



CENTRE FOR SECURITY AND
MILITARY STRATEGIC STUDIES
UNIVERSITY OF DEFENCE



Richard Stojar et al.

SECURITY ENVIRONMENT

SECTORAL ANALYSIS AND IMPLICATIONS FOR THE
ARMED FORCES OF THE CZECH REPUBLIC 2021

Security Environment

**SECTORAL ANALYSIS AND IMPLICATIONS FOR THE ARMED
FORCES OF THE CZECH REPUBLIC**

2021

BRNO 2022

AUTHORS

Richard Stojar

Vendula Divišová

Dominika Kosárová

Libor Frank

Antonín Novotný

Jan Břeň

Adam Potočňák

Vladimír Bízík

Yvona Novotná

This expert study is a partial result of DZRO OZKON project implemented at the University of Defence.

Reviewers:

Assoc. Prof. Ivan Majchút, PhD., Department of Security and Defence, Armed Forces Academy of General Milan Rastislav Štefánik in Liptovský Mikuláš

Assoc. Prof. Josef Smolík, PhD., MBA, LL.M, Department of Security Studies, Police Academy of the Czech Republic in Prague

Author of the photo on the cover: Space X (license CC BY-NC 2.0).

Centre for Security and Military Strategic Studies (Centrum bezpečnostních a vojenskostrategických studií, CBVSS)

CBVSS is part of the University of Defence and is defined as other workplace for education and creative activity according to Act No. 111/1998 Coll., §22(1)(c). Its mission, in particular, consists in:

- Scientific and research activities in the areas of security studies, strategic leadership, military art, strategic management and defence planning, implemented for the needs of the strategic level of decision-making, management of national defence and the building of the Armed Forces of the CR.
- Preparation of the military and civilian experts of the department of the Ministry of Defence and the armed forces in expert and career courses (General Staff Course, Senior Officer Course).
- Expert, publishing and popularising activities (including the sponsorship of publishing the [Czech Military Review](#) and [Defence and Strategy journals](#)).

e-ISBN 978-80-7582-466-0

DOI: 10.3849/978-80-7582-466-0

CONTENTS

Introduction	5
Political Sector	6
Military Sector	17
Societal Sector	26
Economic Sector	31
Environmental Sector	40
Technological Sector.....	49
Graph of the Sectoral Analysis	61
Sources.....	62
Authors.....	72
Summary	74

INTRODUCTION

The aim of this analytical study is to evaluate the development of the security environment of the Czech Republic in 2021. The ambition of the Centre for Security and Military Strategic Studies (Centrum bezpečnostních a vojenskostrategických studií, CBVSS), University of Defence in Brno, is to provide an alternative insight into the discussion on the consequences of security development for the formulation and implementation of an effective defence policy of the Czech Republic. The study is primarily based on materials processed by CBVSS and analytical materials produced in countries sharing the same or similar security environment and security interests. The study presents results of a comparative analysis of available open sources and includes an evaluation of selected state and transnational actors. A sectoral analysis based on the Copenhagen School approaches was used for the study, describing the political, societal, environmental, military, and economic sectors. Newly included in this analysis is the technological sector, which was not part of the previous analyses of the security environment and was addressed in a separate publication. This text analyses the period of the last year - 2021 - and seeks to capture major events and trends with implications for the security environment in individual sectors and to identify implications for the defence policy and armed forces. Verification of the outputs was carried out within the framework of expert meetings with the participation of members of the Ministry of Defence of the Czech Republic, Army of the Czech Republic, and representatives of the security community. Due to the fact that the text was drawn up before the Russian invasion of Ukraine in February 2022, the described sectors and the respective conclusions exclusively reflect the situation for the past year of 2021 and do not include significant changes that occurred after that date.

The results of the sectoral analysis are shown in the figure at the end of the study. Relevant threats identified in 2021 are divided here according to the respective sectors, i.e., according to the nature of the protected value or interest of the Czech Republic which is under threat (e.g., stability of the Euro-Atlantic area or the environment). At the same time, threats are placed in concentric circles reflecting their levels of action: local - regional - global. Some challenges are manifested in more sectors and at more levels at the same time.

POLITICAL SECTOR

In the political sector, we can see a continuation of trends from the previous years at all three levels: national, regional, and global. At the national level, again, governments were subject to delegitimization in several cases and further upheavals took place, mainly in the Sahel, while anti-government protests broke out in several countries, including Europe, due to causes already observed in the preceding year (including discontent with anti-pandemic measures). At the regional level, on the one hand, tensions in some bilateral relations (Israel and Iran, Israel and Palestine, Belarus and Poland, and the EU, respectively) persist or deepen, on the other hand, uncertainty has reduced, for instance, in the relationship between the EU and the United Kingdom. In terms of relations between superpowers, the tensions between the West (US or NATO and the EU) on the one hand and Russia and the PRC on the other hand are escalating.

National level

At the national level, in 2021, there were threats to stability and national order as a result of a military coup (Myanmar, some Sahel countries) or conspiracy (USA), or protests against government actions threatening democracy or human rights (Poland). As in the previous year, the legitimacy of governments was threatened in the context of the ongoing pandemic.

Coups and conspiracies

In 2021, the **US** also experienced an unusual case of conspiracy. The conspiracy was a result of a dangerous combination of two escalating trends that had already been observed in the previous year, namely the growing threat of domestic anti-state extremist groups and the persistent rhetoric of the then incumbent President Donald Trump about rigged elections. The rejection of the results of the presidential elections of some of Trump's constituents and, above all, of Donald Trump himself, culminated unprecedentedly on 6 January 2021, when the House of Representatives was to definitively confirm Joe Biden's victory. A demonstration of Trump's supporters (including sympathizers of extreme right-wing extremist movements such as Oath Keepers and Proud Boys) took place in front of the Capitol, resulting in storming the Capitol in order to disrupt the process of approving the election results. Some of the participants were subsequently accused of conspiracy,¹ while Donald Trump was criticized for inciting the attack with his rhetoric, which he had disseminated mainly on social networks since having lost the elections. This led to a second attempt at his impeachment, which, however, was also rejected by the Senate. Thus, Trump has become the first American president to face a vote on the constitutional lawsuit twice.

Several 'successful' coups, mostly military ones, took place in Asian and African states. In **Myanmar**, the army regained power in February 2021 after calling the 2020 parliamentary elections rigged. The army emerged partially weakened from the election results, even though the constitution continued to guarantee its relatively strong position within the state. Aung San Suu Kyi, who led the victorious party, was detained and General Min Aung Hlaing became the head of the state. In response to the coup d'état, MPs elected in the last elections formed a shadow parliament and a shadow government of national unity, seeking international recognition in place of the military junta. Meanwhile, protests broke out in the country and many employees of state institutions declared a boycott,

¹ UNITED STATES DEPARTMENT OF JUSTICE. Nine Months Since the Jan. 6 Attack on the Capitol. 2021. <https://www.justice.gov/usao-dc/nine-months-jan-6-attack-capitol>

while the number and intensity of armed clashes between the army and armed anti-government groups increased, especially in border areas inhabited by minorities. The military junta responded to the situation by disrupting the Internet, suppressing the independence of the media, arresting those who were critical of the regime and representatives of the previous government, as well as extensive violence. Chaos persists in the country and health, education, and economy are on the brink of collapse. The UN High Commissioner for Human Rights even compared the situation with that of Syria in 2011.² In response to the coup d'état and the violence of the post-coup government, the EU and the US imposed sanctions on the military junta, while Russia and the PRC supported the new Myanmar government.

The situation also escalated in **Afghanistan**. After two decades of efforts to build a stable Afghan state, Western troops withdrew from the country followed by the Taliban coming back to power. It was able to take control virtually of the entire state, including the capital, without much resistance, while President Ashraf Ghani himself fled the country to escape the Taliban and thousands of Afghans sought to leave Afghanistan, too. The Taliban subsequently consolidated the government and proclaimed the Islamic Emirate of Afghanistan. With their initial statements about the respect for the rights of women and minorities, they sought to alleviate fears and gain legitimacy at home as well as internationally, however, shortly after gaining power, they took measures that contradicted their promises and once again prevented women from accessing both education and work. There are also concerns about the development of terrorism in Afghanistan, especially in terms of the Taliban's past and present ties to Al-Qaeda. In addition, the Islamic State of Khorasan (IS-K) terrorist group (responsible for the suicide attack at Kabul airport in August 2021), which represents a rival for the Taliban and criticizes it for its 'moderation' and negotiations with the US, is also increasing its activities in Afghanistan. The Afghan branch of the Islamic State poses a threat not only to the Taliban, but also to Western countries, while in autumn 2021, US intelligence services even warned that in six months' time, the IS-K might be able to attack abroad.³

The most dramatic situation in terms of the high concentration of coups was in the Sahel. Nine months after the previous coup, there was another coup in **Mali** as a result of disputes over the composition of the new government. Both the interim president and the prime minister were detained until they resigned, and Colonel Assimi Goïta, the leader of both coups d'état, became the new interim president. In response to the military coup, both ECOWAS and the African Union suspended membership for Mali; France not only condemned the coup, but threatened to withdraw its troops from the Barkhane mission, especially if the so-called Wagner group was deployed in Mali, which happened at the end of 2021.⁴ At the same time, in December, a turning point occurred in the French operation in Mali, lasting more than eight years, when French forces were withdrawn from the base in Timbuktu. Still, in 2021, the EU confirmed that it would continue its training mission in Mali, however, not at any costs, and expected a transition to democratic government in Mali.

The coup in **Sudan** came one month after the failed attempt to overthrow the transitional government, which was established after the fall of President Bashir and was to remain

² BACHELET, Michelle. Intensifying widespread, systematic slaughter by Myanmar military must be halted. UN Office of the High Commissioner for Human Rights, 13.4.2021.

<https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=26989&LangID=E>

³ KERMANI, Secunder. The Taliban's secretive war against IS, 29.10.2021.

<https://www.bbc.com/news/world-asia-59080871>

⁴ THOMPSON, Jared, DOXSEE, Catrina. 2022. Tracking the Arrival of Russia's Wagner Group in Mali. <https://www.csis.org/analysis/tracking-arrival-russias-wagner-group-mali>

in power until the election in 2023. In response to the coup, the US suspended development aid for Sudan and considered imposing sanctions on the new government. However, Russia as well as the PRC refused to support sanctions against Sudan, while Russia also refused to call the events a coup, blaming Western interference for the unrest in the country. Russia is interested in maintaining good relations with the military government in Sudan, especially in the area of military cooperation with the possibility of opening a Russian naval base on the shore of the Red Sea, which was endangered during the previous Sudanese government (the provisional government in Khartoum suspended the agreement with Russia before the October coup, stating that it still wanted to negotiate it). However, after the coup in October, relations between the US and Sudan deteriorated and Sudan lost the US financial assistance, which in turn increased the chances for the Russian naval base.⁵

In addition to Sudan and Mali, **Chad** and **Guinea** also experienced military coups in Africa, while an attempted military coup failed in **Niger**. In this context, UN Secretary-General António Guterres even spoke about the so-called ‘coup epidemic’ and called on the UN Security Council to respond to the situation.⁶ Overthrows took place mainly in the Sahel, where political and economic instability has prevailed for a long time and the region is also facing an increase in radical Islamism.

Anti-government protests

In **Poland**, protests continued against the law on abortion, which entered into force in January 2021, as one of the strictest anti-abortion laws in Europe, and the Polish Parliament began to discuss its further tightening at the end of the year. In addition, demonstrations in support of membership of the European Union broke out after the Polish Constitutional Court adopted a controversial decision rejecting the binding nature of the decision of the Court of Justice of the EU, thereby effectively challenging the primacy of European law to national law and the fundamental principle of European integration as such. The decision is the culmination of a long-standing dispute between the EU and Poland over the reform of the judiciary. Due to the dispute over the rule of law, the European Commission postponed the approval of the Polish recovery plan, and Poland, in turn, unsuccessfully tried to block the plan of EU’s legislative priorities for 2022. The Law and Justice party has been critical of the European Union’s interference in Poland’s judicial reform for a long time, and, in connection with the unprecedented decision of the Polish Constitutional Court, the term ‘Polexit’ has even appeared, despite the government making statements that it refuses to leave the EU. Based on surveys, majority of the Polish population would not agree to withdraw from the EU.

In **Hong Kong**, the government managed to prevent further anti-government demonstrations, also through application of anti-pandemic measures. In this context, the planned 1989 Tiananmen massacre commemorative gathering was banned and a ban was also imposed on assembly of more than four people. The ban remained in place even after the Hong Kong pandemic situation improved significantly, therefore, critics see these actions as a way to prevent further demonstrations in support of democracy. These threatened, in particular, in connection with Beijing’s further anti-democratic actions in Hong Kong in the form of a new electoral law, which ensures the parliamentarians’ loyalty to Beijing, thereby effectively strengthening Beijing’s control over Hong Kong.

⁵ SEMENOV, Kirill. Sudan coup could offer boon for Moscow. 28.10.2021. <https://www.al-monitor.com/originals/2021/10/sudan-coup-could-offer-boon-moscow>

⁶ GUTERRES, Antonio. Press Conference by Secretary-General António Guterres at United Nations Headquarters, 26.10.2021. <https://www.un.org/press/en/2021/sgsm20993.doc.htm>

Against the backdrop of the ongoing pandemic, the world continued to protest **against anti-pandemic measures**, or against the governments that took those measures. European states, including the Czech Republic, were not an exception. Anti-governmental narratives have also appeared in relation to vaccination, when a part of the population refuses vaccination, questioning the safety and effectiveness of vaccines, or the pandemic as such. Some populist parties have also abused this, using the respective narrative, in the Czech Republic and elsewhere in the world.

Delegitimization of government

In connection with the delegitimization of the government, the conflict potential has increased especially in **Bosnia and Herzegovina**, between the Republic of Srpska and the Federation of Bosnia and Herzegovina. The weakening of the legitimacy of the central government occurred after the Bosnian Serbs refused to amend the Criminal Code criminalizing, inter alia, the questioning of genocide. Subsequently, central state institutions were boycotted, which eventually resulted in the decision of the Republic of Srpska to withdraw from national institutions,⁷ including the army, security services, the tax system, and the highest judicial authorities. This raised legitimate concerns about the threats to the sovereignty and territorial integrity of Bosnia and Herzegovina. According to the UN High Representative for Bosnia and Herzegovina, the country faces an existential threat and an imminent risk of disintegration and a return to conflict.⁸

The legitimacy of the government was also undermined in **Mozambique** after militants from the Ansar al-Sunna group (also called al-Shabaab), claiming affiliation with the so-called Islamic State, occupied territory in the Cabo Delgado province in the north of the country, including the coastal city of Palma. The government was subsequently criticized for the absence of reaction due to a poorly trained and poorly armed army, but also for the high poverty and unemployment that plagues the north of the state, despite the potential for natural gas extraction, which contributes to the growing ranks of terrorists and, conversely, to the government's delegitimization in the eyes of the citizens. In response to the events, the US sent military advisers to Mozambique, and the EU, at the request of the Mozambican government, set up a training mission in the country to help the local armed forces protect the population, restore security, and combat terrorism.

Regional level

In 2021, tensions and instability at the regional level could be observed mainly in the Middle East, but also in Eastern Europe. On the other hand, in some areas or disputes, including the Qatar crisis, a positive shift towards de-escalation could be observed.

Escalation of tensions

Tensions in Eastern Europe have increased significantly, especially in the relations between the European Union and Russia-backed **Belarus**. The relationship between the EU and Belarus intensified mainly after Belarus forced a civilian plane, flying from Athens to Vilnius, to land in Minsk under the pretext of an alleged bomb on board. The actual cause was the detention of one of the passengers, opposition journalist Raman Pratasevich, labelled as an extremist by the regime. It is another of the many arrests of

⁷ SECURITY COUNCIL REPORT. Bosnia and Herzegovina, 29.10.2021.

<https://www.securitycouncilreport.org/monthly-forecast/2021-11/bosnia-and-herzegovina-6.php>

⁸ SECURITY COUNCIL REPORT. Bosnia and Herzegovina: Debate and EUFOR ALTHEA Reauthorisation, 2.11.2021. <https://www.securitycouncilreport.org/whatsinblue/2021/11/bosnia-and-herzegovina-debate-and-eufor-althea-reauthorisation-2.php>

a journalist in Belarus, but the way it happened is unprecedented. The EU responded to the hijacking by extending sanctions against the Belarusian regime and those involved in the hijacking.⁹ The EU even described the forced landing as an act of state terrorism and called for the unconditional release of the journalist and his girlfriend.

However, President Lukashenko reacted to the new package of sanctions by further escalating the situation. Not only did he suspend Belarusian participation in the Eastern Partnership project and the validity of the illegal migration agreement with the EU, but he even artificially created a migration crisis on the **Polish-Belarusian border**. To this end, Belarus began to use migrants to extend pressure on the EU, when Belarusian travel agencies imported persons with tourist visas to Belarus with the promise that they would easily reach the EU from there. Thousands of migrants from the Middle East subsequently got stuck at the Polish-Belarusian border because Poland refused to give way to the 'Lukashenko's game'. Poland even called it an 'attack on the European Union' and sent troops to the border. The EU stands by Poland in this matter, despite the controversies between Poland and the EU discussed above. It agrees that this is not a migration crisis, but a hybrid attack and has also introduced a new round of sanctions against Belarus.¹⁰ Poland was also supported by the United Kingdom and Estonia, which sent troops to the Polish-Belarusian border, while Russian President Vladimir Putin took sides with Belarus. The prevailing opinion was also that the events were to serve to divert attention from the Ukrainian border, where there was a high concentration of Russian troops¹¹ (of up to one hundred thousand) at that time and the risk of military conflict increased significantly.

Belarus has become a source of instability in Eastern Europe, not only because of the migration crisis, which did not end according to Lukashenko's expectations, because the EU was not destabilised and migrants eventually started to return to their countries, but also because of the rhetoric that Lukashenko subsequently chose. First of all, he expressed his will to have Russian nuclear weapons on his territory if NATO moved nuclear weapons from Germany to the east.¹² This was in relation to the forthcoming change of government in Germany after the Christian Democratic Union (CDU) lost the parliamentary elections and the government was formed by the victorious Social Democratic Party of Germany (SPD) together with the Greens and the Free Democratic Party (FDP). In this context, fears have grown that the new government could distance itself from NATO's nuclear deterrence.¹³ At the same time, Lukashenko said, for the first

⁹ EUROPEAN COUNCIL. Restrictive measures against Belarus, 2021.

<https://www.consilium.europa.eu/en/policies/sanctions/restrictive-measures-against-belarus/>

¹⁰ EUROPEAN COUNCIL. Belarus: EU adopts 5th package of sanctions over continued human rights abuses and the instrumentalisation of migrants, 2.12.2021.

<https://www.consilium.europa.eu/en/press/press-releases/2021/12/02/belarus-eu-adopts-5th-package-of-sanctions-over-continued-human-rights-abuses-and-the-instrumentalisation-of-migrants/>

¹¹ WOODRUFF SWAN, Betty, MCLEARY, Paul. Satellite images show new Russian military buildup near Ukraine, 1.11.2021. <https://www.politico.com/news/2021/11/01/satellite-russia-ukraine-military-518337>

¹² ISACHENKOV, Vladimir. Belarus president offers to host Russian nuclear weapons, 30.11.2021. <https://apnews.com/article/russia-ukraine-germany-migration-europe-ab1efae5e65bf01af3be2f6139ef6f4b>

¹³ STELZENMÜLLER, Constanze. Nuclear weapons debate in Germany touches a raw NATO nerve, 19.11.2021. <https://www.brookings.edu/blog/order-from-chaos/2021/11/19/nuclear-weapons-debate-in-germany-touches-a-raw-nato-nerve/>

time, that he considered Crimea to be Russian, and he also claimed that if there was a military conflict, Belarus would not stay aside and would support Russia.¹⁴

Relations also cooled between the Czech Republic and Russia after the publication that the explosions of the ammunition depot in **Vrbětice** in 2014 had been caused by agents of the Russian secret service GRU, who were also responsible for the attack on Sergei Skripal in Salisbury in 2018.¹⁵ In media as well as in political circles, the event was described as an act of state terrorism by Russia against a NATO member, although the real motive for the attack is subject to speculations. Immediately after, the Czech Republic expelled from the first 18 Russian agents operating under diplomatic cover in the country, with Moscow responding by expelling twenty Czech diplomats. In addition, Moscow even included the Czech Republic (only together with the US) on the list of hostile states.

In the Middle East, the situation escalated once again in the **Israeli-Palestinian conflict**, reaching one its hot stages. After the growing unrest in Jerusalem, there were eleven days of open violence between Israel, on the one hand, and Hamas and the Palestinian Islamic Jihad, on the other. In parallel, unrest broke out among the Arabs living in Israel, opening up a new dimension of the conflict that had not yet been recorded. The escalating situation temporarily delayed Benjamin Netanyahu's resignation from the Prime Minister's office, even though it did not prevent it. After the fourth early election, which Netanyahu's party Likud won but failed to form a government, Naftali Bennett eventually formed a government with the nationalist party Yamina, replacing Netanyahu as Prime Minister after twelve years. The new government was formed by eight parties of the right and the left; for the first time in history, the party of the Israeli Arabs UAL (United Arab List) also entered the government.

Relations between **Israel and Iran** also experienced further escalation after Iran had accused Israeli Mossad of sabotaging the Iranian nuclear complex at Natanz and even referred to the incident as the so-called nuclear terrorism. Israel has long rejected the possibility of Iran acquiring nuclear weapons, and has been accused in the past of actions that should have prevented the latter from doing so, or at least slowed down Iran's nuclear program (cyber sabotage, physical liquidation of scientists, etc.). It was at Natanz where the new technology was supposed to enable uranium to be enriched more quickly, but a few hours after it was launched, part of the factory was destroyed by an explosion, putting it out of operation for months. In addition, the conflict also took place at sea, where Israel and Iran blamed each other for attacking their ships. Israel accused Iran of an explosion on the Israeli merchant ship Helios Ray in the Gulf of Oman, and then Iran accused Israel of causing an explosion on the Iranian cargo ship Saviz in the Red Sea. This was supposed to be a retaliatory attack, with Israel claiming that the ship was used by Iran to provide logistical support to the Houthis in Yemen. In another incident, Israel, with the support of the US and the United Kingdom, accused Iran of drone strikes on an Israeli-company-operated Mercer Street oil tanker (only a few days later, Iran was also suspected of attempting to hijack the oil tanker Asphalt Princess in the Gulf of Oman). The tense relations between Israel and Iran are usually referred to as the 'shadow war'.

¹⁴ ISACHENKOV, ref. 12

¹⁵ BELLINGCAT. Senior GRU Leader Directly Involved With Czech Arms Depot Explosion, 2021. <https://www.bellingcat.com/news/2021/04/20/senior-gru-leader-directly-involved-with-czech-arms-depot-explosion/>

De-escalation of tensions

Despite several conflict lines, some positive trends and efforts to de-escalate tensions can be observed. This could include the resumption of talks on the **Iranian nuclear agreement**, which Donald Trump withdrew from in 2018 and which were subsequently violated by Iran continuing to enrich uranium beyond the limit set by the agreement. However, Biden's administration made it a condition of re-accession requiring that Iran return to full compliance with its obligations under the 2015 agreement first, whereas, at the same time, Iran insists on the lifting of all sanctions imposed on Iran in recent years, including those unrelated to the nuclear programme. At the same time, critics point to the possibility that Iran, despite its statements, does not necessarily want to reach an agreement and tries to buy time instead.

In addition, the three-and-a-half-year **Qatari crisis** ended after Saudi Arabia, the United Arab Emirates, Bahrain, and Egypt had declared a blockade of Qatar, primarily because of alleged support for terrorism (groups affiliated to the Muslim Brotherhood), with Qatar's relations with Iran also being a thorn in their side of the eye. At the beginning of 2021, the states finally decided to end the blockade and re-establish diplomatic relations with Qatar, thanks to mediation by Kuwait and US pressure. Nevertheless, the conflict lines that triggered the crisis have not disappeared and may thus give rise to further escalation in the relations between the GCC states in the future.

The uncertainty has also decreased in EU-UK relations after the European Parliament ratified the EU-UK Trade and Cooperation Agreement, which eventually entered into force. The agreement addresses areas such as trade in goods and services, protection of intellectual property rights, energy, fishing, transport, judicial cooperation in criminal matters, and more. On the contrary, it does not apply to the field of foreign policy, security and defence.¹⁶ The Brexit, discussed since 2016, when the referendum on the country's withdrawal from the EU took place in Britain, was thus definitely completed. At the same time, this has put an end to a long period of uncertainty about the future shape of relations between the United Kingdom and the EU.

The superpower level

At the level of superpowers, the conflict line between the West (USA or NATO, EU) on the one hand and the Asian (PRC) and Eurasian (Russia) superpowers on the other hand has been going on for several years.

This conflict line was fully evident in the context of the coronavirus vaccines. 2021 gave rise to the so-called vaccine **diplomacy**, when primarily Russia and the PRC used the vaccine as a strategic geopolitical tool to achieve their foreign policy goals, or as a soft power tool to strengthen their influence in the world, while at the same time accusing the West of selfish 'vaccine nationalism'. Among European countries, for example, it was Hungary, which turned to Russia and the PRC, despite the fact that their respective vaccines were not approved by the European Medicines Agency, while Slovakia also purchased the unregistered Sputnik. Russian and Chinese vaccines were also exported (in some cases donated)¹⁷ to the developing world, including countries in Africa, Southeast

¹⁶ EVROPSKÁ KOMISE. The EU-UK Trade and Cooperation Agreement, 2021.

https://ec.europa.eu/info/strategy/relations-non-eu-countries/relations-united-kingdom/eu-uk-trade-and-cooperation-agreement_en

¹⁷ BLABLOVÁ, Veronika. Čínská vakcínová diplomacie v praxi, AMO, 4.3.2021.

https://www.amo.cz/wp-content/uploads/2021/02/Mapinfluence_cinska-vakcinova-diplomacie-v-praxi_tabulka_2021_03_05_CZ_03.pdf

Asia, or Latin America, traditionally falling within the sphere of American influence, despite the fact that the domestic population, especially in Russia, remained largely unvaccinated.¹⁸ This approach was in contrast with the US policy, which held the ‘America first’ stance since the beginning of the pandemic. In this context, the West was criticized for not striving for a fair distribution of vaccines and was accused of the enormous difference in vaccination rates between the developed Western states and the developing world. On the contrary, Russia and the PRC wanted to act as a reliable ally concerned with the global public good. Both countries used the vaccine to a large extent to improve their own reputation in the world. In reality, both Russia and the PRC pursue their own strategic interests, which may not only be to strengthen their own influence or gain long-term strategic benefits, but, for instance, the PRC exported the vaccine to countries which they have territorial disputes with (Philippines, Indonesia) to improve its own bargaining position. In addition, it turned out that the donated Chinese vaccines were directed mainly to the states that were also involved in the Belt and Road Initiative.¹⁹ Thus, vaccine diplomacy replaced the so-called mask diplomacy that was typical for 2020 (especially in the foreign policy of the PRC), although both Russia and the PRC refuse to have practiced this form of diplomacy and call their vaccine deliveries humanitarian aid, criticising the West for considering the export of vaccines to be just ‘business’.

