more.

How are the airspace and the airbases protected in Hungary? What kinds of techniques are used?

- Air surveillance and control and air defence are basic means of a country's sovereignty. Serious developments have been made in this field during the past few years. Hungary has procured state-of-the-art radars and early warning systems that report intruder aircraft or attack missiles heading to the country. Today we have the NASAMS American-Norwegian medium-range air defence missile system, which can carry out multiple tasks. This system can defend the most significant elements of the critical infrastructure, such as the Paks Nuclear Power Plant. We will use this in military operations to provide an air defence umbrella to land forces and support elements. We also plan to procure the Israeli Iron Dome system, which can play an important role in Hungary's air defence

tasks and the maintenance of airspace sovereignty. The Russo-Ukrainian War has made it clear that air defence is one of the most significant capabilities that a certain state and NATO must have.

We also lay particular emphasis on ISR and early warning capabilities that play a major role in modern warfare. It can be seen from the Russo-Ukrainian War that cruise missiles and hypersonic missiles directly attack each vital building, military target, and airbase in Ukraine. Similarly, Ukrainian missiles and long-range drones attack nearby Russian territories as well. These capabilities play an irreplaceable role in prevention and target acquisition, which are indispensable for successful air defence activities. Defending air bases is essential to us, so we practised it during Exercise Adaptive Hussars 23 to repel a simulated attack through dispersal. It took hours to relocate Gripen fleets from Kecskemét to the Pápa Air Base and the Hévíz–Balaton civilian airport in Sármellék.

Currently, our combat air fleet is made up of multipurpose Gripen fighter aircraft, Airbus H145M and H225M helicopters, Russian Mi-24 attack helicopters, and Mi-17 transport helicopters. We recently introduced the new Brazilian KC-390 military transport aircraft in Kecskemét, of which two will serve in the Hungarian Air Force. With this, our air transport capacity (2 Airbus A319s and 2 Dassault Falcon 7Xs) will be further strengthened. We constantly improve our Zrínyi Defence and Military Development Program based on the lessons learned from the war. For example, a decision was made in the recent past about procuring four new Gripen fighter aircraft shortly.

How advanced is the defence potential of the HDF Land Forces?

► In Hungary, there is a permanent controversy among professionals about how many battle tanks, combat vehicles, and artillery pieces the HDF need, and within that, which equipment types should be purchased or manufactured. This can be easily answered only in theory. Conforming to the NATO requirements, a heavy infantry brigade will give the backbone of the HDF Land Forces, which is to be created from the mechanized infantry brigade in Tata. A heavy infantry brigade, according to NATO standards, consists of three to five manoeuvre sub-units, one of which is an armoured battalion. As we have a low number of old Russian-made T-72 battle tanks, our sub-unit should be equipped with state-of-the-art tanks. The political and professional decision is to equip the new heavy infantry brigade with German Leopard 2A7HU main battle tanks. The 2A7 with the Leo nickname is a state-of-the-art tank type, the best in Europe. These tanks are already equipped with active anti-aircraft and anti-drone systems. An artillery battalion is also assigned to the heavy infantry brigade, which is made up of 24 Panzerhaubitze 2000 tracked self-propelled howitzers in our case. Such a howitzer can fire at a given target at six trajectories at the same time, with the shells hitting the target simultaneously. It can be imagined as if six howitzers fired at once. The artillery howitzer is reliable, can be fielded quickly, and can deliver fire rapidly. It is performing well in the Russo-Ukrainian War. The new brigade will also need modern infantry battalions, which will be equipped with German Lynx tracked infantry fighting vehicles. This is how the complete heavy capability of the new military unit is built up. It will not only have state-of-the-art combat equipment but also digital soldier systems, an automated command and control system, and high-performance combat support and service support elements. The German colleagues say that when the armoured unit is fully set up, Hungary's heavy infantry brigade will be among the most modern ones in Europe.

Based on the lessons learned from the war, "drone capabilities" and the extensive use of "deep supporting fire" have become quite significant in warfare. How advanced are the Hungarian armed forces in this field?

► What we see in the Russo-Ukrainian War is that although they have not changed warfare, drones have a considerable effect on combat activities. Why should we pay special attention to it? According to the previous Russian doctrines, military forces should be massed for deployment in large armoured formations during offensive operations. Today we cannot see this in the Russo-Ukrainian War because, at the company level, formations with more than eight to ten combat vehicles simply could not move on the front without being detected by drones immediately. Now, intelligence, battlefield interdiction, and disruption of the enemy are the main tasks of drones. We must know that Ukraine is planning to manufacture one million drones this year, in 2024. It is obvious that if there are one million drones in the air, nothing can be hidden there. Therefore, intelligence is of outstanding significance from the aspect of movement.

The other important lesson learned from the Russo-Ukrainian War is deep supporting fire. Destroying logistic forces, transport hubs, and command posts further from the frontline can be vital as it disrupts the command and supply of troops in contact with the enemy, their warfighting ability decreases, and they become much more easily destructible. Deep supporting fire means that second-echelon forces, such as logistics and reserves, suffer losses due to which they cannot be used in direct contact with the enemy. The Ministry of Defence and the General Staff are examining how the Zrínyi program could be extended by procuring such weapon systems.

DEVELOPMENT OF SPECIAL CAPABILITIES AND MILITARY INDUSTRY CAPACITIES

There have earlier been doubts about the medical evacuation (MEDEVAC) capability of the Hungarian Defence Forces. Unfortunately, this special capability was recently required in an incident in Kosovo to evacuate our soldiers. It turned out that the military medical service can act quickly and professionally. What can be known about this very important field?

► Let's talk about it honestly. Earlier, many said that transport aircraft do not serve the HDF, but the government. During the unfortunate events in Kosovo in May 2023, Hungarian soldiers also got injured. The MEDEVAC aircraft of the Hungarian Defence Forces arrived there in time to bring home our 27 injured soldiers. We organized the medical care at the site, then in the camp, and finally in Hungary, where the injured soldiers were treated in the Military Hospital. Our physicians and nurses made medical interventions immediately and did a professional job. Again, let me mention the example of the Russo-Ukrainian War. Many think that if soldiers go to war, they fight and die there. But it is not true. A number of soldiers – even 80 per cent of them – get injured, so, healing them and restoring their health is usually more important than battle damage repair capabilities. Therefore, if a soldier gets injured, the most significant task is to provide the necessary medical care and then rehabilitation, because it is not only an important factor in keeping up fighting morale but also the source of personnel replacements as injured soldiers

can return to service in the best-case scenario. The HDF bought a ROLE-2[3] field hospital (special technical devices, vehicles, and equipment) in 2022, the main task of which is to provide medical support to a fighting brigade. Recently, the medical personnel were prepared for deployment and operation in field conditions. Our ROLE-2 field hospital performed well at this year's NATO Exercise Vigorous Warrior 24 medical system exercise, where the forces and assets of 33 countries participated in the Várpalota training area. I must add that this capability does not only serve the HDF as it can also be employed in such domestic crises (disasters, floods, etc.) where immediate and mass casualty medical care is needed. Therefore, ROLE-2 field hospitals also have national defence significance.

Major General László Kovács, professor at the Faculty of Military Science and Officer Training of the Ludovika University of Public Service, called attention to the significance of cyber warfare and military cyber security in several of his studies. Zoltán András Nagy, associate professor at the Department of Criminal Law of the Faculty of Law of the University of Pécs and the Department of Criminal Intelligence, Economic and Cybercrime of the Faculty of Law Enforcement of the Ludovika University of Public Service, also wrote about cyber warfare, cybercrime, and cyberterrorism several times. This subject is highly relevant. How advanced are the Hungarian Defence Forces in this field?

► We also have learned important lessons related to cyber warfare in the Russo-Ukrainian War. Preparation for cyber threats began earlier as in 2007, Russian hackers attacked the state IT system of Estonia. The country's public administration, banking and financial services, pension insurance, and postal systems were blocked for days or even weeks. Following the attacks, Estonia rebuilt its IT defence system, and today the country has one of the most well-developed IT and cyber security systems in Europe. As a result of this, everything can be done electronically in a short time (for example, establishing a company takes 15 minutes), it is possible to elect online, and the internet service is free and well-developed in the country. The Gerasimov Doctrine of 2013 embedded cyber warfare in the toolbox of hybrid warfare, which was intensively applied by the Russians in 2014 and before the war waged in 2022.

Battles in cyberspace and attacks on each other's systems are also constant in the Russo-Ukrainian War. Most people think that a cyber-attack begins with "shooting down" the other's Wi-Fi and mobile networks. This does not happen easily as armed forces protect their internet and mobile services networks, while enemies attack and disrupt each other's systems. Therefore, one might seem that cyber warfare is overshadowed in warfare, which is wrong because it is a part of general armed conflicts, which appears in different forms, including the possibility of triggering targeted attacks. The Hungarian Defence Forces have a powerful cyber security capability and limited cyber-attack capability. We established the HDF Cyber Command at the end of 2022; its Cyber and Information Operations Centre is in Szentendre.

[3] As part of the Zrínyi Defence and Military Development Program, there was a tender for the public procurement of a modular and deployable military hospital with surgical capabilities in 2021, which was procured in 2022. With this, an independent ROLE-2 Basic field medical treatment capability was created, with the help of which medical professionals can provide high-level medical care to those in need even in the area of operations. The equipment background is important but capabilities also require people, expertise, and teamwork. See: https://honvedelem.hu/hirek/nehez-korulmenyek-kozott-is-bizonyitott-a-role-2-allomanya.html (Accessed: 14 February 2024).

Related to the border protection of Hungary, the Hungarian Defence Forces had and have tasks. In what direction can the protection of our national borders be developed?

- Border protection is the responsibility of the Ministry of Interior, and is carried out by the nominated police forces and border hunter sub-units. The fence built at the Serbian border has transformed into an advanced technical protection and defence system over the years. Using electronic defence, artificial intelligence, and face recognition systems helped a lot in filtering out recurrent human traffickers and immigrants. The Hungarian intelligent border protection system has already been bought by several countries (such as Kenya), which shows the success of the solutions. The most effective border protection can be achieved if we curb migration and illegal border crossers not at our borders but at the problem's place of origin. In Hungary, great numbers of immigrants and refugees arrive primarily from Afghanistan, Syria, and the Sahel. Pressure can only be reduced if we help stop the triggering causes and the affected countries build powerful border protection along the escape routes. It was clearly visible in the recent past that, for example, when the Serbian internal affairs bodies efficiently closed down the borders, took action against human trafficking, and transported illegal immigrants from the territory, then in the Hungarian villages along the border, citizens felt themselves in security and lived a much calmer period. Therefore, it also shows that problems always have to be solved at their place of origin and not when immigrants arrive.

What is the present of manufacturing military equipment like in Hungary and what kind of future does it have?

- Here is an important lesson learned from the Russo-Ukrainian War: in case the manufacture and supply chain of military equipment and materials (e.g., ammunition) are blocked, it can cause severe problems for the belligerent parties. It can be sensed that although the Russian military industry shifted to war production in the summer of 2022, it could not substitute for items of military equipment taken out (e.g., main battle tanks) in such numbers as those that had been damaged. Thus, the Russian armed forces lost their capability for military technology regeneration for a time, which could only be restored with resupplies from allied countries. By now, the Russian war industry has ramped up production, but state-of-the-art weapon systems can still be manufactured only with difficulties.

  There are even greater problems in Western Europe and the USA as defence industry capacities decreased during the past decades of peace, they were tailored to the natural resupply of armed forces. Further difficulties include the military industry being in private ownership in Western allied countries (as opposed to the Russian state ownership), so accelerating and expanding capacity is only possible with market solutions. Currently, large military industry companies, such as the American Lockheed Martin, Northrop Grumman, Raytheon, General Dynamics, or perhaps the European Rheinmetall, Airbus, Thales, and BAE Systems are expanding their manufacturing capacities but it will take a long time. In Europe, this process is also helped by the EU, which stimulates the European defence industry, military research, developments, and innovation with resources and policy solutions.

  So, we are in a period of building up defence industry capacities. This situation is favourable for Hungary because this way, a portion of the capacities is created in Hungary. That is why the Lynx combat vehicle factory in Zalaegerszeg, the ammunition plant in

Várpalota under construction, the Airbus factory near Gyula, and the factory manufacturing small arms in Kiskunfélegyháza were created with state subsidies. Hungary took the first step in time, before the war, thus, large defence industry companies settled in the country and are building up a wide import chain, creating workplaces and constantly training our defence industry engineers and professionals.

TOGETHER WITH SOCIETY

General, you called attention to the significance of society's national defence capabilities several times, which are being developed with great efforts. What results were achieved in this strategic field in the recent past?

► Socialisation of the armed forces is the most fitting expression I can find. After the system of peacetime conscription in Hungary ended in 2004, the social relations of the armed forces weakened. Earlier, in the period of conscription, the army was a "melting pot", where every young man served, socialised, and actually became an adult. By now, this function of the armed forces has disappeared. However, nostalgic voices are raised from time to time saying that conscription would be needed, especially now that there is a war raging in our neighbouring country. In this situation, the leaders of the Ministry of Defence and the Hungarian Defence Forces are strengthening the social relations of the armed forces by several means. During the past years, we reorganized our recruitment campaigns, beginning with the "To the army!" slogan, to which we later added the short question "Are you ready too?" With the newest "Man to the hardware!" recruitment campaign, we offer specific positions (artilleryman, infantryman, airman, etc.) to young recruits with a good salary and career path. We have just started the volunteer territorial defence reservist recruitment campaign, which aims at creating a 20,000-strong reserve military component. We would like to double the number of reservists, with which we could enhance the image of the army in public circles. I see great potential in this field. If a volunteer territorial defence sub-unit is created in Böhönye, Marcali, Mándok, or any other place in the country, the HDF appear there and local residents can more easily undertake the task of serving the homeland in their spare time because they can see how they directly benefit from it. During the training, the modern "border fortress soldiers" receive a good and experience-focused preparation, which gives them new challenges, human morals, and a sense of belonging to a community. Everyone wins with this: those who enlist as professional soldiers or reservists, but society and the military, too.

Therefore, we are currently working to make the territorial defence system more complete, build it up, and make it more useful so that it reaches even more citizens. We established the necessary experience-focused military frameworks last year: we created the territorial defence forces command and set up a territorial defence regiment in each region.

Let me ask you a personal question. I was a conscript border patrol corporal, could I also have a role in this system, for instance?

► Yes, that would be very good if you also took up territorial defence tasks. Based on your experiences, knowledge, military pre-qualification, familiarity with weapons, and mem-

ories as a border patrol, you would be an outstanding recruiter, who could address young people authentically. Having a military pre-qualification, you could set a good example because you are not afraid of weapons and know about the rules that have to be followed as a soldier. Evidently, you could promote the reservist career better than a general. That is because – if I can say so – you could be a benchmark in your direct environment, who does serious academic work after the military/border patrol service and, thus, can be regarded as a role model. If you tell someone to come join us and become a territorial defence reservist – we represent a noble cause, let's do it together –, you will learn, and you will gain experience; it would probably have such a convincing force that young people would more easily enlist as reservists.

General, earlier you achieved outstanding sports results in judo, too. We think about Colonel Kálmán Furkó with a good heart. He has left a legacy with invaluable significance after himself both in the Hungarian Defence Forces and Hungarian martial arts. Do the Hungarian Defence Forces have a "martial arts" club now? How can the role of sports be strengthened in the everyday life of the HDF?

► Kálmán Furkó is a real role model, who was an iconic figure of the Hungarian Defence Forces. I consider sports important not only for professional soldiers but also for reservists. We began the volunteer national defence judo program two years ago, in the framework of which we addressed judo associations. We provide them with curriculum and support so that the associations can provide self-defence preparation for our territorial defence reservists. I consider it really important because of endurance, attitude, and the spirit of combat. This program is getting more and more successful because the number of participants has been increasing steadily. We will continue to follow this direction and provide professional sports conditions with equipment, gyms, swimming pools, and running tracks. Thus, each soldier can spend one hour a day doing sports, making use of the sporting opportunities available to everyone. This is indeed a vocation that requires physical preparedness. I could say that we are a workplace that supports physical activities as it is each soldier's right and duty to do some sport for one hour per day. Besides, the HDF support the Defence Sports Association, we have created the Sports Company in Szentendre from professional athletes, who after finishing competitions will organize and manage sports at military organizations.

Besides sports, I also find healthy nourishment important, we are in the period of nutrition reforms in the HDF. Unfortunately, our current recipes do not follow modern healthy nourishment, so they need to be changed. Appropriate body structure is known to be made up of 70 per cent nourishment and 30 per cent workout. In the army, a traditional diet is followed. Everyone loves the traditional HDF bean goulash soup and stew with tarhonya pasta but these meals are far from those considered appropriate by nutrition specialists. We recently held a food science conference and based on the suggestions made there, we will alter our recipes and nutrition-related procurements. I know that many do not like brown rice or bulgur and they would rather not change tarhonya or other tasty and familiar food for it. We must also take steps forward in this field because calorie intake, physical activity, and body structure are closely related. In connection with this, we have a body structure program because we would like soldiers to be healthier and more athletic in the future. Class reunions can give positive feedback in this regard,

I was told several times by my colleagues, because some of the former classmates seem to be older than soldiers, who do physical activities regularly, undergo physical tests, and seek healthy nourishment, which is visible.

Strengthening the community of retired soldiers and preserving traditions are also important tasks, what is to be done in this field?

- Preserving traditions is an important part of the work, on which we lay emphasis and pay special attention to. We try to provide support by every means to those who work in either military or civilian tradition-preserving organizations and undertake a role in fostering military traditions. They do not have to be convinced that the HDF and the defence of the country are of considerable significance to Hungary. The Ministry of Defence is trying to create an umbrella organization where tradition preservers (re-enactors), social organizations, and senior clubs are involved in a system. We do so in the interest of supporting the army more efficiently, making the HDF more popular, creating a complex national defence approach, and conveying messages. We try to give them every support now and in the future so that they can represent the values of the homeland and the HDF more effectively in a social environment.

The Stefánia Palace – Honvéd Cultural Centre is the symbolic building of the Hungarian Defence Forces, which also represents the HDF's traditions. What is its function nowadays and what kind of message is it carrying from the long past?

- There are cadet programs for young people and cultural and other programs for the professional personnel in the institution, while pensioners can use the building as a club. We try to maintain community life not only in the Stefánia Palace but also in other parts of the country. Earlier there were garrison clubs in the villages and communities with military organizations (Marcali, Kaposvár, etc.), where there was vibrant community life. We are working to revive this because a community space is needed where retired soldiers, cadets, military student hostel students, professional soldiers, and reservists can all have a good time. We have been expanded with the Bálna Defence Centre in Budapest, which provides a new space for exhibitions, launches, conferences, and other events.

General, you are at home in Kaposvár, Pécs, and almost all around Transdanubia. How do you see this part of the country through the eyes of a chief of defence?

- Baranya and Somogy counties are traditionally important regions for the Hungarian Defence Forces as there have always been military organizations and barracks there. An infantry battalion has been set up recently in Kaposvár for the HDF 1st Armoured Brigade (Tata), as a part of building up the armoured heavy brigade. We have good recruitment results in this region as we have already brought two platoons to full strength; soldiers are arriving dynamically, some of whom live in Pécs. Pécs was a big military garrison once (an infantry regiment, an artillery regiment, and a medical battalion also operated in the town), with still living national defence traditions and serious recruitment potential. I recall that our first reserve company from university students was formed at the University of Pécs, which has been among the university sub-units at full strength since then. The HDF have an outstanding military medical cooperation with the Medical

School of the University of Pécs. We cooperate with the Disaster Management Training Centre of the Department of Operational Medicine, which has one of the most modern simulation centres in Europe. The HDF can also use this centre, moreover, our military instructors are also participating in the training.

General, your work has been recognised with high-level decorations in both Hungary and internationally, including the Knight degree of the French National Order of the Legion of Honour and the Knight's Cross of the Hungarian Order of Merit. Which decoration are you the proudest of?

- I am the proudest of my subordinates evaluating my work honestly. These decorations on my uniform are honourable and important but the appreciation of my comrades and colleagues, their positive feedback and support are the greatest values that a commander can receive from his soldiers. I am fortunate that since my position as brigade commander, I have always had a good relationship with my personnel and I am still constantly striving for that.

General, thank you for the interview!

Harald Pöcher

THE MILITARY SCIENTIFIC WORK OF MIKLÓS ZRÍNYI (1620–1664) FOR TODAY'S CAPTAINS OF INDUSTRY, OR THE KNOWLEDGE OF MIKLÓS ZRÍNYI FOR TODAY'S CIVILIAN EXECUTIVES

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ABSTRACT: *Success in the business world is an art form that only a few can master. Armed with the knowledge of classical military thinkers – in the specific case of this essay, the knowledge of Miklós Zrínyi (1620–1664) – you can gain a competitive advantage using classic wisdom. The ancient principles of war are reinterpreted for the modern captains of industry and businesspersons.*

KEYWORDS: *Miklós Zrínyi, military science, strategy and tactics, leadership skills, requirements of modern business life*

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INTRODUCTION

For decades, economists have been studying ancient military science books, which contain invaluable information on topics such as strategy, leadership, organization, competition, cooperation, reconnaissance, and deception. The military science works by the Chinese Sun Tzu (771–256 BC) "The Art of War" and the Prussian[1] Carl von Clausewitz (1780–1831) "On War" have so far proven to be particularly fruitful. Less or not at all known by the community of economists is the Hungarian national hero Miklós Zrínyi (1620–1664), who also wrote military scientific works[2] that are ideally suited for such a consideration. Miklós Zrínyi is unique in his military scientific work, as he had no knowledge of Sun Tzu's military scientific work during his lifetime, as it became popular in Europe only

[1] The first modern German state was founded in 1871.

[2] Among his major works as a military scientist are "Vitéz hadnagy" (Valiant Lieutenant), "Mátyás király életéről való elmélkedések" (Reflections on the Life of King Matthias), "Ne bántsd a magyart! Az török áfium ellen való orvosság" (A Remedy for the Turkish Opium or the Antidote to the Peace between the Turks and the Hungarians), "Névtelen level (mely Montecuccoli ellen intézett hatásos irat)" (Anonymous letter) and "Tábori kis tracta" (A Short Treatise on the Army). Thanks to the research work of Professor Major General József Padányi and the translation of the works into English in 2021, the works of Miklós Zrínyi are accessible to a wider audience. (Author's note: It is sad that in the Austrian-Hungarian Monarchy, there was no one to translate the work into other languages. In 2024, the author translated and edited the works of Miklós Zrínyi into German. Pöcher 2024.)

centuries later[3]. He could only build on the literature available at the time, which was not available at the same level of detail as can be found in the works of Zrínyi. It is therefore in the nature of things to subject the military scientific works of Zrínyi to an in-depth examination of whether the principles of strategy and leadership, which are undisputed among economists today, are already reflected in the works of Zrínyi. Miklós Zrínyi was a statesman, a prudent steward of his lands, an entrepreneurial genius, a general, a poet, and last but not least, a military scientist.[4]

Almost 30 years ago, the author read the research results of Donald G. Krause, published under the title "The Art of War for Executives: Ancient Knowledge for Today's Business Professionals".[5] In this book, Krause analysed parallels between Sun Tzu's wisdom and the requirements for new management principles. Today, several scholars reference the works of the younger classics of military science: Clausewitz, for example, Mintzberg,[6] Ahlstrand, and Lampel, in "Strategy Safari: A Guided Tour through the Wilds of Strategic Management" (New York: The Free Press, 1998).

The relevance of the essay, which is published in the military journal Hungarian Defence Review, is simple to explain. The journal will be read not only by soldiers but also by civilians. Companies that are excellent on the market are led by managers who must have theoretical knowledge in addition to the Coup d'œil.[7] As one part of leadership, the knowledge of military science is helpful in enabling company management even better. The following essay is intended as a first thought-provoking impulse for further research, especially undertaken by students of the faculty of Military Science and Officer Training of the Ludovika University of Public Service in Budapest.

ORGANIZATION AND LEADERSHIP AS BASIC HUMAN NEEDS

Since prehistoric times, human beings have desired to manage their everyday life in special forms of organization and through leaders. The form of organization and the behaviour of the leaders often decided on the demise or continued existence of civilizations. While for thousands of years, the military seemed to dominate the civilian sector, the

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3 The first English translation of "The Art of War" is more than a hundred years old. Captain E. F. Calthrop published the first English translation in 1905.

4 His tireless efforts to raise enough money to finance his constant military campaigns against the Ottomans by exporting cattle via the Adriatic ports should be emphasized here; and his military genius, blessed with the so-called Coup d'œil when he attacked and destroyed the bridge of Esek, must also be mentioned here. In doing so, he cut off the supply route of the Ottoman troops, which was not insignificant for the subsequent victory of the imperial troops at the Battle of Saint Gotthard (1664).

5 Krause 1995.

6 Professor Henry Mintzberg is a Canadian academic and author on business and management.

7 In the past, for example, the company founders Ábrahám Ganz and Manfréd Baron Weiss of Csepel had this Coup d'œil or Bill Gates in the present has this Coup d'œil. In the conceptual world of economists, the "Coup d'œil" is called "hunch of the decision maker". Many business decisions are taken not just on the basis of data and analysis, but using the intuition or hunch of the decision maker. Intuition refers to the use of "gut feeling" to make decisions rather than rely on a more scientific approach using data and other quantitative evidence, supported by logical, rational decision-making models.

military and also the knowledge of it increasingly receded into the background from the middle of the 20th century onwards. The knowledge of the military and its application thus disappeared from the centre of interest.

Since almost all areas that focus on the military seem to have disappeared from the agenda of the majority of democratic states; the civilian economy, the behaviour of their leaders, and the military obviously do not like to be compared, which is also illustrated by the small number of scientific papers published on the subject worldwide. Although the term "civil-military relations" is used, it does not reflect the intention of the essay. The term "civil-military relations" describes the relationship between military organizations and civil society, military organizations and other government agencies, and leaders and the military. The objective of the essay rather is to work out what military organizations and military leaders have in common with business organizations and their managers.

As I mentioned above, human beings have had the desire to manage their everyday life in special forms of organization and through leaders. These principles "manage life in special forms of organizations and through leaders" are best practiced in the military. It is therefore not only expedient, but it should also be self-evident that the achievements of the military are also accepted by the civilian side. The following chapter gives an insight into how the knowledge of Miklós Zrínyi can be used today for the benefit of the civilian side.

Figure 1 *Portrait of Nikola VII Zrinski (Miklós Zrínyi) by Jan Thomas van Yperen, (Lobkowicz Collections, Lobkowicz Palace, Prague)*

Figure 2 *Field research at Zrinyi Castle (from left to right: Mayor of Belezna Lajos Jancsecz, Major General Prof. Dr. Padányi with a metal detector and the author with a shovel and excavated rifle bullets in his left hand) (Photo by the author)*

STRATEGIC AND TACTICAL PRINCIPLES IN THE MILITARY SCIENTIFIC WORKS OF MIKLÓS ZRÍNYI

Wars, like laws of nature, are part of human existence. This may well be one of the reasons why warfare has always been dealt with not only theoretically but also in the practical conduct of wars, not least because of their vital significance for a given people. If one analyses the classics of military science today, including, in addition to those already mentioned above, the works by the Roman Caesars and the Russian Suvorov, there are similarities as to the factors that make up successful warfare. At the forefront of this is the leadership competence of the commander-in-chief, followed by other factors such as information, preparation, organization, communication, motivation, and execution. Now, if in a war the commander-in-chief has the greater competitive advantage, commits fewer mistakes than his competitor, and also has the necessary luck, he can win the war.

Military formations, regardless of size, should function as a "natural organization", meaning they are purpose-centred, information-centric, collect information for decision-making, and are highly flexible, responding quickly and efficiently to changes. In economics today, it is common knowledge that a "natural organization" must reconcile strategic and tactical principles[8] in order to function. For the purpose of the essay, it is advisable to use the strategic and tactical principles that Krause lists in his book. These principles can also be found in some old and modern textbooks of business economics.[9] A list of the literature is omitted here for reasons of space. In the case of strategic principles, we distinguish between commitment (all persons in a company must pull together), observation (always observing the environment guarantees success), and preparation (solid preparation, long before a measure actually takes effect, guarantees success). In tactical goals, assessment (ongoing assessment of the situation), adaptation (adaptation to the current situation as soon as a measure has been set in motion), leverage (ongoing control of measures), deception (concealment of true intentions), timing (chronological sequence of measures), and pace (speed of measures) are distinguished. Due to the space available for this essay, a more detailed explanation of these principles will be dispensed with.

In search of these principles, probably the largest source in which one can easily find what one is looking for is the work "Vitéz hadnagy" (Valiant Lieutenant). It is not only a work of prose literature – written in Hungarian language which was high for the time – but also a military treatise. The work consists of three parts and two short introductions for easier understanding of the following texts.

The first part consists of six discourses. Zrínyi took as a model the Italian translation of "Le Ministre d'État, avec le véritable usage de la politique moderne" by Jean de Silhon, a secretary of Cardinal Richelieu. The six discourses are entitled: 1. Military science is greatly supported by learning. 2. A military man must be laborious, indefatigable, and careful. 3. No regulations can be made for military profession as for other trades, and clever warfighting consists mostly of the ability of the leader to change things the way as time and opportunity require. Italians say: diversificare. 4. A military leader must always focus on the end state of his intention and adjust all his actions to the implementation of his plan. 5. One must be able to defeat his enemy and exploit the victory. One must choose the right time for warfighting. And this would be the right time to wage a war against the Ottomans

[8] Krause 1995, 4–30.

[9] Mintzberg et al. 1998, and Schwanfelder 2004.

and retake all that had been lost. 6. A man at war is nothing without fortune. And what fortune should be.

The second part consists of aphorisms, essentially 128 passages, to Tacitus. The third part, which was never finished and was titled "Conclusions" by Zrínyi, consists of 52 reflections on military themes. For the third part, he took as a model "Il novissimo passatempo politico, istorico, et economico" (The Recent Past, Politics, History, and Economy) by Eugenio Raimondo, written in Venice in 1639. This essay is not intended to be a detailed review of the work, but some of its essential statements are to be presented. As in many of his works, Zrínyi also uses parables in his Valiant Lieutenant's discourses, aphorisms, and conclusions to illustrate the qualities of a brave military leader. For example, he compares a brave general to a watchmaker. Like the watchmaker, a military leader who wants to succeed has to put all the pieces together in accordance with a precise blueprint so that the entire movement runs smoothly. For Zrínyi, a military leader is the soul of the army; he must be eloquent and alert and set a good example. However, no skill is enough unless a military leader has the necessary fortune. A brave military leader, Zrínyi believes, based on the knowledge that he is well prepared to fulfil his task, wishes only fortune from God and nothing else. This was also Zrínyi's motto: "Sors bona, nihil aliud!"

But the principles can also be found in other works of military science, explained on the basis of historical examples, for example in "Reflections on the Life of King Matthias", and "A Remedy for the Turkish Opium or the Antidote to the Peace between the Turks and the Hungarians".

Due to the limited space available for the essay, only a few examples are given in the next section. Most of the strategic and tactical principles can be found in the chapter "Conclusions" of the work "Valiant Lieutenant", and there are also valuable interpretations of these principles in other works.

Strategic principles in Miklós Zrínyi's works

Commitment

In his work "A Remedy for the Turkish Opium or the Antidote to the Peace between the Turks and the Hungarians", Zrínyi writes: "Almighty God, this is a terrible shame! Are we Hungarians? We Hungarians? We must not call ourselves Hungarians if we do not recapture Várad, if we lose Transylvania, we must even stop warfighting as it is now or never."[10] With these words, he wants to motivate the Hungarians to think of their strength again and set in motion a process that serves to drive the Ottomans out of the country again. Or, in the conclusion to "Valiant Lieutenant", in point four he writes: "One of the responsibilities of a good leader is to implant necessity to fight in the hearts of his soldiers, for there is no more powerful weapon in the world than necessity".

Observation

Zrínyi writes about observation in his works in several parts, including in "Valiant Lieutenant" under point 13 "Local knowledge. Experience". For today's managers, it is crucial that they have a good insight into the market.

[10] Miklós Zrínyi and His Works on Military Science 2021.

Preparation

Details of the planning for an army can be found in the work "A Short Treatise on the Army" and also in some parts of the "Valiant Lieutenant" explaining strategic and tactical preparations. Furthermore, preparation includes the training of the soldiers and dealing with historical examples of the history of war.

Tactical principles in Miklós Zrínyi's works

Assessment

In the Fourth Discourse of his work "Valiant Lieutenant", Zrínyi writes: "The conclusion of my entire discourse is that a clever military leader should consider the end state of his intention and use means and methods which will certainly assist him achieve his goal and reserve more resources than necessary so that no shortage should be faced but have some remaining funds". By this, he means the Military Situation Assessment. The use of spies plays an important role in Zrinyi's military scientific work, especially in determining the activities of the enemy. He dedicates chapter 5 of "Valiant Lieutenant" to this problem.

Adaptation

Among other things, in his work "Valiant Lieutenant", Miklós Zrínyi discusses adaptation in the Fourth Discourse "A military leader must always focus on the end state of his intention and adjust all his actions to the implementation of his plan".

Leverage

A skilled military leader appears suddenly where the competition must rush to defend against him. He occupies places where the competition least expects to find him. Without going into further detail here, Zrínyi mentions in several descriptions the importance of the commander's right choice of place in order to be able to control the battle in the best possible way. In today's business, the place of the manager no longer has the same importance as the place of the commander had in the time of Zrínyi.

Deception

In his work "Valiant Lieutenant" under point 76 "…and you need to apply deception when your enemy tries to trick you", Miklós Zrínyi discusses what we call today deception. In today's business, managers are also responsible for deception measures.

Timing and Pace

In the Fifth Discourse of his work "Valiant Lieutenant", the following title can be found: "One must be able to defeat his enemy and exploit the victory. One must choose the right time for warfighting. And this would be the right time to wage a war against the Ottomans and retake all that had been lost." For managers of today, it matters a lot when they make their decisions.

Summary Considerations

The rules of conduct of a conventional battle developed by Zrínyi can also be applied to today's battles in daily economic life. Knowing the work of Miklós Zrínyi in detail – the

author has translated the military work of Miklós Zrínyi into German –, it is possible to derive ten principles that a captain of industry or a business manager should observe and apply in order to be successful.

Learn to fight and compete but never lose emotional control

The competition is part of everyday life. However, competition should not become an end in itself as it becomes risky and costly. Likewise, one must not be guided by one's feelings. Emotions must always be controlled. Competing properly also requires a solid education and training.

Lead others into battle

Like Sun Tzu, Zrínyi teaches us that leadership alone determines success in competition. Confucius, who lived in the same era as Sun Tzu, said that leadership comes from seven characteristics: self-discipline, purpose, accomplishment, responsibility, knowledge, "leadership", and example. Many of the great persons in history had these seven characteristics, for example, Alexander the Great, Jesus Christ, or Bill Gates.

Act prudently, effectively, and efficiently. Proper planning leads to success

All competitive advantage is based on effective planning, but also on effective and efficient execution. Planning is important but actions are the source of success. In other words, winners do the right things at the right moment.

Know all the influencing factors and stick to the facts; whenever possible, rely on first-hand knowledge

For a successful entrepreneur today, it is of utmost importance to interpret all available (especially first-hand knowledge and information) data correctly. In every life situation, however, there are also uncertainties that cannot be eliminated by information. It is therefore always necessary to evaluate these uncertainties before taking action. Espionage may be a criminal offense, but in the business world it is a part of information gathering, and it is therefore to be classified as a legitimate means to reach success.

Expect the worst, and have the resources to counter any setback

It is important to consider carefully the meaning of the movement and tactics of the competitor. Therefore, expect the worst in order to succeed. Already when preparing for the competition, you should consider that the decisive factor is not how many resources you have available, what matters is that you focus the resources on the weak point. And you should always keep reserves for all cases you might fall behind.

Determine exactly the time and speed when you act

Both on the battlefield and in economic life, leaders often have the wish for quick victories. Therefore, the most important success factors are time and speed when you act. To win, do things the simple way whenever you can. Reality shows that more often than not, complexity just breeds more overhead. The development of complex strategies and tactics wastes time, exhausts resources, and in the end, never works well. The economic success of many successful enterprises shows that time, speed, and innovation are the keys to staying ahead. Mostly, all these enterprises do simple things well.

Destroy the bridges

Motivation and commitment are the keys to leadership. Successful managers always commit their employees to the end purpose of their actions and drive their employees to success. In the process, such leaders must also destroy all bridges that have already been crossed. In order to be able to achieve all goals, it is important to give employees clearly defined goals and never mention anything about possible failure.

Figure 3 *Miklós and Péter Zrínyi, burning of the bridge at Eszék; Hungarian National Museum*

Just do it better than your competitor does, act innovatively and cooperatively. Innovation is the one weapon that makes you invincible

Sun Tzu already says that in war there are only two types of tactics: expected and unexpected. Smart leaders use both at the right time. Zrínyi does not make this distinction directly, but there are similarities to this distinction in his remarks. Innovative, efficient tactics do not have to be complicated or difficult to execute. Successful total quality management programs have shown how useful it can be to improve one's own strategies just a little bit at a time. Many examples from the business world have shown that those entrepreneurs who have spurred their employees on to innovative ideas have almost inexhaustible resources at their disposal in the competitive situation. An important factor in any organization is communication. Employees who are informed about the purpose of the company and the current processes will work more cooperatively and promote the purpose of the organization.

Train hard

Training has always been the essential element in getting people to pull together. Good training leads to common understandings and perceptions. Common understandings are essential for clear communication. Effective training keeps your employees informed and promotes group comfort and stability. Especially in today's fast-paced times, training, retraining, and further education are even more important than in the days of Miklós Zrínyi.

Leave everyone in the dark

The best strategies are those that cannot be seen through by competitors. As long as a strategy remains secret, it cannot be thwarted. This gives a huge advantage. After all, the less your competitor can predict what you are after, the stronger you are. Therefore, if the competitor has to deploy their limited resources on several fronts, it will be weakened along the entire front line. The best competitive strategies have no form. They are so subtle that neither the competitors nor the employees can discern them.

CONCLUDING REMARKS

For years, universities and think tanks have been studying the writings of ancient military scientists in order to obtain valuable advice on topics such as leadership skills, strategies, organization, competition, and cooperation. With the knowledge of these ingenious predecessors, one can mentally better adapt to the requirements of modern business life and also assert oneself better.

BIBLIOGRAPHY

- Krause, Donald G.: *The Art of War for Executives: Ancient Knowledge for Today's Business Professional*. Perigee, New York, 1995. This book was translated inter alia into Spanish and German.
- *Miklós Zrínyi and His Works on Military Science*. MoD Zrínyi Non-Profit Ltd., Zrínyi Publishing House, Budapest, 2021.
- Mintzberg, Henry – Ahlstrand, B. Bruce – Lampel, Joseph: *Strategy Safari: A Guided Tour through the Wilds of Strategic Management*. The Free Press, New York, 1998.
- Pöcher, Harald: *Miklós Zrínyi und sein militärwissenschaftliches Werk*. Münster, 2024. Translated from *Miklós Zrínyi and His Works on Military Science*. MoD Zrínyi Non-Profit Ltd., Zrínyi Publishing House, Budapest, 2021.
- Schwanfelder, Werner: *Sun Tzu für Manager*. Die 13 ewigen Gebote der Strategie, Campus, Frankfurt a.M. 2004.

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MILITARY LEADERSHIP COMPETENCIES AND THE MISSION COMMAND APPROACH

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ABSTRACT: *Adequate responses – both from individuals and organizations – to the increasingly complex challenges of the 21st century presuppose a combination of leadership competencies essential for effective and successful mission accomplishment in the changing security and operational environment. Creating a network environment that characterizes today's operations (also at the tactical leadership level) increases the commander's responsibility. The increasingly complex operational environment demands that decentralization be emphasized in the decision-making process and the conduct of operations. Furthermore, the fleeting opportunities in emerging tactical situations also require quick reactions and timely and correct decisions of small unit leaders. The paper provides a short, summary analysis of mission command and the leadership competencies, capabilities, and skills necessary for the mission command approach.*

KEYWORDS: *mission command, competency, leadership, changing security and operational environment*

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INTRODUCTION

The new challenges arising from a comprehensive interpretation of security and the quick responses to be given to them, the transformation of warfare, the spread of multi-domain warfare, the rapid development of information technology, and the all-encompassing digitalization require a specific approach to command and battle management, and so does the terrain, which has become a glass table due to the effectiveness of reconnaissance tools. Thus, it became necessary to disperse and split one's forces before their deployment in order to protect them.

Challenges emerging in our world – which are characterized by increased speed and interdependence, and the incredibly fast-paced and intensive change of technology occurring on an unimaginable scale – demand continuous adaptability from every organization, which naturally also entails the transformation of the approach to leadership. In the age of digital, decentralized communication networks, cooperation and problem-solving must take place in real time with the highest possible efficiency, in an innovative way. In an environment characterized by accelerated operational tempo, the complexity of emerging

situations, grey-zone hybrid conflicts, increased data volumes, and the spread of artificial intelligence, military leaders are expected to be able to immediately adapt to the changed circumstances.

From the aspect of mission accomplishment based on allied multinational cooperation, it is also necessary to work out, deepen, and continuously develop a mission command approach and mindset. Nowadays, the role of the time factor and the immediate adaptation to increasingly fast-paced changes have become important, so the usual methods and management schemes are no longer able to provide solutions in every case. The mission command approach can be an excellent tool for increasing efficiency, maximizing success, and utilizing the full spectrum of abilities and skills.

From the point of view of this approach to command, the leader's personality is also of crucial importance. The selection of a leader with appropriate competencies is not only important for the individual professional development of the given person but is also an excellent tool for maintaining and increasing the efficiency of the human resource management process and organizational activity. This is especially true of the representatives of armed forces and law enforcement organizations since the person wearing the uniform embodies the organization, the organizational attitude, and its values. It is particularly true in leadership positions, as in this case, beyond setting a personal example and personal character traits, another important aspect is to preserve and deepen the motivation of one's colleagues.

THE CHARACTERISTICS OF MISSION COMMAND

We can consider mission command as leadership based on the division of legal powers, which takes place between commanders and their subordinates to attain a clearly defined objective, with definite intent, within a defined framework of authority, and with a defined area of responsibility, while at the same time, providing the necessary conditions and resources to achieve that objective.

According to Péter Lippai, "mission command can be interpreted as a human-centered leadership philosophy where, in addition to defining the goal to be achieved, the superior puts constraints on the method of execution only to the minimum extent necessary for coordination. This fact gives subordinates a great deal of autonomy previously unimaginable in our armed forces, which, when coupled with the provision of conditions for execution, can greatly increase the success of mission accomplishment in the rapidly changing circumstances, characteristic of modern warfare."[1] A paper co-authored by Zoltán Bárány and Péter Lippai also confirms this definition: "The essence of mission command as a style of military leadership is that only a framework-like goal is defined for subordinates during the tasking, but not the path leading to it."[2] However, the delegation of the right to make decisions presupposes maximum trust: "The unity of command depends on the commander. If he can bring subordinate commanders, chiefs, and leaders to his side, then the command will be united."[3] The approach and method that presupposes trust also presupposes free-

[1] Lippai 2009, 30–31.
[2] Bárány – Lippai 2009, 18.
[3] Takács 2016, 79.

dom of action taken to achieve the goal, as well as close cooperation, independent initiative, and proactivity.[4]

In my view, mission command can be interpreted as a kind of approach. It is a complexity built on the unity of the leader's mindset and leadership competencies, which also functions as an ongoing interaction between the leader and the subordinates based on a common understanding. It is an approach enhancing professional development that also influences the level of the individual and that of the organization, while also being a warfighting function. An important feature of mission command is that the decisions are made by those who are best placed to make them at any given moment, having detailed information about the given situation and change.[5]

In an environment defined by uncertain and unpredictable circumstances changing at an accelerated pace (VUCA[6]) that is particularly characteristic of our time, an adaptive, cooperation-based, decentralized mode of command is much more capable of supporting the effective realization of the superior's intent than a centralized command approach based on formalities, pushing individual motivation and initiative to the background, while not giving immediate responses to quick changes.

The so-called OODA Loop[7] can significantly support the success of the mission command approach. This method, which is also an approach, is "a kind of cyclical decision-making mechanism in which the decision-maker assesses and evaluates the situation, makes a decision quickly, and then acts accordingly. Its basic premise is that one should not fear uncertainty and should always make decisions and take action according to the current situation."[8]

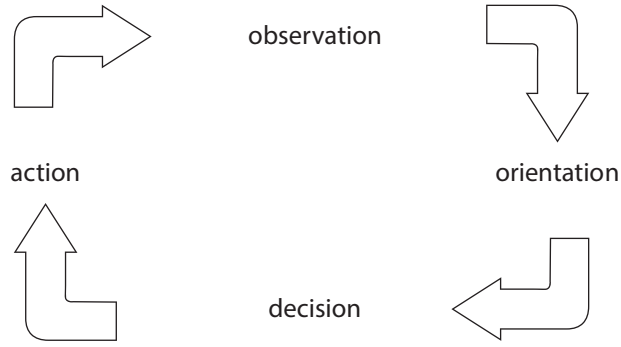

Figure 1 *Flowchart of the OODA Loop method*[9]

The assessment and observation of the situation based on a continuous flow of systematized information and trend analysis are important in the course of the mechanism. This is followed by questioning and rebuilding current paradigms and models. All this allows

4 Jobbágy – Czeglédi 2016, 86.
5 A Multinational Capability Development Campaign Project 2020.
6 VUCA: volatile, uncertain, complex, ambiguous
7 OODA (Observation, Orientation, Decision, Action): a multi-step decision-making process or approach. The method was developed by Colonel John Boyd (1927–1997), a former pilot. The original name of the method was OODA loop, which refers to the continuous cycle of the mechanism.
8 Porkoláb 2017, 145–154.
9 Boyd 2019.

one to assess the situation in a new light. This process of orientation does not focus on the final result but rather on the given momentary state. This is followed by the most optimal decision made based on the information available at the given moment, which – due to the dynamically changing environment – naturally includes the possibility of mistakes and failures as well. The correctness of the decision can be tested in action: after the decision is made, immediate action is required. After taking action, we can get feedback on which (sub)elements work and which need to be changed. This way, this mechanism results in a kind of learning process, which leads not only to the development of the individual's abilities and competencies but also to the deepening of the adaptability, cohesion, and professional knowledge base of the organization.

