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SECTORAL ANALYSIS AND IMPLICATIONS
FOR THE CZECH ARMED FORCES 2022

Security Environment

SECTORAL ANALYSIS AND IMPLICATIONS FOR THE CZECH

ARMED FORCES 2022

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INTRODUCTION

The primary aim of this analytical study is to evaluate the broader security environment of the Czech Republic and its development in 2022. This study is prepared annually and, to a certain extent, allows for monitoring and identifying long-term development trends. The ambition of the Centre for Security and Military Strategic Studies (CBVSS, Centrum bezpečnostních a vojenskostrategických studií) of the University of Defence is to provide an alternative insight in this form and to contribute to 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 the materials compiled by the CBVSS. It presents the 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 this study, similar to the past. The political, societal, environmental, military, and economic sectors are described here. However, apart from this traditional definition, the technology sector is also included in this analysis because, due to the focus of the CBVSS it appropriately complements the basic sectors and was addressed in a separate publication in previous years. The text analyses the period of the year 2022 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. Standard 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 community of security experts.

As in previous years, the processed sectors and their conclusions primarily analyse the situation for the past year (2022) and do not include changes that occurred in the subsequent period. This applies mainly to the critical event, i.e. the Russian invasion of Ukraine and the ensuing high-intensity conflict, which has fundamentally affected all the sectors examined and described here.

Methodology

Compared to previous analyses from the CBVSS production, some more extensive changes in the methodological processing of the analysis and the use of available data have taken place. However, the specific nature of the analysed sectors is the reason for a different approach to their processing, therefore, a slightly different methodological framework was used for each sector. This approach was determined primarily by the availability of usable data, which was significantly different in each of the sectors of interest. However, each sector uses with a selected set of indicators, which, according to the authors working on individual sectors, enable analysing developments within the given sector, identify the main trends, or threats and risks to the security environment of the Czech Republic, and draw implications. A more detailed description of the methodological approach is provided in each chapter, i.e. for each sector. Due to the availability of current data and the overall relevance of individual sectors for the security environment of the Czech Republic, there is a particular difference in the scope between the respective sectors. In some cases, this difference is due to the overlap of the examined issues between sectors.

In the case of the military sector, we can also mention the follow-up analysis of developments from the perspective of the operating environment, which is also prepared annually by a separate CBVSS study. The sectoral analytical study addresses the implications for the armed forces of the Czech Republic resulting from the development of the security environment and the main trends. However, due to the high degree of variation in individual sectors, the study does not contain an overall conclusion that would describe all the implications of the analysis. Within each sector processed, a separate conclusion is presented for greater clarity, which summarises the implications identified therein.

POLITICAL SECTOR

The political sector is divided into two parts. First, as in previous years, we map the specific events that affected the development of the political sector in 2022, both at national (or intra-state) and international levels (including regional issues and relations between the superpowers, which were defined separately in the previous study). Subsequently, to better illustrate the development within the political sector and for the comparability of data with the following studies, six indicators were selected, namely: (1) democracy, (2) legitimacy of state power, (3) provision of public goods and services, (4) respect for human rights, or the rule of law, respectively, (5) corruption, and (6) political violence (in the form of terrorism). The choice of indicators was limited by the availability of data as of June 2023. Thus, they do not express the complete development in the political sector, but point to some partial trends that are characteristic of the political sector. Democracy is assessed using the Democracy Index developed by the Economist Intelligence Unit (2023); the legitimacy of state power, the provision of public goods and services, as well as respect for human rights, or the rule of law are based on the Fragile States Index published annually by the Fund for Peace (2023). Corruption Perceptions Index prepared by Transparency International (2023) was chosen to evaluate corruption and finally the Global Terrorism Index published by the Institute for Economics and Peace (Institute for Economics and Peace 2023) was used to assess political violence. In all cases, the most important data for 2022 is briefly presented and then the status and change of indicators in the world, in the European Union, and in the Czech Republic are evaluated, with each value assigned a specific score (the method of assigning scores is explained in the tables for the respective indicators). Subsequently, the change compared to the previous year is mapped in a similar way, which may take the form of stagnation, improvement, or deterioration. The assigned score will allow a better comparison of the development of the above-mentioned indicators.