Both Russia and the PRC have traditionally used **disinformation campaigns** to undermine confidence in Western vaccines in the race to export vaccines, for example, by focusing on reports of alleged vaccine-related deaths by the state media. This is in line with Russia’s or the PRC’s long-term disinformation strategy to discredit the Western-led world order. In addition, both actors continued to spread conspiracy theories about the emergence of the pandemic itself (including the Chinese theory that the US army laboratory was behind the virus). Once again, it turned out that instead of a worldwide united effort to defeat the pandemic, the particular interests of individual superpowers and the pursuit of a strategic advantage and influence prevailed.

Relations between the West and the PRC

As far as the **West’s relations with the PRC** are concerned, in 2021, they were also marked by continuous human rights violations in Xinjiang (as a result of which the USA and the EU imposed sanctions on the PRC), increased tension in the Taiwan Strait (in the form of intrusion into Taiwan airspace by military aircraft of the PRC), and approach to Hong Kong.

In December 2020, the EU concluded the **Comprehensive Investment Agreement** with the PRC,²⁰ which was perceived critically, in particular, by the US, as Joe Biden, who promised to cooperate more closely with the allies in order to balance the PRC, was about to take the presidential seat in that period. The purpose of the agreement was to establish a level playing field for companies from the PRC and the EU in their mutual trade. For the EU, it was supposed to be a way to protect European investments in the PRC, but the agreement was rather perceived as a “diplomatic victory for Beijing and a geopolitical

¹⁸ STATISTA. Number of people vaccinated and fully vaccinated..., 2022.

<https://www.statista.com/statistics/1239299/covid-19-vaccination-rate-in-russia/>

¹⁹ KIERNAN, Samantha, Serena TOHME, Kailey SHANKS, Basia ROSENBAUM. The Politics of Vaccine Donation and Diplomacy, 4.6.2021. <https://www.thinkglobalhealth.org/article/politics-vaccine-donation-and-diplomacy>

²⁰ EUROPEAN COMMISSION. EU and China reach agreement in principle on investment, 30.12.2020. <https://trade.ec.europa.eu/doclib/press/index.cfm?id=2233>

loss for Europe”.²¹ However, when the European Parliament froze ratification of the agreement, it turned out that the EU had also gained a kind of leverage toward the PRC. With this step, the European Parliament responded to the sanctions imposed by the PRC on representatives of the European institutions after the EU imposed sanctions on several Chinese officials in response to the repressions in Xinjiang. Subsequently, the European Parliament made the suspension of negotiations on the ratification of the Investment Agreement conditional on the lifting of sanctions by the PRC.²²

At the same time, at the end of 2021, the EU presented an ambitious initiative called **Global Gateway**, which consists of €300 billion of infrastructure investments in the developing world by 2027.²³ The initiative, although not formally presented, is seen as an alternative to the Chinese Belt and Road Initiative (BRI), as it should open the way for countries to choose between the Chinese and European investments. The European agenda focuses on areas such as digitization, health, or renewable energy, and unlike China’s BRI, it is more based on values such as transparency of funding or working conditions, and will not leave participating countries in a debt trap, even though the total amount of planned investment is lower than that of China’s BRI. There are also sceptical opinions about the European initiative, but it is important that it allows Europe to present itself as an independent actor. However, it was only the second alternative to BRI presented in 2021. The first one, called **Build Back Better World (B3W)**, was introduced by the President of the US Joe Biden at the G7 summit. It is intended to be an investment project aimed at building infrastructure in low- and middle-income countries. Thus, the US has once again become the main driver of multilateral cooperation in sustainable economic development.²⁴ Unlike the European Initiative, the US-led G7 initiative is presented as a way of competing strategically with the PRC.²⁵

In addition to trying to contain the PRC’s entry into the developing world, especially in Africa, the US is also trying to increase its presence in the Pacific. In this respect, the USA, Australia, and the United Kingdom have announced establishment of a new AUKUS security pact to ensure security and stability in the Indo-Pacific region, while experts believe that the purpose of the pact is to counterbalance the PRC’s influence in the region. After the US left the Trans-Pacific Partnership under the Trump administration, this is a signal that the US interest in the Indo-Pacific region is growing again. Beijing considers the pact to be a threat to regional peace and security, arguing for the intensification of the arms race. (See Military Sector.) The emergence of the pact has

²¹ ŠIMEČKA, Martin M. O zmluve EÚ s Čínou, ktorá zahanbuje Európu a je víťazstvom Číny, 10.1.2021. <https://dennikn.sk/2218493/odkaz-mms-o-zmluve-eu-s-cinou-ktora-zahanbuje-europu-a-je-vitazstvom-ciny/>

²² EUROPEAN PARLIAMENT. Press release: MEPs refuse any agreement with China whilst sanctions are in place, 20.5.2021. <https://www.europarl.europa.eu/news/en/press-room/20210517IPR04123/meps-refuse-any-agreement-with-china-whilst-sanctions-are-in-place>

²³ EUROPEAN COMMISSION. Global Gateway: up to €300 billion for the European Union’s strategy to boost sustainable links around the world, 1.12.2021. https://ec.europa.eu/commission/presscorner/detail/en/ip_21_6433

²⁴ KING’S COLLEGE LONDON. Build back better world (B3W) and the Belt and Road Initiative (BRI): prospects and limitations, 27.10.2021. <https://www.kcl.ac.uk/events/build-back-better-world-b3w-and-the-belt-and-road-initiative-bri-prospects-and-limitations>

²⁵ THE WHITE HOUSE. President Biden and G7 Leaders Launch Build Back Better World (B3W) Partnership, 12.6.2021. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/06/12/fact-sheet-president-biden-and-g7-leaders-launch-build-back-better-world-b3w-partnership/>

raised some concerns, albeit of a different nature, also in the EU, as the formation of the pact was communicated only shortly before the EU was supposed to present its own Indo-Pacific strategy.²⁶ Therefore, there is a growing concern in the EU that it is not sufficiently perceived as a strategic partner for the US or Australia in the Indo-Pacific region.

Relations between the West and Russia

The **West's relations with Russia** also experienced dynamic development in 2021. These initially took place, inter alia, against the backdrop of the Russian **parliamentary elections**, with Vladimir Putin's ruling party United Russia winning as expected with the gain of almost 50%,²⁷ thus defending its constitutional majority in the Parliament. However, the elections were preceded by intimidation of critics and arrests of opposition politicians, and also bans on their candidacy in the elections, and were accompanied by numerous accusations of electoral fraud, which the Kremlin, however, rejects. One of the critics that Moscow is trying to silence is **Alexei Navalny**, who was detained immediately after his arrival in Russia after recovering from the poisoning with the substance called Novichok. Russia has declared his network of supporters to be an extremist organization and himself an extremist or even a terrorist. On the contrary, the European Court of Human Rights considers the trial of Navalny to be unfair and the European Parliament awarded Navalny with the Sakharov Prize for his courage in the fight for freedom, democracy, and human rights.

Sanctions against Russia were once again among hot topics in the West. The European Union approved the extension of the sanctions imposed as a result of the annexation of Crimea until 2022. In addition, several rounds of new sanctions against Russia were introduced by the US, in connection with the imprisonment of Alexei Navalny, hacker attacks on US institutions in 2020, disclosure of US secret services, according to which Putin was to authorize operations that would help re-election of Donald Trump as president and, conversely, would harm his opponent Joe Biden. Sanctions were also imposed in connection with the construction of the Nord Stream 2 gas pipeline (see the Economic Sector), criticised by the US for a long time. Last but not least, the sanctions also concerned the situation in Ukraine.²⁸

Tensions in relations between the West and Russia culminated mainly in the events in Eastern Europe and the massive concentration of Russian troops at the Ukrainian border, as a result of which the fear of a possible Russian invasion of **Ukraine** increased. The risk of an open conflict escalated unprecedentedly after Putin published his conditions for NATO at the end of the year, which are interpreted as an ultimatum in the West, or even (due to their unacceptability) are referred to as Russia's pretext for invading Ukraine. On the one hand, Putin is demanding that Ukraine does not join NATO, but, at the same time, he is demanding that NATO does not deploy its bases in the states admitted after 1997, which would affect the Czech Republic. Agreeing to Putin's terms would thus undermine the fundamental pillars of NATO's functioning. In this respect, relations between NATO and Russia reached their lowest level since the end of the Cold War at the end of 2021.

²⁶ EUROPEAN COMMISSION. The EU strategy for cooperation in the Indo-Pacific, 16.9.2021. https://eeas.europa.eu/sites/default/files/jointcommunication_2021_24_1_en.pdf

²⁷ STATISTA. Distribution of votes in the election to the State Duma, 2021. <https://www.statista.com/statistics/1264445/russia-parliamentary-election-results/>

²⁸ CONGRESSIONAL RESEARCH SERVICE. U.S. Sanctions on Russia: An Overview, 1.9.2021. <https://sgp.fas.org/crs/row/IF10779.pdf>

Implications for the armed forces

The above trends and events bring several hypothetical and some very specific implications for the ACR. First of all, some events directly affected the ACR, such as the development at the Polish-Belarusian border. In order to help protect Poland's border with Belarus, the Czech government approved a mandate to send 150 soldiers, even though the deployment did not take place because, according to Poland, it was not necessary. The Czech Republic is closely following developments in Eastern Europe and in the context of Ukraine, because escalation into an open armed conflict would directly affect the security environment of the Czech Republic and would bring new tasks for the ACR. In such a case, one can expect, among other things, the need to increase the presence of troops on the eastern border of NATO.

In general, any deterioration of the security situation and stability in the region, which is geographically close to the Czech Republic or where the Czech Republic has its interests, may result in the future in new tasks in the sense of bilateral assistance or participation in a stabilization or other mission under the auspices of one of the collective security or defence organizations that the Czech Republic is a member of. The EU is currently paying increased attention to the developments in its immediate border area, with the situation in Bosnia and Herzegovina being also dynamic, in addition to Ukraine. In this context, the UN Security Council has approved the extension of the mandate of the EUFOR Althea mission.²⁹ If there is a need for greater involvement of the international community in the territory of Bosnia and Herzegovina, new tasks for the ACR may also arise. Hypothetically, a similar development could occur in Mozambique, where, in the context of deteriorating security, the EU established a new mission in 2021. Moreover, as troops leave Afghanistan and the focus gradually shifts from the Middle East to Africa, where the security situation is deteriorating, especially in the Sahel, an increased presence of Czech troops in missions on the African continent is not excluded. At the same time, the opposite trend can be seen in Mali, where the role and presence of Czech soldiers will be influenced by the withdrawal of French troops and the possible EU response to further developments in the situation, including the deployment of Russian mercenaries from the Wagner group on the territory of Mali.

²⁹ UNITED NATIONS. Security Council Extends Mandate of European Union-Led Stabilization Force in Bosnia and Herzegovina for One Year, 3.11.2021.
<https://www.un.org/press/en/2021/sc14685.doc.htm>

MILITARY SECTOR

Long-term conflicts dominated the military sector in 2021 as in the previous period. These included, again, regional conflicts of varying intensity, sometimes with a relatively high escalation potential. Nevertheless, fundamental changes can be observed in some conflicts in 2021 due to the projection of military power or, on the contrary, resignation of one of the actors from further operations on the conflict territory.

The key event of 2021 in the military sector was the **end of the Western military presence in Afghanistan**. In the first half of the year, foreign forces were being gradually withdrawn and the responsibility for the security situation was increasingly delegated to Afghan government structures and security forces. In view of this process, the intensity of this national conflict was not too high, yet, it was possible to observe the erosion of the government's authority in an increasingly larger part of the territory of Afghanistan. The second half of the year brought an acceleration of this development, which marked a complete and partially chaotic end to all external Western presence.

The overly autonomous approach of the main external actor, the United States, which did not announce some of its actions in advance either to its foreign partners or to the local government, was rather problematic. The total and unexpectedly rapid collapse of the government structures, the Afghan army, and security forces can then be seen as an almost strategic shock. In the long run, and at the cost of considerable effort and expense, the forces being built virtually disappeared within a few hours without resisting the advancing armed formations of the opposition. Opposition rebel forces thus seized a significant amount of undamaged military material and modern armaments, originally received by the government troops in the previous period. Subsequently, the current rebel movement (often commonly referred to as the Taliban in the past) was transformed into a de facto Afghan government, with the Islamic Republic of Afghanistan being replaced by the Islamic Emirate of Afghanistan.

The transfer of power, in fact, a fundamental transformation of power in Afghanistan took place without major material and human losses, probably also thanks to its rapid course. On the other hand, this collapse called into question two decades of efforts by Euro-Atlantic actors to create a stable, non-conflict Afghan government and society. From the military point of view, it is possible to claim complete failure of efforts to create operational Afghan security structures, which was the primary focus of attention in recent years, including efforts of the components of the ACR operating here. Thus, the attempt to Afghanize the conflict and maintain at least a short-term functioning of the pro-Western government was not fulfilled even to a minimal extent. The result of the Afghan conflict then brings a number of negative consequences, both on a military and political level. Unconsulted and chaotic withdrawal has led to a decline in the credibility of the United States as a partner in some NATO member states. It was also used as an argument for developing closer cooperation within the European area and more autonomy from the United States.³⁰ The strategic patience of the opposition rebel forces, or the Islamic Emirate of Afghanistan, and the subsequent spectacular success and complete takeover of power in the country can become an inspiring example for a number of similar radical movements, which are in conflict with their own governments and their external allies and partners in many places in the Islamic world.

³⁰ TARQUINIO, J. Alex. Macron Uses Biden's Afghan Retreat to Push 'Strategic Autonomy' [online]. 2021 [cit. 2022-01-21]. Available from: <https://foreignpolicy.com/2021/09/02/macron-biden-afghanistan-retreat-strategic-autonomy/>

In the context of the **conflict in Syria**, a phase of relative stability can be observed again in 2021, given the results of military operations in previous years. Government forces have consolidated control over most of the country's territory, with the exception of the north and northeast of Syria and several smaller isolated locations in other regions. The stability is currently determined by the Syrian-Turkish agreement and respect for the previously established demilitarized zones. Syrian Kurdish armed opposition forces, which mainly control the north-east of the country and have confrontational attitude towards both regional power actors, occupy a specific position in the conflict. Israel got involved in the Syrian conflict several times with limited strikes to eliminate possible threats, primarily from Iranian entities active in Syria. In principle, 2021 brought a relatively quiet period, with no greater intensity of fighting between all of the main actors, and reaffirmed the trend of the fundamental importance of external actors in this conflict.

Similar characteristics were displayed by the long **conflict in Yemen** in 2021. The Yemen conflict is a regional confrontation of varying intensity. It is a prolonged confrontation of power of external regional actors (Iran vs. Saudi Arabia) and proxy conflict with flexible intensity of military action. The conflict affects a significant part of the Yemeni population and significantly worsens the already very poor living conditions. The war has a profound impact on a number of areas in the non-military sector, with Yemen remaining at the forefront of the *Fragile States Index*³¹ and the *Global Hunger Index*.³² From a military point of view, there is a significant increase in rocket attacks or attacks carried out by drones by the Yemeni Houthis against Saudi Arabia. In particular, this actor uses Iranian technology, which, while not cutting-edge technologically, as shown in the previous period, has a significant impact on the key infrastructure of the oil industry and can cause serious economic losses. In 2021, there was an unprecedented amount of such attacks, the total number of which reached 375.³³ The number of attacks significantly burdens the Saudi air defence, which is nevertheless able to eliminate the vast majority of the opponent's resources using sophisticated systems, such as Patriot. Still, it already meets its limits and the ratio of low-cost missiles and enemy drones versus the financially very expensive own disposable air defence systems leads to considering the economic and military aspects of Saudi Arabia's participation in the conflict. In view of this development, the intensity of air strikes by the Saudi air force on the positions of the Houthis, in particular, targeting the infrastructure needed to produce or assemble their unmanned vehicles, has increased.

In 2021, European countries, and traditionally France in particular, were involved militarily in the **Sahel region**, but the long-term impact of high costs and only limited achievement of set objectives have led to reassessment of further perspectives of the French military presence. The several-year-long trend, where military interventions by external actors bring only short-term local stabilisation, while local political and military elements are unable to achieve a significant improvement in the security situation and political stability, has led to parallels with the situation in Afghanistan.

The difficult-to-solve internal political problems in Mali, where a military government with limited legitimacy has ruled since the military coup of 2020, have also led to a fundamental deterioration in the relationship between the Malian and French

³¹ Fragile States Index. [online]. 2021 [cit. 2022-01-21]. Available from: <https://fragilestatesindex.org/data/>

³² Global Hunger Index. [online]. 2021 [cit. 2022-01-21]. Available from: <https://www.globalhungerindex.org/about.html>

³³ L UBOLD, G. Saudi Arabia Pleads for Missile-Defense Resupply as Its Arsenal Runs Low. [online]. 2021 [cit. 2022-01-21]. Available from: <https://www.wsj.com/articles/saudi-arabia-pleads-for-missile-defense-resupply-as-its-arsenal-runs-low-11638878400>

governments and diplomats. Originally, the French accepted the new military government, however, they expected its temporary functioning and replacement by a new government with a democratic mandate. Instead, another military coup took place due to discord on the composition of the existing government resulting in further instability in the internal politics of the country. There was, nevertheless, no negative shift at the level of practical cooperation in the training of Malian troops and joint interventions against Islamist radicals; new government officials in Mali were mainly formed at French military schools and thus constituted suitable counterparts for the military representatives of the French mission.³⁴ At the political level, however, expectations have not been met, and the postponements of the new elections, supposed to provide the government with a legitimate basis, have provoked growing criticism from French partners. The political divide has thus also had a negative impact throughout the mission and, together with the unsatisfactory overall development, has led European actors to gradually reconsider their initial intentions and prospects for further action.

Moreover, Russian activities implemented through the so-called Wagner Group, the Russian private military company and its contractors, have become a new factor in the region. This group is very closely connected to Russian intelligence services, serving as a vehicle through which Russian power-political goals are implemented. According to some sources, several hundred Russian contractors arrived in Mali in 2021, while their presence was initially denied by the government of Mali. For the military junta in Mali, however, cooperation with this Russian entity may counterbalance the current dominant French influence and become a factor that responds to the deterioration of French-Malian relations. Part of the government and society in Mali perceive Russian entities as a politically neutral element, which can partially or fully replace the French and European military presence in many respects, without interfering in domestic political developments and placing demands of a political or economic nature.

The presence of this Russian entity also led the European Union to suspending the training mission in the Central African Republic, as it was reported that part of the trained military personnel of this African state came under the control and leadership of the Wagner Group and carried out operations with this organization, which is suspected of widespread violations of human rights and war crimes.

These restrictions on the presence and diplomatic disagreements of states in the region with European partners led to an increase in instability in the Sahel last year as well as an increase in the activities of terrorist and jihadist rebel groups belonging to the Islamic State, Al-Qaeda, or their branches. In 2021, we can observe the increase in numbers of armed attacks and incidents, as well as losses of human lives and the increasing number of refugees from the most conflict-stricken zones.³⁵

The conflict potential in the Sahel area is difficult to address only by acting in the military sector; the sources of conflict are based on deep social and environmental causes, which are then reflected in religiously and ethnically motivated violence. The erosion of state power in the last decade, inter alia, allowed the escalation of a number of latent inter-ethnic conflicts, while the interconnected ethnic and Islamist forms of radicalism strengthened the conflict potential in many local regions. The fact that, despite a long-term and strong French military presence, one of the most consolidated states in the region - Mali - could not be stabilized, is indicative of the depth of the problems and difficulties that any external actor will be forced to face in its stabilization efforts. In this

³⁴ BOTÍK, M. Interview with Col Martin Botík, member of mission in Mali, on 20.10.2021

³⁵ The Armed Conflict Location & Event Data Project 2021. [online]. 2021 [cit. 2022-01-21]. Available from: <https://acleddata.com/#/dashboard>

respect, 2021 heralded a fundamental curbing of the French military presence and limited possibilities of external action without a relevant power base in the country.

Another internal conflict escalated in the African continent in 2021 with new dynamics - namely, in **Ethiopia**, the second most populous African country. The conflict between the central Ethiopian government and the government of the autonomous region of Tigray, whose military phase erupted already in 2020, was resolved seemingly quickly by joint action of the Ethiopian army and Eritrean intervention troops at the end of the same year. From a military point of view, this operation of government forces was successful, but as it turned out in 2021, this success was very limited in time. Despite the military defeat, the occupation of most of the territory and the ethnically motivated massacres of the civilian population, the Tigrayan leadership was able to react quickly and mobilize its remaining material and human resources. In the first half of the year, it consolidated its positions and established a de facto anti-government coalition of other ethnic and regional opposition formations and groups. In autumn 2021, the Tigray People's Liberation Front (TPLF) was able to launch a large-scale offensive in two directions, namely attack the strategically important Djibouti corridor and quickly threaten the capital city of Addis Ababa. The situation changed dramatically again in December 2021, in turn, in favour of the federal forces. These first gained control over the Tigrayan occupied part of the Djibouti corridor and then pushed the Tigrayan forces to the north, virtually taking all the lost territories outside Tigray itself. Apparently, there were more reasons for this turnaround, TPFL units had moved away from their logistics bases and their own ethnic space, and the federal government was able to mobilize all resources in the immediate danger for the main centre of the state. Also, higher education institutions were closed and their students were mobilized, so that human losses of government forces from the previous period could be compensated. However, the technological dimension of the conflict is also of significant importance; the federal government was able to gain the support of external actors and achieve the acquisition of a greater number of military drones.³⁶ The effectiveness of the deployment of Ethiopian drones highlights, again, the trend of the growing importance of these systems in contemporary conflicts. The government forces were able to deploy Turkish, Chinese, and Iranian drones with significant psychological effect on the Tigrayan opponent, who did not have any sufficiently sophisticated means to provide air defence of their troops. As in many previous conflicts, the Turkish Bayraktar TB2 devices, in particular, were used, and there was also information about the Iranian models of Mujaher-6 as well as Chinese Wing Loong 2; the delivery, service, and provision of trained operation were to be provided by the United Arab Emirates.

Growing instability and escalation potential in the event of a **conflict in Ukraine** can be observed in the European territory in 2021. In the first half of 2021, the situation here was relatively stable, although armed incidents on the dividing line occurred in the same way as in the previous years. There were also movements of Russian troops closer to the Ukrainian border or even to the territory controlled by the separatist forces in the entities of the Donbass, but this military presence was only quantitative and time-limited. These relocations could be seen as a demonstration of force, but they also helped establish the continued higher level of Russia's military presence in the region. In this respect, these steps have increased the availability and proximity of Russian military capabilities and have broadened the scope of opportunities for Russian forces should a decision be taken

³⁶ Foreign Drones [online]. 2021 [cit. 2022-01-21]. Available from: <https://www.nytimes.com/2021/12/20/world/africa/drones-ethiopia-war-turkey-emirates.html>

on a military operation against Ukraine in the future. The withdrawal of part of the Russian forces, which then took place, did not constitute a real de-escalation, rather, actually a concealment manoeuvre with a continuous gradual increase in military potential.³⁷

This interpretation of Russian activities was confirmed by the development in the second half of the year, when, due to the increasing military presence of the Russian Federation's armed forces in the vicinity of the Ukrainian territory, the security situation deteriorated significantly. Since 2014, the unprecedented concentration of Russian troops in this area has been supplemented by the articulated Russian requirements towards the North Atlantic Alliance, or the requirement of resignation of Ukraine for possible future membership in NATO, solid security guarantees preventing further expansion of the alliance by states in the post-Soviet space, or restrictions on the deployment of allied forces in the eastern wing of NATO. This military-political pressure was accompanied by the deployment of Russian forces on the territory of allied Belarus and a number of exercises in this area and beyond. There was a significant increase in tensions especially in November and December 2021. Russian action may also have been taken in connection with the increase in the military capabilities of the Ukrainian forces. In October 2021, among others, the first Ukrainian combat deployment of Turkish Bayraktar T2B drones took place, during which the artillery system operated by the pro-Russian separatists was destroyed, and the Ukrainian side announced its interest in further, wider acquisition of these unmanned vehicles.³⁸ In this context, one can also notice the opinions that the Russian side could be concerned about the possible implementation of the successful Turkish tactics of the network-centric drone warfare, which proved successful in the conflicts with the Soviet/Russian-type opponents in Nagorno-Karabakh or Syria. Bayraktar T2B drones could indeed represent a breakthrough at the tactical level in the case of limited deployment against pro-Russian separatists. The pro-Russian forces do not have air defence systems; the use of Russian systems would mean admitting direct Russian activity in the territory not controlled by the Ukrainian government. On the Russian side, it was also possible to note the opinion that the use of these drones constituted a violation of the Minsk agreements prohibiting the deployment of air force in the Donbass, although unmanned vehicles are not explicitly mentioned here. In November, the Ukrainian side announced the thwarting of the allegedly planned coup of pro-Russian elements, in parallel, there was a further increase in the Russian military presence in the immediate vicinity of the Ukrainian state, and this process continued until the end of the year.³⁹

Antagonist attitudes to the principal contentious issues did not see any fundamental changes during 2021 and or significant shift in the political dialogue between the two main parties. 2021 was characterized by the continuation of a long-term latent frozen conflict and an increasing risk of its escalation in the form of a limited military operation

³⁷ ³⁷ VOROTNYUK, M. False De-escalation: The Continuing Russian Threat to Ukraine and the Black Sea Region | Royal United Services Institute (rusi.org) [online]. 2021 [cit. 2022-01-21]. Available from: <https://rusi.org/explore-our-research/publications/commentary/false-de-escalation-continuing-russian-threat-ukraine-and-black-sea-region>

³⁸ BEKTIL, B. E. Ukraine is set to buy 24 Turkish drones. So why hasn't Russia pushed back? [online]. 2021 [cit. 2022-01-21]. Available from: <https://www.defensenews.com/unmanned/2021/09/29/ukraine-is-set-to-buy-24-turkish-drones-so-why-hasnt-russia-pushed-back/>

³⁹ KIMMAGE, M., KOFMAN, M. Russia Won't Let Ukraine Go Without a Fight | [online]. 2021 [cit. 2022-01-21]. Available from: <https://www.foreignaffairs.com/articles/ukraine/2021-11-22/russia-wont-let-ukraine-go-without-fight>

of Russian forces in the eastern Ukrainian territory or a large Russian-Ukrainian military confrontation of high intensity. In the context of the overall development after 2014 and the extraordinary increase in tensions in 2021, more and more Euro-Atlantic countries perceive the Russian Federation as an aggressive revisionist power and a real security threat to themselves or their allies and partners.⁴⁰

Persistent latent tensions and the possibility of military escalation can also be observed in **Nagorno-Karabakh**. The 2020 conflict marked a fundamental geostrategic change in favour of Azerbaijan, still, it has not achieved all its political objectives and declares that these will be fulfilled in the future. The current ceasefire was generally respected by all actors in 2021, yet, there were a few minor incidents and casualties on both sides. Nevertheless, the Azerbaijani leadership already made new demands in the first half of the year to adjust the parameters of the ceasefire, in particular, it claims greater control over the land corridors (now also the so-called Zangezur corridor along the Armenian-Iranian border) to the Azerbaijani exclave of Nakhichevan, which would be associated with further concessions from the Armenian side and the loss of control over part of its own territory.