Comparing the command-based leadership as an approach to the mission command may facilitate its understanding even more. In contrast to a rigid, ponderous leadership approach, a mission command approach evaluates the role of horizontal relationships as well as the creative and the most competent use of the available resources in order to achieve a determined objective. In today's particularly uncertain and unpredictable environment – defined by rapidly changing circumstances – an adaptive, cooperative, and decentralized leadership approach is more likely to support the effective realization of the leader's intentions than a centralized leadership approach based on formalities, which discourages individual motivation and initiatives and does not respond immediately to rapid changes. Responding effectively to the changes in the security environment and warfare requires a change in the leadership approach as well since the rigid, centralized leadership forms are not or merely suitable for dealing with new types of armed conflicts.

Mission command can be the key to success, although it is important to emphasize that it can only be effective if the subordinates' freedom of thought and decision does not jeopardize the commander's intention, and if autonomy does not mean arbitrariness and the freedom of initiation does not mean uncontrol. The change in approach, and therefore the mission command, can only be successful if it can be adopted in all levels of leadership, without inner resistance based on fears of deviation from the norm, leaving the comfort zone, or fear triggered by personal incompetence.

MILITARY LEADERS' COMPETENCIES

The commanders, leaders at the helm of military organizations lead these organizations within a framework defined by the law and superiors. Their service authority covers all operational areas of the military organizations led by them: they bear full responsibility for the combat readiness of the military organizations, the preparation and training of the personnel, ensuring the functioning, the personnel's discipline, the effective activities and financial management of the military organizations subordinate to them, carrying out the superiors' orders, and compliance with legal norms.[10]

Competency is a word of Latin origin: it means aptitude and skillfulness. David McClelland,[11] whose name is associated with the foundation of competency theories, besides defining the features connected with achievement, also assessed the mindsets and behaviors associated

[10] Act CXIII 2011.

[11] David Clarence McClelland (1917–1998) was an American psychologist, his Human Motivation Theory is one of the best-known psychological models of human needs, especially in business life and related to organizations.

with successful performance, which are in a causal relationship with it.[12] By competency we mean "those basic defining personal qualities and traits that are causally related to performance rated as excellent or at least above average in relation to a given job, based on a predetermined level of criteria".[13] Another definition states: "Competency is the ability and willingness of the individual to transform his knowledge, skills, abilities, and attitudinal characteristics into successful problem-solving actions."[14] It is important to formulate competencies clearly and distinctly since the desired pattern of behavior can only be achieved through unambiguous communication.

"Decree No. 10/2015[15] of the Ministry of Defence on medical, mental and physical fitness for military service and on the review procedure" lays down the requirements for general psychological status according to three decisive criteria. The relevant regulations distinguish seven personality characteristics in terms of personality traits: balance of emotional and impulsive life, stress tolerance, frustration tolerance, self-control, adequate behavior, self-confidence, and self-knowledge. When determining the intelligence level (IQ), the focus is on measuring general intelligence (logical, combinatoric, problem-solving skills), memory, and communication skills. In terms of sensorimotor and perceptual performance, the measurement points include general attentional performance, perception, stimulus discrimination, reaction time, and movement coordination. Based on the job map, job requirements – beyond the aspects of general psychological fitness – determine the set of abilities, skills, and personality traits required to perform the given job (e.g., tanker, artilleryman, field chaplain, etc.). Personality traits are already discussed in more detail and nuance. The requirements include, among others, psychomotor tempo, adaptability, commitment, rule consciousness, and initiative. In terms of intelligence level, logic, information processing, creativity, and flexibility are among the expectations. Requirements for sensorimotor performance and perceptual performance include, for example, spatial orientation, tolerance for monotony, concentration of attention, and accuracy. The decree lays down specific requirements for those serving in areas of operation, taking into account the specific nature of their service. The requirements for firefighters and those performing general foreign service are set out separately in the job descriptions.

The relevant legislation also defines military leadership requirements. Beyond general psychological fitness, an effective military leader at a given level must possess the following skills, abilities, and personality traits necessary for command:

The creation of a network environment typical of today's military operations – including the tactical command level – increases the commanders' responsibility. Decentralization needs to receive greater focus in the context of an increasingly complex operational environment, decision-making procedures, and operational command. The right decision made at the right time depending on the commanders' reactions of the small unit is also important in consideration of the intensively increasing significance of emerging tactical situations. With regard to general competencies, it is important for military leaders to easily and quickly understand the context of the operational situation and the factors influencing it. It is indispensable that they take the initiative and act in the situation they are faced with in

[12] Bolgár 2014, 128.
[13] Bolgár 2014, 128.
[14] Bolgár 2014, 129.
[15] Decree No. 10/2015.

Personality traits	Intelligence level	Leadership and organizational skills
Networking skills	Logic	Planning and organizational skills
Initiative	Creativity	Decision-making skills
Cooperative skills	Insight	Problem-solving skills
Reliability		Information management
Empathy		Strategic thinking
Morality		Team-building skills
Level of aspiration		Management skills
Flexibility		Motivating ability
Psychomotor tempo		Communication skills
Independence		Skill to endure criticism
Commitment		Intellectual efficiency
Rule consciousness		Mental load capacity

Figure 2 *Skills, abilities, and personality characteristics required for command (Table edited by the author)*

such a way that they can continuously influence events and constantly adapt to changing circumstances. By achieving tactical goals, they are able to support the implementation of objectives on the operational and strategic levels, while at the same time, they can also harmonize their activities with continuous changes. In addition, they can build teams and team cohesion to motivate their subordinates.

Highlighting the responses to be given to challenges generated by the rapidly changing security environment and focusing on the characteristics of today's operational environment, Gábor Boldizsár concludes that "the subordinate military organization or formation is usually at a great distance from the sending commander, so continuous guidance and decision support can be difficult or is not provided at all. The commander must be able to make ad hoc decisions on the spot based on well-developed, well-established orders, directives, and guidelines."[16]

To ensure rapid and flexible responses to challenges that are adapted to changes in warfare, the ideal military leader:

– effectively applies the professional knowledge of its branch of service in practice;
– is open-minded across the full spectrum of operations, able to think outside the box, and break with familiar stereotypes;
– adapts to new challenges, can act both as a leader and cooperator during network operations;
– is able to track rapid changes individually and implement organizational adaptation at the institutional level as well;
– is able to perform the same role in an international environment as their national position;
– courageous and determined: can recognize and exploit opportunities in complex operational environments;
– is innovative and adaptive at both his/her own and lower levels of command;

[16] Boldizsár 2014, 33–34.

– is a master of operational art even in multi-domain environments;
– is able to assert national interests at the strategic level;
– has a high level of cultural awareness and language proficiency.[17]

According to General Schwarzkopf,[18] "leadership is a potent combination [and coeffect] of strategy and character", but the totality of personality traits, charisma, is much more important than strategy. We can learn more from negative leadership practices than from positive ones as they show us how not to lead people. In his view, the ability to control and the related competencies are of paramount importance.[19]

According to General Stanley McChrystal,[20] "leaders are empathetic": they have the ability to understand, empathize, and communicate effectively with those they lead. In his opinion, "they need not agree or share the same background or status in society as their followers, but they understand their hopes, fears", plans, strengths, and weaknesses. "Leadership is not popularity," especially not in the military hierarchy: "For soldiers, the choice between popularity and effectiveness is ultimately no choice at all. Soldiers want to win; their survival depends upon it". Military "leaders are genuine". Based on General McChrystal's experience, subordinates would tolerate a commander's being less of a leader than he hoped to be but they would not forgive him for being less than he claimed to be. "Simple honesty matters." The general points out that intellect or charisma play a significant role in leadership but "neither are required nor enough" for someone to become a good leader. "Physical appearance, poise, and outward self-confidence can be confused with leadership – for a time." In his opinion and experience, the emphasis is much more on the extent a given leader can recognize his strengths and weaknesses, how well he can use them to his advantage, how effectively he can exploit and utilize them, to what extent he has a real self-image, self-esteem, self-confidence, and determination.

Also, genuineness and self-discipline are essential for a leader. "Leaders walk a fine line between self-confidence and humility." In his view, "soldiers want leaders who are sure of their ability to lead the team to success but humble enough to recognize their limitations. […] It [is] better to admit ignorance or fear than to display false knowledge or bravado. And candidly admitting doubts or difficulties is key to building confidence in your honesty. But expressing doubts and confidence is a delicate balance. When things look their worst, followers look to the leader for reassurance that they can and will succeed", as well as for calm assessment of the situation and guidance. "Leaders are human." They have their own emotions, no matter how much they strive for objectivity. However, really good military leaders constantly strive "to be the best humans they could be." As well as to admit and take responsibility for their mistakes because mistakes are part of the process and progress of learning.[21]

[17] Takács et al. 2021, 37–38.

[18] Herbert Norman Schwarzkopf, Jr. (1934–2012) was an American general. From 1988 to 1991, he commanded the United States Central Command (CENTCOM) and then served as commander-in-chief of the coalition forces during the Gulf War.

[19] Kruse 2012.

[20] General Stanley McChrystal (1954–) retired as the commander of the U.S. and NATO forces of the International Security Assistance Force (ISAF) fighting in Afghanistan.

[21] McChrystal [no year].

MILITARY LEADERS AND THE MISSION COMMAND APPROACH

In my judgment and experience, the effectiveness of performing the tasks of an organizational unit depends to a significant extent on the leader's person, personality, leadership competencies, and human qualities, thus on his/her leadership style and approach. If they do not have an internal need for a different approach to command, leaders socialized in an environment dominated by a "detailed command" approach find it more difficult to identify with and genuinely represent an entirely different approach. However, changed circumstances, hybrid warfare, the use of highly mobile forces in a rapidly changing environment, the availability of real-time information, and even the demographic characteristics of the personnel should encourage leaders at all levels of command to face this challenge.

It is important to emphasize that mutual trust and respect – effective in both directions – are indispensable for success: superiors know the subordinates' abilities, training level, professional and human characteristics, strengths and limitations, and energy reserves, while subordinates are able to think with their superiors' heads and identify with their intentions in the interest of attaining a common objective.

A leader "need not be a close observer of men, a sharp dissector of human character but he must know the character, feelings, habits, the peculiar faults, and inclinations of those whom he is to command."[22]

Respect should in no way be based on coercion because that would result in fear, low efficiency, and loss of trust. The humanity of leadership must play a decisive role in this approach to command: commanders consider their subordinates as partners and involve them in decision-making by utilizing and exploiting their professional qualities and skills in the right sense, thereby strengthening the soundness of their own decisions and raising the likelihood of successful mission accomplishment and task execution. This also presupposes that commanders maintain a continuous dialogue with their subordinate colleagues; however, this communication can only be effective if it supports initiatives and new and unconventional proposals for solutions formulated to achieve organizational goals, and does so without retaliation. As a result of this method, the subordinates' motivation, their attachment to the organization, and their identification with the organizational goals and tasks continue to deepen, as do the team spirit, camaraderie, and loyalty. All this exerts a fundamentally positive effect on the retaining power of the organization.

The flow of information, as part of communication and an unambiguous expression of the commander's intent, should be multidirectional as a means of achieving a common understanding of the task. All organizational elements involved in the implementation of the task, working in cooperation and continuously interacting with each other, must have the basic information necessary for the achievement of the set objectives.

Leaders with a mission command approach respect their subordinates' human rights and do not humiliate them but rather inspire them while representing and conveying values through personal example. In my opinion, genuineness is of key importance in all manifestations of a leader, including outward appearance and conduct, external and internal communication, decision-making processes, and the system of relationships with subordinates. At the same time, it is necessary to take into account an aspect of the human factor, namely the fact that leaders are also humans: although they are the ones who obviously bear the responsibility, in certain situations, by exercising self-criticism, they do not undermine

[22] Clausewitz 1999, 102.

their authority but may even increase their genuineness. The mission command approach requires awareness and deep self-knowledge of commanders: they must be clear on their strengths and weaknesses but must also possess the ability of self-reflection.

I consider it important to experience successes achieved together, as well as continuous feedback from leaders to subordinates, both in terms of confirmation and criticism. However, the possibility of mistakes should not be overrated: mistakes and conflicts should be part of organizational learning and training, and as such, they should serve as opportunities for development. It is the leader's responsibility to establish and operate an organization that is based on the lessons learned and is capable of continuously adopting new knowledge and methods.

CONCLUSION

With regard to the responses to increased risks and challenges related to the complex, comprehensive interpretation of security, the abilities to adapt and react immediately to changing situations play a key role, which presupposes independence, creativity, proactivity, flexibility, initiative, and an approach based on a decentralized decision-making process that is open to new methods and solutions at all levels of command.

Of course, just like the change of the entire organizational culture, the transformation of the command approach cannot take place overnight: change presupposes a conscious organizational learning process building from the foundations. The basic pillars of this complex process are quality education, preparation, and professional training provided in support of the deepening, value-based, healthy self-confidence, independent thinking, and initiative, as well as the continuous development of leadership competencies and the objective implementation of leader selection based on real-world performance and evaluation.

In my view, mission command points beyond the successful execution of a given task: it provides commanders with a tool and thus an opportunity that, in addition to being efficient, is suitable for building coherent communities and teams that are deeply committed to common values and the common mission, coherent, and prioritize cooperation and common principles, as well as organizational identity.

Mission command can be the key to success but it is important to emphasize that it is effective only if the conditions discussed earlier are simultaneously ensured, if the subordinates' freedom of thought and decision does not jeopardize the commander's intent, if autonomy does not mean a self-serving attitude, and if freedom of initiative does not amount to uncontrollability. The change of attitude, and thus mission command can be successful only if leaders can identify with it at all levels of command and there is no inner resistance deriving from the fear of deviation from the usual, of leaving the comfort zone, or of one's own incompetence.

BIBLIOGRAPHY

- Act CXIII of 2011 on national defence, the Hungarian Defence Forces and the measures applicable during special legal order, 2011. Section (48). National Defence Act.
- A Multinational Capability Development Campaign (MCDC) Project: *Future Leadership.* MCDC Executive Steering Group and Secretariat, 2020. https://www.gov.uk/government/publications/future-leadership-2020 (Accessed: 23 July 2023).

- Lt. Col. Bárány Zoltán – Lt. Col. Lippai, Péter: *A küldetésorientált vezetés lehetőségei és korlátai (1.)*. Honvédségi Szemle, Vol. 137, No. 4 (2009), 18.
- Boldizsár Gábor: A *21. század komplex műveleti környezete és hatása a katonai képességekre*. In: Krajnc Zoltán (ed.): A katonai vezetői-parancsnoki (harcászati vezetői) kompetenciák fejlesztésének lehetséges stratégiája. Ludovika University of Public Service, Budapest, 2014, 15–46.
- Bolgár Judit: *Bevezetés, a katonai vezetői-parancsnoki (harcászati vezetői) kompetenciák meghatározása: a kognitív-, szociális- és személyes kompetenciák*. In: Krajnc Zoltán (ed.): A katonai vezetői-parancsnoki (harcászati vezetői) kompetenciák fejlesztésének lehetséges stratégiája. Ludovika University of Public Service, Budapest, 2014, 117–145.
- First Lt. Boyd, John: *The OODA Loop: How the Greatest Military Strategists Make Decisions in the Face of Uncertainty*. Mayo, 2019. https://www.mayooshin.com/the-ooda-loop-john-boyd (Accessed: 27 January 2021).
- Clausewitz, Carl Von: *A háborúról*. Göttinger Kiadó, Budapest, 1999.
- Decree No. 10/2015 (VII. 30.) of the Hungarian Ministry of Defence on medical, mental and physical fitness for military service and on the review procedure, Magyar Közlöny, 2015.
- Lt. Col. Jobbágy Zoltán – Capt. Czeglédi Mihály: *Mission Command, Auftragstaktik és a szövetségi összhaderőnemi műveletek*. Sereg Szemle Vol. 14, No. 2 (2016), 86–94.
- Kruse, Kevin: *Norman Schwarzkopf: 10 Quotes on Leadership and War*. Forbes, 27 December 2012. https://www.forbes.com/sites/kevinkruse/2012/12/27/norman-schwarzkopf-quotes/?sh=48f5cb184eeb (Accessed: 23 July 2023).
- Lt. Col. Lippai Péter: *A küldetésorientált vezetés lehetőségei és korlátai*. Sereg Szemle, Vol. 7, No. 2 (2009), 30–31.
- General McChrystal, Stanley: *16 Leadership Lessons from a Four Star General*. Farnam Street Media, [no year]. https://fs.blog/stanley-mcchrystal-my-share-of-the-task/ (Accessed: 23 July 2023).
- Brig. Gen. Porkoláb Imre: *Szervezetfejlesztés komplex műveleti környezetben*. Honvédségi Szemle, Vol. 145, No. 2 (2017), 145-154.
- Takács Attila Géza: *A parancsnoki szerepkör és a csapatépítés felelőssége, kihívások a (poszt) modern haderőben*. Hadtudomány, 2016 (Special issue), 79.
- Maj. Gen. Takács Attila – Lt. Col. Szabóné Szabó Andrea – Col. Töll László: *A Magyar Honvédség szárazföldi haderőnemének jövője a nemzeti tisztképzés modernizációjának tükrében*. Honvédségi Szemle, Vol. 149, No. 2 (2021), 27–43.

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Tibor Benkő

FORCE DEVELOPMENT FOR PRESERVING PEACE[1]

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ABSTRACT: *Based on public opinion survey data, Hungarian citizens have a clear need and expectation for living in peace and security. Therefore, bearing in mind the rapidly and sharply changing security challenges in the world, our country must be able to preserve peace, security, and stability continuously and under all circumstances. The Hungarian Defence Forces (HDF) have a main role in fulfilling the citizens' needs and expectations, as well as Hungary's effective defence policy. We can face the challenges of our time and efficiently manage the risks and dangers that have arisen only with well-equipped armed forces that are supplied with modern weapons, material stocks of adequate quantity and quality, as well as excellently trained and loyal soldiers who are committed to their country.*

In his study, the author reviews the previous situation and condition of the Hungarian Defence Forces, then analyses the reasons for launching the Military Development Program, as well as its international and domestic circumstances. He presents the issues of strategic command and control, followed by the characteristics and concrete stages of the military career path model. Finally, he assesses the results achieved so far in the field of force development and outlines the remaining tasks.

KEYWORDS: *National Defence and Military Development Program, force development, human resources, military capability, modern equipment, career path model, military career guidance, preparation*

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INTRODUCTION

In order to create and develop our armed forces fully meeting the challenges of the 21st century, we launched the Zrínyi 2026 National Defence and Armed Forces Development Program in 2017, which was expanded in 2020 with concepts and plans extended to 2030 and then to 2032. We put the person, the soldier himself, at the centre of the implementation of the program, starting from the simple fact that the procurement of modern military equipment is basically a "matter of time and money", but the continuous availability of loyal, dedicated, excellently trained, and motivated soldiers for a real, national force cannot be solved "only" with financial means. First of all, this is because salaries (allowances, pay-

[1] The author closed the manuscript on 30 December 2022. As the 2023/1-2 issue of the Hungarian Defence Review published the presentations of a professional conference, the HDR had the opportunity to publish the study in this issue.

ments) alone – which are strong incentives, but not sufficient – cannot create patriotism, loyalty, sacrifices, and self-sacrifice. The sum of these human characteristics represents a kind of capability for the Hungarian Defence Forces, and thereby for the country, which will have full value if it is accompanied by a commitment on the part of the personnel; this human value and way of life is called vocation, which must form the basis of the predictable national military. For these outstanding human values, we can call our soldiers' activities "professional military service", an honourable epithet that distinguishes it from the ranks of other professions. This service must be based on the harmony of strict expectations and requirements as well as decent remuneration.

SECURITY AND PEACE ARE AT RISK WITHOUT ARMED FORCES DEVELOPMENT

For decades, the soldiers of the Hungarian Defence Forces have been waiting for the moment when, as a result of a comprehensive development of the armed forces, Hungary would have modern Hungarian Defence Forces, as members of which they could proudly serve the interests of our country and the Hungarian people. The Hungarian Defence Forces must be reliable defenders of the nation, being at once an allied force recognized by our international partners, a strong member of NATO, and one of the premier military forces in our region.

There were three fundamental reasons for launching the Military Development Program:

1) First and foremost, to develop Hungary's defence capability and at once its national resilience, as well as its capacity to assert its own interests. In this connection, we had to take into account the following objective necessities and facts:
   – Like all countries in general, Hungary has its own (short-, medium-, and long-term) national interests. It is well known and obvious that the stronger a country is, the more firmly it can assert its interests and attain its goals in practice as well.
   – Our country also has its own national values that are based on historical foundations and handed down from generation to generation – these were created and shaped for us by our ancestors over centuries (be they spiritual, cultural, material, natural, communal, or of any other origin). We must be able to preserve, develop, and expand these values at all times, that is, to further enrich them and pass them on to future generations.
   – Last but not least: in addition to the interests and values of the country, we must think of our fellow humans, fellow citizens, relatives, family members, and loved ones, for whom we are responsible; whom we must protect and defend, which already in itself requires the creation of a strong defence capability.
2) Another fundamental reason for launching the Military Development Program is that the security situation of our region has deteriorated noticeably and visibly, and is still deteriorating in several respects. This is partly because serious unprecedented challenges and threats have emerged, often unpredictable in terms of their outcome, which have a significant impact on the development of the international and regional security environment that determines people's everyday lives. All this has an impact on the security and defence policy of our country, and that of the international organizations and institutions of which we are members. Today's events are also exerting a significant influence on the security situation in our region, see, for example:

– the Russo-Ukrainian War and the associated economic crises, the related challenges to the stability of energy security, as well as the risks associated with the effects of sanction measures on Europe and our country, and their social and political consequences;
– existing tensions between certain countries of the Western Balkans, regional instability;
– political, economic, and social (national-ethnic, tribal, and religious) instability in the Middle East and North Africa (MENA) region[2] and Asian countries, as well as the migration crisis that has been affecting Europe for years;
– from Russia's annexation of Crimea to the present day, information operations conducted by the Russian side, the emergence and strengthening of new forms of hybrid warfare;
– risks, threats, and dangers arising from cyber operational activities, which are posing an increasing risk, and their potential consequences;
– the intensification of information operations, including distorting, exaggerated, deceptive, false, and untrue statements;
– environmental impacts and their consequences, which are often extreme and are caused by climate change;
– and the emergence of epidemics and other health risks on a global scale.

3) Further triggers include our responsibilities under our allied commitments. For the region of Central Europe – and thus also for the area of Hungary –, NATO sets out a direction of dual threat. As a result, Hungary, and within it the Hungarian Defence Forces, have priority security and defence policy tasks in both designated threat directions, which also require the creation of newer and more modern defence capabilities.

NATO has emphatically formulated the risk of a "threat from the East", which has clearly meant the threat posed by Russia for many years now. This earlier perceived threat has become a reality today due to the Russo-Ukrainian War. As the military force of a NATO Ally, the Hungarian Defence Forces perform support, cooperation, and reinforcement tasks in this direction of threat. Thus, Hungary is involved in the implementation of the processes and operations falling within the scope of the Readiness Action Plan (RAP)[3] adopted at the Wales Summit and belonging to the concept of NATO's strengthened Deterrence and Defence Posture.[4]

The other direction of threats is that of the threat from the South, which directly affects Hungary due to the instability of the Western Balkans region. In this direction, NATO presents the challenges posed by mass illegal migration and – especially after the terrorist attacks in Paris in 2015 and in Brussels and Germany in 2016 – the growing terror alert and terrorist threat. Hungary is doing its share of these tasks by deploying a significant portion of its military forces engaged in peacekeeping operations[5] in this endangered direction. Moreover, it has assumed a role in NATO's defence assistance and contributed to the military reinforcement of the NATO Strategic Direction – South Hub (NSD-S HUB).

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[2] MENA: see, among others: https://www.eeas.europa.eu/eeas/middle-east-and-north-africa-mena_en.

[3] RAP: see, among others: https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2016_07/20160627_1607-factsheet-rap-en.pdf.

[4] "Besides the deterrence and defence posture, the participants of the Warsaw Summit emphasized the importance of dialogue, because the existence of the Russian Federation is a reality in Europe". Source: Kecskeméthy 2017, 114–126.

[5] Current missions of the Hungarian Defence Forces, 2020.

At the same time, as a committed and active NATO member state situated for more than twenty years now at the intersection of the two main directions of threats, feeling responsible for preserving the security not only of our country but also of our region, in cooperation with several neighbouring countries, we have established the Headquarters Multinational Division Centre (HQ MND-C)[6] in Székesfehérvár and the Regional Special Operations Component Command (R-SOCC)[7] in Szolnok.

Because of the emergence and intensification of the aforementioned security challenges and risks, in order to guarantee our security, it was our primary goal to implement a comprehensive development of the armed forces in the shortest possible time and at a rapid pace, which serves the security of our country and at the same time, the creation[8] and strengthening of our flexible national resilience.[9]

As one of the segments of generating military capabilities, we have also set the goal of developing the domestic defence industry, which, in a given case and under given circumstances, is capable of greatly reducing the risk factors of supplying our country and the Hungarian Defence Forces with material stocks and equipment by providing the appropriate military equipment and assets. At the same time, it serves the realization of our country's employment policy goals by creating numerous new jobs, and through all this, also contributes to the economic strengthening of our country.

The results of the examination of the root causes of force development and the system of their combined impacts may help us to better understand why it was necessary to launch such a large-scale, wide-ranging development since we had been members of NATO for nearly two decades at the beginning of it, whose founding treaty[10] has always placed important requirements on its member countries.

At the same time, the question may arise: in previous periods, for many years, did we not attach importance to the cause of national defence, including the development of the armed forces? Perhaps even a lay outsider may rightly ask: Have circumspect studies and findings been lacking? Or, maybe, has defence and security research not covered all the necessary areas? Or, was it superficial or erroneous conclusions that put the Hungarian Defence Forces responsible for the armed defence of the country in such an unworthy situation? To continue the reasoning: perhaps the excuse was that this was not the most important issue to be dealt with by government leaders of the day; or they thought that although providing national defence capability is an important task for the country, Hungary's economic situation "at the moment" does not allow the development of military forces.

I am certain that all the above reasoning has a role to play in the situation that has arisen. At the same time, it is also a fact that while seeking the causes and triggers of the decline of defence capabilities, we must look further than domestic decision-making and decision-makers and consider some of NATO's strategic guidelines as well. Here I have in mind the extremely positive interpretation of the "end of the Cold War" or the excessive emphasis on expeditionary forces over military "heavy capabilities". All these NATO policies and measures not only gave member states' political leaders the opportunity to choose simpler

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6 HQ MND-C: See, among others: https://defence.hu/tag/hq-mnd-c.html.

7 R-SOCC: see, among others: https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2019_10/20191022_1910-factsheet-rsocc.pdf.

8 Act on the Coordination of Defence and Security Activities, 2021.

9 Resilience means flexible responsiveness, stamina, resistance, toughness, and flexibility.

10 North Atlantic Treaty, Washington D.C., 4 April 1949. It entered into force on 24 August 1949.

and cheaper solutions but also offered their adoption almost as a recommendation. Among others, these guidelines led to the partial decommissioning of Hungarian heavy equipment from the army. However, it was clearly a domestic mistake not to adequately manage basic Alliance expectations[11] under the secure protective umbrella of NATO's[12] collective defence. It is true that strategic concepts (which at the time perhaps seemed economical and therefore logical), such as elements of NATO's Smart Defence program,[13] played a significant role in this; just like the fact that we placed the emphasis above all on building capacity for tasks related to foreign mission, which pushed the preservation of comprehensive defence capabilities – and even their strengthening as needed – into the background.[14]

However, we cannot cite them, since the development of the capabilities of the national armed forces as a whole, including all subsystems within it, is in our fundamental national interest, that is, our task, our responsibility, which entails obligations for all decision-makers now and in the future. In this spirit, in 2015, the Ministry of Defence was tasked by the government to establish the Hungarian Defence Forces capable of meeting the requirements and challenges of the age, equipped with the most up-to-date technical equipment, providing a premier force of the region consisting of well-trained and prepared soldiers committed to their homeland, and capable of ensuring national self-sufficiency. We had to plan all this with such a calculation that the Hungarian military with the above characteristics would be available by 2028, and we would not commit mistakes like the ones of which Péter Tálas gave a fairly accurate overview in his article "On the framework of investigating attempts at the reform of the Hungarian armed forces over 25 years".[15]

THE SITUATION OF THE HUNGARIAN DEFENCE FORCES AHEAD OF DEVELOPMENT

Since the 1990s, the Hungarian Defence Forces have had to painfully run the gauntlet, which was not even ended by joining NATO. On the contrary, although it is incorrect to think, as a freeloader, from then onwards the slogan that "NATO will protect us" became a reference. One can trace how the place, role, and thus importance of the Hungarian Defence Forces have been present in Hungary's political leaders' perception of security and threats in recent decades.

As a consequence, we have reached the point where the former Hungarian People's Army with a manpower of more than 155,000 was reduced to the less than 24,000-strong Hungarian Defence Forces in little more than 15 years, by 2007. In recent decades, the year 2007 was the one with the lowest personnel strength and the smallest number of available soldiers. As a result of the suspended conscript service, the number of available trained reserv-

[11] Washington Treaty, § 3. See, inter alia, the NATO-official text: The North Atlantic Treaty, 1949.

[12] "In order more effectively to achieve the objectives of this Treaty, the Parties, separately and jointly, by means of continuous and effective self-help and mutual aid, will maintain and develop their individual and collective capacity to resist armed attack." Source: The North Atlantic Treaty, 1949.

[13] See: Smart Defence and the Future of NATO, 2012.

[14] The NATO concept has changed significantly in ten years. In 2003, NATO wanted to develop an expeditionary force with light capabilities, therefore the capabilities providing heavy armaments were largely eliminated or significantly reduced in Hungary as well. By contrast, in 2013, NATO's expectations took a 180-degree turn. Member states were expected to develop the heavy capability and declare it to NATO.

[15] Tálas 2014, 9–22.

ists was continuously reduced, and the draft board exam of conscripts, the reporting and registration obligations, as well as the execution of planning the reservists' positions, and ensuring their availability were abolished. The mobilization exercises and those conducted jointly with reservists were cancelled, although these exercises in themselves were a significant indirect risk factor for the country's defence capability. These capability losses were compounded by the fact that the age limit of men who may be called up for compulsory military service was reduced from 50 to 40 years.

In summary, it can be said that the massive reduction of the manpower of the Hungarian Defence Forces, the decreasing strength, and the lack of availability of trained reservists, the neglect of the duties arising from compulsory military service, the closure of a significant number of barracks, and the reduction of the capabilities of service branches to a minimum have all resulted in a decrease in the performance of national defence tasks and the country's resilience.

The Zrínyi 2026 National Defence and Military Development Program was created to eliminate the above-mentioned problems. It defined the tasks to be carried out for ten years and also included objectives concerning the manpower level of the Hungarian Defence Forces. All this was recorded in a resolution of the National Assembly,[16] which also determined how many personnel are needed to perform peacetime tasks (broken down by personnel category), and also included the staffing needs for the development of the armed forces.

At the current stage of program implementation (in the fifth year of the program), we can state that by 2026 (unless further deterioration of our security environment occurs) some 30,000 active-duty professional and contract soldiers, 7,000 to 8,000 defence employees and at least 20,000 volunteer reservists will be needed. We can conclude and state that the set goal proved to be viable at the end of 2022 as well and reflected a feasible situation which, among other things, also pointed out that the introduced measures created a solid basis for achieving the original objectives of the National Defence and Armed Forces Development Program, on which we can build with confidence. On the other hand, the development of the armed forces beyond 2026 requires us to further raise the manpower level – as also included in the 2020 amendment –, so that it becomes capable of fully ensuring the availability of deployable active-duty military personnel and trained reservists required for national defence in the shortest possible term and as large numbers as possible.

The serious situation in the Hungarian Defence Forces has been exacerbated by the fact that, in addition to the significant downsizings that have occurred over the past decades, their items of military equipment have unfortunately also become obsolete and depreciated. Their withdrawal, upgrading, and modernization have become indispensable. The HDF leadership, led by the then chiefs of defence, continuously assessed and tried to manage the critical situation. Thus, in 2007 and 2009, and again in 2010, the second month after the formation of the new government, the Prime Minister received personal, verbal reports about the issue. These reports accurately illustrated the situation that had arisen and its untenability, the essence of which was that the further fate of military equipment must be decided in 2009 or 2010 at the latest, and the procedures for procurements, overhauls, or modernization must be initiated accordingly.[17]

[16] Parliamentary decision on HDF manpower, 2018.

[17] A decision has to be made on whether to withdraw assets from the system, refurbish, upgrade, or modernize them, and how and with what to replace these decommissioned assets.

As newly appointed chief of defence – in the summer of 2010, together with the then minister of defence, on the occasion of a report to the Prime Minister –, I was told that the needs of the military were legitimate, adequate, and absolutely necessary. Therefore, as soon as the economic situation of the country allows, they require an immediate solution, since the country needs strong defence forces. Following these instructions, our short-term objective has become quite limited: for the time being, we have no other option but to stop the further decline in military capabilities, primarily the reduction of personnel numbers, the closure of barracks, and the deterioration of the operability of military equipment. There was no alternative but to "survive" the coming period, to hold out until the country's economic situation provides an opportunity for starting the development of the armed forces.

The first encouraging signal came in 2015 in the form of a stable, reliable long-term budget projection. This was the start of the detailed planning of the long overdue development of the armed forces, followed by the actual launch of the practical steps of force development in 2017. We could breathe a sigh of relief. I would say let bygones be bygones, let us look forward, not backward. But we still need a brief retrospection, because future generations need to be aware of what happened in the last 25 years and what happens if we do not feel that the cause of national defence is important. They must be given the opportunity to look at the past decades and to judge if what happened to the military was right or wrong, so that they can draw conclusions and learn from the procedures that have taken place and the measures taken, from good and bad examples. All in all, the changes in personnel numbers, the combat availability of military equipment, and the number of functioning barracks, the size of the central budget, i.e., the financing of the military, the evolution of soldiers' salaries, and other allowances – all these indicators prove that the Hungarian Defence Forces, including the soldiers who serve their country devotedly, have been the "stepchildren of the past decades" until 2015. This, unfortunately, amounted to a failure not only of the material but also of moral appreciation. All this changed the social status and perception of the soldiers. Thus, starting from this low point, from such a situation, we had to start the development of the armed forces.

STEPS TOWARDS THE FULL-SCALE DEVELOPMENT OF THE ARMED FORCES

Our starting point was that in the face of the challenges of the 21st century, the Hungarian Defence Forces should not only be able to keep pace but also be able to handle the tasks to be solved in a timely and effective manner, and that it should always have available (human, technical, and material) resources of sufficient quantity and quality, as well as the complex capabilities that are needed to tackle the challenges. Therefore, from the very beginning of planning, the primary and most important aspects included[18] the need for soldiers with specific competencies and the forms of training, preparation, and education to be implemented for achieving this goal. Furthermore, it was specified what kind of individual equipment, means, material technical stocks, procedures, commanders' command and control systems, and means are necessary for the Hungarian Defence Forces. Thus, the most basic complex capabilities which we have taken into account in the force planning process can be summarized as follows:

[18] See Pölöskei 2021, 36–46.

– the capability needed for the comprehensive provision of human resources (including opportunities for the recruitment and selection of future personnel; elements of the organizational and operational unit of preparation, training, and education, as well as retention on the career path);
– elements ensuring the operational, servicing, and user capabilities of military equipment;
– the needs and systems for infrastructural accommodation and servicing tasks, as well as the capability needs of modern command and control assets.

We considered it an important aspect to reduce the risk of our dependence on other countries, therefore we also gave high priority to the creation of domestic defence industrial production, as well as the research, development, and innovation capabilities inseparable from it. As a result of all this, we intend to implement the above-mentioned national defence and military development program in two broad areas, in close connection and unity.

One area is the national defence part of the program called "soldier and society", which is about the soldiers themselves and the social environment and social circumstances surrounding them. Within this, particular emphasis is placed on the military career path and its components. This program element puts the person himself at its centre. It defines the preparation of persons, their places and roles in society, and emphasizes the importance of their appreciation. In addition, it includes the tasks of the "socialization of national defence", especially the forms and phases of patriotic defence education aimed at directing them to military careers, as well as the expectations and tasks of volunteer reserve military service.

The other area of the program is its force development side, the so-called "military technology and defence industry", which includes the procurement and construction of military equipment and assets, as well as the necessary means and systems of command, the implementation of infrastructural investments, and the establishment of the new Hungarian defence industry, as well as ensuring the unity of research, development, and innovation required for this.

The program is a long-term project, which practically defines the tasks to be accomplished for a decade, and which, based on feedback and surveys, has been successful and time-proportional so far. Therefore, we are now on track with the development objectives we set out in 2018 for 2030.

Not surprisingly, we witnessed an interesting and reassuring coincidence when the NATO 2030 agenda was adopted at the NATO Summit in Brussels in 2021, ahead of NATO's eighth Strategic Concept.[19] Having read the document, we conclude that our concept of force development is in line with NATO's objectives[20] and with NATO Secretary General Jens Stoltenberg's statement that "as the world changes, NATO will continue to change".[21]

I think that we must continue to follow this agenda in the future, too, so that we can be able to "recognize, face, and effectively address tomorrow's challenges" at all times under all circumstances.[22]

[19] NATO's new 8th Strategic Concept, 2022.
[20] What is NATO 2030?
[21] NATO 2030: Making a Strong Alliance Even Stronger.
[22] Szenes 2021.

WITHOUT COMPREHENSIVE STRATEGIC COMMAND AND CONTROL, THERE ARE NO STRONG NATIONAL DEFENCE FORCES

One of the key issues of the strong Hungarian Defence Forces is the unity and harmony of their independent leadership based on professionalism. Therefore, a new ministry structure was established to eliminate its integration with military professional and political leadership. As a result, a strategic-level, independent military command element, the Command of the Hungarian Defence Forces was established on the basis of the existing and effectively operating HDF Joint Force Command, while preserving its advantages. The tasks of the HDF General Staff – as strategic-level military tasks – were transferred to the Command. At the same time, the military leadership element (General Staff) was discontinued in the ministry, and instead, an organizational block responsible for national defence affairs was established, headed by the State Secretary for National Defence, who performed his duties not as a soldier, but as a senior state leader, albeit with many years of high-level military professional preparation and experience.[23] As a permanent and active participant in ministerial decision-making, the State Secretary for National Defence was responsible for assisting the Ministry in controlling, tasking, and supervisory work based on military professional aspects, and also for supporting the implementation of the concepts of the commander of the Hungarian Defence Forces. In other words, the State Secretary for National Defence is an active participant in the coordination of political and military tasks, and he is also the professional permanent representative of military needs within the ministry, while at the same time, he performs interministerial defence tasks, especially those of the country's defence administration.

The new ministry had to meet three basic requirements:

– be able to define precise, understandable, and accountable tasks for the top-level military leadership – i.e., the commander of the Hungarian Defence Forces – based on the government's political decisions and objectives;
– create and provide the Hungarian Defence Forces with the conditions necessary for the execution of specified tasks, i.e., "money, horses, weapons" for soldiers responsible for the reliable operation of the Hungarian Defence Forces;
– continuously monitor the professionalism and regularity of the use of provided conditions in addition to performing the tasks of civil democratic control, monitoring, and supervision ("civilian control").

As a result, a streamlined, transparent, and effective strategic leadership level has been created, with organizational elements dealing with political, administrative, and defence issues, and being responsible for their respective areas of expertise. This command structure and division of tasks ensured, at all times, timely decision-making, provision of conditions, flexible response, and close, effective cooperation with ministries and international organizations.[24]

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[23] Act CXL on National Defence, 2021.

[24] In addition to the basic tasks specified in the law, it also ensured the simultaneous implementation of action against illegal migration, tasks arising from the Covid-19 pandemic and the Russo-Ukrainian War, as well as the time-proportional steps of the defence and military development program, which in some areas were brought forward if necessary.

THE MILITARY CAREER MODEL AS A CORNERSTONE OF PROFESSIONAL MILITARY SERVICE

One of the most important areas of capability development of the Hungarian Defence Forces is the provision of human resources at all times and on all sides. Whether it is young people preparing for military careers, active-duty professional and contracted soldiers, or volunteer reservists, everyone needs to know what expectations they have to meet during their service, what they have to do in order to meet them, and what organizational interests require of them. The interest of successful armed forces development requires that soldiers be excellently prepared and trained, loyal professionals who are committed to their vocation and work and can be counted on under any circumstances. The solid foundation of the armed forces, which can be planned for the long term, must be formed mainly by those who undertake professional military service, who undertake a vocation that "spans a career" (not only for active-duty military service but indeed for a lifetime). Among other things, a career-spanning vocation can ensure the stability of the Hungarian Defence Forces at all times, as well as the creation and reliable operation of the country's full-scale resilience. Taking all this into account, a career model[25] has been developed for professional soldiers, which has stages with specific characteristics that can be precisely interpreted, followed, and calculated. The goal for the soldiers is to be dedicated and loyal and set an example for society to follow. At the same time, they should be respected members of society, because the vocation they practice is unique in the country. A vocation in which they offer not only the best of their knowledge and preparation but also the most precious value of human existence, their life, to the service of their nation.[26] Such sacrifice is exemplary, and therefore those who serve their nation in this spirit deserve predictable appreciation from the nation, based on mutual respect. I am convinced that in the long run, only a career model built by taking into account such human factors can ensure a high degree of recognition (prestige) of the profession towards society and the primacy of the profession on the part of the soldiers. Together, they can make a significant contribution to the success of the National Defence and Military Development Program, to the creation of a strong national force – and thus indirectly to Hungary's peace and security.

I am convinced that the career path model must be applied in accordance with these principles and expectations, which – in the case of professional soldiers – must operate throughout a lifetime, always along the lines of organizational interests, but taking into account individual interests at the same time, in a transparent and fair manner.

Based on this, the career path of professional soldiers should be divided into the following three basic stages.

[25] Hazafi 2014, 9–88.

[26] Quote from the military oath: *"I will defend Hungary's independence, the rights and freedom of citizens with courage, by observing and enforcing the Fundamental Law and legal codifications, with the strength of the soldiers and weapons entrusted to me, even at the cost of my life."* Act CXL on National Defence, 2021.

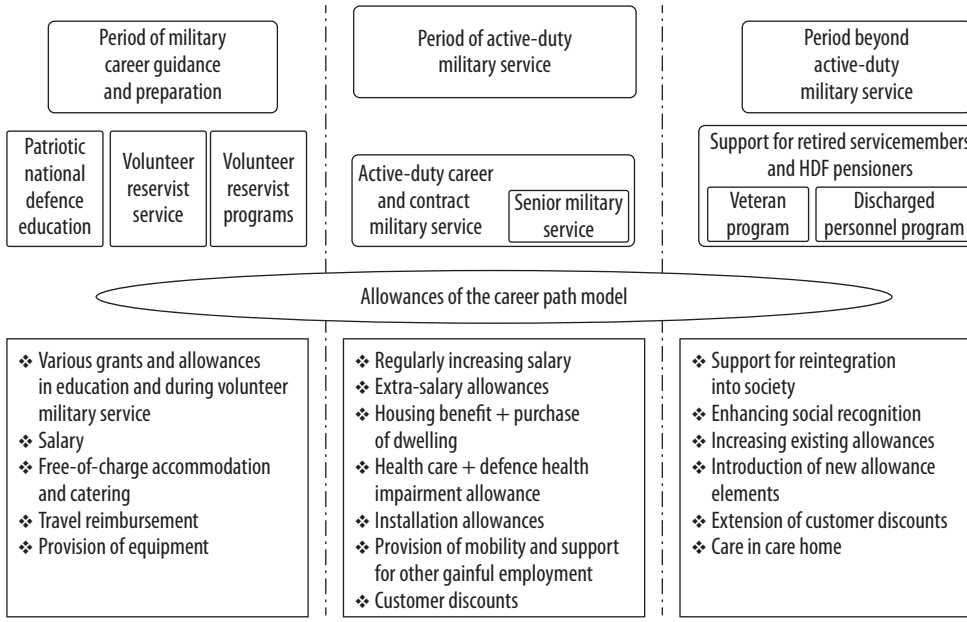

Figure 1 *Stages of the military career model (Edited by the author)*

The first phase of the career path, the period of guidance on a military career

The phase preparing for the career path or laying its foundation serves the education in commitment and patriotism to one's country, the preparation for homeland defence, the mastery of the cause of national defence as a civic duty,[27] and the furthering of guidance on a military career path. This period is intended to provide the indispensable arena for establishing the military vocation and its personal conditions, means, and methods, with the help of which we can achieve our goals of having soldiers committed and loyal to their country. Soldiers who serve the country do not become patriotic and dedicated citizens because they put on their uniforms, but because they are capable of making the greatest sacrifices in their emotional commitment, dedication, thinking, and actions. The harmony of all these ensures the moral state of the Hungarian Defence Forces at all times, which is a determining element of the soldiers' combat readiness and thus that of the Hungarian Defence Forces not only in wartime conditions but also in peacetime and in the period of special legal order. It follows from all this that young people undertaking military service should not be prepared to feel respect and patriotism for their homeland when they begin their military service, but the Hungarian Defence Forces need young people who are already committed to their homeland. At the same time, the security of the country requires that not only those preparing for the military career path should get acquainted with the concepts of loyalty and patriotism to their homeland,[28] and with the things one can do for the peace and security of our country. It is obvious that

[27] "All Hungarian citizens shall be obliged to defend the country". Fundamental Law of Hungary, 2011.