Developments and events in 2022

In 2022, in the political sector, several states once again experienced a weakening of the government or domestic stability, which resulted in either government collapses (Slovakia, the United Kingdom), large-scale anti-government protests (Iran, the PRC, Kazakhstan), or coups (Burkina Faso). In some cases, it was a continuation of the problems of previous years (Belarus), while in others, new problems related to the economic situation, among others, came to the surface. While the pandemic was the central theme of anti-government sentiment in previous years, in 2022 this topic receded into the background (with the exception of the PRC, where strict anti-pandemic measures remained in force, while other states continued to relax their restrictions). At the international level, the topic of the Russian invasion of Ukraine dominated, which subsequently also affected the stability of the international order and can significantly affect the shape of the international system.

National level

In the **United Kingdom**, Prime Minister Boris Johnson resigned and was replaced by Liz Truss as the Conservative leader and Prime Minister. After the shortest time in office, she was subsequently replaced by another Conservative Rishi Sunak. In addition to changes in the Prime Minister post, the head of the monarchy changed after 70 years. After the death of Queen Elizabeth II, Charles III ascended the British throne, which led to a revival of the debate about the future of the Commonwealth. Shortly after the Queen's death, the Bahamas announced its intention to hold a referendum on the question of the constitution, i.e., whether King Charles III would be the head of state or the Bahamas would become a republic. Similar voices began to be heard in Australia and Canada. During the reign of Charles III, the trend present in the past will probably continue, i.e., the removal of the Crown in the Commonwealth states. In the Caribbean, criticism of the United Kingdom also took on another dimension, when, for example, Jamaica, but also other Caribbean states, raised demands for reparations for slavery.

Slovakia also experienced a government crisis, where internal political contradictions against the background of rising prices and enormously high inflation (the inflation rate in Slovakia was above the eurozone average) (European Central Bank 2023) resulted in the departure of the Sloboda a Solidarita (Freedom and Solidarity) party from the government coalition and the formation of a minority government. At the end of the year, however, the parliament passed a vote of no confidence in the government, which opened a discussion about early elections.

In **Belarus**, repression of the state against its population continued to suppress any sign of resistance against the regime of Alexander Lukashenko. Thus, Lukashenko has remained in power. On top of that, the latest surveys from 2022 indicate that people's trust in the state authorities increased after the Russian invasion of Ukraine in Belarus (compared to 2021) (Bikanau 2022). Belarus is currently one of the closest allies of the Russian Federation (in the words of Dmitry Peskov, the Kremlin spokesman, it is the 'number one ally') (Diary N 2022), which also allowed the Russian Federation to attack Ukraine from the Belarusian territory. After the invasion, Belarus was the only state from the Commonwealth of Independent States to unequivocally side with the Russian Federation. The war did not fundamentally change the perception of Russia by Belarus (71% have a positive attitude towards Russia, although the percentage of Belarusians who perceive Russia negatively increased from 10 to 20%) (Maks 2022), which is interpreted not only through shared history or nostalgia but also the dominance of the Russian narrative in the Belarusian information space. At the same time, a large majority of Belarusians (some sources report 85% (Chernyshova 2022), others over 90% (Slunkin 2022)) reject Belarus's direct involvement in the war in the sense of sending troops to Ukraine.