After a protracted internal political crisis, a **military coup in Myanmar** took place in February 2021, ending the process of transition from military dictatorship to a semi-democratic model of the state. Military elites demanded a revision of the election results of November 2020, which they claimed were accompanied by extensive manipulation and falsification of results to the detriment of their preferred Union Solidarity and Development Party. This political entity was founded by former soldiers and representatives of the military junta that had controlled Myanmar until 2015. It was supposed to guarantee the interests of military representatives and the armed forces. The Myanmar Army arrested and interned civilian leaders of the state, blocked social networks, and very harshly suppressed mass protests and demonstrations, which resulted in, inter alia, dozens of deaths. State of emergency was declared in Myanmar for a period of one year, based on which the armed forces intervened in the following months, suppressing attempts at resistance in some regions. The reestablishment of the military government has not led to regional destabilization, nonetheless. The approach of the army has been strongly condemned by the international community, but regional states have mostly described it as a national matter for Myanmar, with no negative impact on their relations.

Tensions could also be observed in the **Asia-Pacific region**. The deteriorating relations between the PRC and Australia, as well as other states that are more sensitive to possible threats of a non-military or military nature from the Chinese side, have led to the strengthening of regional cooperation, effectively reflecting the growing power of the PRC. This factor, together with the US geostrategic interests in this area, led to the establishment of the new Anglo-Saxon trilateral pact AUKUS by Australia, the US and the United Kingdom in mid-September 2021. Australia's military cooperation with external actors with global interests, in turn, has led to a negative reaction by the PRC, which perceives it as a direct threat to Chinese security and political interests in the region and has announced that it will take appropriate counter-measures.

The establishment of AUKUS has also had a very negative impact on the relations between its members and France, as the Australian Navy surprisingly announced the cancellation of the entire acquisition process or contract for French diesel-electric submarines. The

⁴⁰ MAJCHÚT, I., BAKIČ. Russian-Baltic Relations. Slovak Journal of International Relations, Faculty of International Relations, University of Economics in Bratislava 2021, Volume XIX., Issue 4, Pages 311 - 330 ISSN 1336-1562 (print).

primary reason for this step is then the acquisition of nuclear submarines in order to strengthen naval capabilities, in the framework of cooperation offered to Australia by the United States and the United Kingdom. The reaction of the French side to this decision was extremely negative and almost unprecedented in the history of their relations with any of the AUKUS states. The acquisition of nuclear submarines using American and British technology is a rational step, as it will significantly increase the capabilities of the Australian navy and is undoubtedly a huge qualitative shift. It is also an isolated step, as it is only the second time that the US has been willing to provide someone with such advanced technology (so far, it has only been the case of the United Kingdom in the context of completely above-standard relations in the Cold War years). On the other hand, the proliferation of nuclear technologies has led to some concerns about the proliferation of similar systems among other maritime states and the risks that could arise in this context. Also, the significant economic loss associated with the cancellation of the contract for France has considerable political implications and has led to a further erosion of relations between France and its Anglo-Saxon partners, which can gradually be negatively felt within the North Atlantic Alliance.

One of the trends that could be observed in 2021 was the increasing attention and emphasis placed on nuclear deterrence, or strengthening the nuclear weapons capabilities by the nuclear powers. These efforts are motivated by both the deterioration of the security strategic environment and, in particular, technological developments. So far, the nuclear forces of most powers have not usually undergone any significant modernization that would reflect technological progress in recent years. However, the new technologies allow the development of means usable both for carriers of strategic nuclear weapons, as well as for missile defence means enabling their elimination and, possibly, the nuclear deterrent itself. Both the Russian Federation and the PRC have announced successful development of hypersonic missiles, and plans are emerging for the development of nuclear drones in the air and sea. This development of defensive and offensive systems with high efficiency then reduces the current potential and deterrence of European lower-order nuclear powers, such as the United Kingdom or France. For these reasons, the United Kingdom announced in the first half of the year its intention to increase the number of British nuclear warheads in the future, which is a significant reversal in the British strategic considerations and plans after decades of reduction of the nuclear potential.⁴¹

However, the strengthening of nuclear potential is probably most likely to occur in the case of the People's Republic of China, whose nuclear arsenal was incomparably lower compared to the US as the potential opponent and the neighbouring Russian Federation. In connection with the all-encompassing development of the military capabilities of the PRC, the development of the nuclear triad and a number of tests of utilizable means could also be observed there in 2021. It is made possible by the fact that the PRC is not bound by arms control agreements in this area and, as already announced at the end of 2020, it pursues the ambition to double its nuclear arsenal.⁴² In 2021, construction of new nuclear forces for intercontinental ballistic missiles was identified in the PRC, which would

⁴¹ REES, W, BERMANT, A. Why does the UK want more nuclear weapons? | [online]. 2021 [cit. 2022-01-21]. Available from: <https://www.aspistrategist.org.au/why-does-the-uk-want-more-nuclear-weapons/>

⁴² GOULD, J. China plans to double nuclear arsenal, Pentagon says [online]. 2021 [cit. 2022-01-21]. Available from: <https://www.defensenews.com/congress/2020/09/01/china-planning-to-double-nuclear-arsenal-pentagon-says/>

significantly strengthen the Chinese deterrent in relation to global rivals.⁴³ Testing of new types of nuclear weapons in the US can then be considered as one of the responses to this development.

Implications for the armed forces

In terms of prospective expeditionary activities of the ACR, there is a significant shift. Any activities in Afghanistan are probably excluded for a very long time and the involvement of the ACR in the training activities of the former Afghan government forces can be perceived as a complete failure in the overall context of the development, although the ACR cannot bear any blame in this respect. Still, the collapse of the Afghan mission has pointed out certain limits or reserves that could be at least partially removed even within the limited possibilities of the Czech Republic. These consist mainly in responding to sudden crisis situations, or strengthening the capabilities in the field of transport and urgent evacuation of a larger number of people in a short period of time. Here, one can refer to the capacities of countries comparable to the Czech Republic, e.g., the Netherlands, which has higher-level capacities for similar cases. In this context, the issue of acquiring a large-capacity transport aircraft for the needs of the ACR arises again, however, this will depend on the actual economic capacities of the Czech Republic as well as its military priorities. 2021 also brings a significant change in the involvement of the Czech entity in activities in Mali, Africa. Given the generally problematic domestic political developments and the growing animosity between France and the new government, it will be necessary to redefine the objectives and priorities. The assumptions that the military coup in Mali will not fundamentally affect cooperation with external partners in the military field have not been confirmed. However, it cannot be said that the participation of European countries in order to ensure a certain level of stability and security in the region will be significantly reduced or completely stopped. Rather, it is to be expected that the European countries will continue their presence in the neighbouring states, which may be interested in the freed up capacities of Europeans should the mission in Mali be completely terminated. Further involvement of the ACR in the region would continue to be a significant contribution to ensuring the security of the EU's membership base and its interests outside of its own, immediate territory of interest. Although the main security threats and risks for the Czech Republic exist on the eastern wing of the Alliance, involvement on the African continent may be a strong signal for allied partners from the Western Mediterranean region that the Czech Republic perceives the security of NATO/EU member states as indivisible and is willing to act, despite the significant geographical distance, in the regions that generate security threats and risks primarily for these partners. This contributes to the fact that it will be possible to expect similar empathy of these partners also in relation to the Eastern European space.

It is here that geographically the closest armed conflict can be observed in 2021, where any broader escalation would have significant and direct impact on the Czech Republic. Last year, there was a significant increase in the escalation potential in two steps, due to the two phases of the unprecedented concentration of the Russian Federation's armed forces on the Russian-Ukrainian border, as well as the direct threats of the use of military force and the stepping up of the ultimate requirements towards the Alliance. In view of the deteriorating security situation, the priority deployment of the ACR outside of its own

⁴³ China Building Two New Fields With 230 Nuclear ICBM Silos Able to Strike America - Reports [online]. 2021 [cit. 2022-01-21]. Available from: <https://militarywatchmagazine.com/article/china-new-230-icbm-silos-strike-america>

territory - in the Baltic Sea region - can be considered once again, in order to deter the Russian threat and to underline the credibility of the alliance commitments.

In terms of development trends, the growing importance of drones and the associated process of robotization of contemporary battlefields have been manifested again in a number of conflicts. There is an ever-increasing proliferation of drones and their use for reconnaissance and combat activities, and this trend is not limited to technologically advanced states. UAVs are also more frequently used by non-state or less developed state actors with high efficiency, including such that are not so costly and not too sophisticated. In some of the conflicts, they have become the dominant weapon system, affecting the opponent that lacks adequate defence, with a significant psychological effect. This development leads to intensive proliferation of military drones among other actors and it is necessary, similarly to last year, to conclude that armed forces must increase the capabilities of their air defence and prepare it for effective action against drones of potential opponents in the future. One of the possible solutions might be the acquisition of mobile air defence systems, which are produced and operated by some of the alliance partners of the Czech Republic. As part of the necessary attention and priority that should be given to the construction of a heavy brigade and its capabilities, this element could appear to be among the priorities of the future acquisition process, even at the expense of other solutions anticipated for the development of the overall capabilities of the ACR so far.

SOCIETAL SECTOR

The basis of security within the societal (or also social) sector of security is the preservation of differently (ethnically, nationally, racially, religiously, or perhaps civilizationally) defined social identities; with a certain amount of simplification we can talk about the security of differently defined 'us' against also differently understood 'them'. Identities that are most often under pressure from threats coming from other sectors are subject to internal changes, destabilization, fragmentation, violent integration, etc.

In 2021, social security and stability in the Czech Republic were once again influenced mainly by trends of direct rivalry of variously conceived identities, problems associated with migration, and the effects of ongoing demographic changes. The prevailing global COVID-19 pandemic continued to be the dominant accelerator of social cleavage that escalated domestic fragmentation, affecting social security dynamics in various ways as the primary global security threat throughout 2021. The pandemic also largely employed members of the ACR, of whom a total of around 17,000, an average of 700 per day, participated in the fight against COVID-19 in various ways.⁴⁴

Competition of identities and fragmentation of society

In the context of ensuring the security of the state and society, one of the key variables is the social perception of the army as an institution ensuring a basic level of security against existential threats of military nature. Support for the Army of the Czech Republic (ACR) among the public remains at a high level, exceeding three quarters of the population, for a long time. In 2021, 78% of Czechs expressed confidence in the army, which is the standard value for the last several years, while the share of armed forces in managing crises and threats, such as the effects of the pandemic, floods, and an unprecedented occurrence of a tornado in southern Moravia in the summer of 2021, contributes to high trust in the army. Thanks to these factors, the willingness to serve in the army along with the attractiveness of the service itself are gradually growing.⁴⁵ An important part of the identity of the Czech society is also its civilization- and value-based (self-)identification with the geopolitical West in the form of the country's membership in the European Union (EU) and the North Atlantic Alliance (NATO). As many as 66% of people expressed their consent to the Czech Republic's membership in the EU (28% of respondents were of the opposite opinion), however, only a third of the population (34%) expressed their satisfaction with the membership in 2021. It is more complicated to derive longer-term trends from such structured surveys of public opinion, as in 2018-2020, the issues related to the European Union focused only on the overall trust of the population of the Czech Republic in the EU as a whole (where the support rate oscillated at the level of 50-52%), or the level of support for specific EU institutions. In contrast, 25% of respondents were dissatisfied and 38% of respondents were neutral. The (non-)support of the Czechs for the introduction of the euro is also stable - in mid-2021, only 25% (one percentage point more than in 2020) of people were in favour of adopting the common

⁴⁴ HORÁK, J. Testování, převoz pacientů i nemocniční služby. Armáda poslala na covid 17 000 vojáků. Aktuálně.cz. Available from: <https://zpravy.aktualne.cz/domaci/armada-nasadila-proti-covidu-17-000-vojaku-testuji-i-transpo/r-d8000aba729411eb9a61ac1f6b220ee8/>

⁴⁵ HANUŠOVÁ, M. Armádě veřejnost věří díky pomoci při pandemii i tornádu. Technicky ale za světem pokulhává, Hospodářské noviny. Available from: <https://archiv.hn.cz/c1-66981300-armade-verejnost-veri-diky-pomoci-pri-pandemii-i-tornadu-technicky-ale-za-svetem-pokulhava>

currency of the European Union, the opposite opinion was expressed by as many as 70% of the citizens of the Czech Republic (also an increase by a percentage point compared to 2020).⁴⁶

Somewhat more than half of the population (54% and 53%, respectively) expressed trust in NATO and the UN, while roughly a third of respondents did not trust these organizations (34% and 33%, respectively).⁴⁷ Thus, 2021 continues the trend of a gradual decline in support for the Czech Republic's membership in NATO (58% from 2020) and significantly increasing scepticism towards Czech membership in the organization (19% in 2019, 24% in 2020). At the end of the year, the Czech public was also asked about their sympathy for particular countries, where Slovakia was traditionally the most popular, followed by Austria, France, Great Britain, and Hungary. Turkey, Israel, Russia, and China occupied the bottom ranks.⁴⁸ At the end of 2021, a specific survey was conducted on the views of the Czech public on the foreign policy of the United States as a key partner in the field of security policy and the leading force of NATO. As many as 75% of respondents agreed that Americans mainly pursued their own power and economic interests; 64% of respondents rejected the right of the US to use military force against non-democratic regimes. 43% of respondents agreed with the claim that the US foreign policy posed a threat to world security, 6 percentage points less than in the last similar survey in 2018.⁴⁹

In the context of identities and self-perception of the Czech Republic's population in relation to abroad, the still prevailing identification of the majority of the population with the geopolitical West can be stated, however, the solidity and unambiguity of this identification has been subject to increasing centrifugal tendencies in recent years due to a number of various factors. Unfortunately, a similar statement can also be made in relation to the Czech society towards its own country. In 2020, the most important factor and driver of the ongoing trend of socio-political fragmentation and radicalization were the consequences of the COVID-19 pandemic, while nothing fundamental changed in this trend during 2021. In addition to the health sector, the ongoing struggle of state authorities with the global pandemic has also become a political, social, economic, and security issue. Throughout the year, it was accompanied by waves of conspiracy theories, hoaxes, disinformation campaigns, especially in virtual space and on social networks. These have sometimes transformed into irresponsible, irrational to risky behaviour, downplaying threats, questioning the actions of the government and other responsible authorities, targeted and systematic violations of applicable legal norms, and even

⁴⁶ ČADOVÁ, N. Členství České republiky v Evropské unii očima veřejnosti - July 2021. Centrum pro výzkum veřejného mínění. Available from: <https://cvvm.soc.cas.cz/cz/tiskove-zpravy/politicke/mezinarodni-vztahy/5468-clenstvi-ceske-republiky-v-evropske-unii-ocima-verejnosti-cervenec-2021>

⁴⁷ SPURNÝ, M. Důvěra v evropské a mezinárodní instituce - July 2021. Centrum pro výzkum veřejného mínění. Available from: <https://cvvm.soc.cas.cz/cz/tiskove-zpravy/politickemezinarodni-vztahy/5433-duvera-v-evropske-a-mezinarodni-institute-cervenec-2021>

⁴⁸ HANZLOVÁ, R. Sympatie české veřejnosti k některým zemím - November/December 2021. Centrum pro výzkum veřejného mínění. Available from: <https://cvvm.soc.cas.cz/cz/tiskove-zpravy/politicke/mezinarodni-vztahy/5530-sympatie-ceske-verejnosti-k-nekterym-zemim-listopad-prosinec-2021>

⁴⁹ ČERVENKA, J. Česká veřejnost o americké zahraniční politice - November/December 2021. Centrum pro výzkum veřejného mínění. Available from: <https://cvvm.soc.cas.cz/cz/tiskove-zpravy/politicke/mezinarodni-vztahy/5540-ceska-verejnost-o-americke-zahranicni-politice-listopad-prosinec-2021>

various forms of openly hate speech. They reached their peak in the period just before the elections to the Chamber of Deputies of the Parliament of the Czech Republic on 8 and 9 October, where, due to pandemic restrictions, the integrity and honesty of the elections as such were questioned, there were claims of illegitimacy and dishonesty of some candidate entities, or even the manipulation of the elections by non-governmental organizations, the European Union and global elites (especially George Soros) in favour of liberal democratic forces.⁵⁰ However, the problem of social fragmentation is something that is rarely perceived by ordinary residents as a long-term negative trend and threat outside the escalated events (e.g., elections, typically presidential or senate, where 'winner takes all'). In the long run, however, a fragmented society is unable to act effectively, develop, or achieve politically determined strategic results; on the contrary, along with reluctance to forge consensus, there is a threat of political and social paralysis over the long term.⁵¹

Migration

Despite the global pandemic, the Czech Republic recorded a significant increase in migratory movements, both legal and illegal, on its territory during 2021. The number of foreigners legally living in the Czech Republic has been continuously increasing since 2001 and while in 2020 there were about 635,000 in the Czech Republic, at the end of 2021, there were 660,849 people. Of these, 338,957 persons stayed in the Czech Republic on the basis of a temporary residence permit and 321,892 persons on the basis of a permanent residence permit. The most frequently reported reasons are employment (55%), family reunification (25%), study (14%), and entrepreneurship (3%). As many as 30% of foreigners legally residing in the Czech Republic are Ukrainians, while significant minorities in the Czech Republic are legally living Slovaks (17%) and Vietnamese (10%). Russians (7%), Poles, Romanians, Bulgarians, Germans, Mongols, and Hungarians (descending from 3 to 1%) amount to smaller percentages.⁵² 1411 people applied for international protection (asylum) in the Czech Republic in 2021, most often from Ukraine (376), Georgia (226), and Afghanistan (176).⁵³

Throughout 2021, 11,170 illegal migrants were detected and detained in the territory of the Czech Republic, 4077 more than in 2020. This is the highest level since 2008, surpassing the figures of 2015, when a strong migration wave from the Middle East and Africa hit the whole of Europe.⁵⁴ The vast majority (almost 54% of all cases) are illegally working and residing citizens of Ukraine in the Czech Republic; the second largest group of illegal stays belongs to people from Moldova (14%), the third is made up of Afghans (5%). Another 1330 people (844 more than in 2020) were detected and detained during

⁵⁰ ŠTRBOVÁ, M. „Soros kontra Babiš“. České parlamentné volby sa nezaobíhli bez dezinformácií. Infosecurity.sk. Available from: <https://infosecurity.sk/dezinfo/soros-kontra-babis-ceske-parlamentne-volby-sa-nezaobisli-bez-dezinformacii/>

⁵¹ BUCHTÍK, M. et al. Jedna společnost, různé světy. Poznatky kvalitativní studie o fragmentarizaci české společnosti. Friedrich Ebert Stiftung, Masarykova demokratická akademie. Available from: <https://www.stem.cz/wp-content/uploads/2021/06/Jedna-spolec%CC%8Cnost-%E2%80%93-ru%CC%8Azne%CC%81-sve%CC%8Cty.pdf>

⁵² MVČR. Čtvrtletní zpráva o migraci IV. 2021, Ministerstvo vnitra České republiky. Available from: <https://www.mvcr.cz/migrace/clanek/ctvrtletni-zpravy-o-situaci-v-oblasti-migrace.aspx>

⁵³ Ibid.

⁵⁴ ČN. Policie loni při nezákonné migraci odhalila 11.170 lidí, meziročně o polovinu víc, České noviny. Available from: <https://www.ceskenoviny.cz/zpravy/policie-loni-pri-nezakonne-migraci-odhalila-11-170-lidi-mezirocne-o-polovinu-vic/2145716>

illegal migration across the internal Schengen border, most often Syrians and Afghans heading from Slovakia to Germany.⁵⁵ However, the entire statistics for 2021 are significantly affected by the COVID-19 pandemic, to the extent that the statistics of illegal entries into the Czech Republic include individuals who crossed the border legitimately, but failed to comply with some of the anti-epidemic regulations issued by the Government of the Czech Republic or the Ministry of Health. This fact may explain why the enormous increase in illegal migration in 2021 did not significantly contribute to the increase in security risks against internal public order in the Czech Republic or to an increased level of crime in the country. The statistics also fit into the pan-European context, with an unprecedented 61% increase in migration at the external border of the Schengen area in 2021.⁵⁶

Long-term demographic trends

As of 30 December 2021, the population of the Czech Republic was 10,515,669, which is 21,871 more than at the beginning of the year. The Czech Republic owes its absolute population growth exclusively to the positive migration balance (plus 50,000 people), as due to the COVID-19 pandemic, 2021 was another year, after 2020, with a significant prevalence of mortality over natality. The difference between deaths (about 140,000, the highest since the end of World War II) and healthy births (below 112,000) is about 28,000 people, the highest since 1918. As a result of the pandemic, the average life expectancy decreased for the second year in a row (by 1.6 years), both in men (to an average value of 74.1 years) and women (80.5 years).⁵⁷

Implications for the armed forces

2021 has confirmed that crisis situations increase the interest in stable employment in the armed forces, and together with 2020, it has again shown the trend of increasing interest in service in the ACR. The goal to recruit at least 1150 new male and female soldiers was met, the ranks of the ACR were joined by as many as 1228 new recruits in 2021. Budgetary constraints have long forced the army HR managers to prioritize the quality of candidates over their overall quantity, which means that the increased interest in serving in the armed forces will enable the ACR to better select its people. The number of applications for admission to Active Reserves was also higher than in 2020 - the army received a total of 1391 applications, however, due to pandemic restrictions, only 422 new recruits were fully included in Active Reserves.⁵⁸ In addition to the exceptional situation, the excellent image of the ACR among the Czech public has also long contributed to a higher interest in military service - in 2021, up to 69% of the population of the Czech Republic declared absolute (20%) or at least prevailing (49%) confidence in the work of the ACR. Thanks to this, the army, ranked closely second to the Police of the Czech Republic in the list of the most trustworthy institutions in the Czech Republic.⁵⁹ On

⁵⁵ Ibid.

⁵⁶ Ibid.

⁵⁷ ČSÚ. Pohyb obyvatelstva - rok 2021. Český statistický úřad. Available from: <https://www.czso.cz/csu/czso/cr/pohyb-obyvatelstva-rok-2021>

⁵⁸ AČR. Nábor do armády v roce 2021: Rekrutéři se zaměřili na odborníky. Armáda České republiky. Available from: <https://acr.army.cz/informacni-servis/zpravodajstvi/nabor-do-armady-v-roce-2021:-rekruteri-se-zamerili-na-odborniky-232690/>

⁵⁹ HANZLOVÁ, R. Důvěra k vybraným institucím veřejného života - August/September 2021. Centrum pro výzkum veřejného mínění. Available from: <https://cvvm.soc.cas.cz/cz/tiskove-zpravy/politicke/politicke-ostatni>

the other hand, compared to 2020, there was a slight drop in confidence (by 6 percentage points, from the level of 75%).

However, in the long term, demographic trends will have a rather negative impact on the staff of the ACR and its recruitment potential, especially if the service in the army is not competitive also in the area of financial reward and other social benefits. The equally negative phenomenon of the expanding scissors of opinion and value orientations within the Czech society continues, exacerbated especially after the beginning of the COVID-19 pandemic. Although the pro-Western geopolitical orientation of the Czech Republic, or its membership in NATO and the EU, is not yet directly threatened, in 2021, the Czech Republic experienced a reversal of the trend of deteriorating internal stability, which, according to the globally recognized Fragile State Index, has been continuously decreasing since 2016.⁶⁰ However, the increasing social instability together with the erosion of state authority and political leadership must not completely disappear from the attention of political elites, security forces, and society as a whole, as in an extreme case a sudden escalation of social or political instability may lead to a more serious internal political conflict. This trend has two significant consequences for the professional army. The first one is the need to intensify and improve the strategic communication of the armed forces and the entire defence department, both externally and internally, especially with a focus on supporting the Czech Republic's membership in the Euro-Atlantic integration structures and informing about the practical benefits of this membership for the country. The second is the provision (or at least a certain 'reactivation' of the already existing effective mechanisms that would eliminate the risk of 'infiltration' of the armed forces by individuals fundamentally questioning the foreign policy orientation of the country, or a system that would enable identifying and properly addressing such trends among members of the ACR at the same time.

⁶⁰ Fragile State Index. Country Dashboard, Czechia. Fragile State Index. Available from: <https://fragilestatesindex.org/country-data/>

ECONOMIC SECTOR

2021, similar to the previous year, suffered from the ongoing COVID-19 pandemic. The global economy, including the European economy, was coping with the ongoing waves of the coronavirus pandemic this year. In particular, the existence and implementation of vaccination had a major impact on the overall situation this year, although its distribution was problematic in some parts of the world. The optimism of the first quarter of 2021 brought by vaccination and the US fiscal stimulus was replaced by sobriety in the rest of the year. Problems in supply chains, high rate of inflation, and lower than expected effectiveness of vaccines have shown that the pandemic will need to be tackled further.

After the collapse of economies in 2020, there was a partial economic recovery in the developed countries in 2021. It means that some pessimistic scenarios of more large closures potentially leading to further economic downturns did not come true.