[28] Patriotism (noun): The love one feels for one's country or people, ready for sacrifice and even self-sacrifice. A magyar nyelv értelmező szótára [Interpretative Dictionary of the Hungarian Language].

the more people feel the importance and necessity of all-round defence of the security of the homeland and society, the responsibility for and loyalty to the defence of the homeland, and the more people acquire the knowledge of the defence of the homeland, the more will the defence capability of the country strengthen. Historical periods have shown that the threat that surrounds people can significantly amplify the sense of patriotism. This was also observable in Hungary, especially during the period of the wars of independence and freedom fights, as well as during the era of the so-called Wurmb reforms within the Austro-Hungarian Monarchy,[29] when military subordinate and main real schools, cadet schools, and military academies began to operate within the framework of independent military institutional education. But we can also observe these aspirations in volumes VII–VIII of the subject Defence Studies published in 1943,[30] in which it was emphasized in particular that:

The military spirit is one of the most important constituent factors of the state. It must be educated and nurtured! However, education and nurturing is not a single, short event, but a long, continuous process. This means that the education and cultivation of the military spirit must be involved in every aspect of national life, free from artificiality and without forcedness! The soldiers' spirit is the lifeblood of the peoples' souls, so its presence is self-evident and natural.

The importance of preparation for the military vocation and at the same time the methods of its implementation, which differ from period to period, should be examined in a complex, inter- and multidisciplinary approach. Two books provide very important additional information: József Martinkó's *Cőgerek és katkósok*[31] [Cadets and Military Dormitory Students] published in 1998, which examines the issue mainly from military pedagogical aspects, and Zoltán László Kiss's volume entitled The Hungarian Military Elite, 1945–1989,[32] published in 2005, which examines the basically military sociological aspects of the topic.[33]

It is a fact that the unity of patriotism[34] and national defence[35] is one of the defining elements of a strong state, therefore, caring for the cause of national defence is a high-priority task of states. Within this, the planned, conscious foundation of knowledge, the harmonization of theoretical knowledge and practical experience, is one of the most important things, because this determines the soldiers' overall individual attitudes and abilities. That is, education and preparation require thoughtful planning and time, so their implementation must be comprehensive and continuous. Unfortunately, there has also been an omission in this area in Hungary. Concurrent with the reduction of the Hungarian armed forces – which caused a serious decline in the morale among soldiers[36] as well as uncertainty and unpre-

[29] 5th Fond Group – Educational Institutes [no year].

[30] Honvédelmi ismeretek [Defence Knowledge], 1943.

[31] Martinkó 1998, 7–16, 100–135, 136–151.

[32] Kiss 2005, 145–149, 496–512.

[33] The work examines the problems primarily in historical comparison, by comparing the data gathered in the information and empirical database with the historical periods before the First World War and the interwar years.

[34] Patriotism (noun, singular only): Self-aware, active, sacrificial patriotism. A magyar nyelv értelmező szótára [Interpretative dictionary of the Hungarian language].

[35] National defence (noun): Defence of the homeland. A magyar nyelv értelmező szótára [Interpretative Dictionary of the Hungarian Language].

[36] In terms of team spirit; when trust in the superior, the cohesion, and selfless camaraderie expected of the group suffer because of arising feelings of frustration, the selfish search for oneself and one's place and role, hopelessness, and perplexity, which present themselves, especially in prudent foresight, determination, commitment, and motivation as well as discipline. (Author's note)

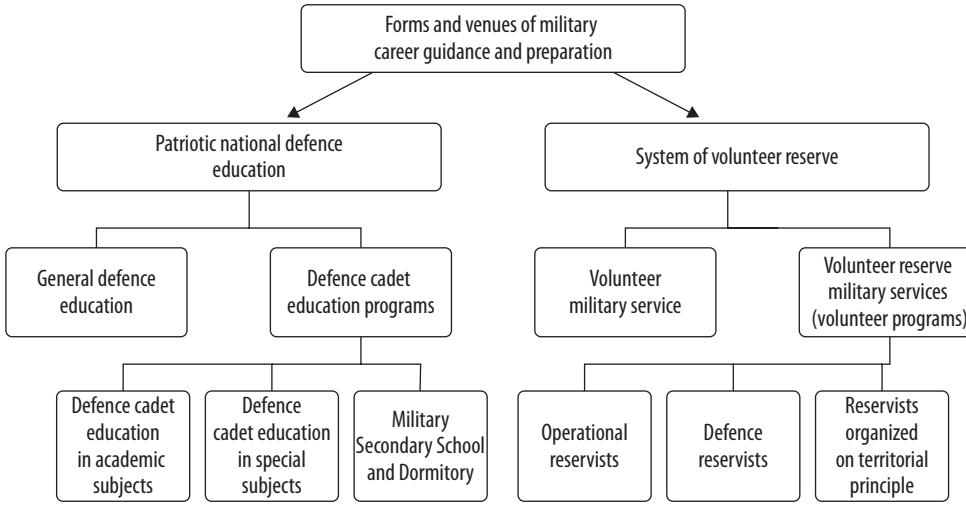

Figure 2 *Forms and venues of military career guidance and volunteer reserve military service (Edited by the author)*

dictability in society –, the venues of patriotic education, i.e., military colleges in secondary schools and military vocational schools were also discontinued, leaving aside the fact that one of the characteristics of a strong state is its strong armed forces, which need educational institutions providing excellent preliminary military training and career guidance.

In the Military Development Program, we intend to fill this gap by establishing forms of education and training and institutions providing patriotic defence education, as well as by creating opportunities provided by the volunteer reserve military service.

With all this, our primary goal is not to ensure that all young people in education pursue military careers or undertake military service, but that as many young people as possible receive patriotic defence training and preparation, where they learn the obligations of defending their homeland. Where they learn what community life and team spirit mean, why adaptation and following instructions are important. Where they learn to solve tasks together, where they acquire the characteristics of respect for others, patriotism, and courage. That is, they acquire everything that a strong society needs.

The causes of patriotism, love of the homeland, and national defence are not age-specific characteristics, so it is important to make them known to all age groups. Within the framework of general defence education, we would like to enrich the everyday life of primary-school-aged children, mainly through subject clubs and extra-class events, as well as experience-rich activities. The program includes learning the importance of team spirit, the will to fight and perseverance, sportsmanship, healthy lifestyle, and regularity. They do not participate in military-type activities, but they can get an insight into the everyday life of the Hungarian Defence Forces and soldiering within the framework of the defence camps organized every year.

Also popular is the National Military Tournament, which is co-organized with the Defence Sports Association. Since 2021, this sports competition has been expanded into an international competition within the framework of the Cadet Cup. Thanks to this, a year lat-

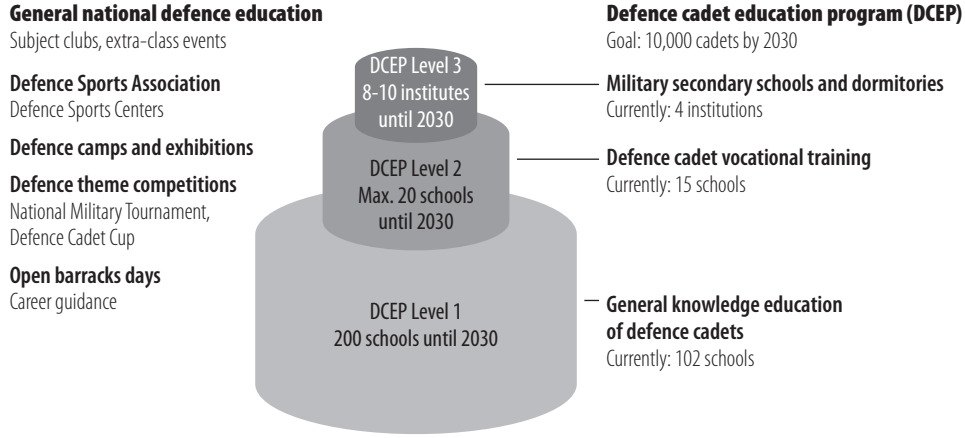

Figure 3 *Venues of patriotic national defence education (Edited by the author)*

er, we were able to organize the 6th National Military Tournament and the 2nd International Cadet Cup Competition.

The next area of patriotic and defence education – that is, the cadet training program – already has a definite goal. In particular, "to raise awareness of the importance of loving and defending one's homeland and to contribute to the education of young people to be responsible citizens."[37]

As shown in Figure 3, this is achieved in three venues. The Defence Cadet Education Program (DCEP)[38] Level 1 is the

general knowledge education for military cadets, which enables students – defence cadets – to learn the basics of national defence subjects for 1–2 hours a week, during which they can get acquainted with the defence tasks of Hungarian citizens and also with the tasks that the Hungarian Defence Forces perform in defence of the homeland.

This form of education is intended to support the career guidance of young people and the supply of enlisted personnel.

The DCEP Level 2 is the defence cadet vocational training,[39] the next stage of the cadet education program.

The vocational training of defence cadets takes place at a technical school in five years. After the first two years of basic education in the defence sector, defence cadets take a sectoral basic examination, then in the second part of the training (grades 11-12-13) they participate in vocational education corresponding to the occupational specialty. If, at the end of grade 12, a cadet decides to continue their careers as soldiers after graduating from the technical school, they may complete the technical school in dual training at an organization (unit) of the Hungarian Defence Forces in the final year.

This form of education is already about promoting conscious career orientation, primarily to the military career of non-commissioned officers. Taking into account the specialization of the mentioned personnel category, we limit the number of educational institutions

[37] Cadet Program website: https://kadetprogram.hu/.
[38] Patriotic and Defence Education – Defence Cadet Program.
[39] Patriotic and Defence Education – Defence Cadet Program, https://kadetprogram.hu/.

– as opposed to the DCEP Level 1 form of education. According to our concept, altogether 20 such vocational training schools will have been opened by 2030.

The most intensive military career guidance – the DCEP Level 3 form of training – takes place in military secondary schools and dormitories,[40] where "[t]he boarding school provides knowledge of national defence and the Hungarian Defence Forces in classes, practical sessions and the dormitory". Taking into account the opportunities offered by further staff increases and the senior phase of active-duty service, this form of training requires 8-10 such institutions by 2030.[41]

In light of all this, we have set a goal in the National Defence and Military Development Program to the effect that by 2026 we should have at least 5,000 students who receive(d) cadet education. The persistent work of the past five years has resulted in this form of education becoming very popular, and as a result, we already achieved our goals in 2021. Therefore, in the spring of 2022, we increased the number of students to receive cadet education to 10,000, which is double that of the original plan. The newly projected target is not far from reality, because by the 2022/2023 academic year, 121 secondary schools have already joined the program, in which altogether more than 7,100 cadets are pursuing their studies.[42]

Preparation for volunteer service

In addition to providing career guidance to school-age young people, it is extremely important to ensure that citizens of military age (18–50 years) are prepared for patriotism and the defence of the homeland. The experiences of recent years have shown that this works excellently in various forms of volunteer reserve military service.

Despite the fact that the legal possibility of volunteer reserve military service was already provided for in the years before the suspension of conscription,[43] the functioning of this form of service was characterized by serious deficiencies due to[44] social disinterest. Therefore, in 2010, we wanted to put this indispensable form of military service on a new footing and started to develop new forms and frameworks of the System of Volunteer Reserve (SVR). As a first step,[45] we relied on the experience and preparedness of "allowance soldiers", which was organized not only for organizational interests but also to provide assistance and support to the personnel suffering moral and financial disadvantages due to previous government decisions. Within this, the volunteer defence reservist service was introduced in 2011 and the volunteer operational reservist service in 2012, but the remarkable impetus was created by the Defence and Military Development Program through issuing a call for military reservist service organized on a territorial basis introduced in 2017. Since then, the number of volunteer reservists has grown more and more dynamically, resulting

[40] Patriotic and Defence Education – Defence Cadet Program.

[41] See Figure 3.

[42] Töretlen a Honvéd Kadét Program népszerűsége [The popularity of the Defence Cadet Program is unbroken], 2022.

[43] Due to the downsizing of the Hungarian Defence Forces and the discharge of military personnel and, as a result, the unpredictability of careers, the military profession was not attractive.

[44] See Colonel (Ret.) (Eng.) András Kladek's PhD thesis (2007).

[45] A soldier receiving service allowance is a person who falls under Act CLXVII of 2011 on the termination of early retirement pension, on benefits prior to retirement age and on service benefits, therefore as of 1 January 2012, a personal income tax burden of 16% is put on the sum of their earlier calculated service pension.

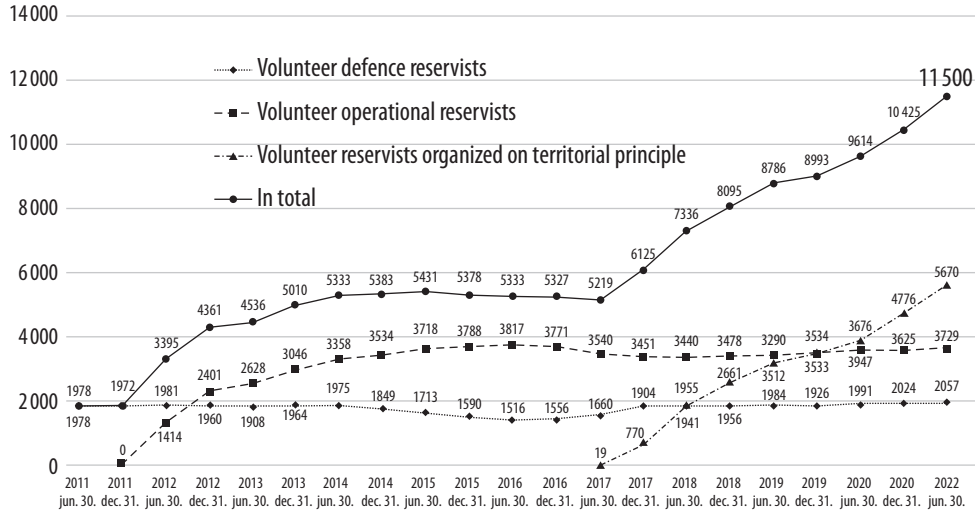

Figure 4 *The growing number of volunteer reservists undertaking service (Edited by the author)*

in significant progress in the number of reservist organizations and the personnel levels of volunteer battalions.

As a result, out of the seven territorial defence regiments planned for 2028, two regiments were already established and operated within a year after issuing the call, i.e., in 2018, and the schedule for bringing the others to full strength has been completed. The significant and dynamic increase in personnel levels provides an excellent basis for the conclusion that what we have planned for 2026 (providing at least 20,000 men[46]) – given that the existing personnel level already reached 11,500 by 2022 – can be considered realistic and feasible.

The volunteer reserve military service is therefore useful for society when not only the needs of individuals to participate in military training but also the interests of the Hungarian Defence Forces and the defence of the homeland are taken into account. It is therefore commendable that the social usefulness of the system placed on new foundations has already been demonstrated several times. For instance, in periods such as the great flood on the River Danube in 2013, in the everyday performance of tasks along the southern border for several years, in the midst of the Covid-19 pandemic in 2020–2021, and the execution of the military tasks of nationwide medical support.

In the field of representing the interests of the Hungarian Defence Forces, as well as military occupational specialty training and preparation – although other tasks arising from the health care emergency and various restrictive measures significantly hindered the process – by 2021, we laid the basis for our fundamental objective. Namely, our reservists who appear and perform tasks within the Hungarian Defence Forces be more than a "stopgap measure", since they must also be able to perform professional service activities in individual positions and to perform force-level tactical and peacekeeping operational tasks based on their training and preparedness level. The first results of this came in 2021, when a volunteer

[46] The number of volunteer reservists is determined in accordance with the 25/2018 Regulations. (31/10) decision of the National Assembly sets it at 20,000 men. See Parliamentary decision on the manpower structure of the Hungarian Defence Forces, 2018.

territorial defence reserve company – now an independent subunit – participated in an international military exercise, the validation exercise of the Ohio National Guard's 37th Infantry Brigade Combat Team, and, also for the first time, the peacekeepers of a volunteer reserve platoon deployed for a six-month tour of duty in NATO's largest mission, KFOR. They performed successfully in both areas, which proves that they can be fully counted on in addition to the subunits performing active-duty military service, meaning that our volunteer reservists are already present as a real capability in the Hungarian Defence Forces.

During the period of the health care emergency, a new, special volunteer military service was introduced, which served the purpose of ensuring that the Hungarian Defence Forces also contribute to helping citizens (and their families) in distress who lost their jobs. With this, the Hungarian Defence Forces also practiced the characteristics of operating with personnel living in a crisis situation. Another advantage for the Hungarian Defence Forces was that those who received military training increased the number of trained military-age reservists.

Already at the start of the cadet training, we were considering the idea of how we could recognize and reward the sacrifice of young people who volunteer for military service before starting their higher education studies. This is one of the reasons why we launched the volunteer military service in September 2021. As its name suggests, in this case, we are not talking about volunteer reservists, but primarily young people who start their higher education studies at a later date, or who want to get to know their skills, make sure that they persevere in their vocation, or simply "test" themselves for a short time on the military career path before deciding whether they want to choose a contract or professional military career. They undergo military training for at least six months and receive additional admission scores for this volunteer military service if they wish to continue their studies at a higher education institution.[47] This form of training is advantageous for the Hungarian Defence Forces not only because it increases the number of trained reservists but also because later several of them will also undertake volunteer reserve military service. At the same time, there are those who are motivated to pursue a military career, as during their training they become convinced that as a result of the Military Development Program, they can operate the most up-to-date, cutting-edge technology and equipment in the Hungarian Defence Forces. High-tech,[48] digitalization, and artificial intelligence,[49] as well as opportunities for research and development, are attractive in themselves to the young generation.

At the same time, the National Defence and Military Development Program will become truly successful, strong in its moral position, and thus Hungary's "resilience" will be firm only if we always put man at the centre. If we do not do so, we will not be able to build a high-quality force in terms of sense of vocation, loyalty, commitment, and faithfulness to our country, sacrifice, commander's responsibility, and care for soldiers, even though we will have the most up-to-date, state-of-the-art military equipment. However, an effective army, especially in the period of high-tech, must have soldiers of adequate quality in its ranks. When building a professional force, the above should always be kept in mind and efforts should be made to apply it already when young people are preparing for a military career. They must see that in addition to the system of strict require-

[47] Government Decree No. 129/2022 amending Government Decree No. 423/2012 on higher education admission procedure.

[48] High-tech is an abbreviation of "high technology".

[49] HOLD lexicon: Artificial intelligence (AI) is an umbrella term for machine, software-based applications, and algorithms that aim to imitate human behaviour and thinking.

ments and the expectations that come with the profession, there is a unity of recognition and appreciation. The study grant system we have developed also serves this purpose.[50] Therefore, we also place special emphasis on this in the Military Development Program. As a result, we now provide four different scholarships to those young people who are preparing for military careers or are also serving as reservists in the military while pursuing their studies. It can be observed that the study grant system in the defence sector is comprehensive. It covers the fields of secondary education, vocational training, and higher education, and provides support for disadvantaged young people and, on the basis of equitability, for HDF orphans.

The main objective of military career guidance as the first stage of a military career is to ensure that as many educational institutions as possible undertake to assist the cause of national defence; as many young people as possible want to know and acquire commitment to their homeland, faithfulness, loyalty, camaraderie, perseverance, respect for others, as well as all the basic human qualities that a strong country needs; and that as many young adults as possible undertake volunteer military or volunteer reserve military service.

Overall, it can be stated that in the first phase of the career model targeted by the Military Development Program – as a result of effective patriotic-national defence education, cadet education, and volunteer reserve military training – a dynamic development was observable in terms of the number of participants. The result of the past five years proves that the procedures and methods used in the first phase of the career model are good, correct, and credible, thus suitable for achieving the long-term goals set by us.

The period of active-duty military service as the second stage of the military career

This phase of the career model presents planned human resources management, primarily the career paths of professional non-commissioned officers, officers, and generals, and the assigned benefit system. These are the career paths of those who have an open-ended "employment contract" and who have to plan their length of service until retirement. This phase should include the following principles and processes of a system approach to ensure that soldiers moving on a career path are truly committed, loyal, and self-sacrificing so that they can always subordinate their individual and family interests to organizational interests:

- always provide a career picture that provides a credible, transparent, predictable career path that thus can be planned and chosen by the individual;
- education, retraining and further training, and the systems of their requirements, as well as the content elements of performance-based evaluation and the career path based on them, should be consistently built and implemented;
- the system of recognition and benefits should always be synchronized with the system of requirements;
- comprehensive care should be based on motivational and moral factors.

It is clear that attractive recruitment, long-term retention, education, and training to ensure a successful life path, the opportunity to choose interoperability, elements, and systems ensuring moral and material appreciation must be implemented at this stage of life.

[50] Available and eligible grants: https://kadetprogram.hu/osztondijak/.

The realization of this career phase basically takes place through three systems, but we can also say that its success or failure rests on three pillars:

– the comprehensive career system and the corresponding salary and benefit systems;
– the accommodation and housing allowance scheme;
– the health promotion and damage insurance system.

Being the most important element of professional military service, the system of career and the related salary system are based on performance evaluation, which includes criteria for assessing knowledge, preparedness, experience, performance, personal human qualities, as well as physical endurance, and medical and psychological fitness.

The knowledge and preparedness requirements are formulated in the education and training chapter of the Military Development Program, in which we primarily set as goals more practice-oriented training, the creation of interoperability between legal relations in public service, the creation of the possibility of a two-way career path, and the conversion of student legal status to contractual military legal status. Like in the case of officer training, we focused on more practice-oriented preparation for non-commissioned officers, including the "Steel Cube", an internal course-type non-commissioned officer training, which resulted in a significant increase in personnel number already on the first occasion.

In the field of education and training for the career of professional soldiers, we consider it an important aspect to ensure the expectations of Lifelong Learning (LLL*),* which enables them to gain more and more experience, further advance on their career path, be appointed to higher positions, and continue to serve uninterruptedly until reaching retirement age.

The government made it possible to introduce a salary system related to career advancement by ensuring long-term budgetary projections.[51] Thus, in 2015, we were able to start developing the soldiers' salary by an average of 50%, one of the most important means of remuneration in their career model, which resulted in further continuous increases or other benefits such as "arms money" in subsequent years, until 2023.

Concurrent with the implementation of the military career, we did not forget about civil servant personnel who wear civilian clothes, but also ensure the operation of military organizations and the deployment of military forces as needed, and perform service and operational tasks. With the introduction of the "defence employee status"[52] in 2019, they received a 35% pay rise in four phases. At the same time, we encouraged them to take part in specialized courses linked to military qualifications, which could lead to additional remuneration as a result of extending their professional knowledge.

The second main area of active-duty military service, the pillar of stability is the housing allowance system, which primarily aims to provide social care for soldiers and their families while preserving the organizational interests of the individual's mobility opportunities. Therefore, this support system is very wide-ranging, including both in-kind (service apartment, garrison hostel allowance) and cash support means, such as lodging money, rent contributions, rent subsidies, non-refundable allowances to help with the acquisition of own apartment (one-off monetary support), employer loans, and apartment management contributions to the housing costs of apartments.[53]

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[51] Benkő 2023, 3–15.

[52] Act CXIV on the Legal Status of Defence Employees, 2018.

[53] Benefit scheme to help maintain apartment rental and leasing.

The health promotion and health impairment insurance system is the third pillar of active-duty military service, which ensures not only the combat readiness of the Hungarian Defence Forces through healthy, always combat-ready soldiers but also the morale of the military through the provision of comprehensive (ROLE 1–ROLE 4)[54] military medicine and health care. In order to create all these values and capabilities, the defence health impairment care system was introduced on 1 January 2017, the first year of the Military Development Program.[55] The aim of this type of care is, first of all, the promotion of a healthy lifestyle, prevention, to provide professional and comprehensive medical support, and last but not least, to create existential security for those soldiers who are medically fit for military service with limitations or become unfit for it. In other words, let us do everything possible to be able to continue employing our soldiers with knowledge, preparedness, and experience in organizations serving the cause of national defence.

According to the statutory provisions, health impairment benefits apply to both professional and contract soldiers and serve the effective management of illnesses, accidents, and related life situations, first and foremost by implying an obligation on the part of the Hungarian Defence Forces (continued employment in a service position or non-military job), while it means an undertaking to do so on the part of the member of the personnel concerned. The introduction of this measure will greatly contribute to enabling the soldiers concerned (if they have the intention and will) to serve in the military or the field of defence until they reach retirement age.

The last phase of the active-duty stage of military service can be closely matched to this, the introduction and professional application of which is essential not only for health care but also especially for ensuring a smooth career advancement system. It is with these cases in mind that we have formulated the idea of introducing the so-called "senior military service phase" for the period immediately preceding the end of the period of active-duty service.

The aim of this 15–20 years before the retirement pension is to ensure that suitable, well-trained, and prepared soldiers can continue serving in the Hungarian Defence Forces in view of their knowledge and experience, which is necessitated by the narrowing of career opportunities as a result of the pyramid principle, the prevention of "aging" of personnel, and the appearance of certain health problems – or to find employment in sectors relevant to their field of expertise, applying the reconversion processes. All this helps the soldiers concerned to maintain their faith and self-respect and to find their rightful place and role in society, without leaving the military system as disappointed or embittered people. In this form, I think that organizations and institutions dedicated to the cause of homeland defence and the individuals concerned can benefit from it alike.

This is not a complicated or insurmountable task. It is only a matter of will where and how it can be accomplished. First of all, in the fields of state administration, public administration, defence administration, the jobs of defence desk officers in ministries, in general and patriotic-national defence education, cadet training, the leadership of volunteer military organizations organized on a territorial principle, in the training and preparation of the personnel serving there, and in the jobs of trainers and range officers employed at defence sports centres – to name but a few –, but also in the state enterprises, companies, and

[54] Kopcsó 2010.

[55] MoD Decree on Defence Health Impairment Benefits, 2016.

organizations where people are employed in so-called "retentional"[56] jobs. This is because a significant part of these jobs is dedicated to performing national defence tasks, and the Hungarian Defence Forces currently have more than 40,000 employees and places of employment of this job type. In the case of various civil companies and enterprises, as I indicated earlier, it can be implemented after an appropriate, specialized reconversion process.

Retired soldiers for homeland defence

The period of active-duty military service is followed by the third stage of a military career, for the simple reason that for professional soldiers, the military oath is for a lifetime, as it binds them for life. Therefore, the cause of defending the homeland is crucial for our retired soldiers and overrides any party-political affiliation. Most of them not only feel and think this way but also act in accordance with it. In recent years, this has been evident in the responses to questionnaires filled out by young people who showed up in the recruitment office, as more than a third of them indicated that they received their inspiration to choose a military career from ex-servicemen (typically primarily from a grandfather, father, relative, or acquaintance). It was also possible to observe how much the briefings and lectures on the National Defence and Military Development Program touched them and, putting aside their other cares, how they espoused the cause of homeland defence. This proves that we have made the right decision in including this so-called third stage of the career path among the basic stages of a career. At the same time, I think it is right also because we are talking about our predecessors, our commanders, and, in many cases, our teachers, from whom we learned the "trade" and the military virtues. Therefore, the Hungarian Defence Forces must continue to turn to them with responsibility. Unfortunately, in recent decades, our retired soldiers have not received respect and attention to the degree that they deserve. Nothing proves this better than the results of investigations from empirical military sociological research, which are known to us from the research carried out by Prof. Dr. Zoltán László Kiss, university professor, head of the research team, and his colleagues.[57] We commissioned them to do this research in October 2020 in order to make scientifically informed decisions about "how to proceed". First, we launched the Discharged Personnel and Veterans Programs,[58] which primarily provide shopping discounts to eligible former colleagues, then with the cooperation of the National Alliance of Comradeship Associations (BEOSZ) and the Trade Union of HDF Employees (HODOSZ), as well as the HDF Public Foundation for Social Policy, we initiated financial assistance for those in need. However, there is still work to be done, for example in connection with the creation of the so-called "Veteran House", i.e., care homes for the elderly or other forms of support for those in need.

[56] People working in such positions cannot be called up as soldiers even in wartime situations, because their expertise and work are especially needed at the given workplace even in wartime circumstances.

[57] Prof. Dr. Zoltán László Kiss, university professor, head of research, and his colleagues carried out the empirical military sociological research called *Nyugállományban 2021* [In retirement 2021] upon a central order (MoD Defence State Secretary) among the concerned persons belonging to the sphere of care.

[58] Zavodnyik 2020.

MID-TERM REVIEW OF THE ARMED FORCES DEVELOPMENT

We have reached the halfway point in the implementation of the National Defence and Military Development Program launched to preserve peace (Zrínyi 2026 at its launch), so it is appropriate to take stock. In the introductory thoughts of the study, it was mentioned that we can acquire modern military equipment at almost any time if the budget allocated to the Hungarian Defence Forces allows it. There are plenty of them on offer in kind, type, quality, and quantity, so we have a wide range of choices. It can be stated that the Hungarian Defence Forces are performing well in this area. The new items of military equipment are arriving continuously according to schedule, and their commissioning is progressing according to plan. In other words, we have achieved the time-proportional targets in time, quality and quantity, and the arrival of additional equipment is ensured – also as per the present situation. Thus, it has been proven that with adequate budgetary support, the procurement of military equipment poses no problems. Even the necessary budgetary infrastructure can be provided for it, although I think we need to move into high gear in this area.

The bigger challenge, as it has already been discussed several times, will be the provision of human resources. There are a great many reasons for this, but above all, it is due to the "national defence policy", which has been neglected for decades and takes time to be put in order. First of all, this is because we need not just a few thousand, but many more patriotic, dedicated, loyal soldiers with whom it is really possible to build a national force. For this, however, it is necessary to change the established social relations, or rather social and human attitudes, because the social effects on people largely determine who and how many of them undertake the armed service of the homeland. That is why we have launched the Military Development Program with the objective of putting man, the soldier himself, at the centre of development. All this may seem to imply that we are talking about the person, the soldier, but this must always be interpreted as meaning the uniformed man who exists in and is represented by society.

Let us take stock in terms of human resources: what have we achieved in the last five years, and does this ensure that we achieve the objectives we have set for ourselves?

Let us proceed according to the stages of the career path model:

- In terms of the number of participants in the cadet training program designed to provide guidance and preparation for the military career, we have set the goal of at least 5,000 cadets studying at these institutions by 2026. Currently, more than 7,000 students are participating in the program, which means that by 2026, we may even be able to double the number of our cadet students compared to the set goal.
- The number of educational institutions has grown dynamically. Participation in the cadet training program has become increasingly popular among schools, parents, and students alike. Currently, 121 educational institutions offer such education.
- The number of volunteer reservists has increased by around 6,300 over the past five years – although this expansion was significantly hindered by the Covid epidemic – as compared to the 860 in the previous five-year cycle (2012–2017). This brings the total number of our reservists to 11,500, which will allow us to reach the target of 20,000 by 2026 through further intensive recruitment.
- The social acceptance of the cause of national defence and the increasing interest in military careers, i.e., the growing attractiveness of undertaking military service, are best reflected in the fact that the number of officer cadets applying to and enrolled on the Faculty of Military Science and Officer Training of the Ludovika University of

Public Service for the 2022/2023 academic year was nearly 40% higher than in 2017 and 3.5 times higher than in 2013.

– In the case of non-commissioned officers, the introduction of the "Steel Cube" NCO training system has also resulted in an almost fourfold increase in the number of non-commissioned officers who can be assigned to positions.
– The growing number of soldiers posted to international military staffs proves that our concept of human resources has been successful and recognized on an international level as well.

GOING FURTHER DOWN THE ROAD

The successful implementation of the National Defence and Military Development Program ensures the creation of such defence capabilities that genuinely serve to preserve peace. However, different capabilities should not be understood as a set goal to be achieved, which must be accomplished by a specific date, but as continuous maintenance of this set goal after we have achieved it. Thus, in the case of the capability of preserving peace, we must talk about simultaneous permanence and continuity. In political terms, this is the task and responsibility of the government of the day, but from a professional point of view, it is that of the top military leadership.

In order to ensure the availability of human resources, along the lines of the previous thoughts, we have analysed, evaluated, and taken into account, shaped and formed the environment that surrounds those who undertake military careers and influences their lives, service, and fate. It can be stated that the career path model of the volunteer, vocation-based military service will only be effective, or even workable, if it proves to be applicable and acceptable by all parties involved, harmonizing organizational and individual interests. However, in order for it to be applicable all along the career path, it requires continuous monitoring and clarification, a so-called updated status. All this must be done in such a way that both organizational and individual interests can be asserted since the main motto of the Military Development Program is: Man, the soldier is at the centre of change and transformation!

As I have emphasized several times before, the creation of defence capability has a great many components, which are influenced and shaped by a great many factors and their interrelations. In my article, I highlighted the availability of human resources as a fundamental segment of creating defence capabilities. I am convinced that this will create a strong and unshakable foundation on which we can stably build in the long term; this is because only through human resources can we build a reliable, loyal, well-trained, and prepared military force committed to its homeland, which can indeed become a premier force in the region. Furthermore, only through it can we make the undertaking of the military vocation recognized, predictable, and attractive for the younger generation. At the same time, the course of human resource planning requires additional work to present the expectations and processes related to operational procedures, applicable doctrines, the use of forces and assets, education, training, and preparation. The emphasis on human resources management does not mean that the areas and means of technical capability development and the operational and servicing needs are pushed into the background, nor does it mean that the importance of research and development is underestimated.

BIBLIOGRAPHY

Laws, decisions, regulations

- 24/2016. (22/12) MoD Decree on the Rules of Procedure related to Defence Health Impairment Benefits. https://njt.hu/jogszabaly/2016-24-20-15.
- 25/2018. (31/10) Parliamentary decision on the detailed breakdown of the manpower structure of the Hungarian Defence Forces. Hungarian Gazette No. 168, https://mkogy.jogtar.hu/jogszabaly?docid=A18H0025.OGY. (31/10).
- Act CLXVII of 2011 on the Termination of Early Retirement Pensions, on Benefits Prior to Retirement and on Service Allowances https://net.jogtar.hu/jogszabaly?docid=a1100167.tv.
- Act CXIV of 2018 on the Legal Status of Defence Employees. Legislative database. https://net.jogtar.hu/jogszabaly?docid=A1800114.TV.
- Act XCIII of 2021 on the Coordination of Defence and Security Activities. Articles 5 and 7 of the Act on the Coordination of Defence and Security Activities. https://njt.hu/jogszabaly/2021-93-00-00.
- Act CXL of 2021 on National Defence and the Hungarian Defence Forces § 13 (3). https://net.jogtar.hu/jogszabaly?docid=A2100140.TV&searchUrl=/gyorskereso.
- Act CXL of 2021 on National Defence and the Hungarian Defence Forces, Annex 2. National Legislation Database. https://njt.hu/jogszabaly/2021-140-00-00.
- Fundamental Law of Hungary. 25/04/2011 Article XXIX (1). Legislative database. https://net.jogtar.hu/jogszabaly?docid=a1100425.atv.
- Government Decree No. 129/2022 (05/04) amending Government Decree No. 423/2012 (29/12) on higher education admission procedure. Hungarian Gazette No. 62, 5 April 2022, 2215.

Books, periodicals, publications

- Benkő Tibor: *A sikeres haderőfejlesztés záloga (1)* [The key to successful military development (1)]. Honvédségi Szemle, Vol. 151, No. 1 (2023), 3–15.
- Hazafi Zoltán: *Új közszolgálati életpálya – a közszolgálat fejlesztésének jogi és emberi erőforrás dimenziói*. [New career in public service – legal and human resource dimensions of civil service development] In: Bokodi Márta et al.: *Közszolgálati életpálya és emberi erőforrás gazdálkodás.* [Public service career and human resource management]. Ministry of Public Administration and Justice, 2014, 9–88. https://docplayer.hu/6708032-Kozszolgalati-eletpalya-es-emberi-eroforras-gazdalkodas.html (Accessed: 30 November 2022).
- *Honvédelmi ismeretek* [Defence Knowledge]. Vol. VII–VIII, 143. Publication of the National Head of Youth Defence Education and Physical Training.
- Kiss Zoltán László: *A magyar katonai elit 1945–1989* [The Hungarian Military Elite 1945–1989]. Zrínyi Miklós National Defence University, Budapest, 2005, 145–149, 496–512.
- Kiss Zoltán László: *Nyugállományban 2021* [In retirement 2021]. Empirical military sociological research.
- Colonel Kladek András (Eng.) (Ret.): PhD thesis (2007). https://nkerepo.uninke.hu/xmlui/bitstream/handle/123456789/12086/ertekezes.pdf?sequence=1.
- Kopcsó István: *A katona-egészségügyi szolgálat XXI. századi kihívásai, különös tekintettel a NATO egészségügyi transzformációs folyamatának támogatására* [The twenty-first century challenges of military health service, with special regard to supporting NATO's health care transformation process.]. PhD thesis, Zrínyi Miklós National Defence University, Budapest, 2009. https://nkerepo.uni-nke.hu/xmlui/bitstream/handle/123456789/12177/ertekezes.pdf?sequence=1 (Accessed: 10 December 2022).

- Martinkó József: *Cőgerek és katkósok* [Cadets and Military Dormitory Students]. Petit Real Publishing House, Budapest, 1998, 7–16, 100–135, 136–151.
- Colonel Pölöskei János: *A képességalapú haderőtervezés* [Capability-based Force Planning]. Honvédségi Szemle, Vol. 149, No. 6 (2021), 36–46. http://real-j.mtak.hu/15069/26/HSZ_2021_6.pdf (Accessed: 23 November 2022).
- Siposné Kecskeméthy Klára (2017): *NATO-csúcstalálkozó az elrettentés és a védelem jegyében* [NATO Summit in the spirit of deterrence and defence]. Warsaw, 8–9 July 2016, *Hadtudomány* [Military Science], Vol. 27, No. 1–2 (2017), 114–126.
- Szenes Zoltán (ed.): *A mai NATO. A szövetség helyzete és feladatai* [NATO Today. The Situation and Tasks of the Alliance]. Zrínyi Publishing House, Budapest, 2021.
- Tálas Péter: *Negyedszázad magyar haderőreform-kísérleteinek vizsgálódási kereteiről.* [On the Framework of Investigating Hungarian Attempts at the Reform of the Armed Forces in the last 25 years]. In: Tálas Péter – Csiki Tamás (eds.): *Magyar biztonságpolitika* [Hungarian Security Policy], 1989–2014. Studies, National University of Public Service, International Institute, Centre for Strategic Defence Research, 2014, 9–22.
- *Töretlen a Honvéd Kadét Program népszerűsége* [The popularity of the Defence Cadet Program is unbroken]. 2022. https://honvedelem.hu/hirek/toretlen-a-honved-kadet-program-nepszerusege.html (Accessed: 13 December 2022).
- Zavodnyik Blanka*: Obsitosként és veteránként Magyarországon. Beszélgetés Ruszin-Szendi Romulusszal, a Honvédelmi Minisztérium humánpolitikáért felelős helyettes államtitkárával.* [Discharged Personnel and Veterans in Hungary. Conversation with Romulusz Ruszin-Szendi, Deputy State Secretary for Human Policy of the Ministry of Defence]. 2020. https://www.uni-nke.hu/hirek/2020/12/22/obsitoskent-es-veterankent-magyarorszagon (Accessed: 11 December 2022).

Internet sources

- 5th Fond group, educational institutes, https://mek.oszk.hu/01300/01340/html/fond09.htm.
- *A magyar nyelv értelmező szótára* [Interpretative Dictionary of the Hungarian Language]: https://mek.oszk.hu/adatbazis/magyar-nyelv-ertelmezo-szotara/kereses.php?.
- Available and eligible grants: https://kadetprogram.hu/osztondijak/.
- Headquarters Multinational Division Centre (HQ MND-C). https://defence.hu/tag/hq-mnd-c.html.
- HOLD Lexicon: https://hold.hu/lexikon/mesterseges-intelligencia-strategia-fogalma/.
- Middle East and North Africa (MENA). https://www.eeas.europa.eu/eeas/middle-east-and-north-africa-mena_en.
- NATO's new 8th Strategic Concept. NATO 2022 Strategic Concept. https://www.nato.int/strategic-concept/.
- *NATO 2030.* 2021. https://www.nato.int/nato_static_fl2014/assets/pdf/2021/6/pdf/2106-factsheet-nato2030-en.pdf.
- *NATO 2030: "Making a strong alliance even stronger".* https://www.nato.int/nato2030/.
- NATO: Readiness Action Plan (RAP). https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2016_07/20160627_1607-factsheet-rap-en.pdf.
- NATO: Regional Special Operations Component Command (R-SOCC). https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2019_10/20191022_1910-factsheet-rsocc.pdf.
- North Atlantic Treaty, §3. NATO – Official text: The North Atlantic Treaty, 4 April 1949. https://www.nato.int/cps/en/natolive/official_texts_17120.htm, https://www.nato.int/cps/en/natohq/official_texts_17120.htm?selectedLocale=hu.

- Office of the National Assembly: *A Honvédség aktuális külföldi katonai missziói* [Current Foreign Military Missions of the Hungarian Defence Forces]. Infojegyzet [Infonote], 2020/62 of 2 October 2020. https://www.parlament.hu/documents/10181/4464848/Infojegyzet_2020_62_honvedsegi_missziok.pdf/9fe7c180-a8a9-8573-c1ed-754bca3e026a?t=1601625018866.
- Patriotic and Defence Education – Defence Cadet Program https://kadetprogram.hu/.
- *Smart Defence and the Future of NATO: Can the Alliance Meet the Challenges of the Twenty-First Century*? Conference Report, The Chicago Council on Global Affairs, Co-authors: Dr. Aronsson, Lisa and Dr. O'Donnell, Molly, Chicago, Illinois, USA, 28–30 March 2012. https://espas.secure.europarl.europa.eu/orbis/system/files/generated/document/en/Conference_Report.pdf.

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Gábor Horváth

REMOTE TOWER: THE DEVELOPMENT VISION OF LOCATION-INDEPENDENT AERODROME CONTROL TAILORED FOR MILITARY PURPOSES

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ABSTRACT: *The first conceptual ideas regarding the provision of location-independent aerodrome control, also known as Remote Tower Service, were outlined over a quarter of a century ago. Despite the enormous technological leaps since then and the increasing prevalence of its application, the common notion persists that the paradigmatic symbol of air traffic control is a tower building with slanted windows, providing a circular view. Nonetheless, the tangible version of this concept developed directly for military purposes is yet to be unfolded but given proper nurturing, this technology has the capacity of positively transforming the conventional operational framework of military air traffic services, propelling its operational value. Therefore, the objective of this paper is to showcase the development directions that currently appear most promising from a military standpoint in the context of location-independent aerodrome control.*

KEYWORDS: *remote tower, location-independent aerodrome control, ATM, ATC*

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INTRODUCTION

The control tower, a symbolic icon of air traffic control, has traditionally loomed over airports, providing an unobstructed circular view through its slanted windows. However, this symbol is on the verge of transformation, largely driven by the remarkable advancements in the semiconductor industry that have unfolded over the past several decades. At the core of this transformation lies Moore's Law, a principle stating that computing capability, measured by the number of transistors on a chip, doubles every 18–24 months.[1] The exponential growth inherent in Moore's Law finds its foundation in the process of miniaturization, a defining characteristic of computer technology and the digital systems that underpin location-independent aerodrome control. Until recently, each aerodrome relied on a dedicated air traffic control tower, and the integrated systems within this facility, to ensure the safe, orderly, and expeditious flow of aircraft.[2] However, the field of Information and Communication Technologies has witnessed momentous progress lately, leading to the emergence

[1] DeBenedictis 2017, 72–75.
[2] Faber 2009, 18.

of the Remote Tower Service (rTWR) concept, encompassing the requisite components for implementing the provision of location-independent aerodrome control services at and in the vicinity of an aerodrome.[3] As already stated, the process of miniaturization plays a fundamental role in the development of these components, not only reducing their physical size but also diminishing their proportional energy consumption, while simultaneously driving down production costs.[4] These advantageous characteristics have culminated in a pivotal juncture, where the reliance on traditional airport control towers has become less imperative for providing modern air traffic services. With the aid of rTWR's toolkit, primarily comprised of camera systems, the task of aerodrome control can now be effectively carried out from remote locations, making this service less constrained by distance. The implications of this paradigm shift can lead to reshaping the whole landscape of – civilian and military – air traffic management, disclosing new possibilities that can be even further propelled by artificial intelligence. In this context, it is crucial to underscore that the objectives pursued by the civilian and military applications shall diverge to a considerable extent. The civilian sphere primarily seeks to augment flight safety, achieve fiscal optimization, and ideally, ascertain a more cost-effective alternative to conventional methods through the utilization of rTWR technology.[5] Conversely, the military domain shall primarily envisage gains that can be quantified in terms of human lives, owing to the fact that military air traffic controllers could provide air traffic services from a secured facility that might be placed at a distance from areas of operations. Therefore, the primary objective of this study is to outline the most optimized course for a military-centric development direction for the provision of location-independent aerodrome control services.

CONCEPT OVERVIEW

As evident from the introductory section, a fundamental distinction between the conventional control tower and the rTWR solution lies in their respective approaches to visual observation regardless of civilian or military applications.[6] Traditionally, controllers rely on unaided human vision from a tower situated at the airport. Conversely, in the case of a fully materialized rTWR concept, the controller's area of responsibility is comprehensively surveyed using digital imaging devices. These devices, primarily consisting of cameras installed at the aerodrome as presented in *Figure 1 (right)*, predominantly operate within the visible range of the electromagnetic spectrum, although not exclusively. The resulting motion imagery captured by these cameras is then relayed to a Controller Working Position (CWP), established remotely at the airport via a wired, wireless, or hybrid data connection, aiming for seamless communication *(Figure 1, left)*.

With regard to the aforementioned rTWR CWP, it is vital to underscore its nature as a consolidated station that integrates an array of monitoring and control functions. Therefore, its purpose extends beyond image data display for real-time air traffic tracking. It includes communication management, radar surveillance and flight data display, alert systems, weather information integration, operational tools, automation, and incident/event

[3] Fürstenau 2016.
[4] Horváth 2023, 55–68.
[5] Horváth 2023, 68–72.
[6] Fürstenau 2016.

Figure 1 *rTWR CWP (left) and rTWR camera configuration (photos taken by the author)*

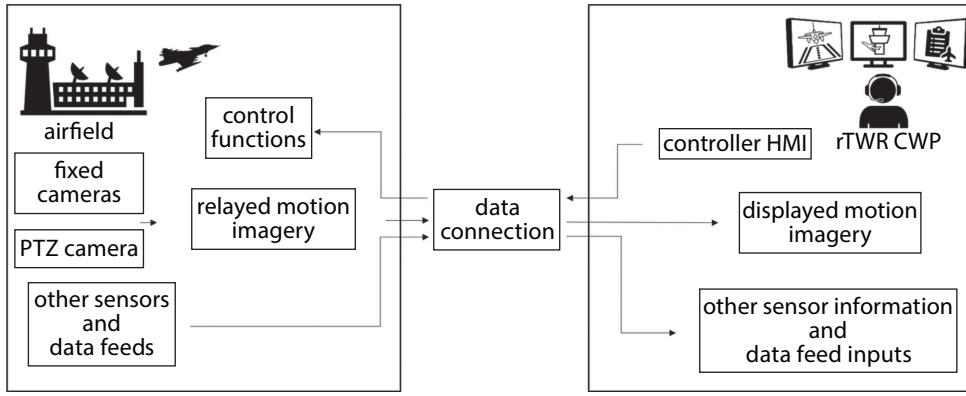

Figure 2 *Conceptual block diagram of rTWR (edited by the author)*[*]

[*] Technical and operational requirements for remote tower operations, 2017.

logging functions. Utilizing this description, *Figure 2* presents a conceptual block diagram of the rTWR system's operational overview.

The Initial NATO Position on Remote Tower Services concept fused the decades-long military experiences of remote sensing and piloting with the disruptive nature of location-independent air traffic control services.[7] This approach made it possible to realize rTWR's inherent military potential characterized by resiliency and deployability. Consequently, when considering military application, a distinction must be made between stationary-based rTWR solutions and those designed with deployability in mind.[8] In the case of stationary solutions, the airbase and the corresponding rTWR center are typically situated within a domestic environment. From these locations, they cater to general and specialized air traffic needs, predominantly military, during both peacetime and non-peacetime operations. This setup offers the advantage of a well-established infrastructure to support service provision and relatively straightforward redundancy implementation. How-

[7] NATO: *Initial Position on Remote Tower Services (RTS) concept*, Reference: AC/92WP- (2015) 0001, 2015.

[8] Vas 2019, 31–45.

Table 1 *Conceptual military environments of rTWR (edited by the author)*[*]

	Stationary rTWR (domestic environment)	**Deployable rTWR (operational environment)**
Applicability	at air bases, in times of peace and conflict, for GAT and OAT	at captured air bases or territories otherwise suitable for flight operations in times of conflict, mainly for OAT (note: it might be used for the aid of foreign and domestic humanitarian missions)
Regulations	civilian and military	military
Services	control, advisory, information, alerting	control (highly dependent on the reliability of data connection), advisory, information, alerting
Threat detection	desired	desired
Redundancy	must (mainly relying on wired connections and hardware elements)	recommended

Acronyms within this table:
GAT: General Air Traffic (GAT) encompasses all flights conducted in accordance with the rules and procedures of the International Civil Aviation Organization (ICAO). These may include military flights for which ICAO rules satisfy their operational requirements.
OAT: The term Operational Air Traffic (OAT) is applied to all flights which do not comply with the provisions stated for general air traffic (GAT) and for which rules and procedures have been specified by appropriate national authorities. Most OAT flights are operated by military agencies.

[*] Horváth 2023, 37–51.

ever, within this context, the system in some cases must also adhere, as shown in *Table 1*, to civilian regulatory requirements.

It is noteworthy to revisit the introductory statement, emphasizing the iconic symbol of air traffic control: the dominant structure called the tower building with slanted windows, providing a circular view. While this control tower commands respect during times of peace, it becomes a highly valuable, easily identifiable, and non-redundant target, challenging to defend during times of conflict. Consequently, the elimination of a conventional control tower at an average airport would lead to the cessation of air traffic services in the respective area. In contrast, a well-structured rTWR configuration presents numerous smaller targets that are more challenging to identify, easier to defend, and functionally redundant. The cumulative impact of these characteristics significantly enhances the resilience of the airbase's air traffic services, bolstering their ability to successfully withstand adversarial actions. In the context of deployable solutions, the concept primarily pertains to times of conflict when air traffic services are provided by captured airbases or territories otherwise suitable for flight operations. Within the deployable context, possible hostile activities must be addressed, although the other set of challenges lies in assessing the qualitative and quantitative factors of infrastructure. However, regardless of these challenges, the utilization of rTWR technology can serve as a critical tool to enhance the resilience of air traffic services in the areas of operations and safeguard forces. Military air traffic controllers can effectively carry out their duties from protected and/or secure facilities located away from the threatened region. It is important to note that the deployable rTWR concept also raises significant technological challenges, particularly in terms of data connection. In this environment, where bandwidth is likely limited, the transmission of real-time high-resolution image data with low latency becomes a fundamental concern.

VISION OF OPERATION

The vision of location-independent aerodrome control systems tailored for military purposes is built upon four pillars: hardware, software, manware, and netware collectively referred to as the *4W principle*.[9] While certain aspects of these elements find existing civilian applications, and in some cases, specific elements may already have adapted military versions, a comprehensive conceptualization of a military rTWR system based on the given essentials is yet to be presented. The 4W principle unfolded below omits, to the possible extent, redundant references to the sub-elements (e.g.: cameras) mentioned in the concept overview, as these have already enjoyed ample publicity rTWR scope-wise and more.

Hardware

To ensure optimal service quality within the designated airspace, an air traffic controller must precisely locate and track aircraft and other relevant elements, such as birds, in real time.[10] Embracing the rTWR concept, the integration of active and passive surveillance hardware, uncommon at civil airports, might be beneficial regardless of the cost. In the former category, Light Detection and Ranging (LiDAR) stands as a particularly promising option. LiDAR is a remote sensing method that uses laser pulses to measure distances and create precise three-dimensional representations of objects and environments.[11] Its accuracy, real-time data capabilities, and ability to penetrate certain weather conditions offer significant advantages for enhancing military air traffic services. However, cost, limited range, line of sight limitations, vulnerability to atmospheric conditions, and integration challenges are aspects that should be carefully considered before implementing LiDAR-based systems in rTWR environments. Assessing the specific needs and requirements of each rTWR facility is essential to determine whether LiDAR is the optimal choice for their operations. In the context of the latter category, landscape, at least R&D-wise, might become more intriguing. While passive surveillance trackers like VERA-NG[12] already utilize multilateration, the Time Difference of Arrival principle,[13] offering a novel solution integrating this passive surveillance approach with diverse optical (including passive infrared) and acoustic sensors, holds a two-fold promise. First, with the envisioned surveillance solution, which currently resides solely in the conceptualization described in this paper, one can utilize the Johnson criteria[14] values from detection through recognition to target identification. Second, the discreteness of this surveillance procedure is ensured by the passive nature of the device. Even though the R&D procedure of such a system requires a substantial investment,

[9] The 4W principle, developed by the author, primarily summarizes the essential development pillars of an rTWR system tailored for military purposes (and may potentially be applicable for the description of other development concepts tailored for military purposes as well). Manware is a made-up word for this principle and is derived from two words: human and hardware/software. Netware is also a made-up word for this principle and is derived from two words: network and hardware/software.

[10] Palik (ed.) 2018.

[11] Peyrin et al. 2023.

[12] VERA-NG passive radar is an electronic support measures system that uses three or four sites to accurately detect, recognize, and track airborne emitters. The manufacturer is ERA a.s., based in Pardubice.

[13] Time Difference of Arrival (TDoA) principle is a positioning methodology that determines the difference among the time-of-arrival of radio signals.

[14] The Johnson Criteria is a standard used for DRI (Detection, Recognition, and Identification). It is calculated based on how many pixels are necessary in order to make an accurate evaluation of your object.

the system's advantages perceived in augmenting military operations, enhancing threat detection and flight safety may justify the associated costs in a mission-critical context. Notably, the integration of sensor data from a remotely piloted aviation system (RPAS) tailored for rTWR can substantially elevate the operational value of the provided air traffic service.

Software

The exponential growth of artificial intelligence (AI) and big data operations presents promising software opportunities for location-independent aerodrome services. However, akin to hardware, the primary objective remains the same: ensuring the quality of service through the production of the best-recognized air picture available.[15] Consequently, the already existing pivotal functions encompass the following:[16]

- following (PTZ),
- tracking,
- labeling,
- alarming.

The following (PTZ) function is a control mechanism, digitizing the use of physical binoculars in order to provide enhanced resolution and close-up views of specific locations or objects. Tracking involves focusing on designated pixels using image processing algorithms or direct selection of the operator. Labeling associates and displays relevant information from a database (e.g., flight plan data) in connection with the tracked/followed aircraft, while the rTWR system must promptly issue visual and/or auditory alerts in case of adversarial actions, critical malfunctions, or flight safety risks. Nonetheless, these examples merely encompass presently known civilian rTWR implementations, while the integration of artificial intelligence and big data management into the military concept demands exquisite creativity and thinking beyond traditional boundaries. First, by processing real-time data from the system's sensors, big data analytics and AI algorithms could provide comprehensive situational awareness to military air traffic controllers. This enables the detection, recognition, and identification of potential targets, distinguishing between friendly and hostile objects, and detecting anomalous activities. AI also offers decision support for optimal flight paths, mission planning, and risk assessments. Furthermore, these technologies can automate routine tasks, reduce the cognitive load on operators, and aid in emergency situations by processing vast amounts of data in real time. With the integration of various surveillance systems, AI enhances the detection of stealthy or low-observable threats. It also facilitates data fusion from multiple sources, improving intelligence gathering and cybersecurity, thereby ensuring the system's resilience against potential cyberattacks. Continuous learning and adaptability can enable military rTWR systems that are propelled by AI to handle dynamic operational environments effectively. In conclusion, the assimilation of big data and AI technologies empowers location-independent aerodrome control systems tailored for military purposes to achieve optimal air traffic control, airspace management, and swift responses to potential threats. This seamless integration bestows a competitive edge, bolstering safety and security within the controller's airspace and elevating the overall effectiveness of military operations.

[15] Csengeri 2018, 159–175.
[16] Zhang et al. 2020.

Manware

In the aviation domain, and more particularly in air traffic management, human involvement remains paramount, even in future scenarios where direct human intervention evolves into a supervisory role. This statement, even as machine learning and artificial intelligence become increasingly prevalent, must be taken into account in all software and hardware development, particularly in ensuring situational awareness for air traffic controllers. A significant challenge facing military rTWR operations gravitates toward the paradox of determining the optimal image refresh rate (frames per second, FPS).[17] Striking the right balance is critical, as an excessively low FPS may lead to mission-critical failures and flight safety risks, while an excessively high FPS can strain bandwidth and degrade image resolution, compromising the quality of the service. In operational environments, the challenge becomes more pronounced, particularly when providing air traffic services for fast, maneuverable military aircraft and other objects requiring following, tracking, and/or labeling with limited bandwidth availability. Here are two possible solutions to address this bottleneck:

1. *Less is more principle:* transmitting rTWR sensor network data to a remote location, which is far from the conflict zone, through satellite communication, since other wired or wireless options are not suitable, ultimately embracing the bandwidth bottleneck nature of the system. This calls for optimal use of available bandwidth and prioritizing data sources based on task-centric relevance. Presumably, this principle will result in a limited air traffic service requiring serious compromises but the protection of the personnel is guaranteed with great certainty.
2. *More is a must principle:* integrating the rTWR sensor network data into a center situated at a suitable distance, using wired, wireless, or hybrid connections, providing the required data throughput with minimal delay in order to address the bandwidth bottleneck challenge. In the case of an occupied airport, this implies that the implementation of an rTWR center would offer superior protection compared to a conventional tower due to its hard-to-reach location and fortified design. Presumably, this principle will result in a good level of air traffic service without making any serious data-related compromise but the protection of the personnel is guaranteed with a lower level of certainty compared to the *less is more principle*.

Additionally, the perception of digital imagery by air traffic controllers, acquired through conventional means from a controller tower, significantly influences the system's efficacy. Intensive simulator training and practice acquisition can be effective measures to address this factor.

Netware

Many systems that exhibit remarkable tolerance to failures share a defining characteristic: highly interconnected and intricate networks. A cell's robustness is concealed within its complex regulatory and metabolic network; society's ability to bounce back is rooted in the interwoven social fabric; the economy's stability is upheld by a delicate web of financial and regulatory organizations; an ecosystem's ability to survive is encoded in a

[17] Jakobi – Hagl 2018, 22–26.

meticulously crafted network of species interactions. It appears that nature's inclination towards interconnectivity serves as a widespread strategy to achieve robustness.[18] With this in mind, a tridirectional network architecture of rTWR must be the prevalent choice to advance. The present landscape of military and civilian rTWR applications, as depicted in *Figure 2*, primarily involves a bidirectional data exchange between system components and the controller. However, this approach fails to fully encapsulate, and consequently unlock, the full military potential of this technology, namely, the incorporation of the NATO Network Enabled Capability (NECC)[19] concept. When developing a location-independent aerodrome control system tailored for military purposes, it naturally yields a substantial volume of high-quality, mission-critical data, currently restricted to the confines of air traffic management operations. Nonetheless, by factoring in the NECC concept, a new realm of data connections emerges – emanating from the military ATM system, yet profoundly beneficial for other stakeholders. Naturally, this endeavor entails identifying potential beneficiaries who can leverage the data delivered by the military rTWR system to augment their performance. These beneficiaries may extend beyond the NATO Integrated Air and Missile Defence (IAMD),[20] encompassing strategic and tactical air defence elements, while also extending to fortifying the physical defence capabilities of the pertinent airbase. The NECC integration unlocks the potential for seamless data sharing, fostering a collaborative operational environment among diverse military entities. This enables various stakeholders to access real-time, comprehensive situational awareness, facilitating informed and timely decision-making. For instance, strategic air defence units can capitalize on the rTWR's precise and timely air traffic data to bolster their threat assessment capabilities and deploy resources effectively. Simultaneously, tactical air defence units can optimize their response strategies based on the real-time surveillance of airspace activities facilitated by the rTWR system. Additionally, the data generated by the military rTWR system can significantly contribute to mission planning and execution, elevating operational efficiency and effectiveness, thereby harnessing the potential of each component and amplifying the collective impact.

CONCLUDING REMARKS

It can be reasonably asserted that the disruptive nature of location-independent aerodrome control will result in a paradigm change in, both civil and military, aviation domains. This becomes an ever more intriguing statement when Imre Porkoláb's thoughts – that nowadays military research and development (R&D) is based on the basic research of the civilian scientific world[21] – are added to the formula. Interpreting it, as it was highlighted throughout this paper, the partial or full application of rTWR technology in military environments, both foreign and domestic, promises substantial advantages by enhancing the quality and the resiliency of the air traffic services. The conceptualized deployable rTWR solution following the *more is a must principle* stands out as the most beneficial direction

[18] Barabási 2014.

[19] NNEC is the Alliance's ability to federate various capabilities at all levels, military (strategic to tactical) and civilian, through an information infrastructure.

[20] IAMD is an ability to protect Alliance territory, populations, and forces against air and missile threats and attacks.

[21] Porkoláb et al. 2021, 11–22.

for the military context. This statement characterizes the conventional air traffic systems, necessitating a reasonable degree of compliance with civil regulations while relying on non-redundant, easily targetable control towers. In contrast, rTWR solutions offer functionally redundant, separated, and more defensible targets, bolstering the survivability of the service and ultimately, the personnel. These attributes can be achieved in an rTWR system tailored for military purposes by following the *4W principle*. This entails that, as the hardware element integrates active and passive surveillance systems, the software elements propelled by artificial intelligence and big data analytics are pivotal in achieving comprehensive situational awareness, target detection, and risk assessment, ultimately enhancing military air traffic management in dynamic operational environments. Furthermore, the manware element emphasizes the importance of human involvement revolving around the issue of situational awareness, with particular attention to the conundrum of defining the optimal FPS rate. The last element discussed is netware that brings attention to the significance of tridirectional rTWR networks supporting mainly, but not exclusively IAMD needs. In summary, the development and the deployment of rTWR in military contexts have the potential, given proper nurturing, to change the landscape of the military aviation domain. Particularly, the deployable rTWR solution standing on the pillars of the *4W principle* can deliver tactical superiority and strategic advantage, while elevating the effectiveness, alongside the security and the safety of military air operations. The synergy created through the overarching technological integration fosters a highly adaptive and formidable military force, equipped to safeguard national interests and address contemporary security challenges effectively. This ultimately culminates in a more robust, resilient, and adaptable military ecosystem beyond air force needs, capable of countering evolving threats and dynamic challenges.

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BIBLIOGRAPHY

- Barabási Albert László: *Linked: How Everything Is Connected to Everything Else and What It Means for Business, Science, and Everyday Life*, Basic Books, New York, 2014.
- Csengeri János: *Remote Towers II*, Hungarian Defence Review, Vol. 146, No. 1 (2018), pp. 159–175, https://kiadvany.magyarhonvedseg.hu/index.php/honvszemle/article/view/315, Accessed: 24 July 2023.
- DeBenedictis, Erik P.: *It's Time to Redefine Moore's Law Again*, Computer, Vol. 50, No. 2 (2017), pp. 72–75, DOI: 10.1109/MC.2017.34.
- Faber, Christian: *Safe, orderly and expeditious flow of air traffic*, Hindsight (8), Brussels, 2009, p. 18.
- European Aviation Safety Agency*: Technical and operational requirements for remote tower operations*, Notice of Proposed Amendment, 2017. Online: www.easa.europa.eu/downloads/44661/en.

- Fürstenau, Norbert: *Virtual and Remote Control Tower – Research, Design, Development and Validation*, Springer, Berlin, 2016.
- Horváth Gábor: *A fedélzeti menetrögzítő kamerák légi oldalon közlekedő gépjárművekben történő alkalmazásának vizsgálata*. In: Gőcze István – Padányi József (eds.): Húsz év a katonai műszaki tudományok szolgálatában. Ludovika University Press, Budapest, 2023, pp. 55–68.
- Horváth Gábor: *A helyfüggetlen toronyirányítás, mint a reziliens katonai légiforgalmi szolgáltatás eszköze*, Haditechnika, Vol. 57, No. 2 (2023), pp. 68–72, DOI: 10.23713/HT.57.2.13.
- Horváth Gábor: *Defining Minimum Performance Standards for Optical System Required for the Provision of Location Independent Military Aerodrome Control Service*, Aeronautical Science Bulletins, Vol. 34, No. 2 (2023), pp. 37–51, DOI: 10.32560/rk.2022.2.4.
- Jakobi, Jörn – Hagl, Maria: *Effects of Lower Frame Rates in a Remote Tower Environment*. In: The Tenth International Conference on Advances in Multimedia, Athens, 2018, pp. 22–26.
- NATO: *Initial Position on Remote Tower Services (RTS) Concept*, Reference: AC/92WP- (2015) 0001, 2015.
- Palik Mátyás (ed.): *A repülésirányítás alapjai*, Dialóg Campus Kiadó, Budapest, 2018.
- Peyrin, Frédéric – Fréville, Patrick – Montoux, Nadège – Baray, Jean-Luc: *Original and Low-Cost ADS-B System to Fulfill Air Traffic Safety Obligations during High Power LIDAR Operation*, Sensors, Vol. 23, No. 6 (2023), DOI: 10.3390/s23062899.
- Porkoláb Imre – Hennel Sándor – Hegedűs Ernő: *Az innováció fókuszú digitális fejlesztésen alapuló stratégia*, Hadtudomány, Vol. 31, No. 3 (2021) pp. 11–22, DOI: 10.17047/HADTUD.2021.31.3.11.
- Vas Tímea: *The Military Specifications of Remote Control Tower Technology*, Advances in Military Technology, Vol. 14, No. 1 (2019), pp. 31–45, DOI: 10.3849/aimt.01240.
- Zhang, Yongli – Zhengning, Yu – Liang, Zeng: *Analysis of Remote Tower System*. In: 2020 IEEE 2nd International Conference on Civil Aviation Safety and Information Technology (ICCASIT), pp. 128–133, Weihai, 2020, DOI: 10.1109/ICCASIT50869.2020.9368521.

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Imre Nagy

EMERGING THREATS IN THE USE OF IMPROVISED WEAPONS IN AFRICA

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ABSTRACT: *Nowadays, we experience a devastating interstate conventional war on the European continent, right beyond our borders: Hungary and Europe share the same concerns about their security, seeing the long-continued armed conflict in Ukraine with doubtful outcomes. After the genocide-laced civil war in Yugoslavia and NATO's intervention in Kosovo – having the continental security architecture*[1] *–, there was a realistic hope to keep up peace and stability in Europe itself and its direct neighbourhood. Via United Nations, NATO, and EU missions there was a chance to stop the spillover of tensions even from distant regions and foster positive changes in the war-torn, failed, and fragile countries. However, these days we have to rethink threats, challenges, and risks, and adjust possible reactions – while not forgetting about but rather taking into account the effects of asymmetric conflicts of the recent past. Al-Qaeda and Islamic State-inspired terrorist networks show continuous and fatigueless efforts to improve their effectiveness in the use of improvised weapons – which could influence conventional warfare, as we see it now, in Ukraine.*

KEYWORDS: *non-state armed groups (NSAGs), improvised explosive devices (IEDs); tactics, techniques, and procedures (TTP); foreign terrorist fighters (FTFs)*

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INTRODUCTION

This article highlights the importance of experiences and lessons learned from asymmetric conflicts – in this case, from Africa – since several elements show up even in conventional wars, making them more complicated and unsystematic: the complexity of modern battlefields cannot be simplified to maps with "blue" and "red" arrows, especially on tactical and operational levels. However, in the long term, the threats posed by improvised explosive devices (IEDs) also have strategic impacts, undermining all efforts to set the conditions for freedom of movement, a safe and secure environment, peace, and stability efforts.

[1] With pillars like the Organization for Security and Co-operation in Europe (OSCE), NATO (with the Partnership for Peace program, the NATO-Russia Council, the NATO-Ukraine Commission, the Mediterranean Dialogue, and the Istanbul Cooperation Initiative), and the European Union (with the Common Foreign and Security Policy (CFSP) and the Common Security and Defence Policy (CSDP)).

Conventional warfare has become more hybrid, affected by the know-how of non-conventional conflicts: creative usage of improvised weapons, weaponized drones, booby traps, emplaced IEDs (mines/hand grenades modified to main charges), and Vehicle-born IEDs (VBIEDs) – all we could see formerly in Iraq, Syria, or Afghanistan, used by non-state armed groups (NSAGs) – and now in Ukraine, by regular forces.

Studying other conflicts – the ongoing Libyan or Yemeni civil wars, the inventive warfare of ISIS from 2014, or the Second Nagorno-Karabakh War in 2020 – can drive us to important conclusions and ideas. Let us examine the Salafi-Jihadist organizations in Sub-Saharan Africa, which are in a continuous offensive, in line with the Islamic State's motto: "surviving and expanding". These groups are harsh, cruel, effective, and innovative, strenuously looking for new ways and methods to fatigue enemies by developing their TTPs (tactics, techniques, and procedures). As wars and clashes are now presented in detail in the media, the theatres of war are not that far anymore. Solutions that we see on one battlefield may show up the next day thousands of kilometres away. Africa is an instructive arena to study.

WHY IEDS ARE SO IMPORTANT AS THREATS?

The flow of knowledge on how to produce and employ improvised weapons[2] is a phenomenon of not just the past two decades – for instance, Irish Republican Army (IRA) bombmakers went to South America to train leftist guerillas,[3] and later the "bomba patata", used by the Revolutionary Armed Forces of Colombia (FARC), has appeared in the Mexican drug war.[4] IEDs are now much more than old-fashioned pipe bombs and widely known roadside bombs.

The importance of the threat by IEDs should not be underestimated: between October 2010 and the end of September 2020, 171,732 people became victims (80% of those harmed were civilians) during 11,971 IED incidents recorded worldwide. Some 58% of these happened in populated areas and in such cases, 90% of the victims were civilians (33,091). Regarding armed forces, in the case of the US military, it means that in Iraq, 52% of those killed died from IEDs, while in Afghanistan 48.2%.[5]

Despite all efforts to reduce this menace, human losses just like the infrastructural and material damages have remained high ever since. The reason behind this is partly that individuals, groups, and networks using IEDs are continuously learning and looking for new solutions technically and tactically to increase effectiveness. However, civilian communities, local authorities, and security forces are not prepared and proficient enough to handle this threat coming in diverse forms.

Types of IEDs are made depending on the general goal of the perpetrator and the special intent of the attack, the skills and expertise of the bombmaker, and the physical resources available for the group and the IED-builder. These devices act as a force multiplier due to their surprising element and ability to claim a high number of victims.

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[2] Improvised weapon is an inclusive category: beyond Improvised Explosive Devices (IEDs) and Improvised Incendiary Devices (IIDs), everyday objects used even with tiny modifications (like knives for mass stabbing, vehicles for ramming), home-made/craft-produced/makeshift/do-it-yourself weapons (handguns, grenade launchers, etc.), and improvised CBRN (chemical, biological, radiological, and nuclear) devices also belong to it.

[3] Forero 2001.

[4] Bunker et al. 2020.

[5] Overton 2020.

Booby traps from hand grenades and mines were widely used during the Second World War, later some middle eastern groups and the IRA were pioneers in Homemade Explosives (HMEs); also, guerillas of Indochina, Columbia, and the Tamil Tigers in Sri Lanka also contributed to widening the assets of irregular warfare. Later, low-profile preparations and massive, media-attractive theatrical attacks were typical of Al-Qaeda operations. However, the Islamic State itself was the most innovative actor in IED use: it had its own controlled area and infrastructure for research and development, and also for mass production. ISIS was able to gather experts from all around the world and – despite the endless fight and international military pressure on it – concentrate resources and knowledge on IED improvement efforts.

For instance, ISIS had no air force – even though it captured airfields, aircraft, and ground support equipment –, so, it gained that by commerce, and later made drones for itself, partly weaponizing them, and also organised training for drone operators and technicians.

The self-made caliphate was also unable to employ captured heavy artillery devices and tanks as being easily vulnerable to Syrian-Russian and Western-backed coalition air forces. To have such capabilities, it applied SVBIEDs (Suicide Vehicle-borne IEDs) in large numbers, dominantly in support of offensive operations, not just against terrorist attacks. Different generations of SVBIEDs were used: motorbikes, cars, vans, and trucks with casual civilian or official (military, police, ambulance) appearances to avoid being discovered before the precise moment of the explosion. In other cases, armoured versions approached their targets with an obvious aim – this time, the dreadful psychological impression, as well as the protection of the suicide driver and the carriage's essential parts were prioritized. Many times, an integrated gunner or a squadron supported the vehicle's move with suppressive fire. Having a limited view from inside, usually a motorcyclist led the driver toward the target or a drone transmitted live pictures of the surrounding area from above. Tactically – similarly to drone swarms – SVBIEDs were applied in waves, or they attacked from different directions or at different times, having enormous psychological effects and overburdening the surprised defenders.

As we see, employment of different types of IEDs gives a "tactical flexibility" to perpetrators:

Secondary/tertiary IEDs: might be timed, victim-activated, or command-operated devices (by the perpetrator), targeting security forces, first responders, or Explosive Ordnance Disposal specialists acting on the scene or concealed in potential or obvious parking areas or helicopter landing zones to increase casualties and unsettle reacting forces. These should be placed close enough but not harmed by the explosion of the primary IED.

Simultaneous/synchronized attacks: cover the activation of explosive devices in the same city's suburbs or several towns at the same time, or coordinated attacks in a wider area in a small timeframe. They were launched in Baghdad, Kabul, and Mogadishu, giving the feeling that the enemy was everywhere and able to strike anytime, while the government could not provide protection.[6]

[6] For example, in November 2020, parallel attacks occurred against military Camps Gao, Kidal, and Menaka in Mali – as revenge after the French forces killed a military leader of Al-Qaeda's North African wing. Even Gao–Kidal are 286 km apart as the crow flies, Gao–Ménaka 264 km, and Kidal–Ménaka 300 km, so, the driving distances are even longer, even though the jihadist columns do not have sparse road networks. Coordination was essential to delivering the message of vengeance.

„Come-on" scenarios: lure security forces into a territory (minefield or with IEDs), where their firepower superiority and space for maneuvers is drastically reduced and favourable conditions are prepared for ambush. A well-known method is to overrun military positions/checkpoints, then retreat, and wait for Quick Reaction Forces to run into the ambush. An IED blast can be the opening element of the attack before the firefight or the closing element: as the attackers are short of ammunition and surrounded, they explode their suicide vests to avoid capture.

IEDs might be used for attack, defence, and timed operations: improvised explosive devices can be used for strikes – at a chosen time and spot by users – against armed forces and civilian targets. These destructive mechanisms might also play a protective role for bombmakers' homes and bomb factories, hideouts, caches, and tunnels – making it risky for search and intervention forces to enter such compounds. On a larger scale, we have seen how the foreground of cities in Iraq was filled with IEDs – like minefields – to slow down and channel the movement of the approaching enemy troops. During urban fights, victim-operated IEDs were hidden in several buildings so that when assault teams entered through doors and windows, the building, or in other cases, the structure or the attic undermined with explosives, collapsed on the forces inside. In the case of SVBIEDs hidden in garages, someone – having a live picture from drones above – is waiting for a command to attack any concentration of troops on ruined streets.

Lone wolves: individuals isolated or connected to any terrorist network only via the internet. They do not have to travel to suspicious destinations to get training, risking arrest or unwanted attention. Some are "hybrid militants" radicalized online, who receive an easy-to-use weapon or following (self-)indoctrination look for recipes to produce homemade explosives (HME) and IEDs from commercially available components.

Suicide missions: the perpetrator sacrifices his/her life intentionally, using a suicide belt/vest or explosive-laden vehicle, choosing the most suitable moment to maximize the number of victims or get as close as possible to the High-Value Target person(s). The device itself is easy to create and, unlike in hazardous shoot-outs, minimal human resources are needed with limited training. Such attacks cause a generally high number of casualties and attract media attention. Women and children are often used to deliver such devices as they are considered less dangerous by security persons; furthermore, in some cultures they are untouchable.[7]

It is worth mentioning here that there are no limitations regarding the use of IEDs: knowledge, creativity, and access to components may narrow down the circle of possible users, otherwise they choose when, where, and how to operate the devices. Learning quickly from the attacks makes the attackers more powerful, while security forces need more time to study cases, share the lessons learned, invent new counter-measures, and install efficient equipment; "bad guys" do not have such obligations. Finally, the exploitation of IED events is essential to have a wider effect and maximize the profit from them: blowing up a patrol or convoy somewhere on a dirt road is a loss of crew and equipment, known only by those who were present and their unit and commanders. If it is recorded on video or by a drone to be shared as propaganda, thus advertising the group's success, it can magnetize recruits and financial support for the case fought for.

[7] "In the last decade (2010–2020), there were 2,113 suicide attacks in 47 countries." „Overall, suicide attacks killed 26,119 people and wounded 49,081." Overton 2020.

AFRICA

In the past years, Africa has become not just the main area for Al-Qaeda and the Islamic State to gain ground and preserve their ideologies through their local affiliates but also sites where they are capable of exploiting knowledge of the above-mentioned weapons of their choice. The flow of battle-hardened foreign terrorist fighters (FTFs) and bomb-maker experts – with useful skills and experiences, and no less important human networks – made local insurgent groups more dangerous. Although the Salafi-Jihadi groups are not widely supported by the local population and do not have a high number of active fighters,[8] they are still very efficient, acting pro-actively and aggressively, having initiative, and being adaptive with high mobility, guided by the strategy of destabilization.

Based on data from the African Union, 426 terrorist attacks (226 against civilian targets, 160 against security forces, 21 against international organizations, and 18 against government institutions/offices) were recorded between 1 January and 31 March 2023, which resulted in 2,809 deaths across Africa: 1,226 were civilians, 788 military/security personnel, and 795 terrorists. Out of the attacks, 102 involved the use of IEDs, resulting in the death of 412 people (15%).[9]

The main areas of operations in Sub-Saharan Africa, where Al-Qaeda and the Islamic State operate parallelly against civilian, military, governmental, and international targets in epicentres of terrorist activity but also fight resolutely against each other are:

– the Sahel Belt (Mali, Burkina Faso, Niger, Mauretania in a lower degree, and Chad), including the coastal states of West Africa (Benin, Togo, and Ivory Coast): JNIM[10] and ISGS/ISSP are active here;[11]
– Nigeria and Lake Chad Basin (Niger, Cameroon, and Chad): Ansaru,[12] Boko Haram (JAS), and ISWAP are present;[13]
– the Horn of Africa (Somalia, Kenya, Uganda, Ethiopia, and Djibouti): with strongholds of al-Shabaab[14] and ISS;[15]

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[8] Depending on the period, the estimated number of warriors for ISGS (in Mali) or ISS (in Somalia) is 100–300, up to ISWAP's 3,500–4,000 (in Nigeria) and al-Shabaab's 7,000–12,000 (in Somalia).

[9] Total attacks and deaths recorded for the first quarter of 2023 increased by 43% and 60% respectively when compared to the period from October to December 2022, which means 298 attacks and 1,761 deaths. See: African Centre for the Study and Research on Terrorism (ACSRT) 2023.

[10] *Jama'a Nusrat ul-Islam wa al-Muslimin* (JNIM, Support Group for Islam and Muslims) is a conglomerate of Al-Qaeda sympathizer groups from 2017, made up of Al-Qaeda in the Islamic Maghreb (AQIM), Ansar Dine, Al-Mourabitoun, and Macina Liberation Front.

[11] Islamic State in the Greater Sahara (ISGS) derived from a splinter group of Al-Mourabitoun, turning to Islamic State in March 2015. From March 2019 to 2022, ISGS was formally part of the Islamic State West Africa Province (ISWAP), then ISIS declared the province autonomous and named it Islamic State Sahel Province (ISSP).

[12] The *Ansar al Muslimeen fi Bilad al Sudan* (Ansaru, Vanguard for the Protection of Muslims in Black Africa) group broke with Boko Haram in 2011, became loyal to Al-Qaeda in North Western Nigeria, and allied with JNIM in 2021.

[13] Popularly used designation but the self-identification is *Jamā'at Ahl as-Sunnah lid-Da'wah wa'l-Jihād* (Group of the People of Sunnah for Call and Jihad, JAS). Its origins go back to the early 2000's. First, it made connections to Al-Qaeda in the Islamic Maghreb (AQIM) but in 2015 turned to ISIS. In 2016, the group split up, resulting in the emergence of the ISWAP. JAS had a stronghold in Sambisa Forest, while their counterpart was in the swampy Lake Chad area.

[14] Officially *Harakat al-Shabaab al-Mujahideen*, it was created around 2006 as a resistance against the intervention of Ethiopia, led by the principles of nationalism and Islam. It has pledged allegiance to Al-Qaeda in 2012.

[15] Islamic State in Somalia, formed from al-Shabaab deserters in October 2015, based in Puntland.

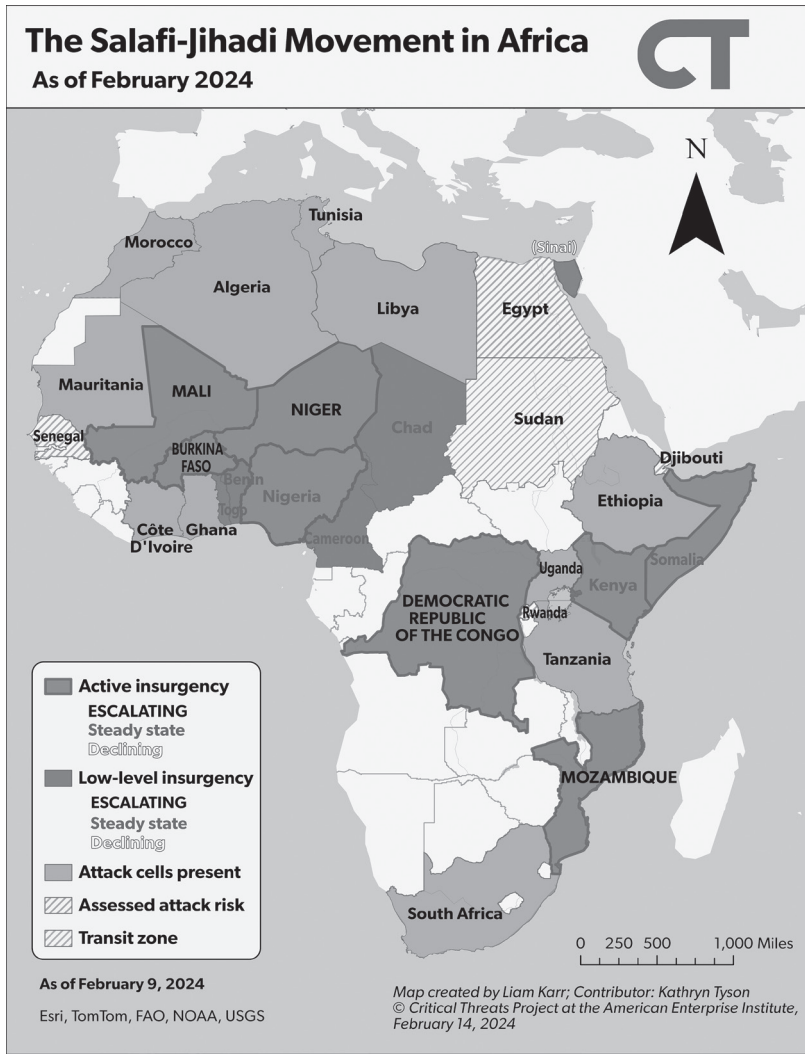

Figure 1 *Jihadist areas of operations and identified sleeper cells across Africa*
(Source: https://criticalthreats.org/analysis/salafi-jihadi-movement-weekly-update?_cf_chl_tk)

– Central Africa (the Democratic Republic of the Congo (DRC) and Uganda): ADF/MTM/IS-CAP;[16]
– Southeast Africa (Mozambique and Tanzania): ASWJ/IS-CAP/IS-Mozambique.[17]

[16] The Allied Democratic Forces originally were a Ugandan rebel fraction against the government, founded in 1994. Losing territories, it moved to the Eastern part of the DRC and transformed into a hardliner Islamist organization, sometimes using the name *Madina at Tauheed Wa Mujahedeen* (City of Monotheism and Holy Warriors, MTM). In 2019, being a local representative of the Islamic State, it received the name Islamic State – Central Africa Province (IS-CAP).

[17] Despite being called Islamist radicals (al-Shabaab Mozambique) by locals, they were actually a local branch of IS-CAP from 2017 until 2022, when it became independent as the Islamic State – Mozambique. It named itself *Ahlu Sunna Wal Jamaa* (People of the Sunna and Community, ASWJ).

The Sahel

Salafi-Jihadi groups and pro-separatist movements initially fought on the same side of the Northern Mali rebellion in 2012, before the French-led intervention in 2013 helped split the non-jihadist Tuareg rebels from Islamist radicals. One reason for their initial success was that "arms trafficking from Libya, especially during 2012–13, significantly enhanced the military capacity of armed opposition groups in Mali […] by providing them with types of weapons that were previously rare or unavailable".[18] Further resources came from Malian army equipment from captured bases and illicit regional markets. The use of captured or unexploded military ammunition and smuggled mines led to significant improvement in IEDs and booby traps.[19]

In most cases, simple victim-operated IEDs and mines are planted under carriageways and dirt roads, or hidden on the roadside. The diffuse road system and conditions limit the use of alternative ways, making the maneuvers of possible targets (lone armoured and light vehicles, or convoys) predictable. Repeated destruction of bridges and main supply routes with IEDs isolated huge areas from government control and exposed the population to the extremists. The goal was the same behind the demolition of transportation and communication systems.

However, the most dangerous course of action is still a complex attack: a well-known example was when at 3 a.m. on 24 February 2019, the Koulikoro Military Training Center – hosting the European Union Training Mission in Mali – suffered a combined attack as 2 SVBIEDs tried to get through the main gate to eliminate guards and physical obstacles.[20] Gunmen also opened fire on the entrance, trying to sneak inside the camp and massacre as many soldiers inside as possible. Also, from another direction, on the hillside of Mount Keita, fighters shot inside the garrison to maximize chaos and the number of victims. Despite extensive planning and preparation, the execution was poor and finally "one of the drivers detonate[d] an explosive vest inside the vehicle. The second exploded in the vicinity of the center entrance, but did not cause significant damage."[21]

At the beginning of October 2019 in Boulékéssi and Mandoro, almost 40 soldiers died and 60 went missing in action in semi-simultaneous attacks. In November in Indelimane (Menaka region), close to the border with Niger, at least 53 soldiers were killed in a complex attack that "involved at least three suicide bombers who detonated explosives inside the military camp".[22] In the following years, concentrated attacks – ambushes, raids – continued against security forces, eroding their strength and morale; and the situation has still not gotten better. On 22 April 2023, the Malian Armed Forces garrison in Sévaré was attacked at the airport next to the UN camp. The potential targets were Russian Wagner instructors stationed there but the attack was repulsed and "three vehicles filled with explo-

[18] Such as anti-tank weapons, mortars, heavy machine guns, anti-aircraft guns, or SA-7 Man-Portable Air Defence Systems (MANPADS), 14.5mm heavy machine guns mounted on all-terrain vehicles. Marsh 2017, 91.

[19] Locally preferred French terminology is *engin explosif improvisé* (EEI) for IED and *piège* for booby-trap.

[20] In such a case, the first vehicle is called the "door-opener" or "battering ram": making a clear entry for the following suicide attacker(s), softening protective measures, and having a psychological impact on the resistant forces.

[21] Stocker 2019.

[22] Al-Jazeera 2019.

sives were destroyed by army drone fire."[23] Overall, the security forces seemed to be under siege in their own country.

In the south, Burkina Faso has been facing militants since 2015: JNIM, ISGS, and Ansar ul-Islam – a "national creature" – conducted actions, deepening and worsening inter- and intra-community tensions, while also provoking the state. Approximately 40% of Burkinabe territory was controlled by jihadist groups in 2022. In the following year, they tried to strengthen and expand support zones to open new attack zones closer to the capital, Ouagadougou, and the Malian border.[24] Attacks have become more complex and sophisticated: in February 2023, at least 50 soldiers were killed in a combined attack in the Oudalan Province. Based on experts' opinions, soon "the country could become a launchpad to completely destabilize the entire West Africa sub-region."[25]

As for Niger, incursions started in 2015 and attacks began in 2016. JNIM and ISGS showed up at the western, while Boko Haram and ISWAP on the southeastern borders. In December 2019, ISGS killed 71 servicemen in a Nigerien military camp (close to Inates, on the border with Mali). Its fighters reportedly used mortars and kamikaze vehicles to storm the base.[26] The next month, 89 soldiers lost their lives due to an assault in Chinagodar. No armies could bear such huge losses in the long term. In the Torodi region, southwest of the Tillaberi region, soldiers were first ambushed and later hit by an improvised explosive device as they tried to evacuate their wounded people – 15 soldiers were killed, seven wounded, and six missing – on 31 July 2021.[27] And these are just some examples of daily threats facing Nigerien troops.

Chad is a force provider to regional counter-terrorism initiatives, so it was an optimal target: suicide attacks first occurred in 2015 and arrived in waves. The most shocking one came in March 2020 at Bohoma: Boko Haram warriors approached it without being detected and began a surprise attack before dawn, which lasted for 7 hours; hundreds of militants stormed the military base on all four sides using boats. Then they occupied the base, looting significant materiel and destroying the equipment, ultimately leaving 98 Chadian soldiers dead and dozens more wounded. Militants were also able to successfully ambush fortifications. By chance – or as coordinated – ISWAP ambushed Nigerian troops near the village of Goniri in Borno State, killing 100 soldiers and militiamen on the same day.[28] Since that, N'Djamena has been concentrating its forces in the Lake Chad area.

The presence of JNIM in Ivory Coast was first reported in 2020, while in Togo and Benin, the next year; and they have suffered from the consequences ever since.[29] This terrorist

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[23] Al-Jazeera 2023.

[24] Carter et al. 2023.

[25] The Quarterly Africa Terrorism Bulletin 2023, 17.

[26] In July, militants raided the same military post during their most complex attack at the time, using two suicide vehicles to gain entry and killing 18 soldiers inside. Armstrong 2019.

[27] France24 2021.

[28] In the capital, N'Djamena, two simultaneous attacks on a police headquarters and a training school killed 27 people and at least 100 people were injured. During that year, further police targets, N'Djamena's main market, a fish market in the Lake Chad area at the busiest time of day, and a nearby refugee camp suffered attacks. Since the beginning of 2019, civilian communities in Chad have been consistently insulted. Eizenga 2020.

[29] "Rather than being ideologically or politically motivated, these events seem aimed at controlling artisanal gold mining and commercial routes with links to criminal, smuggling, and poaching groups." Eizenga – Williams 2020.

group predominately prefers to attack with small arms and mortars: during their 46 actions in the region in the first quarter of 2023, they used IEDs in seven cases.[30] The terrorist group shows obvious ambitions to widen its activity toward the Gulf of Guinea.