The economies of individual countries still faced persistent problems of global supply and production chains in 2021. There were a number of factors behind this, ranging from the limited capacity of maritime transport, to the shortfalls in chip production, and also to the shortage of skilled labour in some countries. This affected industrial production and delayed supplies to the consumer market. At the same time, the consumer climate improved significantly in Europe, including the Czech Republic, in 2021 after the previous downturn, as household consumption was supported by the spending of deferred savings together with the continuing unprecedented fiscal stimuli. While these prevented the possible collapse of economies into recession at the beginning of the pandemic in 2020, they already had a significant inflationary effect in 2021.⁶¹

However, the economic situation was complicated by other extraordinary events - blocking the Suez Canal, bad weather, and hacker activities. Extreme cold in Texas or a cyber-attack on the American Colonial Pipeline also had a big impact on the world trade. All of this would be very unpleasant even in a normal situation, but at the time of the pandemic the negative consequences multiplied. Trade took more blows and time lags increased.⁶²

The increased demand for industrial and consumer goods found itself in an environment of delayed deliveries and shortage of materials and components. The surge in gas and electricity prices dramatically increased inflationary pressures, which became quickly reflected in the output prices of foreign trade partners. These grew at a rapid pace in the second half of the year and, along with this, the outlooks were repeatedly significantly re-evaluated, which also concerned the Czech National Bank (ČNB).⁶³

Overall, the world economy continues to recover, although persistent supply bottlenecks, rising commodity prices, and the emergence of a new variant of COVID-19, Omicron, at the end of 2021, continued to adversely affect the outlook for economic growth in the short term.

The global economy should grow by 5.9% of GDP in 2021. The fastest growing economy was China, where the GDP growth is expected to reach 8.1%. The United States is

⁶¹ HÁJKOVÁ, D. ŠNOBL, R. Proč je inflace v současnosti vysoká a jak dlouho tu s námi bude. Česká národní banka. 17.1.2022. [online]. Available from: https://www.cnb.cz/cs/o_cnb/cnblog/Proc-je-inflace-v-soucasnosti-vysoka-a-jak-dlouho-tu-s-nami-bude/

⁶² Jak odšpuntovat světový obchod. [online]. Available from: <https://www.export.cz/nazory-a-analyzy/jak-odspuntovat-svetovy-obchod/>

⁶³ HÁJKOVÁ, ŠNOBL, ref. 61

expected to grow by 6.2%. Crucial for the Czech Republic is the growth of the German economy, where GDP should increase by 3.0%.⁶⁴ However, it turns out that problems have accumulated in the economy, trade, and transport that would not have received such attention of the wider public in normal, non-COVID times.

US President Joe Biden took office in January 2021. One of his measures, stimulus packages from March 2021, was the likely main trigger of the shortage of raw materials, congested ports, and the resulting inflation. Retail sales showed how much demand exceeded the pre-pandemic trend and capacity possibilities of the US and global economies. Rather than supporting the actual GDP growth, the nominal one, with raising prices, was the result.

In addition, in the second half of 2021, there was a significant increase in energy prices. Coal, oil, and especially natural gas further contributed to increasing inflation. Gas prices in Europe have already significantly exceeded the price of oil at the same level of energy value. Compared to the prices in the US, where there was and is enough gas, traded at lower prices over the entire year of 2021, the winners in this price arbitrage are the exporters of liquefied natural gas (LNG).

For the EU countries, although the coronavirus crisis continued to have a significant negative impact on public finances in 2021, it appears that the budget balance is already on track for improvement.⁶⁵

Economies of the eurozone countries continue to recover. Economic growth slows down, but it is expected to pick up again significantly, mainly as a result of strong domestic demand.⁶⁶ Labour market conditions were improving: more people had jobs and fewer participated in job preservation programmes. Consumption was also supported by the savings generated during the pandemic.

In general, however, the COVID-19 pandemic hit almost all industries with the exception of a few sectors in 2021. It had a particularly large impact on the production of semiconductor chips, which were, and still are, in short supply. Chips are used in almost all kinds of consumer electronics and are the main building block of modern technologies. Thus, their lack has serious consequences for the entire world economy. This has confirmed the already known fact - chip production capacity in the world is limited and it is concentrated in East Asia.

The automotive sector was hit hardest, for two reasons. The first one is the just-in-time approach. The whole industry is accustomed to working with deliveries on time, and many manufacturers did not see a reason to buy components that they did not need at the moment. However, when the chips were needed again, they discovered that their supplies had been diverted in the meantime - to the information technology sector. The second reason is that after car sales started to drop sharply at the beginning of 2020, car manufacturers cancelled part of their chip orders. This spare production capacity was immediately purchased by consumer electronics companies. However, demand for cars returned to normal much faster than anyone expected. Thus, most automotive

⁶⁴ Výchledy české ekonomiky pro rok 2022. Deloitte. [online]. Available from:

<https://www2.deloitte.com/cz/cs/pages/about-deloitte/articles/vyhledy-ceske-ekonomiky.html>

⁶⁵ European Central Bank. Ekonomický bulletin 08/2021. [online]. Available from:

https://www.cnb.cz/export/sites/cnb/cs/o_cnb/.galleries/mezinarodni_vztahy/ecb_escb/ekonomicky_bulletin_ecb/download/ecb_eb202108cz.pdf

⁶⁶ Ibid.

manufacturers were forced to slow down or even suspend their production lines this year, as they had hardly any chips in stock.⁶⁷

For example, the Škoda Auto automobile manufacturer in Mladá Boleslav delivered 878,200 vehicles worldwide in 2021. This is a year-on-year decrease of 126,600 cars. The reason for the decline is the coronavirus pandemic and the crisis caused by the lack of chips for on-board electronics.⁶⁸

Chips are sometimes referred to as the '21st century oil' and their concentrated production in East Asia to the 'modern Strait of Hormuz'. However, the problem with transport routes has not disappeared. The blockade⁶⁹ of the Suez Canal has reminded that the world does not have many alternatives to existing routes. This could only be the case if customers eased on the time and cost of transport, which would allow, for example, for longer sea journeys around the entire African continent, or for more expensive transport by aircraft.

The closure of this frequented waterway had a negative impact on trade between Europe and Asia / Middle East. At least 369 ships waited in the queue for passage, including container ships, bulk carriers, oil tankers, or livestock vessels. Some ships took an alternative route around the African Cape of Good Hope. This journey is about two weeks longer and the ships face the risk of piracy. Around 50 ships use the canal and about 12% of world trade passes through it daily.⁷⁰ Each day, the delays meant a loss of over USD 9 billion (about CZK 200 billion) in world trade.⁷¹

The transition to a green economy and the development of the 'young' renewable energy or electromobility sectors have become major impulses for economic recovery after the pandemic. However, this also entails new risks for world trade. In the future, existing supply chains will have to be rebuilt and others will have to be set up. The number of blocked world trade arteries can increase significantly.

Geopolitical tensions also complicate the post-COVID economic situation. Relations between the United States and the People's Republic of China remained tense even after President Donald Trump's departure. While the Germans are considering 'ethically clean' supply chains, from the point of view of Joe Biden's administration, it is important to limit supplies from the People's Republic of China primarily for security reasons. The fact is that the position of the People's Republic of China becomes significantly strengthened

⁶⁷ SKOUMAL, Š. Světový nedostatek čipů. Co se vlastně děje? [online]. Available from: <https://roklen24.cz/svetovy-nedostatek-cipu-co-se-vlastne-deje/>

⁶⁸ ČTK. Škoda Auto dodala loni celosvětově 878.200 vozů, meziročně o 126.600 méně. [online]. Available from: <https://www.auto.cz/skoda-auto-dodala-loni-celosvetove-878-200-vozu-mezirocne-o-126-600-mene-142331>

⁶⁹ The Suez Canal was blocked between 23-29 March 2021 by 400-metre long and 59-metre wide container ship Ever Given. Passing the Suez Canal from the Red Sea to the Mediterranean Sea, it faced a sandstorm and wind gusts which probably caused the bow to turn to the right and the ship became wedged between the two banks, blocking the traffic in the channel in both directions for 6 days until the ship could be released.

⁷⁰ Česká televize. Podařilo se částečně uvolnit loď blokující Suezský průplav. Tím prochází desetina světového obchodu. [online]. Available from: <https://ct24.ceskatelevize.cz/svet/3287845-suezsky-pruplav-stoji-zablokovala-ho-ctyrsetmetrova-loď>

⁷¹ Irozhlas. Loď, která sedm dní blokovala Suezský průplav, se konečně podařilo uvolnit. Pomalu odplouvá. [online]. Available from: https://www.irozhlas.cz/zpravy-svet/lod-blokujici-suez-castecne-vyprostena-agentura-ap_2103290703_btk

due to new trends in the world economy. It is itself an important producer of raw materials for green energy and, additionally, it is a world leader in the respective processing capacities.

The Czech Republic is a small open market economy, which does not suffer from excessive internal, external, or financial imbalances. Until the beginning of 2020, the Czech economy managed to maintain solid GDP growth and production statistics. In 2020, on the contrary, it underwent a short but deep recession as a result of the global COVID-19 pandemic. Foreign trade plays a key role in the development of the Czech economy. The share of exports of goods and services in GDP reaches 70% and rises in the long term, with the exception of 2021, when it decreased by 4 percentage points. The main trade partners are EU countries: Germany, Slovakia, Poland, and France.⁷²

So far, the stable Czech economy was not experiencing a good period in 2021. The Czech Republic was one of the ten member states of the European Union with the biggest economic drop at the beginning of the coronavirus pandemic. At the same time, they were among the ten countries whose economies did not return to pre-crisis levels. The government-ordered lockdowns interrupted economic operations to the extent that the pre-pandemic conditions could not be followed up. However, gross domestic product increased overall by 3.3% in 2021.⁷³

The result of the shock stoppage of the economy, caused by hard lockdowns from 2020, and a relatively fast restart in 2021, was high inflation, i.e., an increase in the prices of goods and services. Inflation in the Czech Republic was at 6% in December 2021; the last time it reached this level was in 2008. Inflation affects not only consumers' wallets, but also their savings.⁷⁴ The overall average inflation rate in 2021 was 3.8%. This was 0.6 percentage point more than in 2020. This was the highest average annual inflation rate since 2008. Prices of goods, in total, increased by 3.5% and prices of services by 4.4% in 2021.⁷⁵ Another consequence of the pandemic in the Czech Republic is the historical increase in the state's debt.

Management of the state budget ended in a deficit of CZK 419.7 billion in 2021; in comparison with the previous year, the state budget deficit grew by CZK 52.2 billion. The consequences of the COVID-19 epidemic in the form of lower economic performance and support or stimulation measures for the affected sectors of the economy, the health system, and households could be seen for the second year in a row. After adjustment for revenue from the European Union and financial mechanisms (CZK 126.3 billion) and expenditure that was pre-financed from the budget for joint projects of the European Union and the Czech Republic (CZK 137.6 billion), the deficit reached CZK 408.4 billion.⁷⁶

⁷² Deloitte. Výhled české ekonomiky na rok 2021. [online]. Available from: <https://www2.deloitte.com/content/dam/Deloitte/cz/Documents/about-deloitte/deloitte-vyhled-ceske-ekonomiky-na-2021.pdf>

⁷³ ČSÚ. Česká ekonomika v roce 2021 rostla. [online]. Available from: <https://www.czso.cz/csu/czso/ceska-ekonomika-v-roce-2021-rostla>

⁷⁴ MACEK, J. Co přinesl rok 2021 pro naše peněženky. [online]. Available from: <https://www.kurzy.cz/zpravy/626683-co-prinesl-rok-2021-pro-nase-penezenky/>

⁷⁵ ČSÚ. Indexy spotřebitelských cen - inflace - prosinec 2021. [online]. Available from: <https://www.czso.cz/csu/czso/ci/indexy-spotrebitelskych-cen-inflace-prosinec-2021>

⁷⁶ Czech Industry. [online]. Available from: <https://www.casopiszechindustry.cz/products/hospodareni-statniho-rozpoctu-skoncilo-v-roce-2021-schodkem-419-7-mld-kc/>

The results for the Czech koruna were not worse mainly due to the approach of the Czech National Bank, which gradually increased the interest rate from 0.25 to 2.75% during 2021 and announced further growth. Without this measure, koruna would lose much more.

Despite the stronger currency in domestic inflation, the price increase of goods such as clothing, furniture or cars could be observed. In contrast, high energy prices in the Czech Republic, unlike in many other countries, were largely not reflected in inflation, because companies and consumers benefited from temporary VAT waivers on electricity and gas until the end of 2021. However, this has already ended, and at the same time, due to the high increase in electricity and gas prices on world exchanges, there has been a significant adjustment in the price lists of the most important suppliers.⁷⁷

The domestic pressure on inflation in the Czech Republic is so strong because the Czech economy has been struggling with the exhaustion of sources of its growth for a long time. This is probably most evident in the labour market, which has been tense for a long time because of the lowest unemployment in Europe and the situation where the number of job vacancies exceeds the number of people without work. Lack of people is therefore pushing for wage growth, with productivity growing at a slower rate than wages in the long run.⁷⁸

In terms of Brexit, on 24 December 2020, the main negotiators of the EU and the United Kingdom (UK) agreed on the rules for future cooperation between the two entities. However, the Trade and Cooperation Agreement (TCA) was concluded shortly before the end of the transitional period and there was little time left to complete the ratification process. Therefore, in order to minimise the consequences of a possible lack of a legal framework, TCA was provisionally in force from 1 January 2021. As part of the provisional implementation, the deadline was postponed once, until 30 April 2021. The European Parliament needed to give its consent to the TCA, which happened on 28 April 2021. Subsequently, as the last step in the ratification process, the EU Council adopted a decision on the conclusion of the agreement. TCA entered into force on 1 May 2021.

Still, nothing has changed from the point of view of mutual trade between the EU and the UK, the same framework continues to apply as after 1 January 2021. The UK is no longer a member of the EU, and this also applies to the EU's internal market and customs union. The EU and the UK are currently two separate markets as well as regulatory and legal environments.⁷⁹

The EU and the UK are the main trading partners, which is why both parties have agreed to create an ambitious free-trade area, free of tariffs and quotas for products, cooperation in regulatory and customs aspects, and a level playing field for open and fair competition. However, such mode will never fully make up the level of UK membership in the EU. This agreement still goes beyond the EU's free trade agreements with other third countries, such as Canada or Japan, by setting zero tariffs and zero quotas for all goods.

⁷⁷ HÁJKOVÁ, ŠNOBL, ref. 61

⁷⁸ RUSNOK, J. Guvernér ČNB. S inflací si poradíme, horší bude zvládnout přechod mezi světovou elitu. [online]. Available from: <https://www.cnb.cz/cs/verejnost/servis-pro-media/autorske-clanky-rozhovory-s-predstaviteli-cnb/S-inflaci-si-poradime-horsi-bude-zvladnout-prechod-mezi-svetovou-elitu/>

⁷⁹ MPO. Dohoda o obchodu a spolupráci mezi EU a UK vstoupila dne 1. května 2021 v platnost. [online]. Available from: <https://www.mpo.cz/cz/zahranicni-obchod/o-brexitu/dohoda-o-obchodu-a-spolupraci-mezi-eu-a-uk-vstoupila-dne-1--kvetna-2021-v-platnost--261147/>

Another problematic point in 2021 was the question of energy security, namely the construction of the Nord Stream 2 gas pipeline.⁸⁰ Nord Stream 2 was expected to double the transport capacity of the already existing Nord Stream pipeline to 110 billion cubic metres per year. The project, worth more than EUR 9 billion (CZK 232 billion), transports gas directly from Russia to Germany along the bottom at the Baltic Sea and omits Poland and Ukraine as transit countries.⁸¹

Although the construction of Nord Stream 2 ended already in September, its planned and expected launch in 2021 did not take place. It became the subject of discussions and measures in the framework of Russian-Ukrainian relations. Russia was accused of using gas as a political weapon and the project was threatened with further financial sanctions by the United States.

Blocking Nord Stream 2 could have severe consequences for Russia's export-driven economy. However, European governments also feared the negative effects on their economies, because the countries of the European Union are Russia's most important trading partner. For instance, up to a quarter of all Russian oil production goes there.⁸²

Donald Trump's administration exercised pressure on Germany to withdraw from the project and put sanctions on companies involved in the construction of the pipeline. But the new US President, Joe Biden, has stepped down from the Nord Stream 2 sanctions since he took office in 2021, primarily under the pressure of the former German government of Angela Merkel.

Vaccination has become one of the measures to mitigate the effects (incl. economic) of the COVID-19 pandemic. The strategy of the joint procurement of vaccines and the creation of a broad portfolio and diversification of European vaccine suppliers has proven successful for the EU. After a slow start caused by production problems, the pace of the vaccination campaign in the EU gained momentum. The aim of the EU was to gain a head start before the contagion, in order to prepare EU citizens for the future after the pandemic. The EU also stepped up its efforts to stop the pandemic on other continents. By mid-2021, 200 million doses of vaccines were shipped to 138 countries, partly thanks to EU funding.⁸³

Over the following few months, the Commission worked with Member States to develop their national recovery and resilience plans containing planned investments and reforms. In the summer of 2021, the first funds borrowed by the Commission on the capital markets started to flow to the member states.⁸⁴

⁸⁰ Česká televize. Stavba plynovodu Nord Stream 2 se chýlí ke konci. Gazprom letos očekává jeho spuštění. [online]. Available from: <https://ct24.ceskatelevize.cz/ekonomika/3268578-stavba-plynovodu-nord-stream-2-se-chyli-ke-konci-gazprom-letos-ocekava-jeho>

⁸¹ NOVÁK, M. Aktuálně.cz. [online]. Available from: [Ruský plynovod rozděluje Evropu. Německo ale Nord Stream 2 dál obhajuje - Aktuálně.cz \(aktualne.cz\)](https://www.aktualne.cz/zahranicni/zapad-mozna-obetuje-nord-stream-2-plynovodu-hrozi-dalsi-americke-sankce-1386839)

⁸² E15.cz. Západ možná obětuje Nord Stream 2. Plynovodu hrozí další americké sankce. [online]. Available from: <https://www.e15.cz/zahranicni/zapad-mozna-obetuje-nord-stream-2-plynovodu-hrozi-dalsi-americke-sankce-1386839>

⁸³ EK. Stav Unie v roce 2021. Předsedkyně Ursula von der Leyen. [online]. Available from: https://ec.europa.eu/info/sites/default/files/soteu_2021_achievements_and_timeline_cs.pdf

⁸⁴ Ibid.

Funds from NextGeneration EU,⁸⁵ a historic recovery plan, began to flow into the economy. The European NGEU recovery plan is an important milestone in interlinking the national budgets of the EU member states and strengthening the EU's fiscal powers. Although NGEU is defined as a one-off and time-limited solution to the post-pandemic economic recovery, it pushes the boundaries of the possible, setting up common EU bonds into the future, thus, it can no longer be considered as an impossible dream, but rather as one of the plausible options for resolving any future economic crises in the EU.⁸⁶ The aim of the instrument is not only to bring Europe out of the crisis, but it should also provide a new form for the European economy, making it greener, more digital, more resilient, and fairer.

In relation to the economy, the following general conclusions can be drawn from the development of the COVID-19 pandemic so far:

1. The COVID-19 pandemic continued to negatively affect the economies of all countries in 2021; the expected strong economic recovery did not materialize.
2. Due to the COVID-19 pandemic, public health has come to the forefront. The EU lays the foundations for a strong European Health Union, with 27 member states working together to detect, prepare for, and respond to health emergencies. The first pillar of the European Health Union is crisis preparedness and response.
3. The negative multiplier effects of COVID-19 have been manifested in global supply chains and the lack of certain components for economic production (especially semiconductor chips).
4. Energy security is becoming an important element of the general security of individual NATO and EU states - there has been a steep increase in the prices of fossil fuels, especially natural gas, driven by environmental and security reasons.
5. In the future, the speed, timeliness and security of supply of goods and raw materials transported mainly by sea will have to be addressed.

Implications for the armed forces

The period of 2021 continued to be strongly influenced by the global pandemic caused by the spread of COVID-19. This meant continuation of an unfavourable epidemiological situation that fundamentally influenced the functioning of the economies of all countries, including their armed forces, and affected the forecasts for the following period.

2021 was the year of contrasts. On the one hand, the world still had not learned to live and function with COVID-19. Communication problems continued, supply chains eroded, public money was wasted, and the polarization of views not only on the pandemic but also on political, economic, and moral issues on a global scale continued. On the other hand, it was a year of great achievements of many people in health care, trade, and state administration. Many innovations and ideas have emerged, technology and telecommunications are more important than ever.

As far as the supply of chips is concerned, the chip shortage situation can be expected to gradually improve thanks to increased production capacity and reduced demand. However, it can still take long till things get back to normal. Still, the whole situation raises the question of the level of vulnerability of global supply chains and, more generally, of the risks of globalisation. Supply chains need to be made much less

⁸⁵ KÁBRT, M. NETUŠILOVÁ, P. ČNB. Evropský plán obnovy a jeho význam pro budoucnost evropské integrace. [online]. Available from: https://www.cnb.cz/cs/o_cnb/cnblog/Evropsky-plan-obnovy-a-jeho-vyznam-pro-budoucnost-evropske-integrace/

⁸⁶ Ibid.

vulnerable in order to prevent their collapsing again in the event of another global catastrophe, which would put the whole economy at risk. This situation may also affect defence production and thus negatively influence delivery times, especially for sophisticated weapons systems.

If we look at the situation from a different angle, we can conclude that COVID-19 drew attention to the serious problem of semiconductor chip production, which must be resolved in any case.

In relation to supply chains, there has long been no mention of 'offshoring' (shifting production abroad due to lower costs), and also less talk of 'reshoring' (returning production). A new trend is 'friend-shoring' or 'ally-shoring', where companies from allied countries become suppliers.

Another aspect in this context is that the world is still using the maritime transport infrastructure that was built in the middle of the previous century. Moreover, up to 90 percent of all world trade is sea bound.⁸⁷ There are several explanations for this. It is the cheapest and most effective method to move goods globally. Maritime transport has developed significantly, current ships are much larger, as are the volumes of goods that need to be transported. The largest part of trade is between Europe and Asia. In this respect, Suez is crucial, it is a strategic artery for Europe.

Assuming that the trend of localization and regionalization of production will significantly reduce the demands on international transport is not very realistic. If crises similar to the Suez one are to be avoided, it will not be possible without significant public investment. Security of maritime transport needs to be addressed. What happened in Suez in March 2021 is a combination of natural and human factors. It is surprising how such an event with large impacts is dependent on the decision of a small number of people, perhaps even just one person. From this point of view, there is a question of a possible terrorist attack or sabotage, when someone may hijack one or two such ships and block the strategic transport route.

After more than two decades of low or even no inflation, there is a change. Rising prices and increasing inflation will not end in one year, inflationary pressures will continue. In the Czech Republic, mainly due to Czech specifics, it is associated with the labour market and the real estate market. More global trends, such as rising energy prices, will continue. These factors have and will continue to have an impact on potential defence acquisitions not only for the ACR, but also for the armies of other countries associated in NATO or the EU.

The public sector - ideally in cooperation with the private sector - should play an important role in stabilising the world trade. Fiscal and monetary policy will be key, with governments investing in sectors that they deem strategic to their country, in transport infrastructure - including ports, channels, alternative routes, or in defending against hackers. In the future, national governments should encourage recycling that will reduce the demand for scarce raw materials, as well as research and development that will enable the use of alternative materials - less dependent on transport from distant locations. It is not possible to rely only on just-in-time deliveries. This situation also applies to defence technology manufacturers to a certain extent.

Governments and supranational institutions that come up with new economic or energy plans should also have a better overview of supply chains.

⁸⁷ Natoaktual. Zašpuntovaný Suez ukázal zranitelnost námořní dopravy, říká expert. [online]. Available from: https://www.natoaktual.cz/zpravy/suez-pruplav-namorni-doprava-koran-bezpecnost.A210330_085606_na_zpravy_m00

The new government of the Czech Republic declares in its programme statement of December 2021 that it will increase expenditure on defence of the country in accordance with our allied obligations in order to reach the level of 2% of GDP in the future and will further promote the legislative anchoring of this level of defence expenditure as a minimum limit.⁸⁸

Despite this intention of the government, there is, unfortunately, a possibility that, despite observance of the declared defence expenditures, there may be a situation when it will not be possible to complete the procurement of some modernization projects due to their unavailability on the market. Also, 2% of GDP in nominal values may result in much less than calculated when the strategic development documents were issued with the planned prices of the individual projects. Therefore, the Ministry of Defence must be prepared to use the entrusted funds effectively and not to return millions to the budget as redundant and unnecessary.

⁸⁸ Vláda ČR. Programové prohlášení vlády. 17.1.2022. [online]. Available from: <https://www.vlada.cz/cz/programove-prohlaseni-vlady-193547/#obrana>

ENVIRONMENTAL SECTOR

Climate change currently dominates debates about risks in the environmental sector, although not all environmental risks are necessarily associated with this mega-trend. Nevertheless, climate change is significantly worsening the predictability of the climate system development and increasing the frequency and intensity of extreme manifestations, as demonstrated again by the events of 2021. This process of global average temperature increase is directly linked to the increase in greenhouse gas concentrations, while the coronavirus pandemic, which temporarily dampened economic activity and mobility in all parts of the world, has not significantly slowed down this trend. Political promises and commitments in terms of mitigation and adaptation to climate change have still not been reflected in measures to implement them rigorously, thus, the planet is, for the time being, heading towards warming, inconsistently with the objectives of the Paris Agreement. In the absence of other solutions in terms of concentration of greenhouse gases in the atmosphere (e.g., different technological solutions), this rate of warming will have serious consequences with the potential to multiply instability in some regions of the world and the emergence or escalation of conflicts. The development in this sector in 2021 will be discussed via two agendas - scientific and political. This is followed by an assessment of the risks and opportunities with implications for the armed forces.

Scientific agenda

Climate change is a long-term process, it is a mega-trend, and at the same time it is very difficult to predict its development and effects due to the high complexity of the climate system. In addition to the specific manifestations of climate change and their evolution over time, it is therefore essential to pay attention to the scientific knowledge that enables increasingly accurate projections of future developments and analysis of risks associated with climate change. In 2021, a new report by the Intergovernmental Panel on Climate Change, known as the IPCC, was published (“AR6 Climate Change 2021: The Physical Science Basis”), which offers the most up-to-date and accurate knowledge about the causes and impacts of climate change, including attributing the impact of some human activities as well as scenarios for further development. It is the most authoritative resource that has had a significant impact on policy debates on climate change in recent years. The report noted that the current rate of global warming has been unprecedented in the last 2000 years and that the same applies to some aspects of the climate system over the course of many centuries or millennia. Continued man-made climate change is already affecting all inhabited regions of the planet in the form of various weather and climate extremes, according to the report.⁸⁹

In the future, the development of warming will have a major impact on these extreme phenomena, with the increase in global average temperature directly linked to the concentration of greenhouse gases in the atmosphere. In this respect, the new IPCC report provides the most accurate projections of warming by 2100 to date, depending on five different emission scenarios. In the two scenarios with the lowest emissions growth, warming in the range of 1-1.8°C is assumed, for medium emission values in the range of 2.1-3.5°C, and in high-emission scenarios between 3.3 to 5.7°C. The critical warming value of 1.5°C (in line with the objectives of the Paris Agreement) will be probably

⁸⁹ IPCC. *Climate Change 2021: The Physical Science Basis: Summary for Policymakers* [online]. 2021 [cit. 2022-01-27]. Available from: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf

exceeded in all scenarios with the exception of the scenario with the lowest greenhouse emissions, while *achieving* this value is still more likely than unlikely in this scenario, and the subsequent return of warming under this value is expected by the end of the century, with temporary exceeding of this value by 0.1°C max. Both lowest-emission scenarios assume achieving carbon neutrality by or after 2050 with subsequent negative CO₂ emission balance.⁹⁰

In the IPCC report, global warming is directly associated with a number of negative impacts, such as an increase in intensity or frequency of phenomena such as heat waves, heavy rainfall, agricultural or ecological droughts, tropical storms, or the retreat of sea ice in the Arctic, snow cover, and permafrost. These extremes will increase with each increase in warming. Rare events will occur with still higher frequency. However, the forecast of further development is burdened with a high degree of uncertainty, which, in addition to the accuracy of the models, is also associated with the existence of the so-called feedbacks of the climate system, events with a low probability and high impact, such as the collapse of the ice sheet or rapid changes in the ocean flow, or also with crossing the so-called turning points.⁹¹

Global average temperature

In 2021, the global average temperature of the Earth's surface deviated by approximately 0.84°C from the average value of the temperature in the 20th century, which makes it the sixth highest value in the period since 1880.⁹² Since the beginning of the Industrial Revolution, the global average temperature has risen by approximately 1.1°C.⁹³ The beginning of the year was marked by the cold phase of the phenomenon of El Niño - the southern oscillation called La Niña with a slight cooling effect. According to The Copernicus Climate Change Service, at the current rate of warming, the global average temperature of the Earth can reach a critical temperature rise of 1.5°C by November 2033.⁹⁴

Concentration of greenhouse gases in the atmosphere

The trend of increasing concentration of greenhouse gases in the atmosphere as a result of the combustion of fossil fuels and other human activities, such as deforestation, continues. As of December 2021, the concentration of CO₂ achieved 417 ppm. The problem also remains the increase in the concentration of methane, which is a greenhouse gas with an order of magnitude greater warming effect than carbon dioxide, but at the same time with a lower lifespan (12 years on average, compared to centuries in the case of CO₂). Reducing the concentration of methane in the atmosphere is currently an

⁹⁰ Ibid.

⁹¹ Ibid.

⁹² NOAA. 2021 was the sixth-warmest year on record for the globe. *National Centers for Environmental Information* [online]. 2022 [cit. 2022-01-26]. Available from: <https://www.ncei.noaa.gov/news/global-climate-202112>

⁹³ NASA. 2021 Tied for 6th Warmest Year in Continued Trend, NASA Analysis Shows. *Nasa.gov* [online]. 13. 1. 2022 [cit. 2022-01-26]. Available from: <https://www.nasa.gov/press-release/2021-tied-for-6th-warmest-year-in-continued-trend-nasa-analysis-shows>

⁹⁴ COPERNICUS. How close are we to reaching a global warming of 1.5°C?. *Climate Data Store* [online]. 2022 [cit. 2022-01-26]. Available from: <https://cds.climate.copernicus.eu/cdsapp#!/software/app-c3s-global-temperature-trend-monitor?tab=app>

opportunity to slow down warming with a relatively fast effect and with available measures.⁹⁵

Table 1: Development of global temperature and carbon dioxide concentration over the last five years

Indicator/year	2017	2018	2019	2020	2021
Global average temperature ⁹⁶	0.92	0.85	0.98	1.02	0.84
Concentration of CO ₂ ⁹⁷ (in 12/2020)	407.49	409.75	412.44	414.99	417.41

Ocean level, temperature and pH

Ocean level reached record levels in 2021 once again; its rise cannot be reversed even with emission reductions in the longer term due to the inertia of some climatic processes and the associated melting of ice sheets and glaciers and thermal expansion of water. While between 1993 and 2002, ocean levels increased on average by 2.1 millimetres per year, between 2013 and 2021, the pace increased to 4.4 millimetres, roughly double.⁹⁸ According to the latest IPCC projections, by 2100, ocean levels are likely to rise by 0.28 to 0.55 metres in low-emission scenarios and by 0.63-1.01 metres in the highest-emission scenarios compared to 1995-2014.⁹⁹ Increasing water levels pose a risk in terms of the habitability of low-lying regions, stormy tides and the intrusion of salt water into freshwater resources. At the same time, the average ocean temperature on the surface as well as in depth and the increasing acidification due to the absorption of carbon dioxide continues to increase, with a negative impact on some ecosystems and services related to them.

Size of sea ice and ice sheets

The Arctic sea ice decline continues at a rate of 13% per decade compared to 1981-2010.¹⁰⁰ The size of sea ice in Antarctica has increased slightly since 1979 in the same period. Although the melting of sea ice does not directly increase the sea level due to its placement on the surface, its decrease has an impact on the reduction of the so-called albedo (reflectivity), when the white area reflects the solar energy and its reduction thus results in absorbing more sunlight, thus causing further warming, which causes further

⁹⁵ FUTURE EARTH, THE EARTH LEAGUE AND WCRP. *10 New Insights in Climate Science 2021* [online]. 2021 [cit. 2022-01-31]. Available from: <https://10insightsclimate.science/>

⁹⁶ NASA. Global Temperature. *Global Climate Change: Vital Signs of the Planet* [online]. 2022 [cit. 2021-03-05]. Available from: <https://climate.nasa.gov/vital-signs/global-temperature/>

⁹⁷ NOAA. Data [online]. 2022 [cit. 2022-01-26]. Available from: ftp://aftp.cmdl.noaa.gov/products/trends/co2/co2_mm_mlo.txt

⁹⁸ WMO. *State of the Global Climate 2021: WMO Provisional Report* [online]. 2021 [cit. 2022-01-31]. Available from: <https://reliefweb.int/report/world/wmo-provisional-report-state-global-climate-2021>

⁹⁹ IPCC. *Climate Change 2021: The Physical Science Basis: Summary for Policymakers* [online]. 2021 [cit. 2022-01-27]. Available from:

https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf

¹⁰⁰ NASA. Arctic Sea Ice Extent. *Global Climate Change: Vital Signs of the Planet* [online]. 2022 [cit. 2021-03-05]. Available from: <https://climate.nasa.gov/vital-signs/arctic-sea-ice/>

melting of ice. The trend of melting glaciers and ice sheets (in Greenland and Antarctica) continues, but the surface melting of the Antarctic ice sheet is still negligible compared to that of Greenland. Due to the high year-to-year variability, it is difficult to predict further developments resulting from the advancing climate change.¹⁰¹

Political agenda

Environmental risks are currently high on the political agenda, but the specific commitments made by countries to reduce and adapt to these risks are far from being commensurate with the declared gravity of the issue. The United Nations Climate Change Conference (COP26), held in Glasgow in October and November, aimed to increase the countries' commitments. Its main output is the *Glasgow Climate Act*, signed by all participants. The key outcomes of the conference include a confirmation of efforts to limit the increase in global average temperature, with countries revising their nationally determined contributions for 2030 to be consistent with the Paris Agreement goals, i.e. keeping warming below 2 °C, while approaching 1.5 °C as close as possible. Some countries have already declared increased ambitions in this regard - India, for example, will strive to achieve climate-neutrality by 2070, reducing emissions to 45% by 2030. In addition, countries agreed to accelerate the transition to low-emission energy systems, including a gradual *reduction* in coal-burning power generation, while the original term *phasing out* for coal was moderated to *phasing down*, following objections by China and India. Yet, this is historically the first such declaration at the COP conference. The agreement also calls for at least doubling the funding for developing countries to adapt to climate change as well as for complying with the commitment to provide funding for adaptation to parties from those countries at an annual rate of USD 100 billion. Over a hundred countries in the so-called *Global Methane Pledge* have agreed to reduce methane emissions in line with the goal of keeping global warming below 1.5 °C.¹⁰² Moreover, the US and China have issued a joint statement articulating their readiness to work together as well as with other parties to achieve the objectives of the Paris Agreement, including the adoption of ambitious measures in the current decade. In addition to mitigation measures, both parties of the declaration also stressed the importance of adaptation to climate change.¹⁰³

However, according to the CarbonBrief analysis, current policies of countries would lead to warming by around 2.6 to 2.7 °C at best by the end of the century, and, if countries actually meet their nationally determined contributions, the estimate of warming by the end of the century is only slightly below 2.4 °C. The warming of around 1.8 °C by 2100 is then estimated to be valid, provided all countries adhere to their long-term plans to achieve climate-neutrality.¹⁰⁴ Therefore, it can be stated that there is still a large

¹⁰¹ NASA. Antarctic Sea Ice. *The Earth Observatory* [online]. 16. 6. 2016 [cit. 2022-01-26]. Available from: <https://www.earthobservatory.nasa.gov/features/SeaIce/page4.php>

¹⁰² EUROPEAN COMMISSION. *Launch by United States, the European Union, and Partners of the Global Methane Pledge to Keep 1.5C Within Reach* [online]. 2. 11. 2021 [cit. 2022-01-26]. Available from: https://ec.europa.eu/commission/presscorner/detail/en/statement_21_5766

¹⁰³ U.S. DEPARTMENT OF STATE. *U.S.-China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s* [online]. 10. 11. 2021 [cit. 2022-03-31]. Available from: <https://www.state.gov/u-s-china-joint-glasgow-declaration-on-enhancing-climate-action-in-the-2020s/>

¹⁰⁴ FORSTER, Piers a Zeke HAUSFATHER. Analysis: Do COP26 promises keep global warming below 2C?. *CarbonBrief* [online]. 10. 11. 2021 [cit. 2022-01-26]. Available from: <https://www.carbonbrief.org/author/zekehausfather>

discrepancy between the countries' declarations and the measures actually taken to mitigate climate change (the so-called *credibility gap*).¹⁰⁵

In February, a new EU strategy on adaptation to climate change was agreed on, aiming to increase the Union's resilience to the negative impacts of climate change.¹⁰⁶ At the end of the second half of 2021, the European Union adopted the so-called Climate Law ('European Climate Law') as an important part of the European Green Deal, which represents "a framework for the irreversible and gradual reduction of anthropogenic greenhouse gas emissions by sources". The document sets out binding rules for achieving the common European Union emission targets and foresees a reduction in greenhouse gas emissions of 55% by 2030, compared to 1990 and the initially planned 40%, and sets out the way forward to achieve the EU climate neutrality by 2050. The EU institutions and member states are then obliged to take the necessary measures to achieve this objective. The law also provides for a regular assessment of the Union's progress and measures, as well as national measures, in meeting the objectives of climate neutrality and adaptation to climate change.¹⁰⁷ At the same time, in July 2021, the European Commission presented a legislative package of 13 legislative proposals in the field of climate, energy and transport, in support of the Union's reduction target of 55% by 2030 as an intermediate step towards achieving climate neutrality while ensuring a fair transition.¹⁰⁸

A resolution defining climate change as a threat to peace under Article 39 of the UN Charter was voted on at the UN in December.¹⁰⁹ The document also called for regular reporting on the security implications of negative climate change manifestations in the countries or regions concerned, recommendations on climate change management, and the integration of climate change security risks into comprehensive conflict prevention strategies as well as into UN missions and operations. The resolution was vetoed by the

¹⁰⁵ See also UNITED NATIONS ENVIRONMENT PROGRAMME. *The Heat Is On. A World of Climate Promises Not Yet Delivered. Executive Summary* [online]. 2021 [cit. 2022-01-31]. Also available from: <https://www.unep.org/resources/emissions-gap-report-2021>

¹⁰⁶ EVROPSKÁ KOMISE. *Sdělení Komise Evropskému parlamentu, Radě, Evropskému hospodářskému a sociálnímu výboru a Výboru regionů: Vytvoření Unie odolné vůči změně klimatu - nová strategie EU pro přizpůsobení se změně klimatu* [online]. 2021 [cit. 2022-03-31]. Available from: <https://eur-lex.europa.eu/legal-content/CS/TXT/HTML/?uri=CELEX:52021DC0082&from=EN>

¹⁰⁷ THE EUROPEAN PARLIAMENT and THE COUNCIL OF THE EUROPEAN UNION. *Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No. 401/2009 and (EU) 2018/1999 ('European Climate Law')* [online]. 2021 [cit. 2022-03-31]. Available from: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R1119>
COUNCIL OF THE EU. *Council adopts European climate law* [online]. 28. 6. 2021 [cit. 2022-01-31]. Available from: <https://www.consilium.europa.eu/en/press/press-releases/2021/06/28/council-adopts-european-climate-law/>

¹⁰⁸ THE EUROPEAN COUNCIL and THE COUNCIL OF THE EUROPEAN UNION. *Fit for 55* [online]. Not dated. [cit. 2022-03-31]. Available from: <https://www.consilium.europa.eu/en/policies/green-deal/fit-for-55-the-eu-plan-for-a-green-transition/>

¹⁰⁹ FEMIA, Francesco and Caitlin WERRELL. *Is it Time to "Climatize" the UN Security Council?. The Center for Climate and Security* [online]. 2021, 17. 12. 2021 [cit. 2022-01-26]. Available from: <https://climateandsecurity.org/2021/12/is-it-time-to-climatize-the-un-security-council/>
UN. *Security Council Fails to Adopt Resolution Integrating Climate-Related Security Risk into Conflict-Prevention Strategies* [online]. 2021, 13. 12. 2021 [cit. 2022-01-31]. Available from: <https://www.un.org/press/en/2021/sc14732.doc.htm>

Russian Federation, India also voted against, and China abstained.¹¹⁰ In his speech in December 2021, UN Secretary-General António Guterres highlighted the fact that climate change multiplied existing vulnerabilities in society and was an “aggravating factor for instability, conflict and terrorism”. He also pointed out that those countries that were most vulnerable to climate change were typically plagued by higher levels of insecurity, poverty, inefficient governance, and terrorism, with a UN peacekeeping mission or other type of special mission currently ongoing in eight of the 15 countries most exposed to the risks of climate change.¹¹¹

In September 2021, the Government of the Czech Republic approved the update of *Strategie přizpůsobení se změně klimatu v podmínkách ČR* (Strategy on Adaptation to Climate Change in the Czech Republic) and *Národní akční plán adaptace na změnu klimatu* (National Action Plan for Adaptation to Climate Change). The aim is to increase the readiness of the Czech Republic for climate change, which has a number of negative manifestations in the country, such as prolonged drought, floods and flash floods, heavy rainfall, temperature increase, extremely high temperatures, extreme wind, and vegetation fires.¹¹²

Risks of environmental nature

In the environmental sector, risks are manifested mainly in the form of sudden disasters, such as floods or tropical cyclones, or creeping disasters, such as drought. In some cases, countries are affected by multiple crises at the same time or in the short term, and often these are weak states with insufficient capacity to cope with such events. 2021 was again an extreme year in terms of these phenomena. Natural disasters cannot be automatically associated with climate change, yet, climate change has a demonstrable impact on the intensity and frequency of these phenomena, and scientists are increasingly better able to attribute the impact of climate change to some of these phenomena.

For instance, China, Japan, Indonesia, Nepal, Pakistan, India, Turkey, and Kenya suffered devastating floods in the summer months. For example, in the Chinese province of Henan, in July, precipitation reached more than 200 mm per hour, hundreds of people died as a result of the flooding, and more than 800,000 people had to be evacuated. The European continent was also hit by devastating floods, the most serious situation occurring in Germany, with nearly 200 victims. Extreme precipitation is associated with heat waves and high evaporation, as a result of which the concentration of water vapour in the atmosphere increases, but there is also a possible connection with changes in jet streams. For tropical cyclones, a decrease can be observed in 2021 with a total of 94, of which only 37 reached the intensity of a hurricane.¹¹³ While hurricane Ida, which affected two different regions, caused the most material damage (about \$75 billion), typhoon Rai in

¹¹⁰ SECURITY COUNCIL REPORT. *Climate Change and Security: Vote on a Resolution* [online]. 11. 12. 2021 [cit. 2022-01-31]. Available from: <https://www.securitycouncilreport.org/whatsinblue/2021/12/climate-change-and-security-vote-on-a-resolution.php>

¹¹¹ UN. *Climate Change ‘a Multiplier Effect’, Aggravating Instability, Conflict, Terrorism, Secretary-General Warns Security Council* [online]. 9. 12. 2021 [cit. 2022-01-31]. Available from: <https://www.un.org/press/en/2021/sgsm21074.doc.htm>

¹¹² MINISTERSTVO ŽIVOTNÍHO PROSTŘEDÍ. *Strategie přizpůsobení se změně klimatu v podmínkách ČR* [online]. 2021 [cit. 2022-01-31]. Available from: https://www.mzp.cz/cz/zmena_klimatu_adaptacni_strategie

¹¹³ NOAA. *Tropical Cyclones - Annual 2021* [online]. 8. 2. 2022 [cit. 2022-01-31]. Available from: <https://www.ncdc.noaa.gov/sotc/tropical-cyclones/202113>

the Philippines caused the most deaths (about 400). 2021 was also a destructive year in terms of the occurrence of tornadoes, with most of the deaths from this phenomenon occurring in the US. There was a rare occurrence of a tornado of category F4 in the territory of the Czech Republic, which swept through Břeclav and Hodonín on June 24 and left six people dead, hundreds injured, and damage valued at approximately 15 billion CZK.¹¹⁴ At present, there is no scientific knowledge that can credibly prove the link between the emergence of tornadoes and climate change and possible future increase in the frequency or intensity of this phenomenon.

The trend of extreme fires of vegetation continues; in 2021, these manifestations mainly concerned North America, large-scale fires were also recorded in Siberia, but also in some European countries (France, Greece, Italy). On the other hand, in Australia, the season of fires was relatively mild compared to the previous one. Extreme heat waves undoubtedly contributed to vegetation fires, having a demonstrable impact on their intensity. In some regions, the trend of increasing the length of the season of fires can be observed. Extreme heat waves hit southern Europe, the northwestern US, and western Canada. On the contrary, extreme frosts and snowstorms plagued Texas in February, with millions of inhabitants of this US state finding themselves without energy or water supplies and hundreds losing their lives as a result.

With further warming, one can expect an increase in the frequency and intensity of extreme weather events and related impacts. According to the latest IPCC report, when warming by 1.5 °C, the occurrence of an event with extreme rainfall, on average every ten years so far, will be about 1.5 times more frequent. Similarly, drought, occurring on average once a decade so far, is projected to be twice as frequent with the same warming level.¹¹⁵ The stability of the climate system cannot be judged from average values, but from the occurrence of extremes, for which an upward trend can currently be observed.

In addition to floods, there are also risks associated with water scarcity or insufficient water quality, while a number of other areas are linked to water availability, such as agriculture and food production, energy production, or the currently fundamental issue of sanitation. Drought problems are most acute in the Middle East and also in the Sahel. In fact, water scarcity plays a multiplier role in security risks arising from social tensions, rapidly growing populations, and weak or illegitimate governments. Moreover, in some countries, such as Yemen or Syria, the situation is complicated by ongoing conflicts, where water is used as a weapon, when civilians are cut off from access to water by the enemy side. In Syria, over more than a decade of conflict, drinking water supplies have been reduced by up to 40% due to malfunctioning of up to 50% of water and sanitation systems, compared to 2010. Environmental factors should be added to the crisis, when the 2020-21 winter rainy season came two months later and ended two months earlier than usual, while the harvest was also negatively affected by the extreme heat in April, followed by the summer with the worst drought in 70 years, which hit the country.¹¹⁶ In July 2021,

¹¹⁴ ČESKÝ HYDROMETEOROLOGICKÝ ÚSTAV. *Souhrnná zpráva k vyhodnocení tornáda na jihu Moravy 24. 6. 2021* [online]. 2021 [cit. 2022-01-31]. Available from: https://www.chmi.cz/files/portal/docs/tiskove_zpravy/2021/Souhrnna_zprava_tornado_24.6.2021.pdf

¹¹⁵ IPCC. *Climate Change 2021: The Physical Science Basis: Summary for Policymakers* [online]. 2021 [cit. 2022-01-27]. Available from: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf

¹¹⁶ ICRC. *Syria Water Crisis: Up to 40% less drinking water after 10 years of war*. *Reliefweb* [online]. 1. 10. 2021 [cit. 2022-01-31]. Available from: <https://reliefweb.int/report/syrian-arab-republic/syria-water-crisis-40-less-drinking-water-after-10-years-war>

local residents in the Iranian province of Khuzestan, plagued by extreme drought and heat, protested against these unbearable conditions and the discrimination of this mostly Arab population from the government, blaming it for diverting water from the river to the neighbouring province.¹¹⁷

Drought and water scarcity are being addressed by some countries by building dams on rivers, however, this in turn increases risks for other countries downstream. In this respect, the construction of a dam in Ethiopia for the purposes of irrigation of land and energy production, the filling of which can significantly affect food production in Egypt, has a conflict potential, in particular. This dam is the subject of disputes between the two countries; in response to this situation, Egypt organized a joint military exercise with Sudan called “The Guardians of the Nile” in May 2021. However, similar disputes with conflicting potential exist in a number of other countries, such as India and the People’s Republic of China, or Iran and Afghanistan. On the other hand, according to the *Ebb and Flow: Water in the Shadow of Conflict in the Middle East and North Africa* study, such situations have more often resulted in cooperation rather than conflict in the MENA countries.¹¹⁸

Opportunities in the field of environmental security

In the previous year, it was already evident that in the context of the coronavirus pandemic, it was not possible to take advantage of the opportunity offered by the stimulus packages for the transition to a low-carbon economy. With the coming of the new administration of Joe Biden, however, the chances of a global agreement by countries to tackle climate change are theoretically increasing again.¹¹⁹ Already in February 2021, the US formally rejoined the Paris Agreement. As mentioned above, disputes over the use of water resources have historically been more often an opportunity for cooperation than a source of real conflict. Regarding defence ministries directly, the expert group within the International Military Council on Climate and Security (IMCCS)¹²⁰ suggests in its report the possibility of massively investing in research and development in the field of carbon-neutral fuel and propulsion systems for military vehicles, which would also have a positive impact on the civilian sector.¹²¹ Given that the defence ministries, at least in the countries of the West, are for the time being the main drivers of the efforts to make the armed forces ‘green’, without being subjected to external pressure, they can use this fact to build their image of an organization that takes on its share of social responsibility in resolving the climate crisis. Based on the conclusions of the IMCCS, the European Union’s 2020 ‘Climate Change and Defense Road Map’ offers an

¹¹⁷ FRANCE24. Iranians gather in mass protest against water crisis caused by dried-up river.

France24 [online]. 19. 11. 2021 [cit. 2022-01-27]. Available from:

<https://www.france24.com/en/middle-east/20211119-iranians-gather-in-mass-protest-against-water-crisis-caused-by-dried-up-river>

¹¹⁸ BORGOMEIO, Edoardo. *Ebb and Flow: Volume 2. Water in the Shadow of Conflict in the Middle East and North Africa*. World Bank Group, 2021. ISBN 978-1-4648-1748-9. Also available from:

<https://openknowledge.worldbank.org/handle/10986/36090>

¹¹⁹ BLINKEN, Anthony J. The United States Officially Rejoins the Paris Agreement. *U.S.*

Department of State [online]. 19. 2. 2021 [cit. 2022-02-03]. Available from:

<https://www.state.gov/the-united-states-officially-rejoins-the-paris-agreement/>

¹²⁰ The International Military Council on Climate and Security (IMCCS) is a network of senior representatives of the armed forces, security experts and security institutions that deals with the security risks of climate change.

¹²¹ IMCCS. *The World Climate And Security Report 2021* [online]. 2021 [cit. 2022-01-27]. Available from: <https://imccs.org/the-world-climate-and-security-report-2021/>

opportunity for the armed forces of European countries to better integrate climate change into their planning processes, including the development of appropriate forecasting tools and early warning systems.¹²²

Implications for the armed forces

In terms of the tasks of the armed forces, in the foreseeable future, environmental risks will have the biggest impact on possible needs for assistance of the ACR in disaster management and elimination of their consequences in the Czech Republic and abroad. In doing so, it will be necessary to take into account the increasing intensity and frequency of natural disasters and it will not be possible to exclude long-term crises or several crises over a short period of time that could negatively affect the readiness of the armed forces to address other tasks.

Furthermore, environmental risks increase instability in some regions and create a potentially explosive mix in combination with other socio-economic factors and dividing lines in local societies. In terms of the EU's foreign policy priorities and, consequently, those of the Czech Republic, the greatest risk stems from an outbreak of an armed conflict or further escalation in the already ongoing conflicts in relation to environmental risks in the Sahel countries. The instability in the Middle East, exacerbated by water scarcity and severe droughts, can then result in mass migration and pressure on the borders of countries located on the southern and eastern periphery of the EU.

It is also impossible to avoid the gradual building of pressure on the Ministry of Defence and the armed forces with regard to the reduction of their environmental footprint or the risk of a decrease in the expenditure of the Ministry along with increasing state expenditure on climate change mitigation and adaptation measures, which will further create pressure on public finances and their allocation to various budget chapters.

¹²² Ibid.

TECHNOLOGICAL SECTOR

This text covers the main areas of technological development with regard to defence technologies in 2021. This was characterized mainly by the continuation and intensifying of trends within two ‘new’ operational domains (outer space and cyberspace), in the field of remotely controlled means and autonomous systems, augmented and virtual reality, and hypersonic technologies. As the technology sector is truly large, it is not the ambition of the following pages to cover all the technological advances and innovations for 2021. We select those areas that were the most significant in the period concerned and which had an immediate impact on the security and defence of the Czech Republic and on the building of the Czech Armed Forces. These main relevant areas are copied by the structure of this text.