Nigeria and the Lake Chad Basin

A radical Islamist revolt began in July 2009 to create a Sharia-led territory in the Muslim-dominated part of Northern Nigeria. *Jama'atu Ahlis Sunnah Lidda'awati Wal Jihad* (JAS) – widely known as Boko Haram – began its bloody campaign against the state and everyone else not dedicated to their goals. Its erratic leader, Abubakar Shekau was successful, using extreme brutality and focusing terror on civilians. Committing suicide attacks became a typical *modus operandi:* on 16 June 2011, Boko Haram claimed responsibility for bombing a police headquarters in the capital, Abuja, which was the first known suicide attack in Nigeria. Two months later, an SVBIED exploded at the United Nations building.

It was the first terrorist group in history to use more female suicide bombers than male, and was at the vanguard of using children: the youngest was just 7 years old. Most preferred were teenage girls, who are less likely to be searched for and can hide explosives under their clothing. This fear and mistrust undermined social cohesion.[31] "In 2019, suicide bombings accounted for 7% of all attacks by Boko Haram, a significant decline from its peak in 2017 when 46% [… The group] shifted from bombings towards armed assault and hostage takings" – but still was the second deadliest terrorist group in the past decade, and remains the deadliest one in Sub-Saharan Africa.[32]

Though the epicenter of the Boko Haram insurgency has always been in Nigeria's northeastern Borno State, in 2013, the insurgency moved to Cameroon to establish supply lines equipping its fighters with arms and to ensure a haven for retreat after Nigerian offensives and the kidnapping of foreigners for ransom. They are also very active in Southeast Niger (the Diffa region) and the Lake Chad area of Chad, with subversions and direct attacks.

At its peak in March 2015, Shekau swore an oath to the Islamic State, as a result of which Boko Haram became the Islamic State's West Africa Province (ISWAP). However, the next year the obstinate master was displaced, causing a split in the organization into the aggressive minority JAS, loyal to him, and the ISWAP, more thoughtful of civilians. Both groups fought separately – simultaneously targeting security forces, government officials, humanitarian and development workers, and non-Muslims"[33] – and against each other. During clashes between the two groups, IEDs were also used regularly.[34]

In May 2021, ISWAP attacked and overran Boko Haram militants in the Sambisa Forest and Shekau was killed. Still, in October, Abu Musab al-Barnawi, ISWAP's charismatic then-leader (and son of the late founder of Boko Haram, Mohammed Yusuf) also died doubtfully. Those JAS members who refused to align with ISWAP – including high-

[30] The Quarterly Africa Terrorism Bulletin 2023, 11.

[31] In the eyes of militants, "Women seen as 'expendable', allows you to save your men for fight". Warner – Matfess 2017.

[32] Global Terrorism Index 2020, 16.

[33] UNDP 2022, 10.

[34] On 6 August 2021, sources reported that ISWAP attacked JAS locations in Barwa but suffered heavy losses. JAS successfully deployed IEDs to force ISWAP into a retreat. In late November, around 180 ISWAP fighters died on the Shuwaram island: JAS relied heavily on IEDs, which it planted around the village before triggering confusion with gunshots. UNDP 2022, 21.

ranking commanders and families – continued to fight or surrendered to security forces.[35] ISWAP remained the dominant player on the ground, not just taking former positions of Boko Haram but also setting up terrorist cells and cooperating with bandit gangs in central and northwestern areas.

The Nigerian Armed Forces have a robust presence with a non-negligible air force in the area, also including paramilitary troops and armed local volunteer militias, supported by the Multinational Joint Task Force (MNJTF),[36] especially in the Lake Chad zone. Security forces had to learn a lot suffering heavy losses; although their level of expertise, quality of equipment, and cooperation improved, they still made a lot of errors. Leaving vulnerable hasty camps, isolated outposts, and indefensible checkpoints, from 2019, the Nigerian military largely relied on a "Supercamp" strategy: soldiers were pulled from smaller posts into bigger, better-equipped, and better-fortified camps to prevent Boko Haram from easily overrunning them. To attack the supercamps, ISWAP deployed fighters in larger concentrations, ambushing military fortifications at the same time. This tactic worked and the Nigerian military had to rethink its tactics and bring back the Forward Operating Bases concept to complement the supercamp strategy.[37]

Still, the Nigerian Theater Commander had identified the detection and diffusing of IEDs as a major challenge in the fight against insurgency.[38] On 17 January 2021, seven IEDs were activated against a Nigerian army convoy of APCs and other vehicles, escorted by a foot patrol in Gorgi, Borno State – over 30 soldiers were killed. On 12 October 2021, at least 35 Nigerian soldiers were killed and 10 of their vehicles destroyed when ISWAP fighters ambushed them around Bremari village. In the first quarter of 2023, ISWAP carried out 18 IED attacks but only between 18 March and 24 April, 6 IED incidents happened just in Cameroon. On 14 May, MNJTF troops were hit by a double IED attack as they advanced towards an ISWAP camp.[39]

To reduce kamikaze attacks, awareness-raising meetings have been held for the civilian society to call for greater vigilance, systematic searches have been conducted by security forces, and the importance of local networking and trust-building regarding authorities was promoted in the recent past.

As for administrative restrictive steps, the delivery of potassium nitrate is monitored and the access to it has been reduced to stop making homemade explosives. Urea fertiliser was banned from the Northeast, forcing bombmakers to gather uranium from uranium mines. Gas cylinder sales are monitored, for this reason, plastic containers are used more frequently as cases for IED charges.[40] Legal daily markets and illegal flow of goods are banned to cut the supply of terrorists, who are able to capture huge amounts of high-quality explosives from military stocks or buy them from corrupt officers.

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[35] For example, in the summer of 2021, Amir Abu Darda, in charge of IEDs made for Boko Haram, surrendered with 20 other IED experts. Omonobi 2021.

[36] Members: Benin, Cameroon, Chad, Niger, and Nigeria. It was mandated in 2012 for counter-terrorism operations against Boko Haram.

[37] UNDP 2022, 13.

[38] "An operational journey that should take the troops 20 minutes may be delayed for 3 hours because they must scan for IEDs and scanned again when returning from the operation." Makama 2022.

[39] Delanga 2023.

[40] Makama 2022.

Somalia and the Horn of Africa[41]

As a nationalist reaction to the Ethiopian intervention in 2006 – in a de facto non-existing country since 1991 –, jihadist groups organized into *Harakat al-Shabaab al-Mujahideen*, commonly known as al-Shabaab, with the long-term goal of getting rid of any foreign forces and establishing an islamic state in Somalia. It allied with the militant pan-Islamist organization, Al-Qaeda in 2012, and has ties with Al-Qaeda in the Islamic Maghreb (AQIM) and Al-Qaeda in the Arabian Peninsula (AQAP).[42] The group made an image of being effective in administration and fighting, building up its own media arm, *al-Kataib,* and secret service, *Amniyat*.

One unsatisfied leader in the North, in the mountainous areas of Puntland pledged oath or *bay'ah* to the Islamic State in October 2015; since then, al-Shabaab has tried to exterminate the splinter group.[43] The estimated number of fighters commanded by Al-Shabaab is between 7,000 and 12,000, while the manpower of ISS extends from 200 to 280 fighters.[44]

On the other side, international legitimacy had the Transitional Federal Government (2004–2012) replaced by the Federal Government of Somalia, strongly supported by the African Union Mission to Somalia (AMISOM), which was established in 2007 and was replaced by the African Union Transition Mission in Somalia (ATMIS) in 2022.

In 1993, the use of IEDs was made possible by training warlord Aydiid's officers in military camps in Sudan.[45] Suicide bombing is a radically new choice that was never part of the Somali culture of war until September 2006, when then-President Abdullahi Yusuf Ahmed was targeted outside the parliament.[46] Since then, al-Shabaab has become second only after Boko Haram in its use of suicide bombings in Sub-Saharan Africa. Most frequent targets are personnel and symbols of the Somali state and of the international community, as well as "spaces where personnel in the two demographics tend to congregate: hotels and restaurants".[47] Al-Shabaab largely avoids indiscriminately suicide bombing civilians and civilian spaces (Boko Haram's primary targets include markets, bus stops, mosques, and churches),[48] rather attempting to kill high-level officials, both from Somalia and abroad, assassinating political opponents and dissidents. Attacks or attempted attacks took place in at least four countries outside of Somalia: Kenya, Uganda, Djibouti, and Ethiopia – perpe-

[41] In the region, the first suicide attacks were carried out by Al-Qaeda operatives on the American embassies in Nairobi and Dar al-Salam (on 7 August 1998). The attacks were executed simultaneously and by pairs of suicide operatives "in order to ensure them both support and personal empowerment." On 28 November 2002, two terrorist attacks occurred one after the other on Israeli targets in Mombassa, Kenya. The two Strela SA–7 missiles launched at an aircraft missed their targets, and twenty minutes later, a car bomb driven by a suicide terrorist was detonated at the Paradise Hotel. Schweitzer – Goldstein Ferber 2005, 55 and 59.

[42] Harrington – Thompson 2021.

[43] Zenn 2023.

[44] UN Security Council 2022, 8–9.

[45] Marchal 2011, 54.

[46] Marchal 2011, 54.

[47] Warner – Chapin 2018, 12.

[48] The group seeks to serve as a viable alternative legitimate governance to the Somali government and has a close relationship with al-Qa'ida, which has outlined explicit rules for "martyrdom operations": avoid fighting or targeting those who have not raised arms against us, refrain from killing and fighting against noncombatant women and children, refrain from harming Muslims, refrain from targeting enemies in mosques, markets, and gatherings where they mix with Muslims or with those who do not fight us. (Ayman al-Zawahiri in 2013 in his "General Guidelines for Jihad").

trators mostly failed to reach their target or were arrested well before outrages planned in restaurants and sports events.

Al-Shabaab has its profile: less than 5% of suicide attackers are female,[49] around 60% of kamikaze attempts are vehicle-borne, and almost half of the actions use suicide bomber teams – multiple suicide bombers are deployed to the same location to detonate simultaneously.

Al-Shabaab's terrorist and guerrilla actions using IEDs have increased in frequency, scale, and lethality since 2014. Investigations found out that the group can produce homemade explosives at least since the summer of 2017. Up to that point, primarily military-grade explosives (explosives remnants of war, captured AMISOM munitions, and illicit transfers from Yemen) were in use.[50] According to the 2023 Global Terrorism Index, almost 63% of terrorism deaths attributed to al-Shabaab in 2022 were the result of IED attacks.

Both al-Shabaab and ISS have sleeper cells in Mogadishu, activating them gives continuous evidence of their presence and unbreakability and shows the limits of the official government, not even in control of the capital. The most devastating action was a dual truck suicide bombing in Mogadishu on 14 October 2017. That day, a truck laden with an estimated two tons of homemade explosives detonated near a central traffic junction in Mogadishu causing extensive, unnecessary civilian casualties. Even al-Shabaab did not dare to claim responsibility. A small minivan and a larger truck bomb worked in coordination: the attacks hit the Mogadishu airport compound, where the United Nations, most embassies, and the headquarters of AMISOM were situated. Mogadishu has long been the epicentre of terrorist activity by al-Shabaab and eminently in 2019, over half of al-Shabaab attacks in Somalia occurred in Mogadishu.[51]

Yet, al-Shabaab is especially powerful in rural areas, acting freely and conducting numerous base and prison attacks. For instance, on 27 January 2017, a base was stormed at Kulbiyow killing at least 67 Kenyan soldiers. At dawn on 8 June 2017 in Puntland, an attack on the Afurur military base killed approximately 60 soldiers. On 4 March 2021, at around 11 p.m. (local time), Al-Shabaab launched a complex attack on the central prison in Bosaso, Puntland, to free prisoners by blocking roads for reinforcements and then breaching the eastern wall. Finally, 337 prisoners escaped, of which 83 were convicted Al-Shabaab operatives, including four high-ranking officials. Meanwhile, former officers, as well as prisoners with links to the Islamic State were taken as hostages.[52]

This year in January, al-Shabaab conducted a complex suicide raid targeting a US-trained elite unit at Galgudud base, killing at least 15 soldiers, including the deputy commander of the Danab forces. In February, an ambush close to Kismayo killed 36 soldiers and injured 15. In May, al-Shabaab overran a Ugandan African Union base in southern Somalia; it stormed the base with at least three SVBIEDs and 800 fighters. The group captured the

[49] "Boko Haram deploys women, children, or even disabled individuals to create pervasive fear among the population. Such reliance on untrained, coerced, or unexpected bombers means that there will be, in many cases, failures to detonate and kill others […] Al-Shabaab, divergently, relies on attackers who have completed codified training and who have a high likelihood of completing their mission." Warner – Chapin 2018, 23. Still, there is a waiting list for the *Istishhadyin* unit, the group's suicide brigade.

[50] HMEs are identified mixtures of nitroglycerin, a highly sensitive explosive, potassium nitrate as an oxidizer, and charcoal as a fuel element. As for the military, original TNT and RDX were the most preferred explosives. Final Report of the Panel of Experts on Somalia 2019, 11–12.

[51] Global Terrorism Index 2020, 17.

[52] Final Report of the Panel of Experts on Somalia 2021, 57–58.

base, killed at least 54 Ugandan soldiers, and took control of the town. The lack of close air support and the contingent's intelligence gaps contributed to al Shabaab's success. A few days later, it stormed the base of the newly deployed Eritrean-trained SNA[53] units in the recently liberated areas of central Somalia, near Masgaway, killing 73 Somalian soldiers. Reinforcements from the town nearby were also ambushed.[54] Lack of adequate force protection and compound security leads to repetitive attacks and high numbers of human and material losses. And there are myriads of examples of such fatal incidents.

In October 2022, SVBIEDs – a car and a three-wheeled motorcycle – were used against two vital bridges connecting central and southern regions of the country.[55] Using suicide attacks against bridges is new: the destruction of these traffic connections could slow down federal forces and allied militaries offending al-Shabaab or isolate areas, as seen in the Sahel as well.[56]

The organization's effort to find new methods was seen in the case of a "laptop bomb" in 2016: two airport workers provided the modified device for a suicide bomber boarding a flight from Somalia to Djibouti. Another direction of innovation is experiments with commercial drones used for surveillance, precision targeting, and propaganda dissemination purposes, so, weaponizing them and using them for aerial attacks must be just a question of time.

Central Africa and Mozambique

The Allied Democratic Forces (ADF) Islamist militant group – originally founded to overthrow the Ugandan government – has been entrenched in Eastern Congo and in the 2000s, it rebranded itself and acquired a new name as an ISIS affiliate in 2017.

Arabic-speaking men started giving classes on bomb-making in ADF camps in 2013, and these were first used later that year during a FARDC-led[57] area clearing operation. The "directional focused fragmentation charges" (DFFC) slowed down the advancement of government forces. Between 2014 and 2018, the usage of IEDs remained limited: 0–3/year, as the ADF tried to avoid contact with the army. The ADF often targets civilians; the first case was in 2016 when a time-actuated device was placed in a market. However, during a five-month period from November 2020 to March 2021 alone, at least 64 IEDs were used in 34 incidents; the majority of IED casualties came from devices laid along footpaths and access paths to ADF camps, also used to initiate ambushes. The advanced bomb-making experience, coming from Uganda and Tanzania, loosely regulated mining companies in Tanzania, acquiring commercial explosives just as the black market. Several motorcyclists surrendered themselves to the government while carrying IEDs from Uganda to North Kivu.[58]

"The increasing use of IEDs in the region suggests that experienced Foreign Terrorist Fighters (FTFs) are in the area, and ISCAP is fast developing the technical competence of manufacturing and deploying these devices."[59] In June 2022, suicide attackers showed up for the first time in this region: two bombs outside a Catholic church only killed the bomb-

[53] Somali National Army
[54] Carter et al. 2023.
[55] Dhaqane – Maruf 2022.
[56] ACLED 2023.
[57] Forces armées de la république démocratique du Congo = Armed Forces of the DRC.
[58] Bachus 2022.
[59] The Quarterly Africa Terrorism Bulletin 2023, 19.

ers but a Christmas-day suicide bombing in a crowded bar in Beni killed 6, with metal shrapnel and bullets enhancing the blast. Congolese and Ugandan forces launched joint military operations against the ADF, pulling out of strongholds near the Ugandan border and heading inland. Clothespins were utilised for trip-wire, wooden pressure plates with mortar shells, and boobytraps under corpses aimed to slow down and demoralize the African and UN troops' stabilizing efforts.[60]

Islamist rebels first showed up in Mozambique in October 2017, raiding police posts at dawn in the city Mocímboa da Praia in the northern, Muslim-dominated Cabo Delgado province. Experiencing improper reactions from security forces, extremists turned more and more daring, harassing not just remote villages and military outposts but raiding Tanzanian border areas too. Furthermore, in August 2020, they seized the port town of Mocimboa da Praia for a whole year and declared it the ISCAP's capital. In March 2021, they seized Palma, a bigger municipality.

The first recorded incident of the deployment of IEDs in Mozambique was in September 2021, when an armoured Rwandan patrol column detonated a device on a dirt road. Most IEDs were detected and disarmed without causing any harm, perhaps reflecting the insurgency's limited experience in both making and using the devices. The introduction of IEDs in Cabo Delgado coincided with their increased use and growing pressure on the ADF in the DRC.[61]

Emerging from the advancing army – backed by Rwandan and the Southern African Development Community (SADC) forces –, IS-Mozambique is regrouping into smaller, more mobile groups, carrying out attacks along the key corridor to the South, shifting from coastal districts to the inland because the former were previously designated hotspots and currently have a high presence of military forces.

CONCLUSION

Studying other theatres of operations gives us ideas and warning signals as to what scenarios and potential threats should we prepare for. Not all experiences are relevant; modi operandi and TTPs may vary: for example, suicide attacks have a very minimal chance to occur in Ukraine or Latin America. The ever-increasing use of weaponized commercial drones, emplaced IEDs, modified conventional mines, booby-trapping equipment, and facilities *en masse* in varied and tricky ways is coming from lessons learned from different asymmetric conflicts of the past decade.

Sub-saharan Africa has gradually become the epicentre of terrorism: Salafi-Jihadist networks with destructive activities and fine-tuned propaganda were able to exploit existing local and regional tensions. Foreign fighters and bomb-maker experts could multiply their effectiveness and dangerousness. On the other side, the governments' unconcern and miscalculation together with the unpreparedness and overreaction of security forces caused the population to flee or turn for protection to the radicals: following their own rules, they provide predictability.

In Africa, terrorist groups and NSAGs have also successfully embedded themselves into smuggling and trafficking networks and developed the ability to extract revenues and resources by utilising these networks. Their aggressivity, flexibility, mobility, and capacity

[60] United Nations Organization Stabilization Mission in the Democratic Republic of the Congo – MONUSCO
[61] Vali 2023.

to survive and renew make it extremely difficult for governments to overcome this challenge, not only targeting institutions and symbols of states – like leaders and security forces – but also undermining normal functions of society and the daily life of innocent unbiased people.

Terrorist groups are expanding their activities, exacerbating inter-communal tensions, and exploiting the collective grievances of local populations. The continued civilian casualties are fast eroding the citizens' confidence in the government's ability to protect them. One reason for the success of these Salafi-Jihadist groups is their low profile and high mobility: in a huge territory, they can spread in well-concealed areas (swamps, forests, islands), move in smaller units, and unite hundreds of warriors before action. The fighters come from different directions in a coordinated way on motorbikes, quads, and armed pickups (called technicals). Following the ambush or raid, this force disperses quickly, making it hard for government forces to target them afterward, having limited ISTAR[62] and Close Air Support capabilities.

In the beginning, countries normally tried to manage the situation with their own administrative-military-police assets as a response to the jihadi intimidation. But after realizing their inability to handle the situation, private military companies were hired[63] and local communities set up self-defence units, causing concerns locally and abroad. The next step for governments was to ask for assistance from neighbouring nations (like Uganda and Rwanda), regional organizations (ECOWAS[64] and SADC), and great powers (USA and France) for direct intervention or support in training and equipment. Though several countries, organizations, programs, and initiatives helped the capacity building, these nations and security forces are still unable to handle the threat, and the awareness of civil communities and the preparedness of local authorities are also questionable. Prolonged crises and social discontent have led to allegations among involved governments and takeovers of power.

Mali's military junta decided to withdraw from the G5 Sahel in May 2022, the same time JNIM and ISGS agreed to a ceasefire to focus their efforts against Malian forces. Burkina Faso and Niger also had coups, the latter was a last resort for operations across the Sahel for the USA and France. This development led to the completion of Operation Barkhane and the Takuba Task Force in 2022, and finally the dissolution of UN mission MINUSMA[65] in Mali until the end of June 2023. The lifting of counterterrorism pressure gave chance to JNIM and ISGS to fill the security vacuum and expand their areas of operations toward Algeria, the Atlantic Ocean, and the Gulf of Guinea.

Some countries seem to be resistant to the challenges of extremism: until now, Mauritania and Chad have shown relative stability and looked unshakeable, thanks to the professionalism, political awareness, and social cohesion of their security forces. The reality is that these states also face this threat.

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62 Intelligence, Surveillance, Target Acquisition, and Reconnaissance

63 Examples are not just Wagner's operations across Africa but the international, privately-owned STTEP (Specialised Tasks, Training, Equipment, and Protection International) in Nigeria, the Turkish Sadat International in Somalia, and the South African Dyck Advisory Group in Mozambique.

64 Economic Community of West African States

65 Multidimensional Integrated Stabilization Mission in Mali

In Nigeria and the Lake Chad area, ISWAP has unambiguously prevailed but the remnants of Boko Haram could cause awkward moments for their Islamist counterpart and the countries involved.

The planned withdrawal of the African Union's forces by the end of 2024 concerns the Somali Federal Government (SFG), which failed to launch an offensive against al-Shabaab in Southern Somalia in 2023, replicating the clan militia strategy that was used in central Somalia. Therefore, the government requested troops from the neighbouring countries (Kenya, Ethiopia, and Djibouti).

In the Congo–Uganda and Mozambique–Tanzania regions, former IS-CAP wings have suffered from being hard hit by international and national forces, but in smaller units and moving deeper inward, they try to avoid risky actions and find ways to survive.

In all the above-mentioned theatres, IEDs are well-tried tools, giving high tactical flexibility to users. Pouring money into training programs and IED-resistant equipment for security forces is a must but not the solution: as "terrorist groups today have increasing access to advanced technologies, which are expanding these groups' global reach and effectiveness, and dual-use technology access is giving terrorist groups access to more powerful, military-grade technologies, which is in turn amplifying their power potential (3-D printing, autonomous vehicles, drones, and AI)".[66]

The best is if the IED itself is never manufactured, IED user networks should be isolated from people and vulnerable social groups, and in the end, fade and be disrupted.

BIBLIOGRAPHY

- ACLED: *Somalia: Counter-Insurgency Operation Gains Regional Support in Phase Two as al-Shabaab Attacks and Political Differences Persist*. 21 April 2023. Online: https://acleddata.com/2023/04/21/somalia-situation-update-april-2023-counter-insurgency-operation-gains-regional-support-in-phase-two-as-al-shabaab-attacks-and-political-differences-persist/.
- African Centre for the Study and Research on Terrorism (ACSRT): *The Quarterly Africa Terrorism Bulletin 2023 January–March*. 2023. Online: https://caert.org.dz/Medi-review/Terrorism-bulletin/AFRICA%20TERRORISM%20BULLETIN%20-%20First%20Quarter%20 2023 %20-%20Edition%2004.pdf.
- Al-Jazeera: *At least 10 killed, dozens wounded in central Mali attack*. 22 April 2023. Online: https://www.aljazeera.com/news/2023/4/22/at-least-nine-killed-in-central-mali-attack.
- Al-Jazeera: *Attackers on trucks and motorbikes raid Mali base, kill 33 troops*. 17 March 2021. Online: https://www.aljazeera.com/news/2021/3/17/at-least-33-killed-in-northern-mali-attack.
- Al-Jazeera (2019): *Mali: Dozens of troops killed in military outpost attack*. 3 November 2019. Onlinbe: https://www.aljazeera.com/news/2019/11/3/mali-dozens-of-troops-killed-in-military-outpost-attack.
- Al-Jazeera: *Military bases housing foreign troops attacked in northern Mali*. 30 November 2020. Online: https://www.aljazeera.com/news/2020/11/30/french-military-bases-un-building-attacked-in-northern-mali.
- Armstrong, Hannah: *Behind the Jihadist Attack in Niger's Inates*. International Crisis Group, 13 December 2019. https://www.crisisgroup.org/africa/sahel/niger/behind-jihadist-attack-inates.

[66] Larsonneur 2022, 7.

- Axe, David: *The Russians Are Turning Old Vehicles Into Rolling Bombs. The Ukrainians Are Trying To Spot Them Before They Explode*. Forbes, 21 June 2023. Online: https://www.forbes.com/sites/davidaxe/2023/06/21/the-russians-are-turning-old-vehicles-into-rolling-bombs-the-ukrainians-are-trying-to-spot-them-before-they-explode/.
- Bachus, Trevor: *Alarming IED Proliferation in Eastern DR Congo*. Counter-IED Report, 2022. Online: https://counteriedreport.com/alarming-ied-proliferation-in-eastern-dr-congo/.
- Bunker, Robert J. – Kuhn, David A. – Sullivan, John P.: *Mexican Cartel Tactical Note #42: Car Bomb in Apaseo el Alto, Guanajuato with Remote Detonation IED ('Papa Bomba') Payload*. Small Wars Journal, 2020. Online: https://smallwarsjournal.com/jrnl/art/mexican-cartel-tactical-note-42-car-bomb-apaseo-el-alto-guanajuato-remote-detonation-ied.
- Carter, Brian – Tyson, Kathryn – Karr, Liam – Mills, Peter: *Salafi-Jihadi Movement Weekly Update, May 31, 2023*. Critical Threats, 31 May 2023. Online: https://www.criticalthreats.org/analysis/salafi-jihadi-movement-weekly-update-may-31-2023#_ednd5a36f7eeff0a15fe4a15867352a844349.
- Delanga, Célestin: *Boko Haram brings IEDs back to Cameroon*. Institute for Security Studies (ISS), 27 June 2023. Online: https://issafrica.org/iss-today/boko-haram-brings-ieds-back-to-cameroon.
- Deutsche Welle: *Mali: Dozens killed and missing in attack on army*. 2019. Online: https://www.dw.com/en/mali-dozens-killed-and-missing-in-attack-on-army-camps/a-50670119.
- Dhaqane, Hussein Hassan – Maruf, Harun: *Al-Shabab attacks key bridges in Somalia, kills at least 21 people*. Hiiraan Online, 20 October 2022. Online: https://www.hiiraan.com/news4/2022/Oct/188322/ al_shabab_attacks_key_bridges_in_somalia_kills_at_least_21_people.aspx.
- Doctor, Austin: *After Palma: Assessing the Islamic State's Position in Northern Mozambique*. Program on Extremism at George Washington University, Washington D.C., 2022. Online: https://extremism.gwu.edu/sites/g/files/zaxdzs5746/files/Islamic-State-in-Northern-Mozambique_Doctor_August-2022.pdf.
- Eizenga, Daniel: *Chad's Escalating Fight against Boko Haram*. Africa Center for Strategic Studies, 20 April 2020. Online: https://africacenter.org/spotlight/chad-escalating-fight-against-boko-haram/.
- Eizenga, Daniel – Williams, Wendy: *The Puzzle of JNIM and Militant Islamist Groups in the Sahel*. Africa Center for Strategic Studies, 1 December 2020. Online: https://africacenter.org/publication/puzzle-jnim-militant-islamist-groups-sahel/.
- Forero, Juan: *Colombia Arrests 3 as I.R.A. Bomb Experts*. The New York Times, 15 August 2001. Online: https://www.nytimes.com/2001/08/15/world/colombia-arrests-3-as-ira-bomb-experts.html.
- France 24: *Au Mali, les corps de 13 soldats découverts après une attaque jihadiste*. 22 November 2019. https://www.france24.com/fr/20191122-attaque-mali-armee-attaque-jihadisme-niger.
- France24: *More than a dozen soldiers killed, several missing in Niger attack*. 2 August 2021. https://www.france24.com/en/africa/20210801-more-than-a-dozens-soldiers-killed-several-missing-in-niger-attack.
- *Global Terrorism Index 2020*. Institute for Economics & Peace, 2020. Online: https://www.economicsandpeace.org/wp-content/uploads/2020/11/GTI-2020-web-2.pdf.
- Harrington, Jake – Thompson, Jared: *Examining Extremism: Harakat al Shabaab al Mujahideen (al Shabaab)*. Center for Strategic & International Studies, 23 September 2021. Online: https://www.csis.org/blogs/examining-extremism/examining-extremism-harakat-al-shabaab-al-mujahideen-al-shabaab.

- Haugstvedt, Håvard: *A Flying Threat Coming to Sahel and East Africa? A Brief Review*. Journal of Strategic Security, Vol. 14, No. 1 (2021). https://doi.org/10.5038/1944-0472.14.1.1848. Online: https://digitalcommons. usf.edu/jss/vol14/iss1/6.
- Hiraal Institute: *Security in Somalia: A Review of 2022*. The Quarterly Report, 2023. Online: https://hiraalinstitute.org/wp-content/uploads/2023/03/2022-Somalia-Security-in-Review.pdf.
- Kirechu, Peter: *Al-Shabaab's Improvised Explosive Device Supply Chain Gambit in Somalia*. War on the Rocks, 2020. Online: https://warontherocks.com/2020/09/al-shabaabs-improvised-explosive-device-supply-chain-gambit-in-somalia/.
- Koné, Hassane: *How has Mauritania managed to stave off terror attacks?* Institute for Security Studies, 6 December 2019. Online: https://issafrica.org/iss-today/how-has-mauritania-managed-to-stave-off-terror-attacks.
- Larsonneur, Jean-Charles: *The Evolving Terrorist Threat: Adapting the Allied Response*. Report, NATO Parliamentary Assembly, 2022. Online: https://www.nato-pa.int/download-file?filename=/sites/default/files/2023-01/014%20DSCTC%2022%20E%20rev.%202%20fin%20%20-%20TERRORISM%20-%20LARSONNEUR%20REPORT.pdf.
- Lionel, Ekene: *Al Shabaab drones, and the African conundrum*. Military Africa, 15 September 2022. Online: https://www.military.africa/2022/09/al-shabaab-drones-and-the-african-conundrum/.
- Lister, Tim: *The March 2021 Palma Attack and the Evolving Jihadi Terror Threat to Mozambique*. CTC Sentinel, Vol. 14, No. 4 (2021). Online: https://ctc.westpoint.edu/the-march-2021-palma-attack-and-the-evolving-jihadi-terror-threat-to-mozambique/.
- Makama, Zagazola: *How Locally Fabricated IEDs Power ISWAP's Desperate Battle of Survival*. Emergency Digest, 16 April 2022. Online: https://emergencydigest.com/2022/04/16/how-locally-fabricated-ieds/.
- Marchal, Roland: *The Rise of a Jihadi Movement in a Country at War*: *Harakat al-Shabaab al Mujaheddin in Somalia*. SciencesPo, 2011. Online: https://sciencespo.hal.science/view/index/identifiant/hal-03641269.
- Marsh, Nicholas: *Brothers Came Back with Weapons: The Effects of Arms Proliferation from Libya*. PRISM, Vol. 6, No. 4 (2017), 79–96. Online: https://cco.ndu.edu/News/ Article/1171858/brothers-came-back-with-weapons-the-effects-of-arms-proliferation-from-libya/.
- Omonobi, Kingsley: *Boko Haram's IED commander, Abu Dardi, 20 other IED experts surrender in Northeast – Army*. Vanguard, 9 August 2021. Online: https://www.vanguardngr.com/2021/08/boko-harams-ied-commander-abu-dardi-20-other-ied-experts-surrender-in-northeast-army/.
- Overton, Iain: *A decade of global IED harm reviewed*. Action on Armed Violence (AOAV), 15 October 2020. Online: https://aoav.org.uk/ 2020 /a-decade-of-global-ied-harm-reviewed/.
- Schweitzer, Yoram – Goldstein Ferber, Sari: *Al-Qaeda and the Internationalization of Suicide Terrorism*. JSTOR, 1 November 2005. Online: https://www.jstor.org/stable/resrep08936.
- Stocker, Joanne: *Mali: France airstrike kills 15 in Mopti as EU training base in Koulikoro attacked*. The Defense Post, 25 February 2019. Online: https://www.thedefensepost.com/2019/02/25/mali-france-airstrike-kills-jnim-mopti-eutm-koulikoro-attacked/.
- UNDP: *Conflict Analysis in The Lake Chad Basin 2020–2021 – Trends, developments and implications for peace and stability*. United Nations Development Programme, 2022. Online: https://www.undp.org/sites/g/files/zskgke326/files/2022-08/Conflict%20Analysis%20in%20the%20Lake%20Chad%20Basin.pdf.
- UN Secretary-General: *Joint Force of the Group of Five for the Sahel: Report of the Secretary-General*. 2020. Online: https://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/S_2020_373.pdf.

- UN Security Council: *Final report of the Panel of Experts on Somalia*. September 2019. Online: https://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/S_2019_858_E.pdf.
- UN Security Council: *Final report of the Panel of Experts on Somalia*. September 2021. Online: https://reliefweb.int /report/somalia/letter-dated-5-october-2021-chair-security-council-committee-pursuant-resolution-751.
- UN Security Council: *Thirtieth Report of the Analytical Support and Sanctions Monitoring Team submitted pursuant to resolution 2610 (2021) concerning ISIL (Da'esh), Al-Qaida and associated individuals and entities [S/2022/547]*. https://www.ecoi.net/en/document/2075689.html.
- Vali, Castor: *IEDs in Mozambique*. 2023. Online: https://www.castorvali.com/ieds-in-mozambique/.
- Warner, Jason – Chapin, Ellen: *Targeted Terror: The Suicide Bombers of al-Shabaab*. Combating Terrorism Center, 13 February 2018. Online: https://ctc.westpoint.edu/targeted-terror-suicide-bombers-al-shabaab/.
- Warner, Jason – Matfess, Hilary: *Exploding Stereotypes: The Unexpected Operational and Demographic Characteristics of Boko Haram's Suicide Bombers*. Combating Terrorism Center, 2017. Online: https://www.hsdl.org/c/view?docid=803660.
- Zenn, Jacob: *Al-Shabaab Versus the Islamic State in Somalia Province: Why Only Al-Qaeda's Affiliate Remains Unrivalled*. JSTOR, Counter Terrorism Trends and Analyses, Vol. 15, No. 2 (2023), 7–11. Online: https://www.jstor.org/stable/48718086.
- Zenn, Jacob: *Boko Haram's Backyard: The Ongoing Battle in Cameroon*. The Jamestown Foundation, Terrorism Monitor, Vol. 16, No. 6 (2018). Online: https://jamestown.org/program/boko-harams-backyard-ongoing-battle-cameroon/.

Stelian Tampu

BASIC INFRASTRUCTURAL REQUIREMENTS FOR THE TEMPORARY ACCOMMODATION OF DISASTER VICTIMS AND TO DEMONSTRATE THE FUNCTIONING OF AN NGO

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ABSTRACT: *In this paper, we define the concept of natural and humanitarian disasters, their historical and civilisational context, their consequences, and their impact on people and their environment. Protection agencies run by states, together with civil society organisations (CSOs), must provide the necessary infrastructure to accommodate displaced people and meet their needs until they can return to their homes. Disaster refugees are not a modern phenomenon, we have seen them in every period of history, but we are now aware of the causes and consequences of natural and humanitarian disasters and are consciously working to prevent, avert, and recover from them. This paper, by examining international practice, identifies the basic infrastructure requirements necessary for the temporary housing of refugees and, in the practice of one NGO, describes the infrastructure tools used.*

KEYWORDS: *disaster refugees, infrastructure, NGOs, enforcement authorities*

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INTRODUCTION

Human life is a constant struggle between threatening phenomena and natural disasters in our environment that lurk in every moment of life. When people deliberately over-consume, natural phenomena multiply, upsetting the natural balance.[1] Human civilisation has created the potential for an unpredictable number of life-threatening phenomena of incalculable danger, which we now call humanitarian and natural disasters, depending on their origin. For humans, a disaster is a situation in which life, health, human values, and the environment are damaged in a way that could have irreversible consequences, even resulting in the destruction of life.[2]

Of course, it is very important to see the antecedents, look for causal links, map the natural phenomena we observe, assess the changes in our environment, and decipher the antecedents of the events that occur. Knowing our history and our environment can provide

[1] Lányi 2020.
[2] Ferguson 2021.

more certainty of foresight, but modelling why a society failed in a stage of history or why a particular epidemic, earthquake, or flood occurred, and whether it had predictable, foreseeable signs, is very difficult.[3]

Also, a natural disaster is a humanitarian disaster only if it occurs in a place where people live, but if it occurs far from the area inhabited by people, it can be called a natural disaster but not a humanitarian one, since it only affects the population of animals and other living beings and can be recorded as damage to the local flora and fauna. It is very important to define precisely what natural and humanitarian disasters are, what the relationship between them is, and to explore their interactions. It is worth listing what life-threatening phenomena have occurred and still occur in our history, what societies before us have faced and what we, as members of today's societies, are facing.

Important questions are where the unexpected event or disaster occurs, in which geographical area, under what conditions, who the victims are, what their way of life is, and what their values are. All these questions can provide important answers for the countries affected by a disaster but also for the countries hosting disaster refugees. When we talk about disaster refugees, we do not refer to the status of voluntary refugees. Voluntary refugees can be individuals or groups of people whose lives and dignity are not in danger and whose flight is motivated by poverty, unemployment, hunger, and the hope of a better life. Real disaster refugees are those who are forced to leave their homes because their lives are in imminent danger due to war, natural disaster that makes survival impossible, ethnic cleansing, political persecution, etc.[4]

It is important to define who has a role to play in taking care of a group of refugees, what the state's obligations are in terms of the infrastructure needed to temporarily accommodate refugees, and what tasks can be carried out by NGOs (coordinated by the state), accredited volunteers, and rescue teams certified by state bodies.

Democratic states have very well-developed active civil societies and charitable organisations, and the role of these organisations in social security is now inescapable and indispensable. Today, the Hungarian Charity Service of the Order of Malta is one of the largest operators of social and humanitarian institutions in Hungary.[5] For this reason, it supports and actively coordinates the social and human security tasks of marginalised social strata – such as the homeless, the elderly, the disabled, the sick, and the poor, as well as those who are forced to flee, whether because of natural or man-made disasters, such as war or political and economic persecution – in cooperation with the state and international bodies.[6]

CATEGORISATION OF DISASTERS

Act No. CXXVIII of 2011 concerning disaster management and amending certain related acts is very precise in its definition of disaster:

> a condition or situation that is suitable for leading to the declaration of a state of emergency or that does not reach the extent of such a declaration, which endangers or damages the life, health, material values of people, the basic supply of the population, the natural envi-

[3] Ferguson 2021.

[4] Refugee status is determined by the United Nations High Commissioner for Refugees (UNHCR), depending on whether they are voluntary or forced refugees.

[5] Romhányi et al. 2021.

[6] Solymári et al. 2016.

> ronment, natural values in such a way or to such an extent that the prevention or control of the damage, or the elimination of the consequences exceeds the protection capabilities of the organisations designated for this purpose in the prescribed cooperation arrangements and requires the introduction of special measures and the continuous and strictly coordinated cooperation of local authorities and public bodies, or the mobilisation of international assistance.[7]

The Hungarian Charity Service of the Order of Malta Emergency Management Team's Toolkit for the Training of Disaster and Crisis Intervention Volunteers is simpler and clearer but based on the same essential aspects:

> a disaster represents the exposure of a vulnerable group of people to danger, causing serious disruption to the functioning of society and causing human, material, economic or environmental losses that exceed the resilience of the affected community or society to such a situation. A disaster is the result of a combination of hazards and vulnerability that exceeds the capacity of society to mitigate the potentially negative consequences of the risk.[8]

Of course, it is difficult to define the meaning of disaster very precisely; it is also difficult to determine when a particular natural phenomenon, say a river leaves its usual course after a heavy rainfall, constitutes a disaster and to what and to whom it poses a threat. The same can be said of earthquakes. It is very important to distinguish among natural phenomena that, although can cause enormous destruction in their immediate vicinity, are far from any human habitation and therefore have little or no impact on human life and property. We know very well that the majority of natural disasters are completely independent of humans, because earthquakes, floods, and volcanic eruptions are not caused by human intervention, they can cause enormous destruction, and all man can do is try to protect himself against them and adapt his architecture and his housing habits to minimise the damage caused by these natural phenomena. However, there are disasters that, due to human intervention or omission, cause enormous human losses and serious natural damages, often with irreversible consequences. These include industrial disasters such as the Chernobyl nuclear reactor disaster, poorly constructed collection dams, explosive industrial plants, and structurally defective structures and bridges.[9]

Earthquakes are the most recognised and one of the most devastating natural disasters. Between 1900 and 2017, earthquakes with magnitudes above 9.1–9.3 have been recorded around Japan, South Sumatra, the west coast of South America, and the Gulf of Alaska, with very high population densities compared to the average. But if we also look at the seismological reports of this period, it is clear that from Alaska southwards, on the western coasts of the two American continents, the mid-Atlantic, and the Mediterranean coasts eastward to the Arabian Sea, there is an outstanding number of high-magnitude earthquakes, but the situation is the most severe around Japan, on the western Pacific coast, and the archipelago from southern China to Australia.[10] These areas are also quite densely populated. The natural phenomena are difficult to predict and therefore pose a high risk, not

[7] Act CXXVIII 2011.
[8] Training of Disaster and Crisis Intervention Volunteers 2015, 98.
[9] Faragó 1996.
[10] Ferguson 2021.

only locally but also regionally, and sometimes even as a starting point for a global disaster, as in the case of the Fukushima nuclear reactor, especially if the earthquake is also followed by a tsunami. In such cases, the damage is enormous and the human toll is very high. There are also many seismically active areas in the southeast of Europe, so disasters in the surrounding countries can also affect Hungary and its region. As Hungary is a member of the EU, the UN, and NATO, Hungarian authorities and their active and qualified organisations are involved in rescue operations, with their human and technical resources.

Floods can occur anywhere on Earth, and our country is not a flood-free zone. Floods are the most common natural disasters in Europe and Hungary, and River Tisza is the most dangerous, with a length of 965km and a discharge of 792 m^3/s. It flows from north to south and crosses the entire country in a north-south direction. Tisza collects water from rivers such as Viso, Túr, Szamos, Kraszna, Bodrog, Körös, and Maros, which together are more than 1,500km long and also pose a flood risk.[11] River Danube is not without flood risks either, just think of the floods of 2006 and 2013, and perhaps it is worth mentioning the Pest-Buda flood of 1838, when it flooded nearly 2,882 houses and claimed 153 lives, according to some sources.[12] Internationally, it is important to mention floods that have taken a huge human toll. The 19th century was a period of floods not only in Hungary but also on a global scale when flooded rivers caused a great deal of suffering and destruction. The rapid population growth in China led to the alteration of the Yellow River, a lot of forests were cut down, the land was made arable, and the alteration of the riverbed led to a series of huge floods that reached the surrounding settlements, resulting in the death of many people. The flood of 1887 killed almost 900,000 people, but the Yangtze spill of 1931 is reported to have killed nearly 2 million, while the 1938 flood of the Yellow River killed 4–500,000. The number of homes destroyed is also high, placing a huge burden on the state. Mississippi River in the United States also flooded a few times in the late 19th and early 20th centuries, with fewer deaths and less damage. We could also cite the history of rivers bursting their banks on every continent of the world or floods caused by sudden surges of water, river flooding, or earthquakes (in Sri Lanka), which in these cases not only result in disasters of local and regional significance but also entail risks that transcend continents, sometimes at a global level. In this context, prevention, recovery, and intervention require a broad, often global, response.[13]

Volcanic eruptions also have a high disaster risk and have been common throughout the Earth's history. Science has now established that many of the volcanic eruptions in the Earth's history had a global impact because average temperatures rose following eruptions. The most notable volcanic eruptions – such as Okmok (in Alaska), which erupted in 45 BC, the well-known Mount Vesuvius, which erupted several times: in 1780 BC, 79 BC, and 1631 BC, and the Taupo volcano in 1631 BC – had a significant impact on the global temperature. 232 AD completely changed the regional climate, affecting not only the surrounding settlements but also causing regional shifts and climatic changes, leading to population migrations.[14]

In the context of disasters, we most often talk about extreme natural phenomena and their effects, such as earthquakes, floods, and volcanic eruptions described above, which

[11] Training of Disaster and Crisis Intervention Volunteers 2015, and Dobák 2006.
[12] Vekerdy 2002.
[13] Ferguson 2021.
[14] Ferguson 2021.

can have a major impact on the geographical locations where they occur, but local social cultures can combat these phenomena with different effectiveness and the affected populations can adopt different protection strategies.[15] Such natural phenomena may shape local conditions in such a way that the affected population chooses to leave the geographical area but we also often find that they choose to remain by transforming their environment. We may encounter geographical areas where critical infrastructures of society are under constant threat from extreme disasters, yet the response of the area's population is not to move but to protect, prevent, and be prepared. For a long time, most natural disasters were not the results of extreme human intervention. However, later on, some of these phenomena were caused by human intervention, depending on the cultural context in which the people were living because in the 21st century, there are still people who have developed a social structure that does not endanger their micro and macro environment or pollute their environment, as is the case in societies that are now under pressure due to their high industrial development.[16]

However, wars, famines, and epidemics can generate major global population movements but societies are not always prepared, neither in the sending nor in the receiving countries. This is clearly visible, for example, in the case of the Western Sahara conflict, where in 1975, the former Spanish colony was attacked by Morocco and Mauritania. The indigenous Sahrawis were unable to resist and more than half of them (160,000 people) fled to the neighbouring Algeria, where they were temporarily lodged in tents in the desert near Tinduf. This temporary habitation started 48 years ago. No one knows whether they will ever return to their homeland.[17] Many social security problems could be contained if the geopolitical games of the great powers did not pose such a risk to so many societies because wars generate famines, famines generate epidemics, and so on. The interconnections between natural and humanitarian disasters are often very clear, one phenomenon is a consequence of the other, and one consequence generates the other. We can therefore conclude that the symbiosis of the relationship between man and nature, or the lack of it, the cultural heritage, the respect for life, or the social order in which it is lived, very often contribute to the development of natural and humanitarian disasters.[18]

DISASTER REFUGEES

We are already familiar with the phenomenon of irregular (undocumented or irregularly arriving refugees) and regular (documented refugees crossing the border) migrations, as numerous studies have been carried out in recent years. In simplified terms, they are voluntary and forced refugees, who are, by definition, disaster refugees since those fleeing war, famine, economic hardship, political anarchy, and the threat of epidemics are also disaster refugees.[19] However, the failure of a state's critical infrastructure (water or electricity shortages) can also lead to a lack of conditions for basic human life, which can also raise the possibility of flight, and thus, we can also speak of disaster refugees in this case. At the global level, human populations have most often been displaced for the reasons listed

[15] Vekerdy 2002.
[16] Nagy 2010.
[17] Besenyő 2010.
[18] Nagy 2021.
[19] Reticz 2018.

above. A major earthquake, which may have been repeated several times, may have caused people living in a particular geographical area to leave and choose a safer area. This was not always a major problem before the development of state boundaries, but with their development, later this was and still is a legal constraint.[20]

We need to distinguish between internal and external disaster refugees:

1) Internal disaster refugees are internal refugees of a disaster within a state, whose accommodation and care infrastructure are most often provided jointly by the security services of the state and its accredited, contracted, and qualified NGOs. If the state and its agencies cannot provide for the care of disaster refugees on their own, the state may request assistance from international security agencies with which it has contractual relations.[21]
2) We talk about external disaster refugees when a disaster in another state forces populations of people to leave their homes and seek safety in a neighbouring state, as we have seen in the case of groups of refugees from Syria to Turkey and from Ukraine to Hungary.[22] However, the choice of a third state is also common, often for socio-political reasons.[23]

The security strategy of the European Union states and the coordination of disaster-crisis situations are essentially determined by the policy framework regulated by the European Commission, the European Council, and the European Parliament. Council Regulations on humanitarian aid set out the framework that can be used, which is not only earmarked for disaster relief in the European Union but also for all global disasters. All EU Member States are also members of sub-organisations of the United Nations, such as the Office for the Coordination of Humanitarian Affairs (OCHA), through which the UN OCHA provides assistance to disaster victims. At the same time, most EU Member States are members of NATO, of which Hungary has been a member since 1999. The Civil Emergency Planning (CEP) program is the Alliance's non-military program that oversees the activities of the Euro-Atlantic Disaster Response Coordination Centre (EADRCC). NATO's military alliance is increasingly linked to civil society issues, which, while emerging as new challenges, also include the protection of critical infrastructure in addition to operational coordination of disaster response. For example, in the fight against climate change, NATO has developed a broad spectrum of linkages with its strategic partners.[24]

The United Nations, NATO, and other security organisations around the world are constantly monitoring the world's population and the millions of people displaced by natural and humanitarian disasters, whether caused by epidemics, extreme natural phenomena, war, political persecution, famine, or economic hardship. At present, it is estimated that nearly 70 million people are displaced somewhere, in temporary camps or reception facilities. According to the United Nations High Commissioner for Refugees (UNHCR), 25 people were forced to flee their homes every minute in 2018.[25] Africa and the Middle East have the largest refugee camps in the world, but refugee reception camps are found all over the world.