Outer space

The outer space, traditionally considered a part of the air domain, gradually became one of the centres of special interest of both state and non-state actors. This trend continued in 2021. As in previous years, the interest of state and non-state actors in this domain is growing. We are increasingly seeing a new round of ‘space races’ by powers, notably the US, the People’s Republic of China (PRC), and the Russian Federation (RF).¹²³ In 2021, the PRC launched the basic module of its Tiangong (‘Sky Palace’) space station.¹²⁴ The station operates in low Earth orbit at an altitude of 340-450 km and when completed, it will be the size of the former Russian space station Mir. The station is inhabited by a crew of three. The PRC also launched plans and technology development for three missions to the Moon in 2021 and plans to land human crews there after 2030. The plans also provide for a shared lunar base between the PRC and the RF.¹²⁵ In August 2021, the PRC tested the Fractional Orbital Bombardment System (FOBS) with the Long March 2C launcher with the ability to carry nuclear warheads. Such a system gives China the ability to bomb directly from space, which significantly reduces the time between the launch of an attack and the moment when the enemy learns about it. It is important to note here that according to the Outer Space Treaty of 1967, which the PRC has signed and ratified, it is forbidden to station nuclear weapons in outer space. Therefore, the possible conflict with international law cannot be overlooked. Later, in November 2021, the Russian Federation tested its anti-satellite missile, which hit a malfunctioning Russian space satellite 1408 of the Celina-D class. The result is thousands of larger and hundreds of thousands of smaller fragments that are now orbiting in orbit.¹²⁶

Space races, however, also take the form of a competition between private, namely, who will earlier and more successfully reach the border of what can already be called outer space. 2021 can also be called the year of billionaires in space. Significant and publicized flights were undertaken by Elon Musk’s SpaceX, Jeff Bezos’s Blue Origin, and Richard Branson’s Virgin Galactic. In July 2021, suborbital space flights were performed by Virgin

¹²³ TAVERNEY, Thomas D. *Welcome to the NEW Space Race* [online]. 2022 [cit. 29.03.2022]. Available from: <https://www.airforcemag.com/article/welcome-to-the-new-space-race/>

¹²⁴ ROGERS, Mike. Op-ed | Space race with China is not just a military competition. In: *SpaceNews* [online]. 29. 1. 2022 [cit. 29.03.2022]. Available from: <https://spacenews.com/op-ed-space-race-with-china-is-not-just-a-military-competition/>

¹²⁵ JONES, Andrew. China is working on a lander for human moon missions. In: *SpaceNews* [online]. 9. 8. 2021 [cit. 29.03.2022]. Available from: <https://spacenews.com/china-is-working-on-a-lander-for-human-moon-missions/>

¹²⁶ TAVERNEY, ref. 123

Atlantic with the Unity 22 device and by Blue Origin with the NS-16 aircraft. These companies have declared their plans for commercial space tourism. The traditional leader among these companies is SpaceX, which launched a flight under the name Inspiration4 with the help of its Falcon 9 carrier rocket in September 2021, historically the first flight into the orbit of a purely private crew.¹²⁷ In spring 2021, SpaceX also won a contract for American NASA to deliver a lunar landing module under the Artemis space programme, which aims to restore manned flights to the Moon. Here, we can see an unprecedented role of the private sector in the field that used to be an exclusive state domain in the past.

Traditionally, the potential represented by space and relevant technologies can be divided into two areas (civilian and military), the dividing criterion being the nature of the activities or the actual artificial bodies (satellites, stations, etc.) operated or located in the outer space. As the above described events also demonstrate, it is necessary to state that the boundaries between the two categories are very unclear, or both groups often overlap in their elements, which makes their differentiation in practice quite problematic. Thus, we encounter a persistent phenomenon of dual use of the concerned technologies or activities. As we can see from the examples of the American GPS system or the different types of services that will be provided through the European Galileo system, still under construction, the satellite navigation network can be used not only to determine the position of civilian entities, but also to coordinate the progress of operational clusters or guiding missiles or unmanned aerial vehicles. Similarly, the usability of the constructed satellite networks for global communication and 5G Internet coverage (currently, e.g., OneWeb or LeoSat) can be assessed.

The use of satellite systems is increasingly available to small states from the point of view of both technological development (miniaturization) and capacity sharing as well as the involvement of space companies. This phenomenon is also demonstrated by the Czech Republic through the operation of the SATCEN Satellite Centre, which is managed by the Military Intelligence and allows the collection and analysis of electro-optical and radar image data from space exploration. Also, a proprietary (national) satellites system called GOLEM is being developed.¹²⁸ Especially in 2021, information about the STRATOM system began to appear. It is an abbreviation for the Stratospheric Image System for Monitoring Land Targets, a development project of the Ministry of Defence of the Czech Republic. It uses devices of the High Altitude Platform Station (HAPS) type, also known as 'pseudo-satellites', i.e., categorized between orbital and aerial devices. The system will take high-resolution multispectral images and live videos and can also serve as an emergency communication hub, along with other uses. The system should be put in operation by 2025.¹²⁹

¹²⁷ TARANTOLA, A. 2021 was the year of the billionaire space race. In: *Engadget* [online]. 2021 [cit. 29.03.2022]. Available from: <https://www.engadget.com/in-2021-billionaires-headed-to-the-stars-210013764.html>

¹²⁸ GROHMANN, Jan. STRATOM a GOLEM: Česká republika jako kosmická velmoc. In: *armadninoviny.cz* [online]. 2021 [cit. 29.03.2022]. Available from: <https://www.armadninoviny.cz/stratom-a-golem-ceska-republika-jako-kosmicka-velmoc.html>

¹²⁹ KOHOUT, Martin. STRATOM je běžící vývojový projekt Ministerstva obrany České republiky. In: *FREEBIT* [online]. 16. 1. 2022 [cit. 29.03.2022]. Available from: <https://freebit.cz/stratom-je-bezici-vyvojovy-projekt-ministerstva-obrany-ceske-republiky/>

Implications for the armed forces

The growing influence of the outer space is starting to be reflected also in the Army of the Czech Republic. At the same time, some specific actions by the Czech Republic, which are not directly related to the armed forces, can be identified in this domain. In particular, it concerns the aforementioned construction of the Military Intelligence Satellite Centre,¹³⁰ as well as the STRATOM project under the Ministry of Defence of the Czech Republic. The Czech membership in the EU and NATO institutions also represents a potential for gaining access to individual types of space systems (whether navigation, communication, or monitoring) and their use for the development of relevant capabilities. In 2021,¹³¹ the European Space Agency adopted a new space programme that extends investment in all key areas and introduces a new institution, the European Global Navigation Satellite Systems Agency (European Agency for GNSS, GSA), with its basis in Prague.¹³²

On the part of NATO, this aspect is further strengthened by the acceptance of the outer space as a separate operational domain, which creates conditions for further cooperation across the whole organization for the ACR. Similarly, the growing opportunities resulting from the privatization/commercialization of this space can be assessed, although at the same time there is a threat of dependence on such an actor, which is associated with potentially different interests or unclear control over their activities. The nature of space as a separate operational domain imposes new requirements on the Prepare/Training area of the Armed Forces, which must take into account the specificities of this domain. For the Czech Republic, such activities and projects are relevant that will be usable not only for the construction/strengthening of the complex C4ISTAR system, but also for ensuring a robust information flow for the control of unmanned and autonomous systems. In this context, the development of a stand-alone satellite system can significantly help strengthen the capabilities of the armed forces in all areas of interest.

Cyberspace

The physical world and its infrastructure are now closely interconnected with cyberspace, and this is increasingly used by hostile actors, both state and non-state, who, depending on their nature, use the so-called cyber espionage or cybersabotage. Typical forms of cyber attacks include the distributed denial of service (DDoS) attacks. They aim to disrupt the operation of a given system or network by flooding the server. Also, ransomware attacks are common. Ransomware encrypts data on the hard drive of the infected computer or computers and requires payment of a ransom (typically in cryptocurrency) to enable unlocking the data. The trend of such attacks continued also in 2021 in the context of the ongoing COVID-19 pandemic, which revealed the vulnerability of critical infrastructure, for instance, in the form of hospital information systems. One historical milestone is the case of a newborn in the US state of Alabama who died as a result of a

¹³⁰ BOHÁČ, Vojtěch. Když začne válka ve vesmíru, zhroutí se úplně všechno, říká šéf Satelitního centra Vojenského zpravodajství. In: *VOXPOT* [online]. 11. 1. 2021 [cit. 29.03.2022]. Available from: <https://www.voxpot.cz/kdyz-zacne-valka-ve-vesmiru-zhrouti-se-uplne-vsechno-rika-sef-satelitniho-centra-vojenskeho-zpravodajstvi/>

¹³¹ AMOS. Lift-off for European Union's new space programme. *BBC News* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.bbc.com/news/science-environment-57573698>

¹³² EU Agency for the Space Programme. 2021 [cit. 29.03.2022]. Available from: <https://www.euspa.europa.eu/>

lack of care caused by a ransomware attack on the hospital. It was the first time that even the court confirmed the link between such an attack and the loss of human life.¹³³ In 2021, ransomware caused an energy crisis in the United States. Pipeline transport of fuel in the Colonial Pipeline system was sabotaged, resulting in an interruption of the transport of oil for about a week. The attack was apparently caused by the Russian hacker group DarkSide, who also took about 100 GB of data from the company's servers. In the same year, there was an attack on a water treatment plant in the town of Oldsmar in Florida - the hacker increased the level of sodium hydroxide to hundred times the normal level.¹³⁴ In 2021, it was also discovered that Pegasus spyware developed by the Israeli company NSO Group, using the so-called zero-click vulnerability (the user did not have to be tricked into launching the malicious program, it launched itself after the infected message is received, while the attacker only needs to know the victim's phone number), penetrated the communication of government officials or opposition members in many countries (including, e.g., Hungary). Later, it was even revealed that the tools were used by Israeli law enforcement authorities against Israeli citizens without the court's permission.¹³⁵ In 2021, four serious 'zero-day' vulnerabilities were identified in the Microsoft Exchange Server internal communication product, which were apparently abused by the hacking group Hafnium linked to the PRC and potentially also by other actors.¹³⁶ There was also a serious error in the widely used Log4j Java library. This error helped, inter alia, spread the Khonsari ransomware and the Orcus Trojan horse.¹³⁷

The development of the so-called Internet of Things (IoT) is gradually escalating into the form of the so-called 'Internet of Everything' (IoE), which not only enables much more effective use of the benefits associated with all-embracing information interconnections (e.g., ensuring monitoring and real-time decision-making), but it also deepens the overall dependence on the stable and effective functioning of this space, resulting in increased user vulnerability. Construction and development of 5G information networks brings the discussed issue to a qualitatively higher level, both in terms of opportunities and possible threats. Ensuring security, in particular for the critical infrastructure and critical information infrastructure, must necessarily take this trend into account at present. Especially when taking into account the potential misuse of a large number of discussed devices within the so-called botnets to carry out targeted attacks against information

¹³³ POULSEN, Kevin, Robert MCMILLAN a Melanie EVANS. A Hospital Hit by Hackers, a Baby in Distress: The Case of the First Alleged Ransomware Death. *Wall Street Journal* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.wsj.com/articles/ransomware-hackers-hospital-first-alleged-death-11633008116>

¹³⁴ *Ongoing Colonial Pipeline Ransomware Attack is Unprecedented* [online]. 2021 [cit. 30.03.2022]. Available from: <https://claroty.com/2021/05/10/blog-research-colonial-pipeline/>

¹³⁵ Pegasus Project: Macron among world leaders selected as potential targets of NSO spyware. In: *Amnesty International* [online]. 20. 7. 2021 [cit. 30.03.2022]. Available from: <https://www.amnesty.org/en/latest/news/2021/07/world-leaders-potential-targets-of-nso-group-pegasus-spyware/>

¹³⁶ OSBORNE, Charlie. Everything you need to know about the Microsoft Exchange Server hack. In: *ZDNet* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.zdnet.com/article/everything-you-need-to-know-about-microsoft-exchange-server-hack/>

¹³⁷ LAKSHMANAN, Ravie. Hackers Exploit Log4j Vulnerability to Infect Computers with Khonsari Ransomware. In: *The Hacker News* [online]. 2021 [cit. 12.04.2022]. Available from: <https://thehackernews.com/2021/12/hackers-exploit-log4j-vulnerability-to.html>

systems of both relevant state and non-state entities. In 2021, this trend continued with an increasing pace.¹³⁸

Simultaneously with the intensification of the interconnection of humanity within this space, there is an increase in the number of networks that are created and used on a distributive basis, i.e., without the existence of a central control or management 'node'. The advantages of this approach can be demonstrated in the so-called 'cloud computing' (or its more advanced variant in the form of 'edge computing'), which, on a distributive basis, provides, inter alia, a flexible approach to storing and processing large amounts of data or provides new possibilities for increasing the computing power. Another example is the so-called 'blockchain' technology. It is currently used by cryptocurrencies and is being gradually introduced in other areas.

2021 was a year of new and developing trends in blockchain. Three of them should be mentioned. The first is associated with the ongoing COVID-19 pandemic. The use of blockchain for verification of authenticity and integrity of supplied vaccines, verification of deliveries, and control of temperature during transport and storage began to be discussed. The second trend is the new phenomenon called NFT, which is the English abbreviation for 'non-fungible token'. Simply put, the NFT is proof of ownership of specific digital goods and a clear identification of the unique owner. Anything that exists in digital form can be 'tokenized' (typical examples are virtual works of art). This trend gave rise to a completely new economy in the Internet environment, where theoretically anything can be copied indefinitely - before the creation of NFT, no one could be a unique owner of anything. NFTs use blockchain technology, which ensures authentication and trust. The last trend, which is associated with blockchain, but at the same time exceeds it significantly, is the phenomenon of the so-called 'metaverse'. It is a new term that technology companies have started to use to designate virtual worlds where people meet in the environment of virtual or augmented reality. Large technology companies such as Meta (the new name of the former Facebook company, which, inspired by this concept, communicates its changing strategy), Microsoft or video game companies such as Epic Games are building their own 'metaverse'. It is unclear how transformative these efforts by corporations will be for a new paradigm in Internet communication, in any case, in combination with blockchain, the trend of decentralization is being talked about, which should lead to equal and transparent access to the virtual environment.¹³⁹

The interconnection of all areas of human society with cyberspace also further develops interdependence in terms of the availability of information itself. From this perspective, the Internet makes it possible to increase the transparency of almost all activities in the real environment. Social media such as Facebook, Instagram, Twitter, YouTube, TikTok, or Clubhouse, the last one having experienced a huge increase in popularity in 2021 (but later also a descent, when established companies simply copied its functions) allow almost constant supervision and monitoring of activities of individual entities. At the same time, it serves as an ideal tool and platform for conducting information operations by both state and non-state actors. Control over these networks, or their providers, can therefore be seen as an important prerequisite for the ability to control and influence

¹³⁸ MCMILLEN, Dave. Internet of Threats: IoT Botnets Drive Surge in Network Attacks. In: *Security Intelligence* [online]. 22. 4. 2021 [cit. 30.03.2022]. Available from: <https://securityintelligence.com/posts/internet-of-threats-iot-botnets-network-attacks/>

¹³⁹ WESTON, Georgia. The 5 Biggest Blockchain Trends In 2022. In: *101 Blockchains* [online]. 24. 1. 2022 [cit. 30.03.2022]. Available from: <https://101blockchains.com/blockchain-trends-in-2022/>

public opinion in general. On the other hand, similarly, this aspect helps to effectively defend against the influential activities of a potential opponent. In 2021, such ambitions could be identified, inter alia, in building the separate Russian Internet Runet or the heated debate on extending the scope of the so-called ‘Great Firewall of China’ to Hong Kong in response to mass demonstrations of its citizens.¹⁴⁰

The full introduction of quantum (computing) technologies, which by their very nature fundamentally surpass the current performance of individual systems, will be crucial (not only) for this domain. This subsequently brings new possibilities, e.g., in the processing and storage of large data (‘big data’) or even corresponding threats/opportunities for current encryption tools and procedures, i.e., data and information protection itself. The competition of state and non-state actors in this area continued in 2021, when perhaps the biggest event was the introduction of IBM’s new quantum computer called ‘Eagle’. This new device contains a 127-qubit processor, almost double compared to the previous generation (‘Hummingbird’). Experts believe that surpassing the 100 qubit limit is crucial for the practical use of quantum technology. In 2021, IonQ entered the New York Stock Exchange as the first ever company to offer complete quantum-computing solutions. This also suggests that the era of quantum computers is slowly approaching and becoming lucrative.¹⁴¹

The phenomenon of virtual and augmented reality along with artificial intelligence and machine learning are also connected to cyberspace (the areas are addressed separately below). Their development and performance brings new possibilities, for example, for the areas of detailed analysis of a large number of documents, image elements or voice expressions. Subsequently, the ability to imitate them accurately and create copies or completely new elements (e.g., a virtual TV reporter) almost indistinguishable from reality/originals (in the form of the so-called deepfakes) is associated therewith. One of the most interesting cases of the use of deepfakes took place in April 2021, when the duo of Russian comedians Vovan and Lexus allegedly created a false identity of Leonid Volkov, an advisor to Russian opposition politician Alexey Navalny, via which they consequently communicated with unsuspecting MPs from the Baltic states and the United Kingdom.¹⁴² Later, however, it turned out that it was actually ‘only’ Volkov’s double in the service of Vovan and Lexus.¹⁴³ This case demonstrates, on the one hand, that the persuasive power of deepfakes is already counted on to such an extent that a real character could be mistaken for a deepfake video. On the other hand, this gives rise to a double uncertainty: we can never be sure whether a video is real, but at the same time we cannot be sure that an unexpected and unforeseeable message is necessarily false.

¹⁴⁰ POWER, John. As ‘Great Firewall’ looms, fears for Hong Kong’s free internet. In: . 2021 [cit. 30.03.2022]. Available from: <https://www.aljazeera.com/economy/2022/2/17/as-great-firewall-looms-fears-for-hong-kongs-free-internet>

¹⁴¹ SWAYNE, Matt. 2021: *The Year’s Top Ten Stories in Quantum Computing and Quantum Technology* [online]. 2021 [cit. 30.03.2022]. Available from: <https://thequantuminsider.com/2021/12/31/2021-the-years-top-ten-stories-in-quantum-computing-and-quantum-technology/>

¹⁴² ROTH, Andrew. European MPs targeted by deepfake video calls imitating Russian opposition. *The Guardian* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.theguardian.com/world/2021/apr/22/european-mps-targeted-by-deepfake-video-calls-imitating-russian-opposition>

¹⁴³ VINCENT, James. ‘Deepfake’ that supposedly fooled European politicians was just a look-alike, say pranksters. In: *The Verge* [online]. 30. 4. 2021 [cit. 30.03.2022]. Available from: <https://www.theverge.com/2021/4/30/22407264/deepfake-european-politicians-leonid-volkov-vovan-lexus>

Implications for the armed forces

From the perspective of this latest operational domain, cyberspace places increased demands on training and preparation, both in order to maximize its benefits and to suppress vulnerabilities resulting from the use of information technologies. The importance of the trends discussed above for CAF can be further identified for in the areas Project; Engage; C3; Protect; Sustain and Inform. Capacity development in these areas will be linked, inter alia, to systems enabling the processing of large volumes of data, as well as systems supporting operational changes in the level of centralization and decentralization of command and control. Completing the comprehensive interconnection of C4ISR within the ACR environment should not only prevent the lagging behind more developed states in this area, but also provide an important competitive advantage both in the context of 'small' and 'large' armed conflicts. Military-adjusted 'cloud' service elements can provide support for this development. The 'blockchain' technology and the possibilities of its implementation for decentralization and data security (e.g., from unmanned reconnaissance devices) or increasing the resistance of the ACR systems to the effects and consequences of electromagnetic pulse (EMP) or other methods of disrupting the operation of information and communication systems can also be used here. In all of these areas, the importance of cyberspace and the trends described above for information activities should not be overlooked.

Attention must be paid to the possible use of this platform, including the 'Internet of Everything', social networks, elements of artificial intelligence for the action of the ACR against the opponent, as well as defence against such activities by the opponent. Ensuring consistent and continuous strategic communication (StratCom) toward domestic and foreign audiences plays a central role here. The Engage area also offers the possibility of combining with the abilities and elements of electronic warfare - e.g., in the form of introducing malware into the opponent's information networks via wireless connection, etc. At the same time, especially in the context of Protect and Sustain, increased emphasis should be placed on ensuring cyber defence and security. Similarly, it is necessary to ensure continuous evaluation of applications used mainly on business devices, including targeted search for so-called 'zero date' vulnerabilities. However, this recommendation needs to relate not only to traditional platforms, but also to the area of the Internet of Things / Internet of Everything or the opportunities/threats associated with the development of quantum computing. Building on the experience, e.g., from the US, it can be assumed that these devices will be used not only as targets of cyber attacks in the near future, but also as a means for their implementation. Therefore, even for the armed forces of a country such as the Czech Republic, it is necessary to ensure capabilities which would enable a stable use of this environment and deny access to the opponent. In other words, it is an adaptation of A2/AD capabilities for the cyber domain. A2/AD (Anti-Access, Area Denial capabilities) generally involves means to ensure one's own access while preventing the opponent from access at the same time. In the cyberspace domain, it concerns eliminating the opponent from cyberspace or possibly vice versa: the state's ability to eliminate itself from cyberspace.¹⁴⁴

Protect also includes equally important resilience capability of the staff of the ACR. Permanent access to the information environment makes it an ideal target for both influential operations and specific cyber attacks perpetrated by the enemy. It will be necessary to ensure the development of both mental resilience and critical thinking or information literacy. In the area of Sustain, experience from the ongoing pandemic points

¹⁴⁴ See RUSSELL, Alison Lawlor. *Strategic A2/AD in Cyberspace*. Cambridge: Cambridge University Press, 2017.

to increased demands on permeability and usability of all communication tools. For the ACR, this implies the need to strengthen its IT infrastructure in order to avoid disrupting the stability of connections and remote access.

Several legislative and institutional changes took place in 2021, demonstrating that the Czech Republic reflects these requirements. An amendment to the Military Intelligence Act came into force in July 2021, defining military intelligence as the guarantor of cyber defence. Under Military Intelligence, the National Cyber Operations Centre (NCKO) operates, whose task is to create an effective system of defence in cyberspace so that the Czech Republic is able to stop and possibly avert cyber attacks, thus ensuring the protection of civilians and infrastructure. In the Army of the Czech Republic, the Cyber Forces Command (VeKySIO) commands units of cybernetic and information warfare forces. It plans and control operations in cyberspace and plans and controls operations in the information environment based on the decision of the Chief of the General Staff of the ACR. It conducts cyber operations in cooperation with the Military Intelligence. It protects part of the cyberspace, acquires information about and through the cyberspace, and carries out information operations in the cyberspace and information environment. It is responsible for the construction and provision of elements for operations, for the content of programmes of preparation of the capabilities of cyber forces, InfoOps, PSYOPS, and CIMIC units, including the active reserves. In 2021, a decision was made to re-subordinate the CIRC (Computer Incident Response Capability) centre under VeKySIO. It is responsible for the proactive identification of cyber security threats and incidents through continuous monitoring of important segments of the MoD data networks and their subsequent analysis, evaluation, and reporting to relevant partners.

Development and dissemination of remotely controlled devices and autonomous systems

Unmanned Aerial Systems (UAS), commonly also known as drones, are currently used by the armed forces of more than sixty countries in the world for reconnaissance, exploration, or monitoring purposes. The group of states that have combat (strike) drones is also gradually expanding. It can be assumed that this general trend, i.e., increasing the number of states possessing individual categories of unmanned assets, will only increase in intensity. Compared to piloted aircraft, lower acquisition and operating costs and the absence of direct threat to the human 'crew' (operators) are preferred.

In superpowers in particular, it is possible to identify both the noticeable increase in the number of individual types of unmanned vehicles and the expansion of the range of tasks (e.g., supplies or transport) which they are used for. This trend can be very well demonstrated by the example of the United States, which currently operates two dozen types of such devices, including UASs equipped with weapons systems. In 2021, we could observe a large number of newly introduced systems by all military superpowers. Current trends are miniaturization and the onset of micro- and nanodrones. The United States is developing the SR-72 Darkstar, a UAS capable of flying more than five times the speed of sound - thus, it can be defined as the so-called hypersonic weapon (more about hypersonic technologies below). The example of SR-72 demonstrates many current trends in addition to miniaturization: UASs are better armed, larger, faster and capable of missions over still greater distances, all of it without a human crew. Other systems in development that demonstrate these trends include US Ravn X (by Aevum), X-47B (the first UAV to land on an aircraft carrier and undergo in-flight refuelling), or MQ-25 Stingray. The United States Air Force announced a request for funding the development of further two classified development programmes for 2023. US Vice Admiral James Kilby said that in the foreseeable future, unmanned systems would make up a half of all aircraft on board

aircraft carriers.¹⁴⁵ New systems have been introduced also by other superpowers. In December 2021, the Russian Federation presented a new version of Suchoj S-70 Ochotnik-B. It is suitable for reconnaissance and combat missions and has features that make it hardly visible to enemy radar systems. The People's Republic of China presented its Hongdu GJ-11 device (the first model was tested already in 2013) with precision-guided air-ground missiles.¹⁴⁶

So far, Unmanned Ground Systems (UGS) have been represented in smaller numbers and variability within the armed forces of individual states compared to UASs. Their role often consists in the disposal of booby traps and unexploded ordnance, handling of hazardous substances, or short-range exploration (e.g., in urbanized areas). For instance, the US Army announced a more than \$30 million contract in 2021 with FLIR Systems, which will supply MTRS Inc II UGS, remote-controlled devices designed to detect and disarm explosives.¹⁴⁷

Similarly, projects for the joint operation of piloted/controlled systems and remotely controlled or autonomous systems are being developed. A manned device in such a combination generally plays the role of a leader supported by robotic systems. The result is a synergistic increase in the capabilities of such a set in practically all aspects. The above-mentioned MQ-25 Stingray UAS is intended, inter alia, to accompany the F-35 aircraft and the B-21 bomber.¹⁴⁸

Compared to remotely controlled means, autonomous systems assume either no or minimal 'interference' by the human operator. Individual systems should be able to not only obtain information about the surrounding environment independently, but also to process (evaluate) it and make corresponding decisions. In 2021, the possible regulation of the development of such systems at the UN level was discussed, but no steps were taken and the start-up of an arms race in the field of autonomous systems is generally considered.¹⁴⁹ According to a report prepared for the UN Security Council in spring 2021, Turkish drone STM Kargu-2, using artificial intelligence and facial recognition, sought and made an autonomous decision to kill members of General Khalifa Haftar's forces in Libya.