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[20] Frivaldszky 2020.
[21] Nagy 2021.
[22] McClelland 2014, and Kövecsi-Oláh 2017.
[23] Frivaldszky 2020.
[24] https://katasztrofavedelem.hu/159/nato (Accessed: 2 January 2023).
[25] Aburamadan et al. 2020.

MAIN PRINCIPLES FOR THE ESTABLISHMENT OF REFUGEE CAMPS

Based on our national and international knowledge and experience, we know that the most common temporary accommodation for disaster refugees is in the form of refugee camps. We can mention the refugee camps in the Middle East (Jordan and Turkey) and the refugee camps in Africa (Kenya), but we can also recall the temporary camps for refugees from the German Democratic Republic (GDR) in 1989, which were set up and run by NGOs in Hungary for as long as they were needed.

It is very difficult to define what is meant by the concept of a temporary camp for disaster refugees. Temporary accommodation for people who have been displaced or have fled a small-scale disaster of local significance is not the same as for the refugees of a large-scale, protracted, nationwide natural or humanitarian disaster. In both cases, we are talking about temporary camps, but in the case of the former, the temporary claim is true, while in the case of the latter, it is questionable, and if so, it is worth considering that the best solution would be to integrate the refugees in towns and villages (in existing infrastructures) rather than in camps, where they could live and work under human conditions, i.e., where they could integrate into the daily life of the society concerned.

In the case of tens of thousands, perhaps hundreds of thousands of refugees, this idea is of course difficult to implement; we know that a significant number of Syrian refugees are not living in refugee camps but have settled in many towns and cities in Turkey, where they have effectively integrated into the social fabric and have not caused any supply problems, despite the strain on the basic infrastructure of the Turkish population.[26] However, as the Hagadera Camp in Kenya demonstrates, any planned and supervised refugee camp can turn into a town if its population does not choose to return.[27] In Hungary, we can see the use of different methods to accommodate disaster refugees from natural disasters of local nature affecting a significant amount of the population (1970 Szatmárnémeti flood, 2001 Bereg flood, 2006 flood, 2010 Devecser red sludge disaster, 2010 Miskolc flood, 2010 and 2013 Danube floods).[28] Hungary's disaster management authorities, in cooperation with humanitarian organisations, consider the use of existing infrastructures a priority.

In the case of urgent displacement of small populations, important infrastructure facilities are usually local halls, gymnasiums, suitable industrial facilities, schools if necessary, and non-functioning hospitals, but in many cases, also tourist facilities, so temporary tent camps are only built in justified cases (e.g., GDR refugees in 1989, 2015 refugee wave). Existing settlements, towns, and villages are always better suited to meet human needs but if the size of the refugee crowd does not allow it, refugee camps should be built for temporary purposes, as we have seen in many cases, for example in the case of the GDR refugees.[29]

Today, the aspects of establishing a refugee camp are very complex: there are many issues to be considered before a camp can be built quickly and professionally. First of all, who are the refugees? From which country, territory, or region are they? Are we talking about internal or external migration? What type of disaster are they fleeing or evacuating from? What is the composition of the population (male, female, children, elderly, disabled, sick)? Religious distribution (homogeneous or mixed)? Cultural background? How long will the

[26] Kövecsi-Oláh 2017.
[27] Hagadera Refugee Camp 2020.
[28] Romhányi et al. 2021.
[29] Tampu 2020.

disaster require the population to be accommodated? What are the climatic conditions? All these questions show that building a refugee camp is not only a question of infrastructure but also a very complex set of human policy considerations.[30] Of course, the occurrence of a disaster does not leave much time to ponder over these issues, so the experts must have many different scenarios in mind as acting quickly will save human lives, especially if there are injured people among the fleeing population.[31] This means that even before the construction of the camp starts, the most important thing is to provide first aid, treat the wounded, avert danger to life, and if necessary, transport the people in danger to hospitals (paramedics of the National Ambulance Service, Hungarian Charity Service of the Order of Malta), because this is how human lives can be saved.[32]

Taking into account cultural anthropological aspects is a cardinal issue when setting up a camp because if ethnicity and religion are not taken into account, the campers' lives can be made hell. We cannot put Christians in a camp with Muslims because religious differences make coexistence difficult, but a mixed ethnic population would also cause difficulties. When setting up such camps, the fact that they come from the same settlement is usually taken into account because if they already know each other or may have family ties, they can help each other. At the same time, it is important to establish house rules and provide police service to prevent abuses from turning into crime.

INFRASTRUCTURE REQUIREMENTS

The key to setting up a temporary camp for disaster refugees is to choose the site quickly, considering whether the camp will be needed for a short or longer period. The advantages and disadvantages of the chosen site must be considered very quickly, as these must be combined to ensure the safety of the population accommodated there. The site should be transparent, free from natural disasters, far from war zones, easily defensible, and preferably with usable infrastructure (roads, water, and electricity).[33] Once the site is chosen, a decision must be taken on the possible districts, the degree of fragmentation of units, or whether a single camp – large in size – is to be set up to cater to a large population. The size of the area will also depend on the population ratio as the basic minimum requirement is 30m^2 per person, or more if possible, depending on how temporary the set-up is and how long it may take before moving back becomes possible. This cannot always be guaranteed. During the Darfur conflict, the refugee camps set up in the El Fasher area met almost no requirements and the Sudanese government authorities were unable to guarantee the safety of the refugees, so the African Union Mission in Sudan (AMIS) peacekeeping operation sent policemen and soldiers there, but only during daytime.

Public safety is very important in the operation of camps, and cooperation between NGOs and law enforcement agencies is essential to ensure the safety of temporary refugee camps. This cooperation focuses on maintaining security, protecting human rights, and providing basic services to refugees. Cooperation can take place in several areas, including security and protection, exchange of information, humanitarian assistance, legal and ethical monitoring, conflict management, and preservation of human dignity. This cooperation

30 Dudás 2015, and Nagy 2009.
31 Training of Disaster and Crisis Intervention Volunteers 2015.
32 Szilágyi 2021.
33 Dubin 2015.

will contribute to maintaining a balanced approach to security that protects refugees while ensuring respect for their dignity and human rights.

Likewise, the mission's logistics system has repeatedly assisted refugees, but only on an ad hoc basis, so their food and water supply has been inadequate.[34]

The camp to be set up needs to be planned: it usually reflects the structure of the settlements. Health safety must be taken care of; protection from rain, snow, wind, cold, heat, mud, and pathogens must be provided. It must ensure privacy and human dignity, as well as the ability to earn a living. The distance between the facilities provided (tents, containers, and shelters built with other local materials) is also an important consideration, bearing in mind fire safety regulations, and a possible rapid evacuation. Information centres, as well as sanitation facilities (toilets, showers, washing facilities, and access to clean drinking water), should be designed according to the size of the camp. Sanitation centres should not be located in close proximity to the living facilities, to avoid the risk of infection. Provision should of course be made for firefighting equipment that can be deployed quickly if necessary to prevent the possibility of another disaster. A health centre should also be planned for the camp area, with a medical service to accommodate patients, and a pharmacy to buy basic medicines. It is not incidental to provide a school room within the camp if the refugee population has school-aged children, in case the camp is far from populated settlements, which would allow access to the local school.[35] The establishment of (religious) worship places cannot be excluded because to a refugee in crisis, the spiritual connection to his/her faith is not negligible from the mental health point of view, nor is the need for the camp to have a mental health centre.[36] It is also important to set up and run a shop because a well-guarded camp does not always allow for in-and-out access, so it is good to have some basic necessities available within the camp. Food and catering facilities are also necessary because in many cases, for example, if cooking facilities are not available in the tents of the population, they have to be provided centrally, even by setting up several such facilities. Healthy and regular meals are a basic humanitarian right, as is access to clean water. It is also important to provide storage facilities for the raw materials needed to supply the camps, which must be safe, dry, and dust-free to preserve the quality of the stored materials (e.g., medicines).[37] For longer-term camps, it is also advisable to provide communal facilities, usually consisting of large tents of several square metres, where camp residents can meet their visitors and which are also suitable for cultural events and public meetings.

Still today, similarly to the past practice, the classic way of building a camp is to use a tent that can be set up quickly and efficiently. This is all the more so because it can be set up by the refugee himself without any particular difficulty, dismantled and reused after the danger has passed, and carried in case the need arises again. Today, there are much more modern and cheap solutions that are quick to set up and better suited to accommodate a family with children, which can be supplemented with solar panels to provide part of the energy supply. However, the UNHCR still considers the use of canvas tents faster and cheaper. The Emergency Crisis Response Team of the Hungarian Charity Service of the Order of Malta also has a tent kit for setting up a fast camp. Tents can also be of several types. Depending on the duration of the camp and the climatic conditions, different types of tents can be

[34] Besenyő 2021.
[35] Dubin 2005.
[36] Sáfár 2018.
[37] Sáfár 2018.

used: there are single-fly tents, which protect against rain but do not provide thermal insulation and are ideal for short periods, preferably in warmer climates. Better quality tents (double-fly tents), with improved strength and weather resistance, are longer-lasting structures that can be used in harsher weather conditions, including, of course, milder cold. The type of tent that can be used in all weathers, to protect children, women, and the elderly, is winterized tents, which can be equipped with a stove so that the floor can be insulated in colder climates.[38] The lifespan of tented camps is not infinite, even the best tents need to be replaced every 10 years or less, so there is an effort to encourage residents of decades-old camps to build their own accommodation structures using local building materials where possible, to make their camp homes more comfortable and durable.[39]

For those fleeing wars in the 21st century, refugee camps are often built from containers or using local building materials, as we have seen in the case of the African refugee camps, which are much more comfortable as they are furnished, have a much higher level of comfort, are safer, and are not affected by major rainfalls.[40] If there is a roof, i.e. a tent, which protects from rain, snow, and sun, then the interior equipment needed is important: mattresses, clothing, bedding, sleeping bags, and blankets. Electronic equipment (computer, television, radio, and telephone) should also be provided as access to information is now a fundamental right, and a person fleeing a disaster is fearful, and fear can be alleviated by a constant supply of appropriate information.[41]

The right to access healthy food is a basic condition for survival, so, providing food to refugee camps is also a fundamental right as the refugee population may have children and elderly and sick companions who cannot work even temporarily to provide their food.[42] Food is usually provided by humanitarian NGOs working with government agencies to meet these needs and is usually collected in the form of donations through social partnerships or even through the philanthropy of large companies. If there is no electricity or water at the campsite, this must also be provided; electricity is usually supplied by appropriate aggregators and water by water tankers.[43]

THE HUNGARIAN CHARITY SERVICE OF THE ORDER OF MALTA'S TOOLKIT FOR REFUGEE RESETTLEMENT AND ITS HUMANITARIAN ROLE IN HUNGARY, EUROPE, AND GLOBALLY

The history of the Sovereign Military of the Order of Malta, which dates back more than 900 years, began in Jerusalem because the social conditions of the time, namely the consequences and horrors of the Crusades, created the necessary basis for the creation of an organisation that could take care of the citizens of Jerusalem, then a war disaster. If we look at the events from today's perspective, it is clear that the inhabitants of a city in a state of disaster needed an organisation to provide security and the material goods and conditions necessary for survival. The Order found its final home in Rome in 1834 and is now pres-

38 Tents: A Guide to the Use and Logistics of Family Tents in Humanitarian Relief 2004.
39 The 7 Largest Refugee Camps in the World 2020.
40 The 7 Largest Refugee Camps in the World 2020.
41 Tents: A Guide to the Use and Logistics of Family Tents in Humanitarian Relief 2004.
42 Frivaldszky 2020.
43 Training of Disaster and Crisis Intervention Volunteers 2015.

ent on every continent, maintaining diplomatic relations with 108 countries and operating humanitarian, social, and health organisations in some 120 countries, with rescue, disaster relief, and social security missions.[44]

The Hungarian Charity Service of the Order of Malta was founded in 1989 when Hungary, which was part of the Soviet sphere of interest, was embarking on the path of democratisation and entering an era of building its sovereignty. The events of the period in East-Central Europe upset the political events and thus the risk to the security of the citizens greatly increased. The flight of GDR citizens from their homeland turned into a humanitarian disaster in Hungary in 1989. From 14 August to 14 November 1989, the Hungarian Red Cross set up its first temporary refugee camp in the garden of the Catholic Church in Zugliget, where 48,600 East German citizens who wished to flee were provided with accommodation, food, and guidance.[45] To build the camp, the organisation used military-style tents from West Germany, which arrived in the country the day after they had been requested. The tents, in which camp beds and mattresses were placed, were pitched inside the churchyard in an orderly manner and in accordance with the fire safety regulations. An information centre was set up in the camp and containers for sanitation services arrived from Germany. Hygiene supplies were supplemented by donations from the church's parishioners. A dining facility was also built in the camp, where the camp residents received regular and adequate meals from the food donated and prepared by various restaurants. Security and protection were also coordinated by the organisation as the camp residents' fears were not unfounded. The Hungarian state and its security services also contributed to the camp's operation. The Csillebérc youth camp was also opened and the facilities of the Zánka camp were turned into a temporary refugee camp in the autumn, the latter being run by the Hungarian Defence Forces (HDF).[46] It is important to note that the role of the HDF in disaster management, like that of any other country's armed forces, is extremely important as they perform tasks that are essential for the security and defence of the country. In the field of disaster management, the HDF perform several key activities. One of these is the "state of readiness". The HDF are constantly on the alert so that they can intervene if necessary. This includes continuous training of personnel and maintenance of appropriate equipment (infrastructure). The task of "disaster response" is of paramount importance. The HDF are involved in the response to natural and industrial disasters, such as floods, earthquakes, fires, or chemical accidents. The equipment and special units provided by the HDF enable rapid response and rescue operations to ensure the safety of evacuated and displaced people in time. Therefore, they play a key role in the construction, maintenance, and security of refugee camps, both nationally and internationally. In order to prevent and manage disasters, the HDF work closely together with disaster management authorities, the police, ambulance services, and other state and municipal institutions, as well as with all civil society organisations (CSOs). The relationship of the HDF with CSOs is a close and continuously developing cooperation, which is manifested in several areas. CSOs often work together with the HDF in disaster response and rescue missions. In addition to the experience and expertise of the HDF, CSOs ensure a faster response through their local presence and direct contact with communities. Cooperation allows the best expertise and resources to be available to help those in distress. In order to build relations between the HDF and CSOs,

[44] Török et al. 2009.
[45] Jauer 2009.
[46] Tampu 2020.

there is also an ongoing dialogue in which the parties share their experiences, suggestions, and concerns. This open relationship promotes mutual understanding and effective cooperation. Overall, the relationship between the HDF and CSOs enhances community response capacities and is geared towards achieving common goals, be it disaster management, rescue, or refugee camp construction and operation.[47]

The Hungarian Charity Service of the Order of Malta next encountered a catastrophic situation in 1991, when the horrors of the South Slavic war struck the citizens of the former Yugoslavia and many were forced to flee the consequences of the fighting. The Knights of Malta organisation was involved in the evacuation of the citizens of the municipality of Vukovar with its own ambulance and patient transport. It also helped to care for the masses of ethnic Hungarians who had fled to Hungary until the fighting subsided.[48]

Between 2006 and 2013, Hungary faced flood protection problems on several occasions, where the Hungarian Charity Service of the Order of Malta participated with all its means and human resources not only in the protection but also in the accommodation of evacuees and the recovery tasks. During these years, the evacuated population was usually accommodated in existing sports halls or in suitable facilities, where the organisation provided camp beds, mattresses, blankets, and food.[49]

The red sludge disaster that flooded the settlements of Devecser and Kolontár also gave the Hungarian Charity Service of the Order of Malta a task in 2010–2011. The citizens of the severely damaged residential properties were forced to leave their homes and the organisation also took an active role in providing rented accommodation, the cost of which was covered by the Charity Service. So, this time too, the organisation did not build a refugee camp to house the residents but used existing infrastructure to place the families in rented properties until they could return to their newly built homes.[50]

The 21st century is inexhaustible when it comes to disasters. In 2015, Hungary and its citizens experienced the biggest crisis of the refugee wave. We will not go into the reasons for the masses of refugees but the scale of them (triggered by the civil war in Syria) was staggering and would have been difficult for the state authorities to cope with if civilian, humanitarian organisations had not joined in the supply tasks. The Order of Malta was present at the borders, both at the entry and exit points, where its mobile medical unit was constantly on duty, its social workers provided food and rest in the tents set up, especially for women, children, and the elderly.[51]

The Hungarian Charity Service of the Order of Malta proved its worth in taking care of European disaster refugees with humanitarian and technical support for GDR citizens in 1989, the care for refugees from Romania in 1988 and 1989, the evacuations from the South Slavic war in 1991, caring for victims of the Transylvanian and Hungarian floods in 2006 and 2013, taking care of refugees from the Middle East from 2015 to 2017, and hosting refugees of the war in Ukraine in 2022. With all these, it won professional recognition.[52]

Finally, the legal basis for its global role is its effort to help disaster refugees outside Europe.[53] The organisation was involved in helping people affected by the Sri Lankan disaster,

47 Tokovicz et al. 2012.
48 Romhányi et al. 2021.
49 Romhányi et al. 2021.
50 Romhányi et al. 2021.
51 Solymári et al. 2016.
52 Romhányi et al. 2021.
53 Solymári 2020.

provided relief after the war in Lebanon, provided medicines in Vietnam in 2009, organised voluntary medical training in Syria, and coordinated major programs in Kenya, Uganda, and Tanzania – mostly in a human security and health safety role –, built a hospital in Aleppo, organised and managed the evacuation of Hungarians from Venezuela, and continues to organise the evacuation and care for persecuted Christians in Pakistan.[54]

CONCLUSION

In conclusion, natural and humanitarian disasters have always occurred and will continue to occur in increasing numbers. Therefore, societies have developed self-protection reflexes, but an unforeseen and unpreventable disaster will very often trigger the affected population to be moved to safety until the danger is averted and they can return to their homes. The actors involved in temporary sheltering can be the state and its defence and security agencies or NGOs, which often provide voluntary and dedicated expertise and disaster management crisis stocks (infrastructure: tents, food, medical supplies, medicines, etc.). NGOs generally operate in a socialised form to protect and provide security for citizens. As a result, the inhabitants of a disaster camp are more likely to trust charitable NGOs than, in many cases, law enforcement officials. It is more difficult for traumatised individuals and groups to open up for law enforcement personnel because they are afraid, but it can be easier for volunteers from aid agencies. However, providing the infrastructure for the camps is a shared responsibility.

BIBLIOGRAPHY

- 2011. évi CXXVIII. törvény a katasztrófavédelemről és a hozzá kapcsolódó egyes törvények módosításáról, 2011. Article 2. Section (3). https://net.jogtar.hu/jogszabaly?docid=a1100128.tv.
- Aburamadan, Rania – Trillo, Claudia – Ncube, Chiko – Makore, Ncube: *Designing refugees' camps: temporary emergency solutions, or contemporary paradigms of incomplete urban citizenship? Insights from Al Za'atari*. City, Territory and Architecture, Vol. 7, No. 12 (2020), 12. https://doi.org/10.1186/s40410-020-00120-z.
- Besenyő János: *Darfur Peacekeepers. The African Union Peacekeeping Mission in Darfur (AMIS) from the Perspective of a Hungarian Military Advisor*. L'Harmattan, 2021a.
- Besenyő János: *Logistic Experiences: The Case of Darfur: Promoting Peace and Security in Africa*. Finnish Department of Strategic and Defence Studies, Vol. 2, No. 35 (2021b), 41-59.
- Besenyő János: *Saharawi refugees in Algeria*. AARMS, Vol. 9, No. 1 (2010), 67–78. https://www.academia.edu/12169344/Saharawi_refugees_in_Algeria.
- Dobák Imre: "*Természeti és mesterséges katasztrófák" – példák a Kárpátok Eurórégió térségéből*. Hadmérnök, Vol. 1, No. 1 (2006), 126–136.
- Dudás Zoltán: *Menekülttáborok kialakításának néhány releváns kérdése közel-keleti példák alapján*. Műszaki Katonai Közlöny, Vol. 25, No. 1 (2015), 74–87.
- Faragó Tibor: *Természeti és emberi eredetű környezeti veszélyek, balesetek, katasztrófák*. In: Környezetbiztonság: az ENSZ programjai és a hazai feladatok. Környezetvédelmi és Területfejlesztési Minisztérium, 1996, 11–16.
- Ferguson, Niall: *Végzet – A katasztrófa politikája*. Scolar Kiadó, 2021.

[54] https://nemzetkozi.maltai.hu/ (Accessed: 15 May 2023).

- Frivaldszky János: *A menekültek alapvető jogainak védelme és a befogadó társadalom önvédelme a tömeges bevándorlás és az asylum shopping korában*. Máltai Tanulmányok, Vol. 2, 2020, 161–181.
- *Hagadera Refugee Camp*. WorldsAid, 2020. https://worldsaid.com/node/511 (Accessed: 14 December 2022).
- Jauer Joachim: *Urbi et Gorbi – A keresztények mint a fordulat úttörői*. Magyar Máltai Lovagok Szövetsége, Róma, 2009.
- Kövecsi-Oláh Péter: *Az EU–török megállapodásról: mi történik jelenleg Törökországban a menekültek tömegeivel?*. Migrációkutató Intézet, 2017.
- Lányi András: *A szegénység ökológiája*. Máltai Tanulmányok, Vol. 2, 2020, 1–12.
- Dubin, Lisa: *Field Guidelines for Best Practices in Shelter Response: Site Planning, Shelter Design and Construction Management*. International Rescue Committee, Humanitarian Library, 2014. https://www.humanitarianlibrary.org/resource/field-guidelines-best-practices-shelter-response-site-planning-shelter-design-and (Accessed: 11 December 2022).
- McClelland, Mac: *How to Build a Perfect Refugee Camp*. The New York Times Magazine, 13 February 2014. https://www.nytimes.com/2014/02/16/magazine/how-to-build-a-perfect-refugee-camp.html (Accessed: 30 November 2022).
- Nagy Rudolf: *A klímaváltozás hatása a kritikus infrastruktúrák védelmére*. Nemzet és Biztonság, Biztonságpolitikai Szemle, Vol. 3, No. 2 (2010), 35–44.
- Nagy Rudolf: *A kultúrantropológia jelentősége a katasztrófák elleni védekezésben*. Hadtudományi Szemle, Vol. 2, No. 2 (2009), 70–77.
- Nagy Rudolf: *Járványok és kihívások napjainkban*. In: Bodnár László – Hezler György (eds.): Konferenciakiadvány: Természeti Katasztrófák Csökkentésének Világnapja Nemzetközi Tudományos Konferencia. Budapest, 2021, 288–300.
- Ritecz György: *Az Európába irányuló tömeges irreguláris migráció felfutásának és megszűnésének okai*. Hadtudomány Vol. 28, No. 3–4 (2018), 66–78. https://doi.org/10.17047/HADTUD.2018.28.3-4.66.
- Romhányi Tamás – Solymári Dániel – Tihanyi Gábor: *Szolgáló Szeretet – A Magyar Máltai Szeretetszolgálat Története*. Magyar Máltai Szeretetszolgálat, 2021.
- Sáfár Brigitta: *A humanitárius segítségnyújtás elméleti és gyakorlati kérdései a Vöröskereszt nemzetközi tevékenységének tükrében*. PhD értekezés, Budapest, 2018.
- Solymári Dániel: *A Magyar Máltai Szeretetszolgálat humanitárius és fejlesztő munkája a menekülteket kibocsátó afrikai és közel-keleti országokban*. Áttekintő bemutatás, Máltai Tanulmányok, Vol. 2, 2020, 273–284.
- Solymári Dániel – Győri-Dani Lajos: *Gondoskodó kíséret*. Magyar Máltai Szeretetszolgálat, Budapest, 2016.
- Szilágyi Béla: Menekülttábor: *A méltóság és a biztonság eszköze*. Belügyi Szemle, Vol. 69, No. 4 (2021), 31–52. https://doi.org/https://doi.org/10.38146/BSZ.SPEC.2021.4.3.
- Tampu Stelian: *A Magyar Máltai Szeretetszolgálat Egyesület szerepe az 1989-es NDK menekültek megsegítésében*. Biztonságtudományi Szemle, Vol. 2, No. 2 (2020), 1–14.
- *Tents: A Guide to the Use and Logistics of Family Tents in Humanitarian Relief*. OCHA, United Nations Publication, 2004. https://www.unocha.org/publications/report/world/tents-guide-use-and-logistics-family-tents-humanitarian-relief (Accessed: 13 December 2022).
- *The 7 Largest Refugee Camps in the World*. Refugee Council USA, 3 November 2020. https://refugeecouncilusa.org/category/refugee-camps/ (Accessed: 21 December 2022).

- Tokovicz József – Kádár Pál – Süle Attila – Borsos József – Juhász László – Petneházi Ferenc – Molnár László: *A Magyar Honvédség képességei és a katasztrófaelhárítás kihívásai, 2000–2011.* Zrínyi Kiadó, Budapest, 2012.
- Török József – Legeza László: *Máltaiak. Szerzetesrendek a Kárpát-medencében*. Mikes Kiadó, Budapest, 2009.
- *Training of Disaster and Crisis Intervention Volunteers*. In: Szöveggyűjtemény (MMSZ Szöveggyűjtemény). Magyar Máltai Szeretetszolgálat Kiadó, 2015, 98.
- Vekerdy László: *Embertudomány – kultúrák – történelem (A kulturális antropológia kihívása).* In: A. Gergely András (ed.): Kulturális antropológia, 2002.

HDR 2024, Nr. 1–2, 108–121.

Patrik Szalkai

THE UNIQUE ENVIRONMENTAL FEATURES OF THE ARCTIC THAT AFFECT MILITARY CAPABILITIES

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ABSTRACT: *The study explores the question of how the Arctic's natural characteristics affect military capabilities and assets. It will show how the region-specific nature of some of the Earth's subsystems (e.g., ionosphere or hydrosphere) impacts communications, warfare, and the use of submarines and drones. The study will highlight how many of the tools used in military operations, such as batteries and communications equipment, are significantly affected by the extreme Arctic environment. It also discusses the challenges that these natural conditions pose to specific military equipment (submarines, swarm drones) and the human aspects of warfare, such as calorie and water intake, the logistics of these, and medical aspects. The paper argues that military operations in the Arctic can only be successful if comprehensive, region-specific knowledge is available.*

KEYWORDS: *arctic, polar warfare, geography, communication, drone*

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INTRODUCTION

The natural conditions of a given region are crucial components of any military operation that cannot be ignored. The more extreme the environment in which a military operation is planned, the more the natural geography of the region will influence military operations. The military presence in the Arctic is growing yearly, and the region is being addressed more and more strategically. In October 2022, the United States released its new Arctic Strategy, which is based on four pillars:

1. security: develop capabilities for the expanded arctic activity;
2. climate change and environmental protection: build resilience and advance adaptation, while mitigating emissions;
3. sustainable economic development: improve livelihoods and expand economic opportunities;
4. international cooperation and governance: sustain Arctic institutions and uphold international law.[1]

[1] The White House 2022.

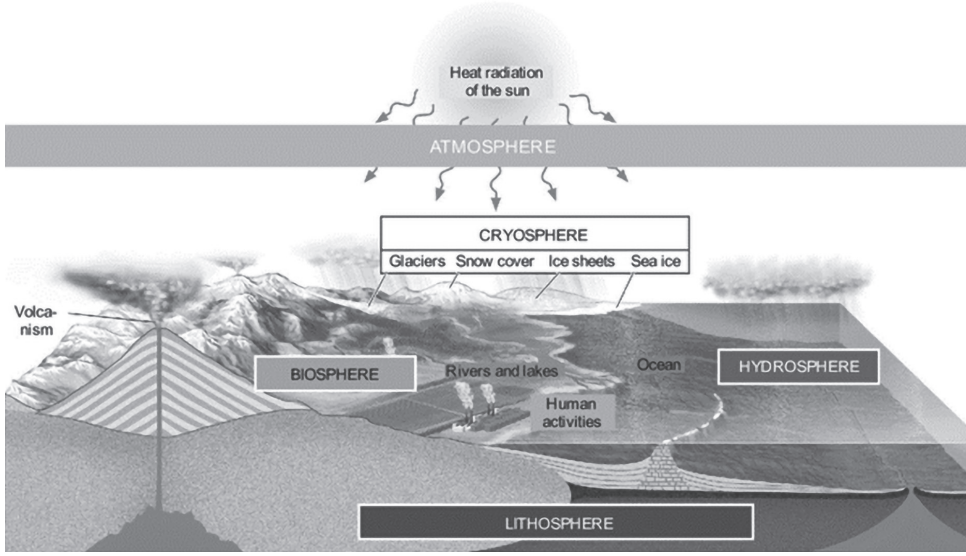

Figure 1 *The interacting subsystems of the Earth*
(Source: Razik 2014, 1.)

A key objective of the first pillar of the strategy is to better understand the operational environment in the Arctic. This includes the development of communication and navigation tools that can operate beyond the Arctic Circle, satellite coverage, weather forecasting capability, and cartographic knowledge of the region.[2] Following the new US Arctic strategy, this study shows how the environmental characteristics of the Arctic affect the application of military capabilities in the region. The layers of *Figure 1* show how the subsystems of the Earth affect military capabilities and warfare in the Arctic, for a better understanding of the study. As the US strategic vision also argued, the essay claims that military operations in the Arctic can only be successful if comprehensive, region-specific knowledge is available. This should include the characteristics of atmospheric phenomena, weather events, (sea) ice properties, ocean features, and their effects on military assets.

THE IMPACT OF IONOSPHERIC CHANGES ON ARCTIC POSITIONING AND COMMUNICATION

Ensuring continuous communication in the region is essential for both civilian and military purposes. Stable connectivity, data transmission, and positioning are vital for maritime navigation, search and rescue operations, and the deployment of military equipment. However, maintaining these is becoming increasingly challenging as we move towards the pole.

The ionosphere is a layered part of the atmosphere ranging in altitude from 60 to about 1000km, and its polar characteristics make communication very difficult in the region. It plays a significant role in high frequency (HF 3–30 MHz) communications and in the

[2] The White House 2022, 9.

degradation of satellite radio system performance in the very high (VHF 30–300 MHz), ultra-high (UHF 300–3000 MHz), and even higher frequency bands.[3]

The total electron content (TEC) is a significant parameter of the ionosphere, representing the electron density between the transmitter and the receiver of a radio signal. The more electrons are in the path of the radio wave, the more the radio signal is affected.[4] The detection of temporal variation in TEC has not only scientific significance but also practical implications. The ionospheric time delay error of a radio signal is directly proportional to its TEC value. From a military point of view, this phenomenon is important because of its significance in the Global Navigation Satellite System (GNSS) high precision positioning, navigation and timing (PNT) service, radio communications, and other space activities.[5]

Above the poles, the ionosphere has a high level of electron precipitation, which is involved in the formation of the aurora borealis and aurora australis. This, however, interferes with and degrades the effectiveness of HF radios, which are generally used by the military for long-range communications in the absence of satellites.[6] In addition, the areas of the ionosphere particularly affected by scintillation[7] are the regions between the sub-polar and polar latitudes and the equatorial belt. This phenomenon interferes with satellite communications and global positioning navigation systems, and reduces radar performance and radio astronomical observations, leading to severe degradation of data quality.[8]

It is important to highlight that the ionosphere is also influenced by other layers of the Earth. The interactions of the lithosphere (the Earth's crust and upper mantle), the atmosphere, and the ionosphere (LAI) are important for the biosphere of the planet for living organisms. Changes in one sphere of the LAI can affect changes in the other two. The lithosphere-atmosphere-ionosphere coupling is a phenomenon that has been studied for several decades, whereby seismic phenomena are closely linked to higher levels of the Earth's atmosphere through a coupling mechanism. This correlation involves multidimensional physical processes involving chemical, thermal, acoustic, and electromagnetic phenomena.[9] The coupling is related to the pre-earthquake anomalies, seismic reactions, tsunamis, volcanic eruptions, and explosions that occur together.[10] For the military, this means a spillover effect: if there is a change in one sphere, there might be a consequence in another, and considering the ever-changing environment of the Arctic, it is even more important in this region.

Satellites are one of the most effective ways of ensuring military and civilian communication in the Arctic because they allow information to flow and create contingency even in extreme environments without infrastructure. However, at present, areas beyond the 72nd parallel north and south are not well covered and the infrastructure coverage is insufficient, which is a further challenge in addition to the natural characteristics of the region.[11] Nevertheless, satellite remains the only viable solution for activities requiring a high bandwidth.

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3 Dabas 2000, 35.

4 Space Weather Prediction Center [no year].

5 Hui Xi et al. 2020, 540.

6 Mills 2021.

7 Ionospheric scintillation is a rapid fluctuation in the phase and/or amplitude of a radio frequency signal. See more: Globalpartners.com [no year].

8 Dabas 2000, 41.

9 Sasmal et al. 2021.

10 Calais et al. 1998, 191–202; Fitzgerald 1997, 829–834; Chen et al. 2022.

11 Boniface et al. 2020, 39.

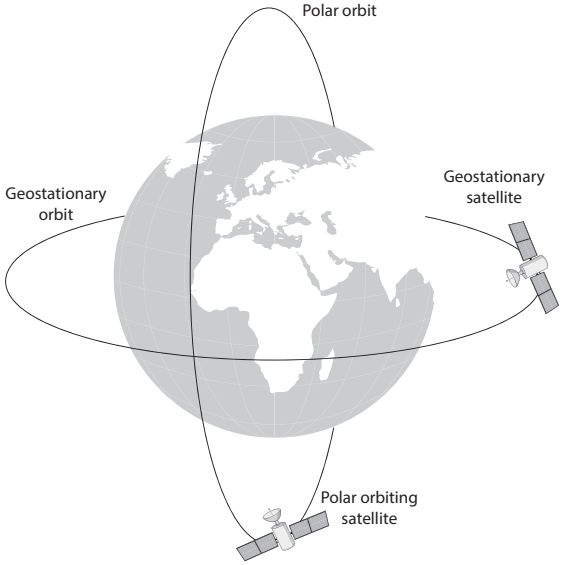

Figure 2 *Satellite trajectories*
(Source: Hardik 2022.)

The satellite link uses satellites in geostationary orbit (GEO),[12] which cover part of the Arctic. However, due to the curvature of the Earth, they do not cover the higher Arctic latitudes. There have already been examples of armies and other governmental users employing older GEO satellites that have drifted north or south of their original equatorial orbits to provide capacity in the Arctic.[13]

Several states and companies are working to increase satellite coverage of the Arctic. OneWeb and SpaceX Starlink already have satellites in the polar orbit. The Arctic Satellite Broadband Mission (ASBM) program is a joint project among the UK satellite provider Inmarsat, the Norwegian Ministry of Defence, and the US Air Force, which put two satellites into high elliptical orbit in 2024, aboard SpaceX's Falcon-9 rocket to provide polar coverage.[14]

An alternative to satellite communication is to use HF radio, but HF radio is sensitive to changes in the ionosphere. This is why HF communication in the Arctic is the least reliable, as the ionospheric variability is the most dynamic in the Arctic. Currently, only Iridium Next can provide full Arctic communications.[15] However, this system can only handle low-bandwidth services such as calls, monitoring, and tracking applications.[16]

Thus, the lithosphere-atmosphere-ionosphere coupling and other Arctic phenomena (e.g., the difference between Arctic day and night or ionospheric storms) can affect navigation, communication, and other devices that use them (e.g., targeting systems) and rely on trans-ionospheric communication. These environmental changes may therefore affect satellite communications during military operations.

According to the US Coast Guard's 2019 Arctic Strategic Outlook, high-latitude communications suffer from significant gaps due to geomagnetic interference, poor land-based infrastructure, and low satellite coverage. For this reason, one of the main objectives of the strategy is to improve the Coast Guard's communication capabilities in the region.[17] The US Coast Guard and Lockheed Martin were already working on developing an Arctic communications capability in 2014. According to Paul Scearce, Lockheed Martin's Director of Military Space Programs, conventional military systems cannot provide reliable

[12] Hardik 2022.
[13] Rainbow 2022.
[14] Rainbow 2022.
[15] Boniface et al. 2020, 40.
[16] Rainbow 2022.
[17] United States Coast Guard 2019, 29.

communications in the Arctic Ocean, and current (Lockheed) systems do not work beyond 65 degrees north latitude.[18]

In a European context, the European Union's efforts to develop Arctic communications are worth highlighting. The Gallileo Ionospheric Prediction Service, funded by the European Commission, has been monitoring ionospheric changes and providing information to GNSS users on expected events in the ionosphere since 2019.[19]

In addition, the European Defence Fund has launched a €157 million research program on the propagation of electromagnetic signals in 2023. The objective is to develop and test an efficient electromagnetic wave propagation model capable of assessing and predicting the propagation conditions of electromagnetic signals, in order to contribute to the development of a tactical decision support tool. The reason for the program is that military activity has recently increased significantly, particularly in Northern and Eastern Europe and the Arctic, where specific environmental parameters prevail.[20]

However, it is important to stress that it is not only high technology that can solve the communication challenges of the Arctic environment. Major General Brian Eifler, commander of the 11th Airborne Division, reactivated in 2022, said that line-of-sight communications suites are very important to his units, even if they are more limited in their capabilities. "What we found in the Arctic, as some of our Arctic neighbors know, the older the equipment is, the better it works. The more technology you have, the more challenges you have".[21]

THE IMPACT OF THE ARCTIC CRYOSPHERE AND HYDROSPHERE ON MILITARY OPERATIONS

The vast majority of the operational environments in the Arctic are maritime by nature, so the availability of submarines and ships is a key consideration in the region. The large amount of sea ice is a unique feature of the region, which significantly determines the use of surface and sub-surface assets. Firstly, this ice cover makes it difficult for anti-submarine warfare vessels to navigate and deploy towed sensor systems, submersible sonars, and sounding buoys (the same is true for their deployment by air). Secondly, sea ice also renders optical and infrared sensors ineffective, reflecting or scattering laser beams. The constantly moving sea ice creates an ambient noise that masks submarine sounds, while uneven ice cover scatters acoustic waves, further complicating acoustic propagation predictions.[22]

Under-ice submarine warfare requires special submarine and maritime skills. For communication and surface operations (e.g., missile strikes), the submarine must break through the ice in certain situations. However, this is so complex and demanding for the vessel that the submarine commander's primary task is to avoid it completely. To avoid breaking through the ice, FLAP (Fractures, Leads, and Polynyas) analysis is available, which predicts where an ice-free open water area, suitable for surfacing, will develop in the ice-cov-

[18] LaGrone 2014.
[19] Boniface et al. 2020, 45.
[20] European Commission 2023.
[21] Trevithick 2023.
[22] Pedersen 2019, 110.

ered sea. The FLAP analysis uses satellite imagery and forecasting software to predict days in advance where open water will form.[23]

However, one should also take into account the possibility that no ice-free water is formed. An average submarine can break through one-meter-thick ice, while a reinforced one little less than three meters. In case the submarine has to break through thick ice, it uses the "static loading" method. This involves compressed air pushing water out of the ballast tanks to increase the submarine's buoyancy until the upward force cracks the ice. In this case, the breakthrough is a very slow process.[24]

Another challenge in terms of combat procedure is the "in-ice tactical problem". In essence, in an engagement between submarines, the natural conditions of the region give an advantage to the submarine hiding in the sea ice and waiting in place, while the submarine searching and moving is at a significant disadvantage. The submarine's ability to hide and the distance among its points of contact will thus become smaller and smaller.[25]

The interest in Arctic acoustics and sound propagation has a long history. It began in the early years of the Cold War with the development of nuclear-powered submarines that could operate under the ice for extended periods. While the research on this topic lost some of its importance with the end of the Cold War, in our present days, it gained significance once again.

In the sea, the speed of sound is a function of temperature, salinity, and pressure. In the central Arctic Ocean, the relationship of these variables is such that the speed of sound generally increases from the surface to the seabed as can be seen in *Figure 3*.

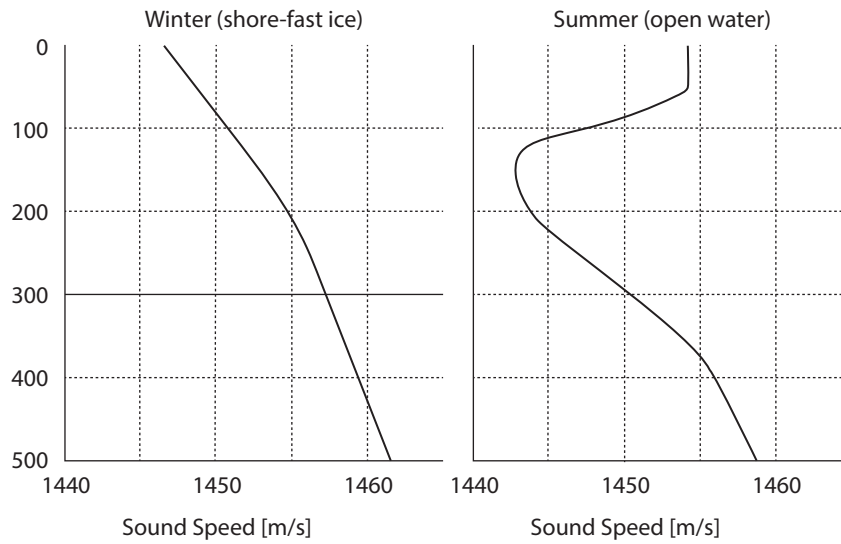

Figure 3 *Typical sound velocity profiles in the Arctic, showing the surface channel under the ice in winter and the shallow sound channel at 150m in summer.*
(Source: Cook et al. 2020, 106.)

[23] Hambling 2018.
[24] Hambling 2018.
[25] Lyon 1992.

Speed profiles with such characteristics are only found in Arctic waters. This means that sound propagates particularly well in Arctic waters.[26] A surface detonation of 0.9 kg of TNT was detected within a radius of 1,100km. This has a clear military value in enabling detection and communication at long range in the region. Additionally, this area is perfectly suited for testing new sensors.[27] So, while ice hides underwater devices from detection above the surface, the water beneath the ice sheet has properties that greatly facilitate underwater detection and communication.