Implications for the armed forces

The development of remotely controlled means and autonomous systems will primarily affect the areas of Prepare/Training and Protect not only in terms of their use, but also the ability to respond to their deployment by the opponent (regardless of their nature). However, the development of these devices definitely must not neglect the emerging categories of micro- and nano-UASs (see ch. Additive manufacturing). An interesting

¹⁴⁵ TOLLAST, Robert. In 2021 we saw the future of drone warfare: bigger, faster and better armed. In: *The National* [online]. 24. 12. 2021 [cit. 30.03.2022]. Available from: <https://www.thenationalnews.com/world/2021/12/24/in-2021-we-saw-the-future-of-drone-warfare-bigger-faster-and-better-armed/>

¹⁴⁶ Ibid.

¹⁴⁷ Army orders small unmanned ground vehicle from FLIR for explosives detection and threat surveillance. In: *Military Aerospace* [online]. 9. 4. 2021 [cit. 30.03.2022]. Available from: <https://www.militaryaerospace.com/unmanned/article/14200987/unmanned-explosivesdetection-ground-vehicle>

¹⁴⁸ TOLLAST, Robert. In 2021 we saw the future of drone warfare.

¹⁴⁹ DAWES, James. UN fails to agree on „killer robot" ban as nations pour billions into autonomous weapons research. In: *The Conversation* [online]. 2021 [cit. 30.03.2022]. Available from: <http://theconversation.com/un-fails-to-agree-on-killer-robot-ban-as-nations-pour-billions-into-autonomous-weapons-research-173616>

perspective in this area (counter-UAS) is provided by the use of a combination of a radar and directional jammer, or a powerful laser, however, not currently available in the ACR. On the other hand, this development is already taking place in the Czech Republic, e.g., at the Military Technical Institute or the Academy of Sciences of the Czech Republic. An example is the project under the auspices of the European Space Agency together with the European Defence Agency. In January 2021, a consortium of several companies launched programme called AUDROS (Autonomous Drone Services), which is to bring a unique ‘antidrone’ solution in two areas: ‘Drone Hunter’ and CBRN (Chemical, Biological, Radiological and Nuclear) Drone. Participation of the Military Technical Institute is expected in the use of proprietary technologies already implemented in the unmanned rotor universal system (BRUS).¹⁵⁰

In this context, the interest of air defence should not focus solely on protection against individual UASs. On the contrary, it is necessary to develop, in particular, the capabilities enabling the destruction of whole swarms of such resources. Similarly, it is necessary to ensure the implementation of system measures aimed at preventing the misuse of our resources by the opponent (whether this concerns obtaining intelligence or taking control of the affected system). From this point of view, the technological dimension of protection and defence as well as their overall procedural and legislative set-up cannot be overlooked. Due to the nature of CAF, in the areas of Project; Engage; Sustain; and Inform, it is necessary to emphasize the potential of ‘flocks/swarms’ of remotely controlled means and the joint operation of piloted/controlled systems and remotely controlled or autonomous systems. Both areas make it possible to compensate for the size of the armed forces (or even the unfavourable demographic development and lack of the required personnel) and to cover a wide range of tasks (from survey to direct encounter with the opponent). Similarly, the use of autonomous systems (elements of AI / machine learning) creates opportunities for the development of skills not only in ‘physical’ domains, but also in the already discussed cyberspace. Effective use of ‘flocks/swarms’ of UASs and UGSs depends on the necessity to have sensors, communication systems and systems processing a huge amount of data about the surrounding operation of these means (see the issue of cyberspace). At the same time, it is also necessary to answer the above-mentioned legal and ethical questions related to the use of autonomous systems in particular, ideally before their potential acquisition.

Augmented and virtual reality

In addition to the above-mentioned trend of ‘robotization of the battlefield’, projects are being developed that make it possible to achieve more effective interconnection between the human and the machine component using goggles, helmets or other devices in the human operator’s field of view. This is also associated with the above-mentioned term ‘metaverse’, although so far this term has been used more in the field of consumer or corporate solutions, rather than in the field of defence.

It is possible to identify the effort to provide all information from sensors to the human operator in real time and to eliminate the delay between the human response and the controlled system, while ensuring the execution of individual commands as if the person in control was identical with the system concerned. In 2021, pilots of American fighter aircraft of the fifth generation F-35 were equipped with a new type of helmet, enabling

¹⁵⁰ LANG, Pavel. VTÚ součástí připravovaného antidronového řešení. In: *VTÚ s.p.* [online]. 14. 1. 2021 [cit. 30.03.2022]. Available from: <https://www.vtusp.cz/en/aktuality/vtu-soucasti-pripravovaneho-antidronoveho-reseni/>

the formation of a comprehensive image from infrared cameras and other connected sensors and providing information about the entire surrounding environment, including the position of the opponent. These helmets are gradually undergoing new revisions eliminating technical deficiencies and discomfort for pilots.¹⁵¹

The discussed area is very closely connected with technologies enabling the creation of the so-called augmented reality (AR) or virtual reality (VR) and, if possible, full human involvement and interaction therewith. In this sense, the importance of information technologies and cyberspace, usable not only in the above-described (combat) activities, but also in planning combat operations and training and preparation of combat units, is emphasized again. The development of augmented and virtual reality makes it possible to simulate very faithfully, in our case, combat situations and environments which the units will operate in, including the possible behaviour of the opponent. Similar applications can also be identified for 'non-combat' activities (e.g., healthcare or logistics). While the use of these technologies directly in combat is subject to long-term transformation and investments, in 2021, augmented and virtual reality was already an integral part of training in the United States.¹⁵² Cyberspace and the phenomenon of 'metaverse', which we have dealt with above, are closely linked to the augmented and virtual reality.

Implications for the armed forces

In the area Prepare/Training, trends in the development of the human-machine interface enable, through augmented and virtual reality, increasing the effectiveness of training programs and simulating conditions for the needs of preparation of members of the Czech Armed Forces, for instance, closely resembling the real combat deployment. Currently, positive experience can be highlighted, among others, from the training of pilots, air controllers or service works in (aviation) technology, including the possibility of professional guidance or direct takeover of works by the manufacturer. Especially in training applications, it is also possible to consider interconnections with machine learning systems that could allow for better adaptation of the training load to the individual. Similar implications also arise for the areas C3 and Inform, including through the creation of a comprehensive image of the battlefield and its mediation to relevant entities.

Hypersonic technologies

Hypersonic technologies represent another area of strategic competition among major powers.¹⁵³ These weapons systems operate at speeds higher than Mach 5 (6125 km/h), which together with high their manoeuvrability makes them almost unstoppable by the current means of missile defence. The hypersonic phase of their flight generally occurs

¹⁵¹ COHEN, Rachel. F-35 helmets that fix 'green glow' are on their way – but not to the Air Force. In: *Air Force Times* [online]. 8. 12. 2021 [cit. 30.03.2022]. Available from: <https://www.airforcetimes.com/news/your-air-force/2021/12/08/f-35-helmets-that-fix-green-glow-are-on-their-way-but-not-to-the-air-force/>

¹⁵² MAYFIELD, Mandy. Virtual, Augmented Reality Tech Transforming Training. In: . 17. 2. 2021 [cit. 30.03.2022]. Available from: <https://www.nationaldefensemagazine.org/articles/2021/2/17/virtual-augmented-reality-tech-transforming-training>

¹⁵³ TEMIN, Tom. Great power competition requires security, agility, speed. In: *Federal News Network* [online]. 6. 12. 2021 [cit. 30.03.2022]. Available from: <https://federalnewsnetwork.com/federal-insights/2021/12/great-power-competition-requires-security-agility-speed/>

during the return from space or its close proximity to the atmosphere or during their atmospheric flight powered by rocket or scramjet propulsion. Examples of these technologies are hypersonic glide vehicles (HGV) or hypersonic cruise missile (HCM). Due to the velocities achieved, these systems can rely primarily on kinetic destructive effects. On the other hand, they can also be used as carriers of conventional or nuclear warheads. Similar attention is paid to anti-ship missiles, which are considered in Chinese strategic thinking to be the ideal means to ensure A2/AD capability against the American navy (aircraft carrier groups), at least for the South China Sea, East China Sea, and Yellow Sea regions. Several important tests of hypersonic weapons were conducted in 2021. The PRC reportedly successfully tested a hypersonic missile able to carry a nuclear warhead in August 2021. The missile orbited the planet and accelerated using its own propulsion before hitting the target.¹⁵⁴ At the end of the year, there was a successful test of the Russian hypersonic missile Zirkon, which can develop the speed of nine times the speed of sound, has a range of about 1000 km and can hit targets on land and at sea.¹⁵⁵ These new abilities can bring about a new era of the arms race. According to US officials responding to Chinese and Russian successful tests in 2021, there is no effective defence against hypersonic missiles, at least not in the form known to ‘traditional’ missile defence.¹⁵⁶ Of course, developments in the hypersonic field are also taking place in the United States, however, faced with bigger problems so far. Several tests of US hypersonic gliders were conducted in the autumn of 2021. One of the tests was unsuccessful when the booster rocket carrying the hypersonic weapon failed.¹⁵⁷

Implications for the armed forces

From the point of view of the level of development of hypersonic technologies, and especially the associated economic costs, these weapons systems do not constitute an immediate option for increasing the capabilities of the ACR. This area is currently the privilege for only a few of the largest global players. On the other hand, following the Czech Republic’s membership in NATO, the assumption that these systems pose a clear challenge to the effective provision of defence against them, i.e., missile protection (the Protect area of capabilities), cannot be neglected. Thus, even the ACR should gradually take into account the increasing capabilities on the part of potential opponents, both at the practical and conceptual levels.

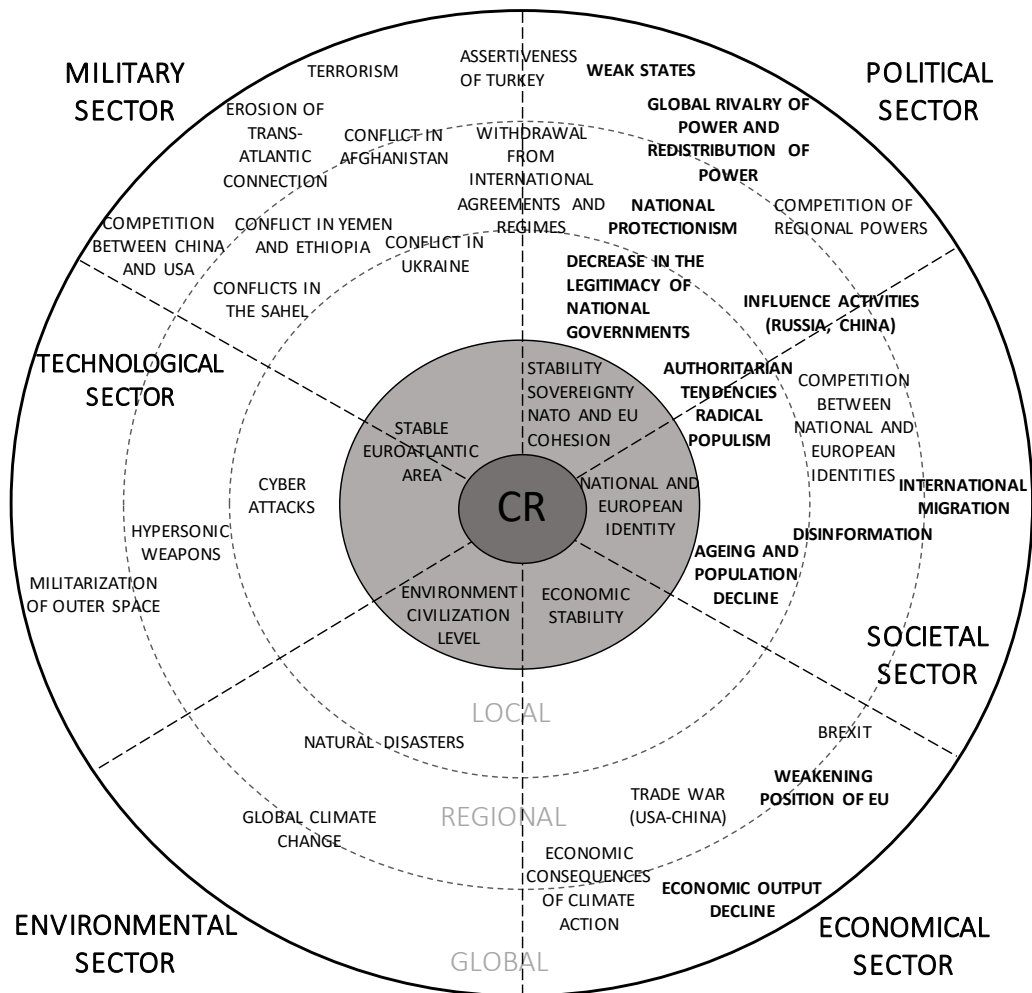
¹⁵⁴ RITCHIE, Hannah. China denies testing a nuclear-capable hypersonic missile, says it was a spacecraft. In: *CNN* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.cnn.com/2021/10/18/china/china-hypersonic-missile-spacecraft-intl/index.html>

¹⁵⁵ Putin oznámil další “bezchybný a úspěšný” test hypersonické střely Cirkon. In: *iROZHLAS* [online]. 2021 [cit. 30.03.2022]. Available from: https://www.irozhlas.cz/zpravy-svet/rusko-test-hypersonicke-strely-cirkon-vladimir-putin_2112241958_kro

¹⁵⁶ SANGER, David E. a William J. BROAD. China’s Weapon Tests Close to a ‘Sputnik Moment,’ U.S. General Says. *The New York Times* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.nytimes.com/2021/10/27/us/politics/china-hypersonic-missile.html>

¹⁵⁷ STONE, Mike a Idrees ALI. Rocket failure mars U.S. hypersonic weapon test as others succeed. *Reuters* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.reuters.com/business/aerospace-defense/rocket-failure-delays-us-hypersonic-weapon-test-sources-2021-10-21/>

GRAPH OF THE SECTORAL ANALYSIS



Legend: The results of the sectoral analysis - the identified relevant threats in 2021 - are divided here according to the relevant sectors, i.e. according to the nature of the protected value or interest of the Czech Republic that they threaten (e.g. stability of the Euro-Atlantic area or the environment). Threats are placed in concentric circles reflecting their levels of action: local, regional and global. Some challenges manifest themselves simultaneously in multiple sectors and at multiple levels. The most relevant threats are listed here in bold.

SOURCES

AČR. Nábor do armády v roce 2021: Rekrutéři se zaměřili na odborníky. Armáda České republiky. Available from: <https://acr.army.cz/informacni-servis/zpravodajstvi/nabor-do-armady-v-roce-2021:-rekruteri-se-zamerili-na-odborniky-232690/>

AMOS. Lift-off for European Union's new space programme. *BBC News* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.bbc.com/news/science-environment-57573698>

Army orders small unmanned ground vehicle from FLIR for explosives detection and threat surveillance. In: *Military Aerospace* [online]. 9. 4. 2021 [cit. 30.03.2022]. Available from: <https://www.militaryaerospace.com/unmanned/article/14200987/unmanned-explosivesdetection-ground-vehicle>

BACHELET, Michelle. Intensifying widespread, systematic slaughter by Myanmar military must be halted. UN Office of the High Commissioner for Human Rights, 13.4.2021

BEKTIL, B. E. Ukraine is set to buy 24 Turkish drones. So why hasn't Russia pushed back? [online]. 2021 [cit. 2022-01-21]. Available from <https://www.defensenews.com/unmanned/2021/09/29/ukraine-is-set-to-buy-24-turkish-drones-so-why-hasnt-russia-pushed-back/>

BELLINGCAT. Senior GRU Leader Directly Involved With Czech Arms Depot Explosion, 2021. <https://www.bellingcat.com/news/2021/04/20/senior-gru-leader-directly-involved-with-czech-arms-depot-explosion/>

BLABLOVÁ, Veronika. Čínská vakcínová diplomacie v praxi, AMO, 4.3.2021. https://www.amo.cz/wp-content/uploads/2021/02/Mapinfluence_cinska-vakcinova-diplomacie-v-praxi_tabulka_2021_03_05_CZ_03.pdf

BLINKEN, Anthony J. The United States Officially Rejoins the Paris Agreement. *U.S. Department of State* [online]. 19. 2. 2021 [cit. 2022-02-03]. Available from: <https://www.state.gov/the-united-states-officially-rejoins-the-paris-agreement/>

BOHÁČ, Vojtěch. Když začne válka ve vesmíru, zhroutí se úplně všechno, říká šéf Satelitního centra Vojenského zpravodajství. In: *VOXPOT* [online]. 11. 1. 2021 [cit. 29.03.2022]. Available from: <https://www.voxpot.cz/kdyz-zacne-valka-ve-vesmiru-zhrouti-se-uplne-vsechno-rika-sef-satelitniho-centra-vojenskeho-zpravodajstvi/>

BORGOMEIO, Edoardo. *Ebb and Flow: Volume 2. Water in the Shadow of Conflict in the Middle East and North Africa*. World Bank Group, 2021. ISBN 978-1-4648-1748-9. Available from: <https://openknowledge.worldbank.org/handle/10986/36090>

BOTÍK, M. Rozhovor s plk.gšt. M. Botíkem, bývalým příslušníkem mise v Mali, dne 20.10.2021

BUCHTÍK, M et al. Jedna společnost, různé světy. Poznatky kvalitativní studie o fragmentarizaci české společnosti. Friedrich Ebert Stiftung, Masarykova demokratická akademie. Available from: <https://www.stem.cz/wp-content/uploads/2021/06/Jedna-spolec%CC%8Cnost-%E2%80%93-ru%CC%8Azne%CC%81-sve%CC%8Cty.pdf>

COHEN, Rachel. F-35 helmets that fix 'green glow' are on their way – but not to the Air Force. In: *Air Force Times* [online]. 8. 12. 2021 [cit. 30.03.2022]. Available from: <https://www.airforcetimes.com/news/your-air-force/2021/12/08/f-35-helmets-that-fix-green-glow-are-on-their-way-but-not-to-the-air-force/>

DAWES, James. UN fails to agree on „killer robot“ ban as nations pour billions into autonomous weapons research. In: *The Conversation* [online]. 2021 [cit. 30.03.2022]. Available from: <http://theconversation.com/un-fails-to-agree-on-killer-robot-ban-as-nations-pour-billions-into-autonomous-weapons-research-173616>

DELOITTE. Výhled české ekonomiky na rok 2021. [online]. Available from: <https://www2.deloitte.com/content/dam/Deloitte/cz/Documents/about-deloitte/deloitte-vyhled-ceske-ekonomiky-na-2021.pdf>

E15.cz. Západ možná obětuje Nord Stream 2. Plynovodu hrozí další americké sankce. [online]. Available from: <https://www.e15.cz/zahranicni/zapad-mozna-obetuje-nord-stream-2-plynovodu-hrozi-dalsi-americke-sankce-1386839>

EK. Stav Unie v roce 2021. Předsedkyně Ursula von der Leyen. [online]. Available from: https://ec.europa.eu/info/sites/default/files/soteu_2021_achievements_and_timeline_cs.pdf

EU Agency for the Space Programme. 2021 [cit. 29.03.2022]. Available from: <https://www.euspa.europa.eu/>

EUROPEAN COMMISSION. EU and China reach agreement in principle on investment, 30.12.2020. <https://trade.ec.europa.eu/doclib/press/index.cfm?id=2233>

EUROPEAN COMMISSION. Global Gateway: up to €300 billion for the European Union's strategy to boost sustainable links around the world, 1.12.2021. https://ec.europa.eu/commission/presscorner/detail/en/ip_21_6433

EUROPEAN COMMISSION. The EU strategy for cooperation in the Indo-Pacific, 16.9.2021. https://eeas.europa.eu/sites/default/files/jointcommunication_2021_24_1_en.pdf

EUROPEAN COMMISSION. *Launch by United States, the European Union, and Partners of the Global Methane Pledge to Keep 1.5C Within Reach* [online]. 2. 11. 2021 [cit. 2022-01-26]. Available from: https://ec.europa.eu/commission/presscorner/detail/en/statement_21_5766

EUROPEAN COUNCIL. Belarus: EU adopts 5th package of sanctions over continued human rights abuses and the instrumentalisation of migrants, 2.12.2021. <https://www.consilium.europa.eu/en/press/press-releases/2021/12/02/belarus-eu-adopts-5th-package-of-sanctions-over-continued-human-rights-abuses-and-the-instrumentalisation-of-migrants/>

EUROPEAN COUNCIL. Restrictive measures against Belarus, 2021. <https://www.consilium.europa.eu/en/policies/sanctions/restrictive-measures-against-belarus/>

EUROPEAN PARLIAMENT. Press release: MEPs refuse any agreement with China whilst sanctions are in place, 20.5.2021. <https://www.europarl.europa.eu/news/en/press-room/20210517IPR04123/meps-refuse-any-agreement-with-china-whilst-sanctions-are-in-place>

EVROPSKÁ CENTRÁLNÍ BANKA. Ekonomický bulletin 08/2021. [online]. Available from: https://www.cnb.cz/export/sites/cnb/cs/o_cnb/.galleries/mezinarodni_vztahy/ecb_escb/ekonomicky_bulletin_ecb/download/ecb_eb202108cz.pdf

EVROPSKÁ KOMISE. Dohoda mezi EU a Spojeným královstvím o obchodu a spolupráci, 2021. https://ec.europa.eu/info/strategy/relations-non-eu-countries/relations-united-kingdom/eu-uk-trade-and-cooperation-agreement_cs

EVROPSKÁ KOMISE. *Sdělení Komise Evropskému parlamentu, Radě, Evropskému hospodářskému a sociálnímu výboru a Výboru regionů: Vytvoření Unie odolné vůči změně klimatu - nová strategie EU pro přizpůsobení se změně klimatu* [online]. 2021 [cit. 2022-03-31]. Available from: <https://eur-lex.europa.eu/legal-content/CS/TXT/HTML/?uri=CELEX:52021DC0082&from=EN>

EVROPSKÁ RADA a RADA EU. *Balíček „Fit for 55“* [online]. nedat. [cit. 2022-03-31]. Available from: <https://www.consilium.europa.eu/cs/policies/green-deal/fit-for-55-the-eu-plan-for-a-green-transition/>

EVROPSKÝ P EVROPSKÝ PARLAMENT a RADA EVROPSKÉ UNIE. *Nařízení Evropského parlamentu a Rady (EU) 2021/1119 ze dne 30. června 2021, kterým se stanoví rámec pro dosažení klimatické neutrality a mění nařízení (ES) č. 401/2009 a nařízení (EU) 2018/1999 („evropský právní rámec pro klima“)* [online]. 2021 [cit. 2022-03-31]. Available from: <https://eur-lex.europa.eu/legal-content/CS/TXT/?uri=CELEX:32021R1119>

FEMIA, Francesco a Caitlin WERRELL. Is it Time to “Climatize” the UN Security Council?. *The Center for Climate and Security* [online]. 2021, 17. 12. 2021 [cit. 2022-01-26]. Available from: <https://climateandsecurity.org/2021/12/is-it-time-to-climatize-the-un-security-council/>

Foreign Drones [online]. 2021 [cit. 2022-01-21]. Available from: [Foreign Drones Tip the Balance in Ethiopia's Civil War - The New York Times \(nytimes.com\)](https://www.nytimes.com/2021/01/21/world/africa/foreign-drones-tip-the-balance-in-ethiopia-civil-war.html)

FORSTER, Piers a Zeke HAUSFATHER. Analysis: Do COP26 promises keep global warming below 2C?. *CarbonBrief* [online]. 10. 11. 2021 [cit. 2022-01-26]. Available from: <https://www.carbonbrief.org/author/zekehausfather>

Fragile State Index. Country Dashboard, Czechia. Fragile State Index. Available from: <https://fragilestatesindex.org/country-data/>.
Fragile States Index. [online]. 2021 [cit. 2022-01-21]. Available from: <https://fragilestatesindex.org/data/>

FRANCE24. *Iranians gather in mass protest against water crisis caused by dried-up river*. France24 [online]. 19. 11. 2021 [cit. 2022-01-27]. Available from: <https://www.france24.com/en/middle-east/20211119-iranians-gather-in-mass-protest-against-water-crisis-caused-by-dried-up-river>

FUTURE EARTH, THE EARTH LEAGUE AND WCRP. *10 New Insights in Climate Science 2021* [online]. 2021 [cit. 2022-01-31]. Available from: <https://10insightsclimate.science/>

Global Hunger Index. [online]. 2021 [cit. 2022-01-21]. Available from: <https://www.globalhungerindex.org/about.html>

GOULD, J. China plans to double nuclear arsenal, Pentagon says [online]. 2021 [cit. 2022-01-21]. Available from: <https://www.defensenews.com/congress/2020/09/01/china-planning-to-double-nuclear-arsenal-pentagon-says/>

GROHMANN, Jan. STRATOM a GOLEM: Česká republika jako kosmická velmoc. In: *armadinoviny.cz* [online]. 2021 [cit. 29.03.2022]. Available from: <https://www.armadinoviny.cz/stratom-a-golem-ceska-republika-jako-kosmicka-velmoc.html>

GUTERRES, Antonio. Press Conference by Secretary-General António Guterres at United Nations Headquarters, 26.10.2021. <https://www.un.org/press/en/2021/sgsm20993.doc.htm>

HÁJKOVÁ, D. ŠNOBL, R. Proč je inflace v současnosti vysoká a jak dlouho tu s námi bude. Česká národní banka. 17.1.2022. [online]. Available from: https://www.cnb.cz/cs/o_cnb/cnblog/Proc-je-inflace-v-soucasnosti-vysoka-a-jak-dlouho-tu-s-nami-bude/

HANUŠOVÁ, M. Armádě veřejnost věří díky pomoci při pandemii i tornádu. Technicky ale za světem pokulhá, Hospodářské noviny. 4. 10. 2021. Available from: <https://archiv.hn.cz/c1-66981300-armade-verejnost-veri-diky-pomoci-pri-pandemii-i-tornadu-technicky-ale-za-svetem-pokulhava>

HANZLOVÁ, R. Důvěra k vybraným institucím veřejného života - srpen/září 2021. Centrum pro výzkum veřejného mínění. Available from: <https://cvvm.soc.cas.cz/cz/tiskove-zpravy/politicke/politicke-ostatni>

HANZLOVÁ, R. Sympatie české veřejnosti k některým zemím - listopad/prosinec 2021. Centrum pro výzkum veřejného mínění. Available from: <https://cvvm.soc.cas.cz/cz/tiskove-zpravy/politicke/mezinarodni-vztahy/5530-sympatie-ceske-verejnosti-k-nekterym-zemim-listopad-prosinec-2021>

HORÁK, Jan. Testování, převoz pacientů i nemocniční služby. Armáda poslala na covid 17 000 vojáků. Aktuálně.cz. Available from: <https://zpravy.aktualne.cz/domaci/armada-nasadila-proti-covidu-17-000-vojaku-testuji-i-transpo/r-d8000aba729411eb9a61ac1f6b220ee8/>

China Building Two New Fields With 230 Nuclear ICBM Silos Able to Strike America - Reports [online]. 2021 [cit. 2022-01-21]. Available from: <https://militarywatchmagazine.com/article/china-new-230-icbm-silos-strike-america>

ICRC. Syria Water Crisis: Up to 40% less drinking water after 10 years of war. *Reliefweb* [online]. 1. 10. 2021 [cit. 2022-01-31]. Available from: <https://reliefweb.int/report/syrian-arab-republic/syria-water-crisis-40-less-drinking-water-after-10-years-war>

IMCCS. *The World Climate And Security Report 2021* [online]. 2021 [cit. 2022-01-27]. Available from: <https://imccs.org/the-world-climate-and-security-report-2021/>

IPCC. *Climate Change 2021: The Physical Science Basis: Summary for Policymakers* [online]. 2021 [cit. 2022-01-27]. Available from: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf

IROZHLAS. Lod', která sedm dní blokovala Suezský průplav, se konečně podařilo uvolnit. Pomalu odplouvá. [on-line]. Available from: https://www.irozhlas.cz/zpravy-svet/lod-blokujici-suez-castecne-vyprostena-agentura-ap_2103290703_btk

ISACHENKOV, Vladimír. Belarus president offers to host Russian nuclear weapons, 30.11.2021. <https://apnews.com/article/russia-ukraine-germany-migration-europe-ab1efae5e65bf01af3be2f6139ef6f4b>

Jak odšpuntovat světový obchod. [on-line]. Available from: <https://www.export.cz/nazory-a-analyzy/jak-odspuntovat-svetovy-obchod/>

JONES, Andrew. China is working on a lander for human moon missions. In: *SpaceNews* [online]. 9. 8. 2021 [cit. 29.03.2022]. Available from: <https://spacenews.com/china-is-working-on-a-lander-for-human-moon-missions/>

KÁBRT, M. NETUŠILOVÁ, P. ČNB. Evropský plán obnovy a jeho význam pro budoucnost evropské integrace. [online]. Available from: https://www.cnb.cz/cs/o_cnb/cnblog/Evropsky-plan-obnovy-a-jeho-vyznam-pro-budoucnost-evropske-integrace/

KERMANI, Secunder. The Taliban's secretive war against IS, 29.10.2021. <https://www.bbc.com/news/world-asia-59080871>

KIERNAN, Samantha, Serena TOHME, Kailey SHANKS, Basia ROSENBAUM. The Politics of Vaccine Donation and Diplomacy, 4.6.2021. <https://www.thinkglobalhealth.org/article/politics-vaccine-donation-and-diplomacy>

KIMMAGE, M., KOFMAN, M. Russia Won't Let Ukraine Go Without a Fight | [online]. 2021 [cit. 2022-01-21]. Available from: <https://www.foreignaffairs.com/articles/ukraine/2021-11-22/russia-wont-let-ukraine-go-without-fight>

KING'S COLLEGE LONDON. Build back better world (B3W) and the Belt and Road Initiative (BRI): prospects and limitations, 27.10.2021. <https://www.kcl.ac.uk/events/build-back-better-world-b3w-and-the-belt-and-road-initiative-bri-prospects-and-limitations>

LAKSHMANAN, Ravi. Hackers Exploit Log4j Vulnerability to Infect Computers with Khonsari Ransomware. In: *The Hacker News* [online]. 2021 [cit. 12.04.2022]. Available from: <https://thehackernews.com/2021/12/hackers-exploit-log4j-vulnerability-to.html>

LANG, Pavel. VTÚ součástí připravovaného antidronového řešení. In: *VTÚ s.p.* [online]. 14. 1. 2021 [cit. 30.03.2022]. Available from: <https://www.vtusp.cz/en/aktuality/vtu-soucasti-pripavovaneho-antidronoveho-reseni/>

LUBOLD, G. Saudi Arabia Pleads for Missile-Defense Resupply as Its Arsenal Runs Low. [online]. 2021 [cit. 2022-01-21]. Available from: <https://www.wsj.com/articles/saudi-arabia-pleads-for-missile-defense-resupply-as-its-arsenal-runs-low-11638878400>

MACEK, J. Co přinesl rok 2021 pro naše peněženky. [online]. Available from: <https://www.kurzy.cz/zpravy/626683-co-prinesl-rok-2021-pro-nase-penezenky/>

MAJCHÚT, I., BAKIČ. Russian-Baltic Relations. *Slovak Journal of International Relations, Faculty of International Relations, University of Economics in Bratislava 2021, Volume XIX., Issue 4, Pages 311 - 330 ISSN 1336-1562* (print)

MAYFIELD, Mandy. Virtual, Augmented Reality Tech Transforming Training. In: . 17. 2. 2021 [cit. 30.03.2022]. Available from: <https://www.nationaldefensemagazine.org/articles/2021/2/17/virtual-augmented-reality-tech-transforming-training>

MCMILLEN, Dave. Internet of Threats: IoT Botnets Drive Surge in Network Attacks. In: *Security Intelligence* [online]. 22. 4. 2021 [cit. 30.03.2022]. Available from: <https://securityintelligence.com/posts/internet-of-threats-iot-botnets-network-attacks/>

MINISTERSTVO ŽIVOTNÍHO PROSTŘEDÍ. *Strategie přizpůsobení se změně klimatu v podmínkách ČR* [online]. 2021 [cit. 2022-01-31]. Available from: https://www.mzp.cz/cz/zmena_klimatu_adaptacni_strategie

MPO. Dohoda o obchodu a spolupráci mezi EU a UK vstoupila dne 1. května 2021 v platnost. [online]. Available from: <https://www.mpo.cz/cz/zahranicni-obchod/o-brexitu/dohoda-o-obchodu-a-spolupraci-mezi-eu-a-uk-vstoupila-dne-1-kvetna-2021-v-platnost--261147/>

MVČR. Čtvrtletní zpráva o migraci IV. 2021, Ministerstvo vnitra České republiky. Available from: <https://www.mvcr.cz/migrace/clanek/ctvrtletni-zpravy-o-situaci-v-oblasti-migrace.aspx>

NASA. 2021 Tied for 6th Warmest Year in Continued Trend, NASA Analysis Shows. *Nasa.gov* [online]. 13. 1. 2022 [cit. 2022-01-26]. Available from: <https://www.nasa.gov/press-release/2021-tied-for-6th-warmest-year-in-continued-trend-nasa-analysis-shows>

NASA. Antarctic Sea Ice. *The Earth Observatory* [online]. 16. 6. 2016 [cit. 2022-01-26]. Available from: <https://www.earthobservatory.nasa.gov/features/Sealce/page4.php>

NASA. Arctic Sea Ice Extent. *Global Climate Change: Vital Signs of the Planet* [online]. 2022 [cit. 2021-03-05]. Available from: <https://climate.nasa.gov/vital-signs/arctic-sea-ice/>

NASA. Global Temperature. *Global Climate Change: Vital Signs of the Planet* [online]. 2022 [cit. 2021-03-05]. Available from: <https://climate.nasa.gov/vital-signs/global-temperature/>

Natoaktual. Zašpuntovaný Suez ukázal zranitelnost námořní dopravy, říká expert. [online]. Available from: https://www.natoaktual.cz/zpravy/suez-pruplav-namorni-doprava-koran-bezpecnost.A210330_085606_na_zpravy_m00

NOAA. 2021 was the sixth-warmest year on record for the globe. *National Centers for Environmental Information* [online]. 2022 [cit. 2022-01-26]. Available from: <https://www.ncei.noaa.gov/news/global-climate-202112>

NOAA. Data [online]. 2022 [cit. 2022-01-26]. Available from: ftp://aftp.cmdl.noaa.gov/products/trends/co2/co2_mm_mlo.txt

NOAA. *Tropical Cyclones - Annual 2021* [online]. 8. 2. 2022 [cit. 2022-01-31]. Available from: <https://www.ncdc.noaa.gov/sotc/tropical-cyclones/202113>

NOVÁK, M. Aktuálně.cz. [online]. Available from: <https://zpravy.aktualne.cz/zahranici/rusky-plynovod-rozdeluje-evropu-nemecko-nord-stream-2/r-d63ff042ad8a11eba22aac1f6b220ee8/>

Ongoing Colonial Pipeline Ransomware Attack is Unprecedented [online]. 2021 [cit. 30.03.2022]. Available from: <https://claroty.com/2021/05/10/blog-research-colonial-pipeline/>

OSBORNE, Charlie. Everything you need to know about the Microsoft Exchange Server hack. In: *ZDNet* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.zdnet.com/article/everything-you-need-to-know-about-microsoft-exchange-server-hack/>

Pegasus Project: Macron among world leaders selected as potential targets of NSO spyware. In: *Amnesty International* [online]. 20. 7. 2021 [cit. 30.03.2022]. Available from: <https://www.amnesty.org/en/latest/news/2021/07/world-leaders-potential-targets-of-nso-group-pegasus-spyware/>

POULSEN, Kevin, Robert MCMILLAN a Melanie EVANS. A Hospital Hit by Hackers, a Baby in Distress: The Case of the First Alleged Ransomware Death. *Wall Street Journal* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.wsj.com/articles/ransomware-hackers-hospital-first-alleged-death-11633008116>

POWER, John. As 'Great Firewall' looms, fears for Hong Kong's free internet. In: . 2021 [cit. 30.03.2022]. Available from: <https://www.aljazeera.com/economy/2022/2/17/as-great-firewall-looms-fears-for-hong-kongs-free-internet>

Putin oznámil další 'bezchybný a úspěšný' test hypersonické střely Cirkon. In: *iROZHLAS* [online]. 2021 [cit. 30.03.2022]. Available from: https://www.irozhlas.cz/zpravy-svet/rusko-test-hypersonicke-strely-cirkon-vladimir-putin_2112241958_kro

REES, W, BERMANT, A. Why does the UK want more nuclear weapons? | [online]. 2021 [cit. 2022-01-21]. Available from: <https://www.aspistrategist.org.au/why-does-the-uk-want-more-nuclear-weapons/>

RITCHIE, Hannah. China denies testing a nuclear-capable hypersonic missile, says it was a spacecraft. In: *CNN* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.cnn.com/2021/10/18/china/china-hypersonic-missile-spacecraft-intl/index.html>

ROGERS, Mike. Op-ed | Space race with China is not just a military competition. In: *SpaceNews* [online]. 29. 1. 2022 [cit. 29.03.2022]. Available from: <https://spacenews.com/op-ed-space-race-with-china-is-not-just-a-military-competition/>

ROTH, Andrew. European MPs targeted by deepfake video calls imitating Russian opposition. *The Guardian* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.theguardian.com/world/2021/apr/22/european-mps-targeted-by-deepfake-video-calls-imitating-russian-opposition>

RUSNOK, J. Guvernér ČNB. S inflací si poradíme, horší bude zvládnout přechod mezi světovou elitu. [online]. Available from: <https://www.cnb.cz/cs/verejnost/servis-pro-media/autorske-clanky-rozhovory-s-predstaviteli-cnb/S-inflaci-si-poradime-horsi-bude-zvladnout-prechod-mezi-svetovou-elitu/>

RUSSELL, Alison Lawlor. *Strategic A2/AD in Cyberspace*. Cambridge: Cambridge University Press, 2017

SANGER, David E. a William J. BROAD. China's Weapon Tests Close to a 'Sputnik Moment,' U.S. General Says. *The New York Times* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.nytimes.com/2021/10/27/us/politics/china-hypersonic-missile.html>

SECURITY COUNCIL REPORT. Bosnia and Herzegovina, 29.10.2021. <https://www.securitycouncilreport.org/monthly-forecast/2021-11/bosnia-and-herzegovina-6.php>

SECURITY COUNCIL REPORT. Bosnia and Herzegovina: Debate and EUFOR ALTHEA Reauthorisation, 2.11.2021. <https://www.securitycouncilreport.org/whatsinblue/2021/11/bosnia-and-herzegovina-debate-and-eufor-althea-reauthorisation-2.php>

SECURITY COUNCIL REPORT. *Climate Change and Security: Vote on a Resolution* [online]. 11. 12. 2021 [cit. 2022-01-31]. Available from: <https://www.securitycouncilreport.org/whatsinblue/2021/12/climate-change-and-security-vote-on-a-resolution.php>

SEMENOV, Kirill. Sudan coup could offer boon for Moscow. 28.10.2021. <https://www.al-monitor.com/originals/2021/10/sudan-coup-could-offer-boon-moscow>

SKOUMAL, Š. Světový nedostatek čipů. Co se vlastně děje? [online]. Available from: <https://roklen24.cz/svetovy-nedostatek-cipu-co-se-vlastne-deje/>

SPURNÝ, M. Důvěra v evropské a mezinárodní instituce - červenec 2021. Centrum pro výzkum veřejného mínění. Available from: <https://cvvm.soc.cas.cz/cz/tiskove-zpravy/politicke/mezinarodni-vztahy/5433-duvera-v-evropske-a-mezinarodni-institute-cervenec-2021>

STATISTA. Distribution of votes in the election to the State Duma, 2021. <https://www.statista.com/statistics/1264445/russia-parliamentary-election-results/>

STATISTA. Number of people vaccinated and fully vaccinated..., 2022. <https://www.statista.com/statistics/1239299/covid-19-vaccination-rate-in-russia/>

STELZENMÜLLER, Constanze. Nuclear weapons debate in Germany touches a raw NATO nerve, 19.11.2021. <https://www.brookings.edu/blog/order-from-chaos/2021/11/19/nuclear-weapons-debate-in-germany-touches-a-raw-nato-nerve/>

STONE, Mike a Idrees ALI. Rocket failure mars U.S. hypersonic weapon test as others succeed. *Reuters* [online]. 2021 [cit. 30.03.2022]. Available from: <https://www.reuters.com/business/aerospace-defense/rocket-failure-delays-us-hypersonic-weapon-test-sources-2021-10-21/>

SWAYNE, Matt. 2021: *The Year's Top Ten Stories in Quantum Computing and Quantum Technology* [online]. 2021 [cit. 30.03.2022]. Available from: <https://thequantuminsider.com/2021/12/31/2021-the-years-top-ten-stories-in-quantum-computing-and-quantum-technology/>

ŠIMEČKA, Martin M. O zmluve EÚ s Čínou, ktorá zahanbuje Európu a je víťazstvom Číny, 10.1.2021. <https://dennikn.sk/2218493/odkaz-mms-o-zmluve-eu-s-cinou-ktora-zahanbuje-europu-a-je-vitazstvom-ciny/>

ŠTRBOVÁ, M. „Soros kontra Babiš“. České parlamentné voľby sa nezaobisli bez dezinformácií. *Infosecurity.sk*. Available from: <https://infosecurity.sk/dezinfo/soros-kontra-babis-ceske-parlamentne-volby-sa-nezaobisli-bez-dezinformacii/>

TARANTOLA, A. 2021 was the year of the billionaire space race. In: *Engadget* [online]. 2021 [cit. 29.03.2022]. Available from: <https://www.engadget.com/in-2021-billionaires-headed-to-the-stars-210013764.html>

TARQUINIO, J. Alex. Macron Uses Biden's Afghan Retreat to Push 'Strategic Autonomy' [online]. 2021 [cit. 2022-01-21]. Available from: [France's Macron Uses Biden's Afghan Debacle to Push 'Strategic Autonomy' \(foreignpolicy.com\)](https://foreignpolicy.com/france/macron-uses-biden-s-afghan-debacle-to-push-strategic-autonomy/)

TAVERNEY, Thomas D. *Welcome to the NEW Space Race* [online]. 2022 [cit. 29.03.2022]. Available from: <https://www.airforcemag.com/article/welcome-to-the-new-space-race/>

TEMIN, Tom. Great power competition requires security, agility, speed. In: *Federal News Network* [online]. 6. 12. 2021 [cit. 30.03.2022]. Available from: <https://federalnewsnetwork.com/federal-insights/2021/12/great-power-competition-requires-security-agility-speed/>

The Armed Conflict Location & Event Data Project 2021. [online]. 2021 [cit. 2022-01-21]. Available from: <https://acleddata.com/#/dashboard>

THE WHITE HOUSE. President Biden and G7 Leaders Launch Build Back Better World (B3W) Partnership, 12.6.2021. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/06/12/fact-sheet-president-biden-and-g7-leaders-launch-build-back-better-world-b3w-partnership/>

THOMPSON, Jared, DOXSEE Catrina. 2022. Tracking the Arrival of Russia's Wagner Group in Mali. <https://www.csis.org/analysis/tracking-arrival-russias-wagner-group-mali>

TOLLAST, Robert. In 2021 we saw the future of drone warfare: bigger, faster and better armed. In: *The National* [online]. 24. 12. 2021 [cit. 30.03.2022]. Available from: <https://www.thenationalnews.com/world/2021/12/24/in-2021-we-saw-the-future-of-drone-warfare-bigger-faster-and-better-armed/>

U.S. DEPARTMENT OF STATE. *U.S.-China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s* [online]. 10. 11. 2021 [cit. 2022-03-31]. Available from: <https://www.state.gov/u-s-china-joint-glasgow-declaration-on-enhancing-climate-action-in-the-2020s/>

UN. *Climate Change ‘a Multiplier Effect’, Aggravating Instability, Conflict, Terrorism, Secretary-General Warns Security Council* [online]. 9. 12. 2021 [cit. 2022-01-31]. Available from: <https://www.un.org/press/en/2021/sgsm21074.doc.htm>

UN. *Security Council Fails to Adopt Resolution Integrating Climate-Related Security Risk into Conflict-Prevention Strategies* [online]. 2021, 13. 12. 2021 [cit. 2022-01-31]. Available from: <https://www.un.org/press/en/2021/sc14732.doc.htm>

UNITED NATIONS ENVIRONMENT PROGRAMME. *The Heat Is On. A world of Climate Promises Not Yet Delivered. Executive Summary* [online]. 2021 [cit. 2022-01-31]. Available from: <https://www.unep.org/resources/emissions-gap-report-2021>

UNITED NATIONS. Security Council Extends Mandate of European Union-Led Stabilization Force in Bosnia and Herzegovina for One Year, 3.11.2021. <https://www.un.org/press/en/2021/sc14685.doc.htm>

UNITED STATES DEPARTMENT OF JUSTICE. Nine Months Since the Jan. 6 Attack on the Capitol. 2021. <https://www.justice.gov/usao-dc/nine-months-jan-6-attack-capitol>

VINCENT, James. ‘Deepfake’ that supposedly fooled European politicians was just a look-alike, say pranksters. In: *The Verge* [online]. 30. 4. 2021 [cit. 30.03.2022]. Available from: <https://www.theverge.com/2021/4/30/22407264/deepfake-european-politicians-leonid-volkov-vovan-lexus>

VOROTNYUK, M. False De-escalation: The Continuing Russian Threat to Ukraine and the Black Sea Region | Royal United Services Institute (rusi.org) [online]. 2021 [cit. 2022-01-21]. Available from: <https://rusi.org/explore-our-research/publications/commentary/false-de-escalation-continuing-russian-threat-ukraine-and-black-sea-region>

Výhledy české ekonomiky pro rok 2022. Deloitte. [online]. Available from: <https://www2.deloitte.com/cz/cs/pages/about-deloitte/articles/vyhledy-ceske-ekonomiky.html>

WESTON, Georgia. The 5 Biggest Blockchain Trends In 2022. In: *101 Blockchains* [online]. 24. 1. 2022 [cit. 30.03.2022]. Available from: <https://101blockchains.com/blockchain-trends-in-2022/>

WMO. *State of the Global Climate 2021: WMO Provisional Report* [online]. 2021 [cit. 2022-01-31]. Available from: <https://reliefweb.int/report/world/wmo-provisional-report-state-global-climate-2021>

WOODRUFF SWAN, Betty, MCLEARY, Paul. Satellite images show new Russian military buildup near Ukraine, 1.11.2021. <https://www.politico.com/news/2021/11/01/satellite-russia-ukraine-military-518337>

AUTHORS

Richard Stojar, PhD.

Graduated from the Faculty of Arts, Masaryk University in Brno. Since 2002, he has been working at the University of Defence in Brno, currently at the Centre for Security and Military Strategic Studies. He focuses on the topic of security threats and risks posed by armed conflicts and the development of the security environment, especially in the region of South-Eastern Europe.

Vendula Divišová, PhD.

Between 2009-2012, she completed the Bachelor's degree in Political Science and Security and Strategic Studies at the Faculty of Social Studies, Masaryk University in Brno, in 2012-2015 she graduated from the Master's programme Security and Strategic Studies, and in 2020, she received her PhD. degree in Political Science at the same institution. Since 2018, she is a research fellow at the Centre for Security and Military Strategic Studies.

Dominika Kosárová, PhD.

In 2010 to 2015, she studied International Relations at the Faculty of Political Science and International Relations, Matej Bel University in Banská Bystrica. At the same time, between 2014 and 2015, she graduated from the Francophone Master's programme in Geopolitics implemented by the Faculty of Political Science and International Relations in cooperation with Université de Reims Champagne-Ardenne. She continued her doctoral studies at the Department of Security Studies and successfully defended her dissertation in 2018. Since 2018, she is a research fellow at the Centre for Security and Military Strategic Studies.

Libor Frank, PhD.

In 1993 to 1999, he completed his Political Science studies at the Faculty of Social Studies of Masaryk University in Brno and in 2006 he successfully completed his postgraduate studies there. Since 1999, he was a lecturer at the Department of Social Sciences at the Command and Staff Faculty of the Military Academy in Brno. Since 2000, he held positions at the Institute for Strategic Studies and follow-up institutions. Since 2014, he has been working at Centre for Security and Military Strategic Studies, University of Defence, currently as the Head of the Department of Security and Defence Studies. He is a lecturer at the University of Defence and CEVRO Institute.

Antonín Novotný, PhD. (Col. ret.)

In 1985, he graduated from the Military College of Ground Forces in Vyškov, and served at commands positions until 1988. In 1988-1991, he completed his postgraduate studies, Military Intelligence command-staff study programme. Subsequently, between 1991 - 2008, he served at various positions within Military Intelligence. Between 2008-2010, he worked as Defence Adviser at Permanent Delegation of the Czech Republic to NATO HQ and Permanent Mission of the Czech Republic to EU in Brussels, responsible for horizontal security and strategic issues. Since 2011, he is a research fellow at the Centre for Security and Military Strategic Studies, University of Defence.

Jan Břeň, PhD.

He completed his Bachelor's and follow-up Master's studies of Security Management at the University of Defence in Brno in 2011-2016. In 2016-2019, he completed the Forces

and Population Protection doctoral study programme at the University of Defence in Brno. Since 2019, he is a research fellow at the Centre for Security and Military Strategic Studies.

Adam Potočňák

In 2011-2015, he completed the Bachelor's programme Political Science and Security and Strategic Studies at the Department of Political Science, Faculty of Social Studies, Masaryk University in Brno. In 2015-2017, he earned his Master's degree in Security and Strategic Studies and currently he is a PhD. student at the same institutions. In 2015, he worked as a researcher and junior project manager at the Centre for European and North Atlantic Affairs (CENAA), with research focus on armed conflicts and political extremism and radicalism within security services. Since December 2019, he is a research fellow at the Centre for Security and Military Strategic Studies.

Vladimír Bízik

He received Master's degrees in Law and Legal Science at the Faculty of Law (2012) and in International Relations at the Faculty of Social Studies (2016), at Masaryk University in Brno. He also studied at Marmara University and Bilgi University in Istanbul, Turkey, and at the University of Nicosia in Cyprus. He worked at the International Institute of Political Science at Masaryk University and in non-profit organizations League of Human Rights and European Values Think-Tank. Currently, he is a PhD. student at the Faculty of Social Studies at Masaryk University in the field of International Relations and European Politics. Since August 2021, he is a research fellow at the Centre for Security and Military Strategic Studies of the University of Defence in Brno. He focuses on the issues of technology in international relations, cyber security, conditions of pacification of states, and politics of the Middle East.

Yvona Novotná, PhD.

In 1995 to 2001, she completed her International Politics and Diplomacy studies at the Faculty of International Relations of the University of Economics in Prague, and in 2008 she successfully defended her doctoral dissertation in International Political Relations at the same faculty. In 2004-2022, she worked as a lecturer of the Jan Masaryk Centre for International Studies at the Faculty of International Relations of the University of Economics in Prague. Since 2022, she is a research fellow at the Centre for Security and Military Strategic Studies of the University of Defence in Brno.

SUMMARY

This analytical study evaluates the development of the security environment of the Czech Republic in 2021. The study is based primarily on materials prepared by the Centre for Security and Military Strategic Studies, as well as on analytical materials prepared in countries which share the same or similar security environment and security interests. The study presents the results of a comparative analysis of available open sources and contains an evaluation of selected state and trans-national actors. For the purpose of the study, a sectoral analysis based on the principles of the Copenhagen School was used, describing the political, social, environmental, military, technological, and economic sectors. The study analyses the period of the past year 2021 and tries to capture the main events and trends in specific sectors with their impact on the security environment and to identify the implications for the defence policy and the armed forces. The results of the sectoral analysis are shown by the figure at the end of the study. Relevant threats identified in 2021 are aligned with the corresponding sectors, i.e., according to the nature of the protected value or the interest of the Czech Republic, which are endangered (e.g., the stability of the Euro-Atlantic area or the environment). At the same time, the threats are placed in homocentric circles reflecting the levels of their instrumentality: local - regional - global. Some of the challenges are manifested across multiple sectors and levels.

Security Environment. Sectoral Analysis and Implications for the Armed Forces of the Czech Republic 2021

Authors:

[Richard Stojar](#)

[Vendula Divišová](#)

[Dominika Kosárová](#)

[Libor Frank](#)

[Antonín Novotný](#)

[Jan Břeň](#)

[Adam Potočňák](#)

[Vladimír Bízik](#)

[Yvona Novotná](#)

Graphics and editing: Martin Blecha

Publisher: University of Defence, Brno

Year of issue: 2022

Issue: First

<https://www.unob.cz/en/csmss/Pages/Publications.aspx>