In addition to natural conditions, the biosphere should also be mentioned as a factor influencing military operations. Most wireless underwater communication modems are based on sound waves. Currently, the only communication method that allows medium- and long-range communication in seawater is based on an acoustic solution. However, it has the disadvantages of low bandwidth, slow data transmission due to the propagation of sound, and is highly unreliable in shallow water. The icy environment is a further challenge as signals are scattered every time they bounce off the ice, increasing the loss.[28]

The region is characterized by shallow water over a large area, which, like ice, poses a challenge to acoustic communication in the Arctic Ocean. Given these challenges, optical channels might be a good alternative to acoustic communication over short distances. It has the advantage of faster data transmission and allows for higher bandwidth as the speed of light propagation in water is 2.25–108 m/s. However, it should be stressed that it is only suitable for short distances. LED optical communication in coastal waters is generally reliable up to a few meters, while in deep water and under ice, data transmission has been enhanced up to 100 meters. This method of communication, considering the bandwidth and the speed of data transmission, is mainly relevant for the communication between underwater drones and drone swarms.[29]

The deployment of underwater drones in the Arctic is a key issue because the shallow waters of the Arctic archipelago are very dangerous for submarines. The large number of surface ice and islands is a limiting factor for submarines[30] but is less challenging for unmanned devices, both because of their improved maneuverability and not putting human lives at risk. Furthermore, the use of these assets is easier to deny, therefore, they are more freely deployable in the region below the level of open armed conflicts. Thus, the communication capability of underwater drones and drone swarming could be crucial issues in the future in the Arctic. *Figure 4* shows a possible concept for drone swarming under water.

Optical communication channels are significantly affected by the optical properties of water. These properties vary depending on the geographical location, the depth of the water, and the particles dissolved in the water. The main absorbers of light in the ocean are water, phytoplanktons, colored dissolved organic matter, and non-algal particles or debris. The amount of these light-absorbing constituents (especially phytoplanktons), and with it their effects, vary both seasonally and with depth.[31] This is significant because their light-absorbing properties cause communication systems to perform differently depending on water depth.

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[26] Cook et al. 106.
[27] Kutschale 1969, 246.
[28] Freitag et al. 2012, 1.
[29] Hoeher et al. 2021, 2632–2633.
[30] Col. Leblanc 2021.
[31] Hoeher et al. 2635.

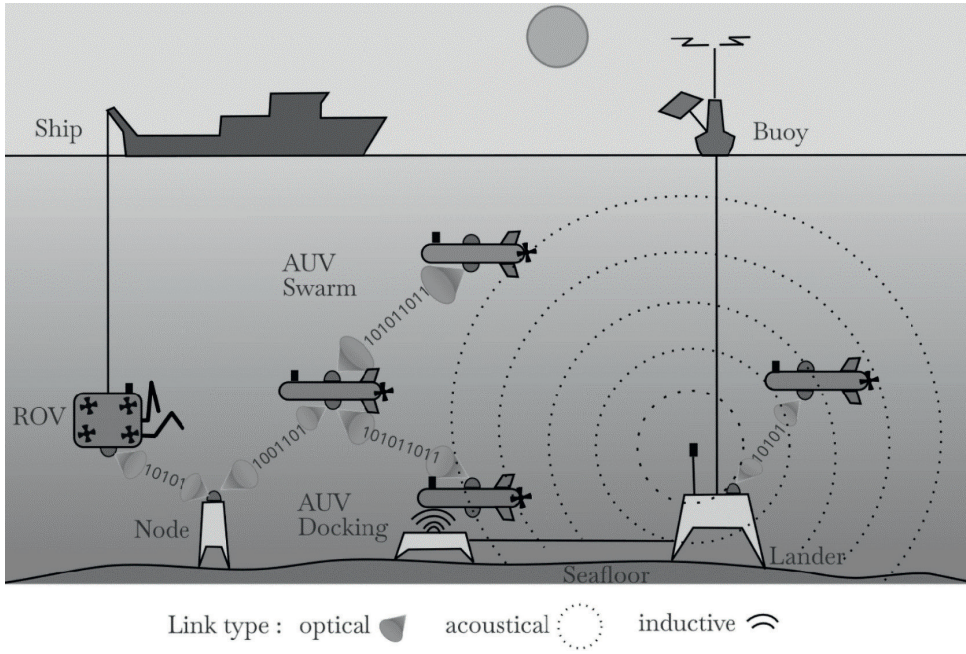

Figure 4 *Concept of communication for underwater drone swarming*
(Source: Hoeher et al. 2021, 2632.)

Thus, phytoplanktons and other organisms with similar properties that affect optical communication are also of military relevance. In the context of phytoplanktons, it should be stressed that their abundance in the Arctic varies not only seasonally but also annually due to the retreat of the ice. Between 1998 and 2018, their proportion increased by 57% in the Arctic Ocean.[32]

The current trend therefore suggests that climate change is indirectly hindering the use of underwater drones in the Arctic. However, several studies have concluded that the number of phytoplanktons in the Arctic Ocean will decline in the long term. Based on the nitrate content of the water, one study claims with 90% certainty that the chlorophyll content[33] of the Arctic Ocean will decrease in the future.[34] Another study from 2020 predicts that as the ice retreats, the number of phytoplanktons will initially increase due to improved light availability, but it will be followed by a decline in productivity due to nutrient depletion.[35]

[32] Hansen 2020.
[33] In general, the amount of phytoplanktons is determined by the chlorophyll in the water, which is the pigment of phytoplanktons used for exploiting sunlight.
[34] Noh et al. 2023, 9.
[35] Seifert et al. 2020.

THE ROLE OF ARCTIC TEMPERATURES IN MILITARY CAPABILITIES

The role of hydrosphere temperature in military capabilities

Water temperature is also a factor to be taken into account in military operations. This is well illustrated by the impact of cold water on battery life. Following a training exercise in Alaska in 2019, US Navy bombardiers highlighted that it is necessary to train in this region because most of the unmanned devices and communication systems routinely deployed are either commercially available or military equipment designed for other theatres of war. As an example, it was mentioned that lithium-ion batteries have a shorter lifetime in cold water. Routine operations from shore with MK 18 MOD 1 Swordfish or MOD 2 Knifefish UUVs in natural conditions in California would be impossible in Alaska.[36]

Impact of Arctic temperatures on land capabilities

Like at sea, temperatures on land vary considerably depending on the season, time of day, and location. They also depend on the distance from the sea, altitude, and the amount of snow. Northern Alaska, Canada, and Siberia tend to be the coldest polar regions with the lowest temperatures between −54 and −46 °C. At destinations like Svalbard, Greenland, and Franz Josef Land, the summer weather in the Arctic Circle is quite moderate: the temperatures are about 0 °C (32 °F). In general, the monthly average temperature in the Arctic Circle is below 10 °C (50 °F) throughout the year, even in the summer.[37]

Arctic warfare requires specific equipment. Commander of the 11th Airborne Division Major General Brian Eifler says the Army's standard equipment is not suitable for Arctic operations. Artillery, for example, faces significant limitations in the region in several ways. In terms of the challenges posed by the temperature, the major general pointed out that operating hydraulics in the Arctic climate is also a concern. The M-777 howitzer has several hydraulic components and therefore its deployment below freezing temperatures is challenging. In addition, the tablets needed to coordinate artillery or other long-range strikes do not work in such climates. The main problem with high-tech electronic devices is that most of them are "off the shelf" devices that are not designed for such climatic conditions.[38] In addition, it is often necessary to dig down more than a meter into the snow to hit solid ground when setting up artillery.[39]

The 320 8X8 Stryker APCs are no longer in use with the 11th Airborne Division because they have failed frequently in the Arctic environment.[40] In their place, the US Army has started to procure CATVs (Cold Weather All-Terrain Vehicles). The target is 163 vehicles.[41]

Similar to the problem in the water, another challenge is that lithium-ion batteries cannot usually be charged in cold temperatures[42] and they also discharge very quickly, which has

[36] Capt. Rojas 2019.
[37] Poseidon Expeditions [no year].
[38] Freedberg Jr. 2023.
[39] Trevithick 2023.
[40] Beynon 2022.
[41] Trevithick 2023.
[42] Saft [no year].

further negative effects on communications and vehicles. To solve the battery problem, the US military is working with Tesla, Panasonic, and LG, among others.[43]

In addition to the use of military assets, it is important to highlight the human aspect. A significant difference from a more general operational environment is the different daily calorie requirements. According to the NATO AMedP-1.11 doctrine, the energy consumption of military personnel should be about 3,600 kcal/day (15.1 MJ/d) for "normal" operations (e.g., urban policing and peacekeeping, firefighting, or tasks such as construction) and 4,900 kcal/day (20.5 MJ/d) for combat operations, i.e., tasks involving sustained infantry or special forces operations.[44] The document makes specific proposals for operations in cold climates. Among other things, it suggests that different, white packaging and higher calorie content are required. The minimum calorie intake set is 4,600 kcal/day but the document highlights that recent research shows that cold climate operations result in energy requirements over 6,000 kcal and therefore, efforts should be made to ensure that daily calorie intake exceeds the minimum requirements.[45]

In addition to adequate calorie intake, less is said about adequate hydration. Contrary to popular belief, liquid intake is still important in the Arctic climate. There are several reasons for this:

- cold-induced diuresis.
  This phenomenon occurs when people become chilled during either cold water or cold air exposure. It is an osmotic diuresis and can increase urine water loss 2-fold above basal conditions.
- increased respiratory water loss from breathing cold, dry air.
  The magnitude of water loss is dependent on both the ventilatory volume and water vapor in ambient air.
- wearing bulky, cold-weather clothing can contribute to water loss.
  Military physical training activities can generate substantial metabolic heat that must be dissipated to prevent excessive elevations in body temperature.
- added metabolic cost of movement on cold terrain.
  The addition of bulky clothing reduces mechanical efficiency and can increase the energy cost of a specific activity by an additional 10% to 20%. The metabolic cost of movement in soft snow can be 2.5 to 4.1 times greater than performing the same activity on a blacktop surface.[46]

A study on soldiers' fluid intake, jointly published by the Borden Institute, the Walter Reed Army Medical Center, and the US Army Medical Department Center & School, highlights that voluntary water intake of soldiers during field maneuvers in cold weather report daily fluid intakes ranging from 2 to 4 L/d, but water needs can go up to 4 to 6 L/d when energy expenditures are high. However, the study also highlights that the recommended daily hydration for soldiers is 7.6 L/d.[47]

[43] Trevithick 2023.
[44] NATO Standardization Office 2019, 2–3.
[45] NATO Standardization Office 2019, 2–3.
[46] Montain – Ely 2010, 27–29.
[47] Montain – Ely 2010, 30.

Considering the logistical difficulties and infrastructural challenges in the region, the issue of drinking water supply for soldiers is also important. The Joint Pacific Multinational Readiness Center (JPMRC) hosted its first Arctic Regional Combat Training Center (CTC) rotation in March 2022 at Fort Greely, Alaska, and exposed a critical capability gap regarding bulk water storage and distribution in extreme cold weather (ECW). Experience has shown that the US Army's water storage units (Camel and Hippo) are not suitable for storing water in sub-zero temperatures and freeze quickly. Residual water in distribution pipes quickly freezes, causing ball valves to freeze and plastic handles to break. Several solutions to the problem have been proposed after processing the experience. One is to keep water storage units in a heated tent. This solved the problem of water freezing but in exchange, reduced the mobility of the unit because it took 90 minutes to set up the tent and more than five hours to dismantle it because the heated tent melted the snow and then it froze again after the heating was turned off, freezing the water storage unit, too. Another solution proposed is to transport and store water in the form of ice instead of keeping it above freezing level, similar to what Norway does. Depending on its size, it could also be part of soldiers' personal equipment, stored in a canteen.[48]

In addition to the daily supplies of soldiers, medical care is another aspect that is even more difficult in specific climatic conditions. Caring for the wounded and providing first aid are not only more difficult but can also be dangerous. Usually, doctors access parts of the wounded person's body by cutting off clothing if necessary. This is not feasible in the Arctic, where undressing even a perfectly healthy person can lead to severe frostbite and hypothermia.[49] For this reason, medical care is also a human aspect significantly affected by the Arctic environment and must be taken into account when planning operations.

CONCLUSION

The study analyzed how the Arctic's natural environment – from the atmosphere to the hydrosphere – affects military operations. While further examples could be given, this paper has already made it obvious that the Arctic has unique natural features, which make military operations significantly more difficult. It could be argued that the only difference between fighting in the Arctic and fighting on the Moon is that the Arctic has air. The special characteristics of the atmosphere affect communications, and ice affects sensors and presents challenges to maritime operations that are not experienced in other regions. Due to technical limitations, procedures applicable in other climatic zones do not work in the Arctic. For Arctic operations, it is therefore essential to gain adequate environmental knowledge and continuously assess the regional impact of climate change. Besides this knowledge, it is important to have suitable tools and procedures.

Any army that has a realistic possibility of having to conduct operations in such an environment should review which of their assets are suited to the area and which capabilities are degraded by environmental factors. As the issue of water transport shows, several Arctic challenges are not a matter of finance but of creative thinking. Given the NATO enlargement and the significant changes in the global security environment, this is also advisable for countries such as Hungary that are remote from the Arctic. This does not mean that a non-Arctic country should be prepared for every possible operation. While the nature of

[48] 2nd Lt. Bedel 2022, 17–19.

[49] Trevithick 2023.

warfare in the Arctic is largely determined by the navy and the use of drones, this is primarily the responsibility of countries in the region. The capabilities primarily required by countries further away from the region are adequate personal equipment, the establishment of stable communications, land transport, and the logistics and methods to support them.

BIBLIOGRAPHY

- *An Autonomous Saft Battery Solution to Monitor the Seas despite Extreme Cold in the Svalbard Archipelago*. Saft, [no year]. https://www.saft.com/case-studies/autonomous-saft-battery-solution-monitor-seas-despite-extreme-cold-svalbard-archipelago (Accessed: 26 June 2024).
- 2nd Lt. Bedel, Nathan: *Water Mitigation in the Arctic*. Army Sustainment, Vol. 54, No. 4 (2022), 17–19.
- Beynon, Steve: *Alaska Gets Rid of Strykers as Brigade Shifts to Air Assault*. Military.com, 20 September 2022. https://www.military.com/daily-news/2022/09/20/alaska-gets-rid-of-strykers-brigade-shifts-air-assault.html (Accessed: 26 June 2024).
- Boniface, Karen et al.: *Europe's Space Capabilities for the Benefit of the Arctic – Key Capabilities, Synergies and Societal Benefits*. European Commission Joint Research Center, 2020. https://doi.org/10.2760/43511 (Accessed: 26 June 2024).
- Calais, Eric – Minster, J. Bernard – Hofton, Michelle – Hedlin, Michael: *Ionospheric Signature of Surface Mine Blasts from Global Positioning System Measurements*, Geophysical Journal International, Vol. 132, No. 1 (1998), 191–202. https://doi.org/10.1046/j.1365-246x.1998.00438.x (Accessed: 26 June 2024).
- Chen, Chieh-Hung et al.: *Resonant Signals in the Lithosphere–Atmosphere–Ionosphere Coupling*, Scientific Reports, Vol. 12, No. 14587 (2022). https://doi.org/10.1038/s41598-022-18887-1 (Accessed: 26 June 2024).
- Cook, Emmanuelle – Barclay, David – Richards, Clark: *Ambient Noise in the Canadian Arctic*. In: Chircop, Aldo – (eds.): *Governance of Arctic Shipping.* Springer Polar Sciences, Springer, year, 105–33. https://doi.org/10.1007/978-3-030-44975-9_6 (Accessed: 26 June 2024).
- Dabas, R. S.: *Ionosphere and Its Influence on Radio Communications*. Resonance, Vol. 5, 2000, 28–43. https://doi.org/10.1007/BF02867245.
- European Commission: *Funding & Tenders.* EU Funding & Tenders Portal, 2023. https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/edf-2023-ra-sens-emsp (Accessed: 26 June 2024).
- Fitzgerald, T. Joseph: *Observations of Total Electron Content Perturbations on GPS Signals Caused by a Ground Level Explosion*, Journal of Atmospheric and Solar-Terrestrial Physics, Vol. 59, No. 7 (1997), 829–834. https://doi.org/10.1016/S1364-6826(96)00105-8 (Accessed: 26 June 2024).
- Freedberg Jr., Sydney J.: *Starlink, Skis and Frozen Batteries: Army Seeks "Bespoke" Kit for Arctic Warfare*. Breaking Defense, 23 October 2023. https://breakingdefense.sites.breakingmedia.com/2023/10/starlink-skis-and-frozen-batteries-army-seeks-bespoke-kit-for-arctic-warfare/ (Accessed: 26 June 2024).
- Freitag, Lee – Koski, Peter – Morozov, Andrey – Singh, Sandipa – Partan, James: *Acoustic Communications and Navigation under Arctic Ice*. 2012 Oceans, IEEE, Hampton Roads, 2012. 1–8. https://doi.org/10.1109/OCEANS.2012.6405005 (Accessed: 26 June 2024).
- Hambling, David: *How the Navy Punches a Nuclear Sub Through Arctic Ice*. Popular Mechanics, 5 April 2018. https://www.popularmechanics.com/military/navy-ships/a19681544/how-a-submarine-surfaces-through-ice/ (Accessed: 26 April 2024).

- Hansen, Kathryn: *Witness Incredible Phytoplankton Surge in Arctic Waters*. SciTechDaily, 1 August 2020. https://scitechdaily.com/witness-incredible-phytoplankton-surge-in-arctic-waters/ (Accessed: 26 June 2024).
- Hardik, Prajapati: *Satellites*. Skyline Academy, 2 December 2022. https://skylineacademy.in/satellites/ (Accessed: 26 June 2024).
- Hoeher, Peter Adam – Sticklus, Jan – Harlakin, Andrej: *Underwater Optical Wireless Communications in Swarm Robotics: A Tutorial*. IEEE Communications Surveys & Tutorials, Vol. 23, No. 4 (2021), 2630–2659. https://doi.org/10.1109/COMST.2021.3111984 (Accessed: 26 June 2024).
- Kutschale, Henry: *Arctic Hydroacoustics*. Arctic – Journal of The Arctic Institute of North America, Vol. 22, No. 3 (1969), 246–264. https://doi.org/10.14430/arctic3218 (Accessed: 26 June 2024).
- LaGrone, Sam: *Lockheed, Coast Guard Tackling Problem of Arctic Communication*. USNI News, 21 August 2014. https://news.usni.org/2014/08/21/lockheed-coast-guard-tackling-problem-arctic-communication (Accessed: 26 June 2024).
- Col. Leblanc, Pierre: *The Need for Underwater Surveillance in the Arctic*. Vanguard, 6 December 2021. https://vanguardcanada.com/the-need-for-underwater-surveillance-in-the-arctic/ (Accessed: 26 June 2024).
- Lyon, Waldo K.: *Submarine Combat in the Ice*. Naval Institute Proceedings, Vol. 118, No. 2 (1992). https://www.usni.org/magazines/proceedings/1992/february/submarine-combat-ice (Accessed: 26 June 2024).
- *Mi a szcintilláció a műholdas kommunikációban?* Globalpartners.com, [no year]. https://gobertpartners.com/what-is-scintillation-in-satellite-communication (Accessed: 26 June 2024).
- Mills, Walker D.: *Solving Communications Gaps in the Arctic with Balloons*. Center for International Maritime Security, 23 August 2021. https://cimsec.org/solving-communications-gaps-in-the-arctic-with-balloons/ (Accessed: 26 June 2024).
- Montain, Scott J. – Ely, Matthew: *Water Requirements and Soldier Hydration*. Borden Institute, Borden Institute Monograph Series, Natick, Massachusetts, 2010.
- NATO Standardization Office: *Requirements of Individual Operational Rations for Military Use, Allied Medical Publication*. Brussel, 2019, 2–3. https://www.coemed.org/files/stanags/03_AMEDP/AMedP-1.11_EDB_V1_E_2937.pdf (Accessed: 26 June 2024).
- Noh, Min Kyung – Lim, Hyung-Gyu – Yang, Eun Jin – Kug, Jong-Seong: *Emergent Constraint for Future Decline in Arctic Phytoplankton Concentration*. Earth's Future, Vol. 11, No. 4 (2023). https://doi.org/10.1029/2022EF003427 (Accessed: 26 April 2024).
- Pedersen, Torbjørn: *Polar Research and the Secrets of the Arctic*. Arctic Review on Law and Politics, Vol. 10, 2019, 103–129. https://doi.org/10.23865/arctic.v10.1501 (Accessed: 26 June 2024).
- Rainbow, Jason: *Arctic Connectivity Competition Is Heating Up.* SpaceNews, 13 May 2022. https://spacenews.com/arctic-connectivity-competition-is-heating-up/ (Accessed: 26 June 2024).
- Razik, Sebastian: *How Magnetics and Granulometry of Continental Margin Sediments Reflect Terrestrial and Marine Environments of South America and West Africa.* Dissertation, Faculty of Geosciences of the Bremen University, 2014.
- Capt. Rojas, Oscar: *Navy EOD: Clearing the Arctic's Sea Lanes for Our Fleet and Nation*. America's Navy, 19 September 2019. https://www.navy.mil/DesktopModules/ArticleCS/Print.aspx?PortalId=1&ModuleId=866&Article=2268193 (Accessed: 26 June 2024).
- Sasmal, Sudipta et al.: *Lithosphere Atmosphere Ionosphere Coupling Mechanism: A Multi-Dimensional Overview.* SAO/NASA Astrophysics Data System, 2021. https://ui.adsabs.harvard.edu/abs/2021cosp...43E.575S/abstract (Accessed: 26 June 2024).

- Seifert, Miriam – Rost, Björn – Trimborn, Scarlett – Hauck, Judith: *Meta-Analysis of Multiple Driver Effects on Marine Phytoplankton Highlights Modulating Role of pCO2*. Global Change Biology, Vol. 26, No. 12 (2020). 6787–6804. https://doi.org/10.1111/gcb.15341 (Accessed: 26 June 2024).
- *Temperature in the Arctic Circle: Facts & Information*. Poseidon Expeditions, [no year]. https://poseidonexpeditions.com/about/articles/temperature-in-arctic-circle/ (Accessed: 26 June 2024).
- The White House: *National Strategy for the Arctic Region*. Washington D.C., 2022.
- *Total Electron Content*. Space Weather Prediction Center, [no year]. https://www.swpc.noaa.gov/phenomena/total-electron-content (Accessed: 26 June 2024).
- Trevithick, Joseph: *Army Faces Fight Just To Survive In the Arctic*. The Warzone, 17 October 2023. https://www.thedrive.com/the-war-zone/army-faces-fight-just-to-survive-in-the-arctic (Accessed: 26 June 2024).
- United States Coast Guard: *Arctic Strategic Outlook*. [PDF] Washington D.C., 2019. https://www.uscg.mil/Portals/0/Images/arctic/Arctic_Strategy_Book_APR_2019.pdf (Accessed: 26 June 2024).
- Worcester, Peter F. – Ballard, Megan S.: *Ocean Acoustics in the Changing Arctic*. Physics Today, Vol. 73, No. 12 (2020), 44–49. https://doi.org/10.1063/PT.3.4635 (Accessed: 26 June 2024).
- Xi, Hui et al.: *Spatial and Temporal Variations of Polar Ionospheric Total Electron Content Over Nearly Thirteen Years*. Sensors, Vol. 20, No. 2 (2020). https://doi.org/10.3390/s20020540.

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GLOBAL PARTNERSHIP FOR CHEMICAL SAFETY

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ABSTRACT: *Chemical plants play a key role in modern industrial society, producing and processing essential chemicals for many industries. However, these plants also face potential threats to the environment and human health, which they must address through appropriate safety measures. Chemical safety is a priority in terms of accident prevention, environmental protection, and public information. This is the only way to ensure the sustainable operation of chemical plants and the effective reduction of environmental risks, which are essential to protect the public and promote sustainable development. Developing and enforcing appropriate chemical safety measures and regulations is key to protecting not only the plants but also communities and the environment. This will ensure harmonious coexistence and a sustainable future for the chemical industry and the surrounding social environment.*

KEYWORDS: *chemical safety, database, threat, protection, security, safety, population*

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INTRODUCTION

The challenge of public security is increasingly at the heart of social and economic stability, as natural and man-made threats grow in number and complexity. Advances and innovations in information technology in the forecasting, prevention, and management of such disasters offer new opportunities to develop more effective measures and responses. Online platforms and systems are increasingly becoming central elements of disaster management, allowing for rapid and efficient monitoring of events, analysis of case studies, data sharing, and collaboration between disaster management professionals and organisations. They also enable communities affected by disasters to participate in preparedness and response and to share their experiences and information with others.

However, to use these online tools and platforms effectively, it is important to be aware of their strengths and limitations. Each platform has different characteristics and capabilities,

and disaster management professionals and decision-makers need to carefully assess these aspects in order to work effectively with the platforms.

In this context, it is worth comparing and evaluating these platforms to identify their strengths, challenges, and possible recommendations for their improvement. Such comparative analysis can help disaster management professionals and organisations make the best decisions in preventing and managing disasters and promote social and economic stability. Despite the increasingly stringent legislation on hazardous substances (such as REACH, GHS and CLP), there have been many incidents and accidents involving hazardous substances over the past decade. The REACH[1] Regulation (Registration, Evaluation, Authorisation and Restriction of Chemicals) is a European Union regulation (EC 197/2006) introduced in 2007 to promote the safe management of chemicals to protect human health and the environment, while supporting the competitiveness of the chemical industry. The regulation requires companies to register the chemicals they produce or import, assess their risk, and ensure their safe use. If risks cannot be managed, the use of substances can be restricted or banned. The legislation covers manufacturers, importers, and downstream users within the EU, while obligations for non-EU companies are taken over by EU importers or designated representatives.

The GHS[2] (Globally Harmonized System of Classification and Labelling of Chemicals) is a globally harmonised system for the classification and labelling of chemicals developed by the United Nations. Its aim is to provide users with clear and easy-to-understand information on the hazards of substances, whether in the workplace, for consumer use, or environmental protection. The GHS has introduced standardised pictograms, warning phrases, and warning words. The CLP Regulation (1272/2008) is the European Union regulation that standardises the classification, labelling, and packaging of chemicals and mixtures in line with the United Nations Globally Harmonised System (GHS). The CLP[3] regulation, which entered into force in 2009, aims to identify hazardous substances and inform users of the risk to health and the environment. CLP has gradually replaced the previous directives on dangerous substances (67/548/EEC) and preparations (1999/45/EC), which expired in 2015, thus ensuring a consistent EU approach to the management of chemicals. So, the GHS is the global standard developed by the UN that unifies the classification and labelling of hazardous chemicals, while the CLP regulation (EC 1272/2008), which closely follows the GHS directives, applies in the European Union and covers the classification, labelling, and packaging of chemicals within the EU. These regulations play an important role in minimising the risk of accidents involving chemicals, yet the accident in Beirut on 4 August 2020, involving the explosion of 2,750 tonnes of dangerous ammonium nitrate, killed nearly 150 people, injured thousands, left 300,000 homeless, and severely damaged hundreds of historic buildings. The explosion created a crater of 140–200 meters in diameter filled with seawater. This accident proved that following the rules is key to avoiding disasters.[4]

A similar disruption was caused by the rupture of the 800 mm diameter high-pressure gas pipeline between Hajdúszoboszló and Endrőd in the Püspökladány area a few minutes

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1 REACH: https://echa.europa.eu/hu/regulations/reach/understanding-reach (Accessed: 11 November 2024).

2 GHS: https://unece.org/ghs-rev8-2019 (Accessed: 11 November 2024).

3 CLP: https://osha.europa.eu/hu/themes/dangerous-substances/clp-classification-labelling-and-packaging-of-substances-and-mixtures (Accessed: 11 November 2024).

4 Polish International Assistance Centre (PCPM) 2020.

before 3 a.m. on 18 November 2019, which resulted in significant heat radiation within several hundred metres. There were no casualties as the affected section of the pipeline was located outside residential areas as a result of the settlement plan.[5]

INTERNATIONAL ALLIANCE/COALITION FOR CHEMICAL SAFETY

Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals and the international relevance of the International Labour Organization (ILO)

During the 1950s, the international community began to work together on the classification and labelling of chemicals to improve the safety of the transport and use of hazardous substances. During this period, ILO and ECOSOC[6] played an important role in the development and implementation of classification and labelling systems. In the late 1950s and early 1960s, the UN and other international and regional organisations, such as IMO[7] and ICAO,[8] widely applied the UN RTDG[9] recommendations on the safety of the transport of dangerous goods.

At the end of the 1980s and the beginning of the 1990s, resolutions adopted by ILO further strengthened the steps towards international harmonisation, particularly regarding safety at work and the use of hazardous chemicals in the workplace. Furthermore, the expert consultation organised by ILO in 1991 was of particular importance for the harmonisation of classification systems, resulting in an update of the harmonisation exercise in 1992.[10]

OECD[11] joined the international harmonisation activities in 1991 and established a joint information centre for the harmonisation of classification criteria. The Coordination Group for Harmonisation of Chemical Classification Systems (CG/HCCS), initiated by ILO, was established in 1992 within the framework of the IPCS, as a result of close cooperation among ILO, WHO,[12] UNEP,[13] UN CETDG,[14] and OECD. The decisions of the 1992

[5] VG: VilágGazdaság 2019.

[6] ECOSOC: the United Nations Economic and Social Council serves as the central forum for discussing international economic and social issues, and formulating policy recommendations addressed to member states.

[7] IMO: the International Maritime Organization is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships.

[8] ICAO: the International Civil Aviation Organization is a United Nations agency that helps 193 countries to cooperate and share their skies to their mutual benefit

[9] UN RTDG: the UN Recommendations on the Transport of Dangerous Goods covers the transport of dangerous goods by all modes of transport except by bulk tanker.

[10] See more: ILO Website: https://www.ilo.org/static/english/protection/safework/ghs/back.htm.

[11] OECD: the Organisation for Economic Co-operation and Development is an international organisation that works to build better policies for better lives. Hungary has been a member of the Paris-based international economic organisation since 1996.

[12] WHO: the World Health Organization is a specialized agency of the UN responsible for international public health.

[13] UNEP: United Nations Environment Programme.

[14] UN CETDG: United Nations Committee of Experts on the Transport of Dangerous Goods.

UNCED Conference were key to harmonising the classification and labelling of chemicals and promoting the sound management of chemicals.

The establishment of the International Commission of Control and Supervision (ICCS) in 1994 confirmed the priorities and the work to be done for classification and labelling harmonisation at the global level. In the mid-1990s, six intergovernmental organisations created the International Online Medical Council (IOMC), which coordinated cooperation in the field of chemical safety. IOCC coordinates chemical safety activities within IOMC, ensuring concerted action and effective harmonisation.

The acknowledged central role of the CG/HCCS and its oversight of the harmonisation work, recognised by UNCED[15] and ICCS, have given further impetus to the global harmonisation of the classification and labelling of chemicals. In order to move forward, the forum called for action plans to be developed to implement the harmonisation work at the national level.

Table 1 *Areas of harmonisation (edited from the Focal Point list* by the authors)*

AREAS OF HARMONISATION	
HEALTH HAZARDS AND DANGER TO THE ENVIRONMENT	**Focal point: OECD/AG-HCL**
Hazardous to the Aquatic Environment	AG-HCL Working Group
Hazardous to the Terrestrial Environment	
Acute Toxicity	
Irritation/Corrosion of Biological Tissue	Germany/USA
Sensitization	Sweden/Germany
Reproductive Toxicity	Australia/UK
Germ Cell Mutagenicity	Netherlands/UK/Germany
Carcinogenicity	Norway/Netherlands
Long-term Systemic Toxicity	Belgium/USA
Neurotoxicity and Immunotoxicity	
METHODOLOGY	**Focal point: OECD**
Classification of mixtures/preparations	Lead country: Canada
PHYSICAL HAZARDS	**Focal points: UN CETDG, ILO**
Reactivity	Working Group chaired by the UK
Flammability	Working Group chaired by Germany
Related Tests and Criteria	UN CETDG
HAZARD COMMUNICATION	Focal point: ILO/CIS
Labelling: minimum data element requirements; graphic hazard symbols (pictograms, colours, frames); comprehensibility of written and graphic hazard warnings; method for the selection of proper hazard symbols and risk and safety phrases. Chemical safety data sheets: format; data elements; harmonization of phraseology; phraseology comprehensibility; means of dissemination on a worldwide basis. Training in hazard communication: (workplace, transport, consumers); harmonization of principles for the elaboration of training packages for compilers and users.	

* Focal Point: https://webapps.ilo.org/static/english/protection/safework/ghs/areasof.htm (Accessed: 29 March 2024).

[15] UNCED: United Nations Conference on Environment and Development.

International Labour Organization

Table 1 shows that the areas of harmonisation relating to health and environmental hazards cover a wide range and play a key role in protecting workers and the environment. OECD/AG-HCL focuses on the classification of health hazards and environmental hazards and deals in detail with, for example, substances hazardous to the aquatic and terrestrial environment, acute toxicity, and reproductive toxicity.

Irritation of biological tissues, hypersensitivity, carcinogenicity, and other hazards play an important role in health protection, and many countries, such as Germany, the USA, or the Netherlands, pay particular attention to these.

In the methodological field, the OECD plays a leading role in the classification of mixtures and preparations, while physical hazards, reactivity, and flammability are the focus of attention of the UN CETDG and ILO. In these areas, country-led working groups are helping to develop common principles and criteria.

In the field of hazard communication, ILO and CIS provide support in the area of labelling and chemical safety data sheets. This includes the definition of minimum requirements for data elements, the use of graphic hazard symbols, and clear phraseology. It is also important to develop hazard communication training for workplaces, transport, and consumers, and to harmonise training packages for translators and users. The application of harmonised methods and principles worldwide will contribute to safer workplaces and environments and help to minimise hazards and harm.

As shown in *Table 2–3*, participation in the IOMC CG/HCCS (Inter-Organization Programme for the Sound Management of Chemicals – Chemicals Management Programme – Coordinating Group of the Harmonization of Chemical Classification Systems) is characterized by the participation of states, international organizations, regional bodies, and non-governmental organisations working together to ensure the safe management of chemicals.

Some of the countries involved include Australia, Brazil, Canada, China, India, Japan, New Zealand, Russia, the United Kingdom, South Africa, Sweden, and the United States of America, which participate through various ministries or authorities (health, environment, or labour).

Among the international organisations, there are important institutions such as WHO, ILO, FAO, UNEP, IMO, ICAO, UN CETDG, and OECD, which are extensively involved in the development of international standards and guidelines on chemicals.

Regional bodies include the Commission of the European Union (CEU), which is responsible for coordinating EU legislation on chemicals. NGOs include important players such as IOE, ICME, ICFTU, ISSA, IOCU, and WWF, representing the interests of industry, workers, consumers, and environmentalists.

The focus of the programme includes the management of health and environmental hazards, physical hazards, reactivity and flammability, and hazard communication. The secretariat of the programme is provided by the ILO Occupational Safety and Health (OSH) Branch. Cooperation among participants aims at safer management of chemicals and harmonisation of standards at the global level.

As can be seen from *Table 4*, the collection of links to information on chemical management available on the Internet is broken down into a detailed list of available resources by international organisation, country, region, and non-governmental organisation (NGO).

Table 2 *Participation in IOMC, part 1 (edited from the SafeWork list* by the authors)*

PARTICIPATION IN THE IOMC CG/HCCS			
COUNTRIES		**COUNTRIES**	
Australia	Worksafe Australia	New Zealand	Ministry of Environment
Brazil	Ministry of Labour	Russian Federation	Ministry of Health
Canada	Human Resources Development Canada – Labour Program	South Africa	Ministry of Labour
China	Ministry of Labour	Sweden	National Chemicals Inspectorate (KEMI)
India	Ministry of Environment and Forests	United Kingdom	Health and Safety Executive
Japan	Ministries of Health, Environment, Labour and Industry	United States of America	Occupational Safety and Health Administration
INTERNATIONAL ORGANIZATIONS/PROGRAMMES			
World Health Organization (WHO)			
International Labour Office (ILO)			
Food and Agriculture Organization of the UN (FAO)			
United Nations Environment Programme (UNEP)			
International Maritime Organization (IMO)			
International Civil Aviation Organization (ICAO)			
UN ECE Committee of Experts on Transport of Dangerous Goods (UN CETDG)			
Organization for Economic Co-operation and Development (OECD)			
REGIONAL BODIES			
Commission of the European Union (CEU)			

* SafeWork: https://webapps.ilo.org/static/english/protection/safework/ghs/particip.htm (Accessed: 29 March 2024).

Table 3 *Participation in IOMC, part 2 (edited from the SafeWork list* by the authors)*

PARTICIPATION IN THE IOMC CG/HCCS
NON-GOVERNMENTAL ORGANIZATIONS
International Organization of Employers (IOE)
International Council of Chemical Associations (Japan, Canada, USA, Australia, Europe)
International Council on Metals and the Environment (ICME)
Hazardous Materials Advisory Council (HMAC, USA)
International Frozen Foods Association (IFFA)
International Federation of Pharmaceutical Manufacturers Association (IFPMA)
International Confederation of Free Trade Unions (ICFTU)
International Federation of Chemical, Energy, Mines and General Workers' Union (ICEM)
World Wide Fund for Nature (WWF)
International Organization of Consumers Unions (IOCU)
International Social Security Association (ISSA)
FOCAL POINTS
OECD Health hazards and danger to the environment
UN CETDG/ILO Physical hazards (reactive and flammable materials)
ILO Hazard communication
SECRETARIAT
International Labour Office, Occupational Safety and Health Branch

* SafeWork: https://webapps.ilo.org/static/english/protection/safework/ghs/particip.htm (Accessed: 29 March 2024).

Table 4 *Participation in IOMC, part 3 (edited from the SafeWork list* by the authors)*

PARTICIPATION IN THE IOMC (COUNTRIES / REGIONS)	
AUSTRALIA	**UNITED STATES OF AMERICA (USA)**
Worksafe Australia	Environmental Protection Agency – EPA
CANADA	Centers for Disease Control and Prevention – CDC
Canadian Centre for Occupational Health and Safety – CCOHS	National Institute of Environmental Health Sciences – NIEHS
La Commission de la santé et de la sécurité du travail – CSST	US EPA Office of Prevention, Pesticides and Toxic Substances
International Development Research Centre	California, Environmental Protection Agency
FINLAND	Chemical Industry Institute of Technology – CIIT
Finnish Institute of Occupational Health	Consumer Product Safety Commission – CPSC
JAPAN	National Toxicology Program – NTP
National Institute of Health Sciences – NIHS	Federal Emergency Management Agency – FEMA
National Institute of Health – NIH	Food and Drug Administration – FDA
National Cancer Center – NCC	Agency for Toxic Substances and Disease Registry
National Institute of Industrial Safety	National Institutes of Health – NIH
National Institute of Industrial Health	National Technical Information Service – NTIS
Tokyo Metropolitan Res. Lab. of Public Health	Environmental Monitoring and Assessment Program – EMAP
Japan Industrial Safety and Health Association – JISHA	ACGIH – American Conference of Governmental Industrial Hygienists
UNITED KINGDOM (UK)	Occupational Safety and Health Administration
UK Department of Health	U.S. Department of Health and Human Services
Institute for Environment and Health – IEH	Other Government Information Servers
Communicable Disease Surveillance Centre	U.S. Federal Government Agencies
Physical & Theoretical Chemistry Laboratory, Oxford University	National Institute for Occupational Safety and Health – NIOSH
Cambridge University Chemical Laboratory	Association of Official Analytical Chemists
EUROPE	CMA – The Chemical Manufacturers Association
United Nations Economic Commission for Europe – UN-ECE	Draft of ACGIH – American Conference of Governmental Industrial Hygienists
UN-ECE: Industry and Technology Division	
UN-ECE: Chemical Industry	
European Chemical Industry Council	

* SafeWork: https://webapps.ilo.org/static/english/protection/safework/ghs/particip.htm (Accessed: 29 March 2024).

The international organisations include important institutions such as FAO, IAEA,[16] ILO, ISO, OECD, UNDP, UNEP, WHO, and WTO.[17] These organisations offer various programmes and databases for information on chemicals.

Some of those countries and regions include Australia, Canada, Europe, Japan, and the United States. These countries provide data, research, and guidelines on chemical management through their governmental and institutional sites.

NGOs include environmental organisations such as EcoNet and Greenpeace, as well as other organisations such as WWF, which also provide relevant information and campaigns on the environmental and health impacts of chemicals.

The organisation also operates several expert groups and advisory bodies, listed in *Table 4,* which aim to develop international guidelines on the use of chemicals in the workplace and to improve the safety of their use.

The International Labour Organisation plays a key role in promoting the safe management of chemicals in the workplace and in communicating risks effectively. To this end, it has produced a number of background materials and documents on the subject.[18] These include a 1996 report on responses to chemical risks. In addition, their 1998 publication analyses the scientific background to communicating chemicals relevant to health and safety. They also considered it important to produce an updated bibliography on communicating chemical hazards and a study on comprehensibility, particularly in Southern African countries.

In addition to the ILO, other organisations are also involved in this effort. IOMC and OECD are also important partners in this field. The IOMC Coordination Group and the documents of the 10th Consultation on the HCCS are also available on the ILO website.

The uploaded documents and background materials provide a reference for countries and organisations in the development and implementation of chemical safety measures, thus contributing to the protection of workers and the environment.

INCHEM

INCHEM is an electronic database created in 1997 as a result of a collaboration between the International Programme on Chemical Safety (IPCS) and the Canadian Centre for Occupational Health and Safety (CCOHS). This database contains a variety of chemical safety-related publications and database entries. INCHEM offers more than 8,000 chemical and chemical risk-related documents, providing quick and free access to their proper management. These documents are peer-reviewed and come from different exposure scenarios, including occupational exposure.[19]

The IPCS INCHEM is directly aligned with the priorities of the Intergovernmental Forum on Chemical Safety (IFCS), which aims to promote public access to the latest internationally recognised publications and databases on chemical safety from international organisations.

[16] IEAE: International Atomic Energy Agency.
[17] WTO: World Trade Organization.
[18] See more: https://www.ilo.org/static/english/protection/safework/ghs/ghsdocs/index.htm.
[19] Graczyk 2024, 525–526.

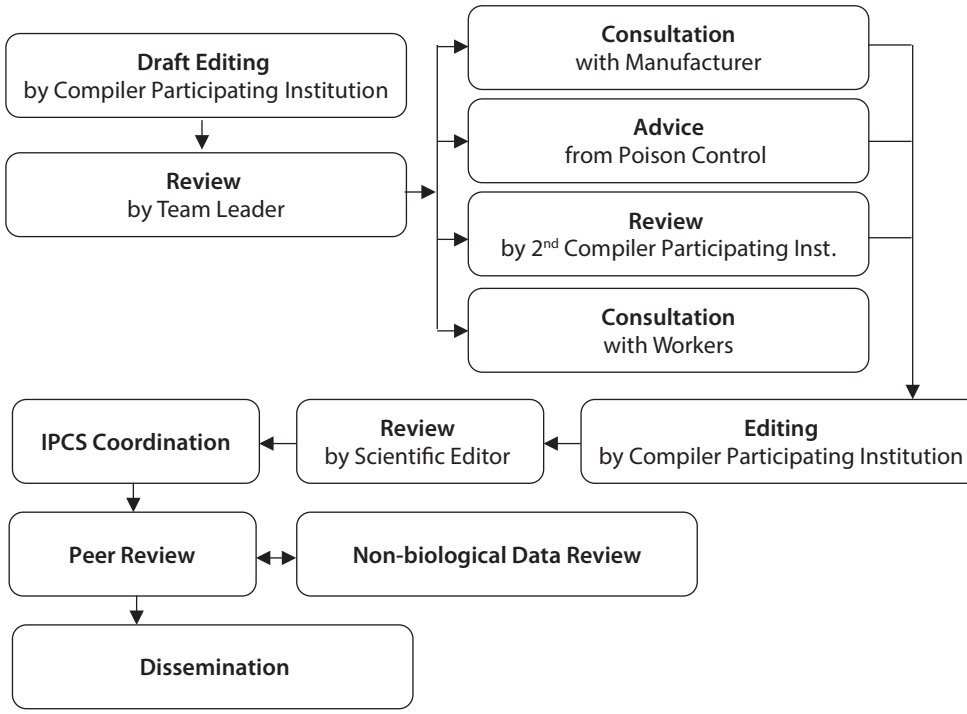

Figure 1 *ICSC flow diagram (Niemeier – Obadia, 2001, edited by the authors)*

IPCS INCHEM is an indispensable tool for professionals involved in chemical safety and the proper management of chemicals. Key features and information offered by INCHEM:

– International Chemical Safety Cards (ICSCs) are short, condensed documents containing information on the health, safety, and environmental risks of chemicals.[20] These cards provide quick access to key information, including hazards, exposure pathways, health effects, and handling guidelines.[21]
– Concise International Chemical Assessment Documents (CICADS) are short, concise documents that summarise the potential health and environmental effects of chemicals. These assessments are carried out by international experts and are based on international or regional assessments or existing Environmental Health Criteria (EHC) documents. The risks to human health and the environment are determined by the type and extent of exposure and can vary considerably depending on the exposure. The CICADs are intended to provide critical information for characterizing the risk of chemicals, but readers are encouraged to consult identified source documents as well.
– The INCHEM also includes toxicological data on chemicals, hazard assessment, exposure pathways, and guidelines for managing health emergencies. It also includes priority documents and manuals on chemical accident management, chemical hazard assessment, and chemical safety in the workplace.

[20] See more: https://inchem.org/pages/about.html.
[21] Niemeier – Obadia 2001, 107–115.

INCHEM has its own website,[22] which is free of charge and provides a wide range of information for chemical safety and health professionals, decision-makers, and the general public.

eCHEMPORTAL

The eChemPortal website is a free web portal where information on the safety of chemicals, including identification, chemical properties, effects, and classifications, is easily accessible. Users can find direct links to various websites that offer detailed information on chemical hazards, risks, and exposure, as well as information related to international chemical programmes.[23] Classification results according to national/regional hazard classification systems or the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) are available. The eChemPortal also provides exposure and useful information on chemicals.

Valid information that can be obtained from the portal includes:
- Physical chemical properties;
- Ecotoxicity;
- Toxicity;
- Environmental fate and behaviour;
- Classification and labelling;
- Exposure and use.

Direct data access is provided on the portal, where databases such as the EU REACH List of registered substances,[24] Candidate List of Substances of Very High Concern (SVHC),[25] or the Registry of Intentions (SVHC, harmonised classification and labelling, restrictions)[26] can be found.

Perhaps what makes the portal unique is that it provides access to Australian, Canadian, New Zealand, and American direct access databases. All of these access points have absolutely valid and open, official source information, which in this case can be of paramount importance to a researcher or defence professional.

eMARS

The European Commission operates a reporting system and database, the Major Accident Reporting System (MARS), for the purpose of reporting the experience of major accidents involving dangerous substances.[27]

[22] See more: https://inchem.org/#/.

[23] De Marcellus 2023, 1017–1029.

[24] List of registered substances: https://echa.europa.eu/en/web/guest/information-on-chemicals/registered-substances (Accessed: 30 March 2024).

[25] Candidate List of Substances of Very High Concern: https://echa.europa.eu/web/guest/candidate-list-table (Accessed: 30 March 2024).

[26] Registry of Intentions: https://echa.europa.eu/information-on-chemicals (Accessed: 5 April 2024).

[27] European Commission website: https://emars.jrc.ec.europa.eu/EN/emars/content (Accessed: 30 March 2024).

The eMARS (European Major Accident Reporting System) is an online platform operated by the European Commission's Joint Research Centre (JRC). eMARS, the major accident reporting system, was originally developed in 1982 under the EU's Seveso Directive 82/501/EEC. The aim of the directive was to regulate and prevent major chemical accidents in establishments that use or store dangerous substances, facilitate the exchange of lessons learned from accidents involving dangerous substances in order to avoid chemical accidents and their possible consequences, and keep the database operational and ensure that credible data are recorded in the system; anonymity is encouraged in the interest of companies. The name, location, and confidential information of the undertaking are not included in the system. The database is public and the public is allowed to consult it. The eMARS database provides accurate data going back 2–3 years, as the investigation and closure of accidents often take years, after which the data are made public. Access to the database and data extraction can be done at any time according to the request of the searcher.

However, the scheme is relevant not only in the EU but also in the countries of the European Economic Area (EEA), the OECD, and the United Nations Economic Commission for Europe (UNECE).

The European Major Accident Reporting System is extremely useful for international cooperation and data sharing, as the most important analyses of chemical accidents are available on this platform. Unfortunately, language barriers and different national data protection regimes do not make it easy to share information. In order to facilitate data access, it is recommended to consider multilingual posting and of course the introduction of more transparent data protection rules and measures.

SEARCH ACCIDENT REPORTS – RESULTS – "1207 ACCIDENT REPORTS"

EU Member States are obliged to notify eMARS of the incidents if the accident involves a Seveso establishment and complies with the requirements of the Seveso III Directive. However, for OECD and UNECE countries outside the EU, accident reporting is voluntary. The eMARS data are regularly updated and maintained by the Major Accident Hazards Bureau (MAHB) and the English translation of the reports is carried out by the European Commission's POETRY service. This ensures that the system is up-to-date and effective in dealing with accidents involving dangerous substances and mitigating their consequences.[28]

eMARS allows disaster management authorities and professionals to easily access information and case studies on chemical accidents, thus helping prevention and mitigation. It ensures learning and lessons can be drawn from accidents. It will support cooperation and data sharing on chemical accident information between EU Member States and other international organisations, which can greatly contribute to the development of safety standards and procedures. Another advantage of eMARS is that the publicly available platform is a user-friendly interface where accident reports can be easily searched and browsed. The system presents accidents by year, country, and category in a transparent way. In addition, eMARS allows data to be downloaded and further analysed for the development of disaster management measures and strategies. However, the downside and difficulty of eMARS is that it needs to protect the confidentiality of data and sensitive information,

[28] European Commission website: https://emars.jrc.ec.europa.eu/en/emars/content (Accessed: 30 March 2024).

which raises complex issues of privacy and data management. It is mainly available in English, which may limit those who do not speak this language. As it is a complex system, it requires considerable resources and expertise to manage and maintain.

Delays in the reporting and analysis processes can reduce the timeliness and relevance of the data. eMARS is an important tool in the field of disaster management, allowing for the collection and sharing of information on chemical accidents at the European and international levels.

The further development of the eMARS system and the strengthening of international cooperation can help to develop even more effective and efficient preventive measures to reduce accidents involving dangerous substances.

Several different data on chemical accidents can be viewed through the eMARS platform: the description of the accidents, time, location, and chemicals involved; the size of the area affected by the incident and the number of people living in the vicinity; the number of people injured as a result of the accident and the type and extent of the damage caused; measures taken following the incident and their effectiveness; names and contact details of the authorities reporting and managing the incident. These data will allow users to understand in detail the circumstances of the various chemical accidents and use them to develop preventive measures and responses.

Based on data from the eMARS platform over the past year, chemical accident rates can vary according to factors such as the type of accident, the type of chemical, and the population of the affected area. However, in general, rates can be assessed by the following criteria:

- There may be differences in rates between different types of chemical accidents – rates of malfunctions, spills, explosions, or fires.
- The type of chemicals involved in accidents may also affect the rates. Certain hazardous substances may cause accidents more often or have more serious consequences.
- Rates are affected by the population of the affected area and its environmental sensitivity. Accidents in an area with a larger population may have a greater impact on people and the environment.

However, to accurately determine Search Accident Reports,[29] detailed data and analysis are needed and can be accessed through the eMARS platform.

CONCLUSION

In our comparative analysis, we have carefully examined the advantages and disadvantages of each platform and highlighted the importance of the recommendations. Through this, we have assessed which development opportunities offer advantages for Hungary and in which areas the practices of other countries should be taken into account when adopting them.

Every chemical database has its advantages and disadvantages, so the following suggestions have been made for Hungary's location and potential.

In terms of proposals, the arguments in favour of adopting eMARS include highlighting the benefits of EU-wide cooperation and data sharing. The eMARS system offers the possibility for Hungary to actively participate in the international chemical security network,

[29] European Commission website: https://emars.jrc.ec.europa.eu/en/emars/accident/search (Accessed: 30 March 2024).

allowing for the exchange of data and best practices with other European countries and EU institutions. This will allow Hungary to access up-to-date information, learn from the experiences of other countries, and work with other member states to prevent and manage chemical incidents.

However, the language barriers of the eMARS system may make it difficult for other countries to access it. It is therefore recommended to introduce multilingualism on the eMARS platform to make it more accessible to other countries. This could include support for the Hungarian language in addition to English and other European languages to make data and information easier to understand for Hungarians.

The establishment of a Hungarian database would also be an important step in the field of chemical safety, allowing Hungary to collect and manage data specifically tailored to its domestic conditions and needs in the management of chemical accidents and disasters. Such a Hungarian database could help disaster management authorities to respond faster and more efficiently to incidents of this kind, and could also help in forecasting and prevention.

It is important to note, however, that a Hungarian database of its own should be in line with European and international standards and practices, with the aim of enabling Hungary to cooperate effectively with other countries in data sharing and collaboration. In addition, the database should be detailed and up-to-date, and disaster management authorities and other relevant organisations should be actively involved in collecting and updating the data.

Overall, the adoption of eMARS combined with the creation of a Hungarian database would be the most appropriate solution for Hungary in the field of chemical safety. eMARS allows EU-wide cooperation and data sharing, while a Hungarian database would help to address specific Hungarian needs and circumstances. This would enable Hungary to respond effectively to chemical threats and incidents while working with other European and international partners to share data and best practices and improve disaster management systems.

Hungary should pay more attention to linguistic multilingualism and developing interactivity to improve the accessibility and usability of disaster management information. It would also be worthwhile to study and apply European and international practices in order to identify and implement best practices.

BIBLIOGRAPHY

- De Marcellus, Sally: *EChemPortal – The Global Portal to Information on Chemical Substances*. In: Elsevier eBooks, Encyclopedia of Toxicology (Fourth Edition). Vol. 3, 2023, 1017–1029. Source: https://doi.org/10.1016/b978-0-12-824315-2.01159-3.
- European Agency for Safety and Health at Work: *CLP – Classification, Labelling and Packaging of substances and mixtures*. https://osha.europa.eu/hu/themes/dangerous-substances/clp-classification-labelling-and-packaging-of-substances-and-mixtures (Accessed: 11 November 2024).
- European Chemicals Agency: *ECHA (The European Chemicals Agency)*. In: Elsevier e-Books, Encyclopedia of Toxicology (Third Edition). 2014, 263–264. Source: https://doi.org/10.1016/b978-0-12-386454-3.00551-0.

- European Chemicals Agency: *European Chemicals Agency (ECHA)*. In: Elsevier eBooks, Encyclopedia of Toxicology (Fourth Edition). Vol. 4, 2024, 523–525. Source: https://doi.org/10.1016/b978-0-12-824315-2.00066-x.
- European Chemicals Agency: *Understanding REACH*. https://echa.europa.eu/hu/regulations/reach/understanding-reach (Accessed: 11 November 2024).
- European Commission website: https://emars.jrc.ec.europa.eu/EN/emars/content (Accessed: 30 March 2024).
- Focal Point: https://webapps.ilo.org/static/english/protection/safework/ghs/areasof.htm (Accessed: 29 March 2024).
- Graczyk, Halshka: *INCHEM*. In: Elsevier eBooks, Encyclopedia of Toxicology (Fourth Edition). Vol. 5, 2024, 525–526. Source: https://doi.org/10.1016/b978-0-12-824315-2.01150-7.
- Niemeier, Richard W. – Obadia, Isaac: *International chemical safety cards and global harmonization*. Safety Science, Vol. 39, No. 1–2 (2001), 107–115. Source: https://doi.org/10.1016/s0925-7535(01)00030-3.
- Polish International Assistance Centre (PCPM): *Tragic explosion in Beirut. The PCPM appeals for help*. 4 August 2020. Source: https://pcpm.org.pl/tragiczna-eksplozja-w-bejrucie-pcpm-apeluje-o-pomoc/ (Accessed: 30 March 2024).
- SafeWork: https://webapps.ilo.org/static/english/protection/safework/ghs/particip.htm (Accessed: 29 March 2024).
- UNECE: Globally Harmonized System of Classification and Labelling of Chemicals (GHS), 2019. https://unece.org/ghs-rev8-2019 (Accessed: 11 November 2024).
- VG: VilágGazdaság: *Gas explosion near Püspökladány*. 18 November 2019. Source: https://www.vg.hu/kozelet/2019/11/gazrobbanas-volt-puskokladanynal (Accessed: 27 March 2024).

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Viktória Bene – Norbert Daruka – Barbara Elek

A COMPARATIVE ANALYSIS OF CHEMICAL ACCIDENT DATABASES AND RECOMMENDATIONS FOR IMPROVED SAFETY PRACTICES

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ABSTRACT: *The prevention and effective management of industrial accidents is key to protecting public health, the environment, and economic stability. The comparison of online platforms and databases allows us to present a comprehensive picture of safety practices in different industrial sectors, as well as their efficiency and effectiveness. This will help to identify best practices and areas where further improvements are needed for the country concerned. As a result of our comparative analysis, targeted measures can be taken to prevent and manage accidents, reduce the number and severity of industrial accidents, and continuously improve industrial safety standards and practices.*

Furthermore, comparative analyses allow us to identify differences in industrial safety cultures and the lessons that can be learned from them. We provide suggestions for improving the efficiency and competitiveness of industrial processes while focusing on the safety of workers, the public, and the environment, as a key priority.

KEYWORDS: *analysis, database, chemical accident, industrial safety, public protection*

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INTRODUCTION

The prevention and effective management of industrial disasters is a priority area of industrial safety, in which data and their analysis play a major role. Accidents in hazardous plant environments can cause loss of life, environmental damage, and economic loss. In order to prevent and manage this, there are a number of databases and online platforms that collect and analyse these incidents and provide information and tools to improve industrial safety.

The MINERVA Portal is part of an initiative supported by the European Union (EU) to provide information and resources for disaster management. The portal aims to strengthen EU internal civil protection cooperation and support EU member states in disaster response and crisis management. It provides a wide range of information and tools, including the latest research, guidelines, and best practices. It also provides an opportunity for different organisations and professionals to connect, share experiences, and work together on disaster management.

In addition to the MINERVA Portal, there are several other online platforms that serve similar purposes, providing detailed information and case studies on the causes and consequences of disasters, helping to analyse and study industrial accidents. To mention a few of the databases we have examined, ARIA in France, ZEMA in Germany, IOGP (also available on the eMars website), the Failure Knowledge Database in Japan, Tukes in Finland, and the CSB database in the US contain useful experience.

In order to make effective use of these databases and online portals in industrial security, it is important to take into account relevant factors such as the availability of platforms, linguistic diversity, and user experience. When developing platforms, particular attention should be paid to overcoming language barriers and designing user-friendly interfaces to make information and tools in the field of industrial disaster prevention and management accessible to as many professionals and organisations as possible.

Our aim is to present internationally existing and proven databases to give a comprehensive picture of the possibilities, thus providing support for public protection. In addition, our research has sought to collect and present as many and as broad a range of databases as possible, rather than presenting as few and as detailed as possible, in order to enhance the potential.

MINERVA PORTAL

The MINERVA Portal[1] is an online platform providing information and resources on how the European Union manages various disaster situations. MINERVA strengthens civil protection cooperation within the EU and assists EU member states in disaster response and crisis management. The MINERVA Portal offers a range of information and tools to support disaster response actions, including the latest research, guidelines, and best practices. It provides an opportunity for different organisations and professionals to connect, share experiences, and work together on disaster management. It is publicly available and accessible to anyone interested in information on disaster management.

The disadvantage is that the platform is mainly available in English, which may limit access for those who do not speak that language. Too much information available on the platform can make it difficult for users to find the information and tools that are most relevant to them.

We suggest that the information and tools on the platform should be made available in several languages to make them accessible to more people/nations. It would be important to group and structure the information on the platform and to create an easy-to-navigate user interface so that users can easily find the information and tools that are relevant to them.

[1] European Commission website: https://minerva.jrc.ec.europa.eu/en/minerva (Accessed: 2 April 2024).

The statistics available on the eMARS platform provide a wealth of important information on chemical accidents[2] in the European Union. Analysis of the statistics provided by eMARS can help to identify possible trends and patterns and assess the frequency and severity of incidents. Some important observations based on the statistical data are:

– The number of accidents recorded by eMARS may vary over the years. An analysis of annual trends can help to identify possible upward or downward trends.
– The statistics provided by eMARS show the proportion of different types of chemical accidents, which allows trends to be identified as to which types of accidents were more frequent over a given period.
– The eMARS statistics provide a general picture of which areas in the European Union have been most affected by chemical accidents, enabling authorities and professionals to assess areas where more attention needs to be paid to preventive measures or risk management.
– The statistics recorded by eMARS show the consequences of chemical accidents, including injuries, deaths, environmental damage, and property losses.

The statistical data recorded in the eMARS system support our conclusion that the number of accidents and incidents involving dangerous substances is not decreasing.

Figure 1 shows the Seveso tier function of the database. Under the Seveso III Directive, "tier" is one of the important definitions used to indicate the categories of risk assessment and safety measures. The tiering helps operators and authorities to identify which establishments are at risk, to what extent, and what measures should be implemented accordingly. The highest tier, or upper threshold, represents the highest risk, while the lowest tier represents a lower threshold, or below threshold, establishments with a lower risk. Under the Seveso III Directive, the classification of the levels sets out in detail the obligations of establishments and the rules to be applied in order to prevent disasters and ensure the safe handling of dangerous substances.

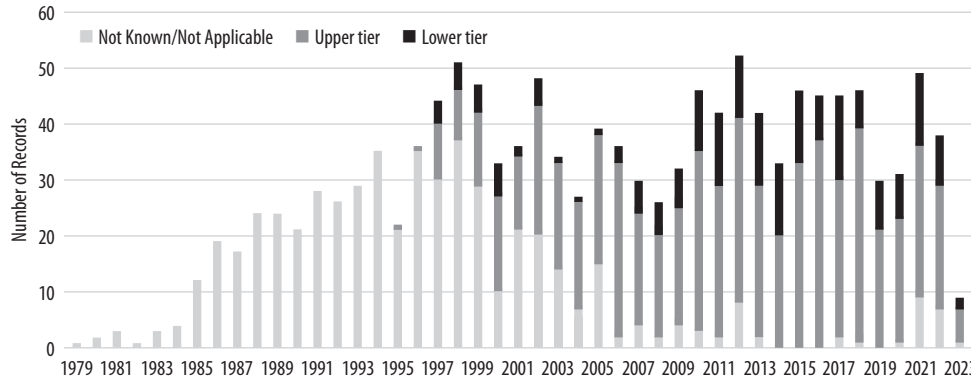

Figure 1 *Seveso tier (Recast by the authors based on Seveso tier data*)*

* Seveso tier: https://emars.jrc.ec.europa.eu/en/emars/statistics/statistics (Accessed: 3 April 2024).

[2] European Commission website: https://emars.jrc.ec.europa.eu/en/emars/statistics/statistics (Accessed: 3 April 2024).

On the information interface, you can find statistics on published accidents under Events by Country. The industry type chart illustrates industrial activities related to different industries and sectors. These include general chemical manufacturing, the production of various chemicals, petrochemicals, and oil refining. In addition, activities such as the processing of metals, energy supply, agriculture, food processing, various industrial processes, water supply, and wastewater treatment are also observed. The diagram also describes other specific activities, such as the plastics and rubber industry, waste storage, treatment and disposal, explosives production and storage, and industrial gas production.

In *Figure 2*, under Reasons for Reporting, you will find the factors that provide useful statistical information on accidents. Accidents can cause different types of injuries, damage, and hazards to people, property, the environment, and communities. The severity and impact of accidents can vary greatly depending on location, weather conditions, and other factors. These and similar events often require special measures and responses to minimize damage and protect those affected.

Events reported for special circumstances to which the database refers are events that occurred under special or exceptional circumstances and thus may deviate from the usual accident patterns or characteristics. Chemical accidents can be civilisation- or natural disaster-related events (Natural Hazards Triggering Technological Accidents – NaTech events),[3] incidents resulting from extreme weather events, or events that have secondary effects or carry a greater-than-average hazard. NaTech events of natural origin were the second most frequent with 26%, behind civilisation-related events.

The Life Cycle Diagram describes the different phases of the accidents in the database, including from their occurrence to the analysis and documentation of their impacts and consequences.

The MINERVA Portal integrates EU-funded projects and initiatives by supporting EU-level civil protection strategies. Unfortunately, there is limited international access.

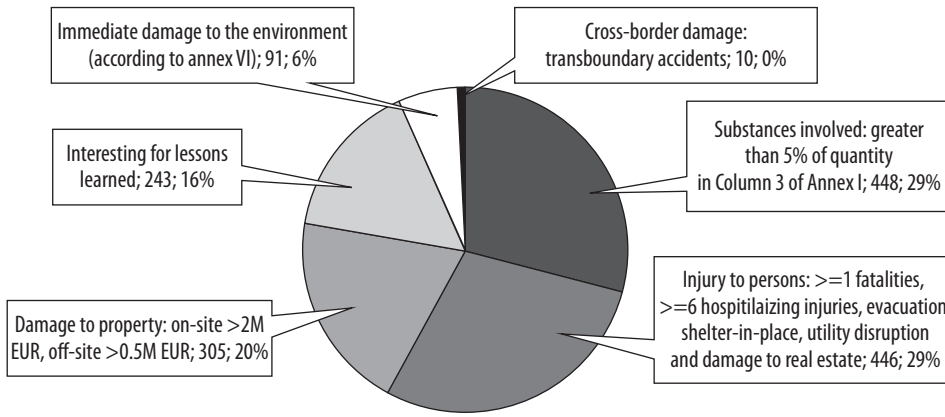

Figure 2 *Reasons for Reporting (Recast by the authors based on Reasons for Reporting*)*

* Reasons for Reporting: https://emars.jrc.ec.europa.eu/en/emars/statistics/statistics (Accessed: 3 April 2024).

[3] Natural hazards such as earthquakes and floods can initiate events that challenge the safety and operation of hazardous installations. Accidents triggered by such events are known as NaTech – Natural Hazards Triggering Technological Accidents.

Although MINERVA is publicly available, the data and tools are mainly designed for disaster management authorities and organisations in EU member states. In our opinion, the accessibility and content of the platform should be extended to non-EU countries, so that other regions can benefit from the knowledge and experience gathered by the EU. Efforts should also be made to simplify the platform and make it easier to navigate so that information and tools are more easily accessible to those interested.

EUROPEAN CHEMICALS AGENCY

The European Chemicals Agency (ECHA)[4] is a decentralised body of the European Union, established in Helsinki on 1 June 2007, which took over the management of the Classification, Labelling and Packaging Regulation in the EU in 2009 (the regulation was extended in 2013–14 with two further regulations covering biocidal products and the export and import of certain dangerous substances).[5] Its main purpose is to support the implementation of EU chemical policies and serve as a centre of knowledge on the sustainable management of chemicals. ECHA is responsible for implementing and coordinating the EU chemicals legislation.[6] It collects and publishes a wide range of data and information on chemicals through the REACH (Registration, Evaluation, Authorisation and Restriction) system.

EUROPEAN ENVIRONMENT AGENCY

The EEA[7] is the European Environment Agency, which collects and disseminates environmental data and information in the member states of the European Union. The EEA has databases containing information on chemicals that affect environmental impacts and risks.

THE ARIA DATABASE (IN FRENCH AND ENGLISH)

Within the Ministry of Ecological Transition/Directorate General for Risk Prevention, the Bureau for Analysis of Industrial Risks and Pollutions (BARPI)[8] is responsible for the collection, analysis, and dissemination of information and feedback on industrial and technological accidents. ARIA (Analyse, Recherche et Information sur les Accidents) is an online platform in France specialised in accident analysis, research, and information on major accidents in the chemical, petrochemical, and refining industries (accidents graves des industries de la chimie, de la pétrochimie et du raffinage).

The ARIA platform provides detailed information on major accidents in the chemical, petrochemical, and refining industries, allowing their causes and consequences to be investigated and studied. ARIA case studies and reports offer users the opportunity to learn and apply lessons learned from accidents. Its website is public and accessible to anyone interested in chemical accidents, not only in France but worldwide. Its disadvantage is that it is mainly available in French or English, which may limit insight for those who do not speak these languages. The platform generally offers static content and limited possibilities for

4 European Chemicals Agency 2024, 523–525.
5 European Chemicals Agency 2014, 263–264.
6 See more: https://www.echa.europa.eu/.
7 See more: https://www.eea.europa.eu/en.
8 See more: https://www.aria.developpement-durable.gouv.fr/le-barpi/.

interaction or communication between users. It focuses primarily on the French chemical and petrochemical industries, making the content less relevant for those working in other countries or interested in other industries. ARIA can be a useful resource for those interested in chemical accidents and their consequences, especially for those working in France.

Detailed accident analyses are available in the database, unfortunately, most of them are only in French. It would therefore be advisable to make them available in several languages and improve interactivity.

ZEMA/INFOSIS (IN GERMAN)

The ZEMA[9] (Zentrales Melde- und Auswertesystem, i.e., Central Reporting and Evaluation System) is an accident reporting system in Germany that is used to document and monitor accidents and incidents involving hazardous substances and can be important for future preventive measures. It enables the identification of potential errors, problems, and lessons to be learned from accidents, which can help to prevent future incidents. ZEMA stores all accident-related information in a central database, which can simplify access to and analysis of the data. Among its many benefits, there are also privacy concerns. Access to the data stored in ZEMA may be restricted for security and privacy reasons, which can sometimes make it difficult for those who need it to access the data. Reporting systems in general can contribute to increased bureaucracy, especially if reporting requirements are overly strict or complex. Regulatory schemes can often limit the flexibility of individual companies or institutions to meet reporting requirements, to their detriment. ZEMA is a modern and useful tool for the management and prevention of hazardous material incidents.

The portal pays particular attention to the issue of chemical safety. Its materials are available in several languages, although interactivity is limited. Therefore, it is recommended to improve data interoperability and interactivity.

THE INTERNATIONAL ASSOCIATION OF OIL & GAS PRODUCERS SAFETY ZONE (IN ENGLISH)

The IOGP Safety Zone is an online platform run by the International Association of Oil & Gas Producers (IOGP).[10] The IOGP Safety Zone aims to provide a variety of comprehensive learning tools and expert content on safe working practices in the oil and gas industry. The platform is available online, making it easily accessible to anyone working in the oil and gas industry anywhere in the world. It offers content developed by experts with significant experience in the industry, so users can access reliable and relevant information. The downside is that the platform's content is generally static and offers limited opportunities for interaction or communication among participants. The content tends to be generic and not suitable for all companies or industrial environments, which can sometimes limit users' access to relevant information. Although the platform offers a lot of free content, some specific or more detailed studies require a subscription, which may limit wider access. This platform is a useful tool for promoting safe working in the oil and gas industry, addressing safety challenges, and educating workers.

[9] See more: https://www.infosis.uba.de/index.php/en/site/13947/zema/index.html.

[10] See more: https://safetyzone.iogp.org/Main.asp.

The portal focuses on oil and gas accident analysis based on international standards and guidelines. Access to data is limited due to the sensitivity of the subject. In addition to the oil and gas industry, it would be useful to consider other, broader industries and accidents. Given the critical infrastructure involved, it is not expected that there would be a significant change in the availability of data.

THE JAPANESE FAILURE KNOWLEDGE DATABASE (IN JAPANESE AND ENGLISH)

The online platform sozogaku.com[11] collects and documents data on different types of accidents in Japan. The main purpose of the database is to make such incidents studyable and analysable in order to learn from them and prevent similar incidents in the future. The website has extensive content in the field of Japanese work and organisational psychology, covering a variety of topics and studies. The platform offers information specifically related to Japanese workforce and workplace culture, which may be useful for those working in Japan or interested in the Japanese labour market. It takes a generally scientific approach to the topic of work and organisational psychology, which can help users to find reliable and relevant information. The website is primarily available in Japanese and English, which may limit those who do not have English language skills. It generally provides static content and limited opportunities for interaction or communication among users. The frequency and content of website updates may vary and may not always reflect current research or developments in the field of work and organisational psychology. Sozogaku.com may be a useful resource for those interested in Japanese work and organizational psychology.

It is likely to process and contain Japan-specific analyses and disaster data due to its geographical location. This also has a disadvantage, as its international relevance is limited, mainly due to language specifics. It would be useful in the future to share international comparative analyses and studies on the portal.

eMARS

The European Commission operates a reporting system and database, the Major Accident Reporting System (eMARS), for the purpose of reporting the experience of major accidents involving dangerous substances.[12]

The European Major Accident Reporting System is extremely useful for international cooperation and data sharing, as the most important analyses of chemical accidents are available on this platform. Unfortunately, language barriers and different national data protection regimes do not make it easy to share information. In order to facilitate data access, it is recommended to consider multilingual posting and of course the introduction of more transparent data protection rules and measures.

[11] The Japanese Failure Knowledge Database: http://www.sozogaku.com/fkd/en/ (Accessed: 4 April 2024).

[12] European Commission website: https://emars.jrc.ec.europa.eu/EN/emars/content (Accessed: 30 March 2024).

TUKES VARO REGISTRY OF CHEMICAL ACCIDENTS IN FINLAND (IN FINNISH)

The website tukes.fi/onnettomuudet[13] is an online platform operated by the Finnish Safety and Chemicals Agency (Tukes). The website aims to provide information on accidents and incidents in Finland and to promote a safer working environment. It provides official information from the Finnish Safety and Chemicals Agency so that interested parties can obtain reliable and authentic data. The platform is regularly updated with documentation of recent accidents and incidents, allowing users to have up-to-date information on the safety situation. Case studies and analyses on the website can help users understand the causes and lessons learned from accidents, which can help prevent future incidents. The website is mainly available in Finnish, which may limit access for those who do not speak this language. This may make it difficult for people from international or other language areas to access the information. It generally provides static content and limited opportunities for interaction or communication among users, focusing mainly on Finland.

The portal is a science-based website, backed up by official sources, where you can find up-to-date data, safety advice, and orientation information. On the negative side, interactivity is an area that needs improvement. Of course, the issue of multilingual access is also relevant here.

THE U.S. CHEMICAL SAFETY BOARD (IN ENGLISH)

The U.S. Chemical Safety Board's (CSB) database provides detailed investigations of numerous accidents, and these data are available on the board's website.

The U.S. Chemical Safety and Hazard Investigation Board is an independent federal agency in the United States of America whose mission is to investigate the causes of chemical accidents and disasters and to prevent future potential accidents. The CSB operates independently of government or industry interests and conducts objective investigations to understand the causes of chemical accidents. As a result of these investigations, the CSB makes recommendations and suggestions aimed at preventing future accidents and creating a safe working environment. However, the CSB can only make recommendations but has no enforcement powers, so the implementation of the proposed measures is the responsibility of the organisations and authorities concerned. CSB investigations can take a long time and the publication of reports can take longer, which may lead to delays in the implementation of the recommended measures. The operation of CSB is linked to funding issues, and the agency does not always have sufficient resources to operate effectively and conduct investigations.[14]

The Chemical Safety Board provides access to detailed reports and case studies by having access to an extremely wide range of databases. Because of its geographical focus, it is mainly concentrated on the United States, which leaves a gap in international cooperation. It would also be advisable to develop international cooperation and international data sharing.

[13] Tukes VARO registry of chemical accidents in Finland: https://tukes.fi/onnettomuudet (Accessed: 4 April 2024).

[14] US Chemical Safety Board: https://www.csb.gov/about-the-csb/mission/ (Accessed: 4 April 2024).

CAMEO/ALOHA: CAMEO (COMPUTER-AIDED MANAGEMENT OF EMERGENCY OPERATIONS)

The CAMEO (Computer-Aided Management of Emergency Operations)[15] and ALOHA (Areal Locations of Hazardous Atmospheres) software are tools developed by the US Environmental Protection Agency (EPA) to model the spread of substances and potential hazard zones in the event of a chemical accident.

On the positive side, the system allows for a rapid and effective response to chemical accidents by modelling the spread of substances and their potential effects on the environment and people. It provides detailed information on the possible consequences of accidents, which can help decision-makers to make appropriate responses. It has an easy-to-use user interface that allows users to easily enter data and interpret results.

On the downside, the modelling of the system may be subject to a certain degree of inaccuracy, especially if inadequate data on material properties and environmental conditions are available. Since the system uses modelling, the results are only estimations and do not always accurately reflect reality. Although the CAMEO/ALOHA system offers many useful features, there are some chemical accident situations that it cannot fully model or manage.

The CAMEO/ALOHA system is an important tool for managing chemical accidents and supporting disaster response efforts, particularly in the United States.

ALOHA (AREAL LOCATIONS OF HAZARDOUS ATMOSPHERES)

ALOHA is a hazard modelling program used as part of the CAMEO software suite to plan and manage chemical emergencies. It allows detailed estimation of chemical releases and modelling of threat zones, such as toxic gas clouds, flammable gases, and explosions, which are depicted on maps. Red, orange, and yellow zones indicate threat levels.[16]

The ALOHA software is often used in disaster planning and emergency response, particularly in the management of chemical emergencies. The application is flexible and easy to use and is widely available to emergency management and safety professionals worldwide. With ALOHA, users can anticipate and prepare for potential hazards and manage disasters more effectively, minimising their negative impact on people and the environment.

CAMEO Chemicals is a key database for planning and managing chemical emergencies. It contains critical response information, physical properties, and health hazards, and predicts potential hazards from mixing chemicals. The information contained in the database will promote effective response and management during chemical emergencies and includes transport information derived from UN/NA identifiers.

The CAMEO Data Manager Software application allows you to track information such as chemical inventories and facility availability to assist with emergency response and planning in your local community as required by the EPCRA Act (Emergency Planning and Community Right-to-Know Act). Data can be entered manually or by importing a Tier2

[15] Computer-Aided Management of Emergency Operations website: https://www.epa.gov/cameo (Accessed: 4 April 2024).

[16] ALOHA Software: https://www.epa.gov/cameo/aloha-software (Accessed: 11 April 2024).

Submit file and the application is part of the widely used CAMEO software suite for chemical emergency management and planning.[17]

MARPLOT (Mapping Application for Response, Planning, and Local Operational Tasks) is a mapping program in the CAMEO software suite used for planning and responding to chemical emergencies. The easy-to-use interface allows for the addition and editing of objects on the map, with various background base maps and online layers. MARPLOT can be used interactively with other CAMEO programs, such as ALOHA threat zone estimators, or by linking it to CAMEO Data Manager Software records.[18]

Tier2 Submit™ is a program to assist facilities in preparing an electronic form for the annual Tier II Hazardous Substance Inventory Report under the EPCRA Act. The latest version of the program, which is updated annually, is Tier2 Submit 2023, which is for the 2023 reporting year. The deadline for completing Tier II reports is 1 March 2024, and it is important to check for state- or tribe-specific requirements. The data can be exported to the CAMEO Data Manager for additional emergency planning and response tasks. Both tools are part of the CAMEO® software suite.[19]

NOAA HAZMAT DATABASE

It is the US National Oceanic and Atmospheric Administration's chemical and hazardous substance information database. The NOAA HazMat database[20] has several advantages and disadvantages. Among the benefits is that it contains a wide range of information on the characteristics of chemicals and hazardous substances, including their properties, hazards, and regulations related to their handling and transport. It is publicly accessible, making information on essential chemicals available to anyone. It can also provide expert support on chemical-related issues, which can help interpret data and make the right decisions.

Although the NOAA HazMat database contains a wealth of information, one of its drawbacks is that it sometimes lacks details or updates, which can limit its usefulness in certain situations. The database does not always contain all the necessary information on all chemicals, especially those that are less well-known or less frequently used. Since the data are compiled and updated by humans, there may be inaccuracies or misunderstandings in the database, which can lead to incorrect decisions.

CONCLUSION

In our study, we presented databases that contribute to the professional activities of a country, a region, or in some cases, different defence organisations. These platforms can be regarded more or less as information platforms, but they can also contribute to the process of security activities. In *Table 1*, we have compared the advantages and disadvantages (pros and cons) of the eight most relevant databases used around the world in tabular format for ease of illustration and transparency. The main reason for selecting the following databases

[17] CAMEO Data Manager Software: https://www.epa.gov/cameo/cameo-data-manager-software (Accessed: 11 April 2024).
[18] MARPLOT Software: https://www.epa.gov/cameo/marplot-software (Accessed: 11 April 2024).
[19] Tier2 Submit Software: https://www.epa.gov/epcra/tier2-submit-software (Accessed: 11 April 2024).
[20] NOAA HazMat database: https://www.noaa.gov/ (Accessed: 11 April 2024).

is to provide an insight into how countries with different conditions, climates, hazards, socialisation, and social backgrounds can help and support the documentation of chemical accidents and contribute to reducing their numbers. For Hungary, it is more relevant to adopt a system that is suited to European conditions because of the almost identical environmental and economic impacts, but it is also worthwhile to look at and adopt useful and proven content and designs from other regions.

Unfortunately, due to limitations of space, we cannot summarise our suggestions for the platforms in the table above, but they are included in the manuscript in the presentation of each database. Our unanimous opinion is that Hungary also needs a multilingual platform where information and studies on events in Hungary and the Central European region can be shared. Of course, it should also be taken into account that environmental changes can affect almost any area, so we can no longer say that tornadoes, hurricanes, etc. can only affect America or the ocean coast.

Table 1 *Database comparison (edited by the authors)*

No.	DATABASES	ADVANTAGES	DISADVANTAGES
1.	eMARS (EU)	International cooperation and data sharing	Language barriers
		Chemical accident analysis and reporting	Data protection challenges
2.	MINERVA Portal	Supporting EU-level civil protection strategies.	The platform is related to EU projects and does not provide detailed information on the member states' own disaster management systems.
		Integrating EU-funded projects and initiatives.	Limited international access, although MINERVA is publicly available, the data and tools are mainly intended for disaster management authorities and organisations in EU member states.
		Promoting cooperation between EU member states.	
3.	ARIA (France)	Detailed accident analyses	Language barriers
		Public access	Limited interactivity
4.	Infosis (Germany)	Focus on chemical safety	Limited data interoperability
		Multilingualism	Limited interactivity
5.	CSB (USA)	Detailed reports and case studies	It focuses mainly on the US.
		Extensive database	Lack of international cooperation
6.	SafetyZone (IOGP)	Oil and gas accident analysis	Restricted public access
		Application of international standards and guidelines	Mainly limited to the oil and gas industry.
7.	Sozogaku (Japan)	Analysis of Japan-specific disasters	Limited international impact
		Japan-focused language content	Language barriers
8.	Tukes (Finland)	Official source	Available mainly in Finnish.
		Topicality	Limited interactivity
		Safety advice and information	Limited international relevance

The number of NaTech events will increase in the future as the temporal distribution of heavy rainfalls increases. Considering the priority, it is advisable to follow the French practice in Hungary and create our own database. In Hungary, there are areas, such as the Veszprém region, where earthquakes occur at a higher rate, but the analysis based on experience shows that it is not necessarily important to deal with earthquakes in all areas, because there are areas where the inland water hazard is more frequent, and therefore local precipitation is the most important issue to be dealt with. In light of this, it is necessary to assess, region by region what NaTech events can be expected in that area and record this data in the national NaTech database.

An assessment system should be developed in Hungary.

Development opportunities:

- Establish a national NaTech database;
- Identify relevant NaTech events;
- Further develop the technical guide:
  - Develop an evaluation methodology;
  - Demonstrate good practices (organisational measures).

The opportunities for improvement also show that there is still work to be done in the area of assessing, managing, and identifying relevant events for the assessment and management of natural hazards that pose challenges to the safety and operation of hazardous installations. In the absence of the developments listed above, we can only monitor events in the hope that the worst will not happen. However, once the right measures and improvements are in place, we can influence the scale of devastation caused by an event and its outcome.

BIBLIOGRAPHY

- ALOHA Software: https://www.epa.gov/cameo/aloha-software (Accessed: 11 April 2024).
- CAMEO Data Manager Software: https://www.epa.gov/cameo/cameo-data-manager-software (Accessed: 11 April 2024).
- Candidate List of Substances of Very High Concern: https://echa.europa.eu/web/guest/candidate-list-table (Accessed: 30 March 2024).
- European Chemicals Agency: *ECHA (The European Chemicals Agency)*. In: Elsevier eBooks, Encyclopedia of Toxicology (Third Edition). 2014, 263–264. Source: https://doi.org/10.1016/b978-0-12-386454-3.00551-0.
- European Chemicals Agency: *European Chemicals Agency (ECHA)*. In: Elsevier eBooks, Encyclopedia of Toxicology (Fourth Edition). Vol. 4, 2024, 523–525. Source: https://doi.org/10.1016/b978-0-12-824315-2.00066-x.
- Computer-Aided Management of Emergency Operations website: https://www.epa.gov/cameo (Accessed: 4 April 2024).
- European Commission website: *eMARS*. https://emars.jrc.ec.europa.eu/EN/emars/content (Accessed: 30 March 2 024).
- European Commission website: *Reasons for Reporting*. https://emars.jrc.ec.europa.eu/en/emars/statistics/statistics (Accessed: 3 April 2024).

- European Commission website: *The Minerva Portal of the Major Accident Hazards Bureau*. https://minerva.jrc.ec.europa.eu/en/minerva (Accessed: 2 April 2024).
- List of registered substances: https://echa.europa.eu/en/web/guest/information-on-chemicals/registered-substances (Accessed: 30 March 2024).
- MARPLOT Software: https://www.epa.gov/cameo/marplot-software (Accessed: 11 April 2024).
- NOAA HazMat database: https://www.noaa.gov/ (Accessed: 11 April 2024).
- Registry of Intentions: https://echa.europa.eu/information-on-chemicals (Accessed: 5 April 2024).
- Seveso tier: https://emars.jrc.ec.europa.eu/en/emars/statistics/statistics (Accessed: 03 April 2024).
- The Japanese Failure Knowledge Database: http://www.sozogaku.com/fkd/en/ (Accessed: 4 April 2024).
- Tier2 Submit Software: https://www.epa.gov/epcra/tier2-submit-software (Accessed: 11 April 2024).
- Tukes VARO registry of chemical accidents in Finland: https://tukes.fi/onnettomuudet (Accessed: 4 April 2024).
- U.S. Chemical Safety Board: https://www.csb.gov/about-the-csb/mission/ (Accessed: 4 April 2024).

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Work by three or more authors	Surname, First name 1 – Surname, First name 2 – Surname, First name 3 – etc.: Title. Publisher, place of publication, year of publication	Hill, Napoleon – Verma, Satish – Green, Don: Adversity & Advantage: Achieving Success in the Face of Challenges. Union Square & Co.New York, 2021.	Hill et al. 2021, 15.
Collection of papers (entire volume)	Surname, First name (ed.): Title. Publisher, place of publication, year of publication.	Graham, Hugh Davis and Gurr, Ted Robert (eds.): The History of Violence in America: A Report to the National Commission on the Causes and Prevention of Violence. Bantam Books, New York, 1969. Shaffer, Ryan (ed.): The Handbook of African Intelligence Cultures. Rowman and Littlefield, 2023.	Graham – Gurr 1969, 55. Shaffer 2023, 731–746.
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Dissertation, term paper, manuscript, etc.	Surname, First name: Title. Nature of work. Institution, year.	Fabian, Sandor: Professional Irregular Defense Forces: the other Side of COIN. Master's Thesis, Naval Postgraduate School, 2012.	Fabian 2012, 10.
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One author with several works from various years, within one footnote		Schmid, Johann: Die Dialektik Von Angriff Und Verteidigung. Clausewitz und die stärkere Form des Kriegführens. VS Verlag, Wiesbaden, 2011. Schmid, Johann: Hybrid warfare on the Ukrainian battlefield: developing theory based on empirical evidence. Journal on Baltic Security 5 (1): 5-15. 2019. In short references the surname is not repeated, only the years of publication are placed next to each other, separated by semicolons.	Schmid 2011, 15; 2019, 5-15.
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Authors with the same last name, same publication year, within one footnote	Surname, First name: Title. Publisher, place of publication, year of publication.	Verma, Kunal: 1965: A Western Sunrise: India's War with Pakistan. Aleph Book Company, New Delhi, 2021. Verma, Aparna: The Boy with Fire. New Degree Press, Potomac, 2021.	Verma, K. 2021. Verma, A. 2021. Initials of the first names. If those are identical, provide the full first name.
Authors with the same last name, different year of publication	Surname, First name: Title. Publisher, place of publication, year of publication.	Brown, Percy: Picturesque Nepal. Adam and Charles Black, London, 1912. Brown, William A. The Gilgit Rebellion 1947. Ibex, London, 1998.	Brown, 1912. Brown, 1998. The year alone distinguishes the authors.

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Hungarian, Japanese, Korean, Vietnamese, etc author	Surname, First name: Title. Publisher, place of publication, year of publication.	Fabian, Sandor: Professional Irregular Defense Forces: the other Side of COIN. Master's Thesis, Naval Postgraduate School, 2012. The customary sequence of names in some countries (e.g. Hungary, Japan, etc) is surname, given names. For consistency in the appearance of the bibliography, use a comma after the surname.	Fabian 2012.
Work of unknown/ unidentifiable author	Title. Publisher, place of publication, year of publication.	Guide to the Sources of Asian History. National Archives of India, New Delhi, 1997.	Sources of Asian History, 1997. Shorten the title, and do not italicise.
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TV show	Program Title. Channel Name, Publication Date URL (Download Date)	The tiny German island with a population of 16. BBC, 07.15.2019. https://www.bbc.com/reel/video/p07cjvmc/the-tiny-german-island-with-a-population-of-16 (Downloaded: 02.05.2024)	Tiny German Island… 2019. Shorten long titles.
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Movie	Movie title. (Genre) Reg. Director's Name. Manufacturer, Year of publication.	Alphaville: A Strange Adventure of Lemmy Caution. (distopian science fiction) Director: Jean-Luc Godard. Athos Films, 1965.	Alphaville 1965.
Laws, articles of law, decrees, ordinances		The Disturbed Areas (Special Courts) Act, 1976, Act No. 77 of 1976. Article 3. Section (2). Act of the Parliament o the Republic of India. Title and number of the legislation, type of legislation, year of promulgation, article and section, as appropriate. Sequence the identifying information as close to the original as possible, use Roman or Arabic numerals as in the original.	Disturbed Areas Act 1976.

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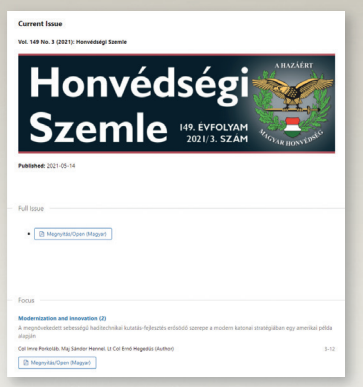

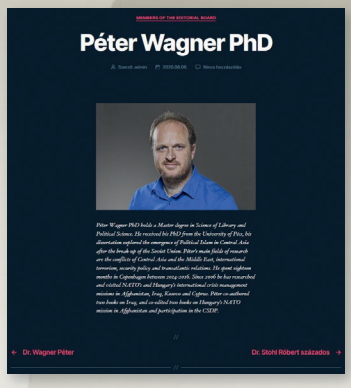

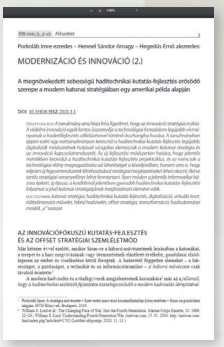

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