At the beginning of 2022, there were also protests in **Kazakhstan** associated with the increase in the price of natural gas and the doubling of fuel prices. President Tokayev violently suppressed the protests (calling the protesters terrorists), even with the participation of international forces sent for the first time by the states of the Collective Security Treaty Organization (mainly by the Russian Federation, but also by Belarus, Armenia, Tajikistan, and Kyrgyzstan). In addition to economic issues such as poverty, corruption, inequality of opportunity, or unfair distribution of wealth, the protesters also demanded the departure of the previous (and also the first) Kazakh President Nursultan Nazarbayev, who, despite his old age, served as the chairman of the Security Council and in fact continued to govern the state through people close to him. In the end, he resigned

due to the pressure of the protesters. President Tokayev blamed the government, 'Nazarbayev's extended arm', for the problems in the state and dismissed it along with several other high-ranking state officials (International Crisis Group 2022). He also promised a constitutional reform, which was subsequently voted on by the Kazakhs in a referendum. Among other things, the reforms deprive Nazarbayev of the title of 'Leader of the Nation' and the privileges associated with it (Congressional Research Service 2022), and strengthen the role of the parliament (thus, the presidential system will replace the previous 'super-presidential' one, although sceptics point out that democratisation cannot be expected and nothing fundamental will change) (Seliga 2022).

Against the background of the January protests, there were also concerns about how Moscow, an ally of Kazakhstan, would react to the situation, while it considers the northern part of the state to be historically Russian territory. There were even calls for the Kremlin to protect Russian-speaking people in this territory, reminiscent of the Russian narrative applied to Crimea (Hess 2022). Moscow, within the framework of international forces, helped its ally suppress the protests. Still, it was the Russian invasion of Ukraine that showed that Kazakhstan was not just a puppet of the Kremlin. Kazakhstan did not stand unequivocally on the side of the Russian Federation (it abstained in the UN vote condemning the invasion), did not recognise the republics in the Donbas, and announced that it supported the integrity of the Ukrainian border and wanted to strengthen energy cooperation with Europe (Hess 2022). Putin subsequently reminded Tokayev that 'the entire Soviet Union is historical Russia', which was interpreted as a hidden threat (Vasilko 2022a). In November, Russia even focused attention on Kazakhstan, calling it the 'next problem', where Nazi trials could allegedly begin similar to Ukraine (Auyezova, 2022), which the Kremlin uses in its propaganda to justify the invasion of Ukraine.

Large-scale protests broke out in **Iran** in mid-September 2022 due to the death of Mahsa Amini after the arrest by the Guidance Patrol because of an improperly worn hijab. The protests quickly escalated into demonstrations not only for women's rights, but also against the regime. Some protesters are even no longer 'just' demanding regime reform, but want an end to theocracy and the separation of religion from politics. Slogans such as 'away with the clergy' have also appeared. Iran primarily blames the US and Israel for the protests and responds to the protests with extensive arrests, intimidation, and brutality, while imprisoned protesters are subsequently threatened with a death sentence for the 'crime of hostility against God'. The protests did not stop even after three months, when Iran finally announced the abolition of its morality police.

In **Israel**, after a year, the government of Prime Minister Naftali Bennett fell and the fifth Knesset elections were held since 2019. They were won by former Prime Minister Benjamin Netanyahu and his Likud party. He formed the government together with ultra-Orthodox Jewish parties and the far-right Religious Zionism bloc, creating the most right-wing government in the history of Israel (Al Jazeera 2022a). It includes some controversial politicians, for example, previously accused of racist anti-Arab statements or support for terrorism or well-known for their statements about the annexation of the occupied territory by Israel (Associated Press 2022). This has raised concerns about how the impact of the new government on the Palestinian issue and Jewish-Palestinian relations in general.

There were two coups in **Burkina Faso** in Africa in 2022. Both were caused by the deteriorating security in the state and the government's inability to effectively counter the Islamist insurgent movement with links to Al-Qaeda and the Islamic State. Burkina

Faso recorded the highest number of deaths caused by terrorism in the world in 2022 (this is a 50% increase compared to the previous year) (Institute for Economics and Peace 2023). Due to the deteriorating security situation, Burkina Faso is also referred to as the 'new epicentre of the conflict in the Sahel' (Al Jazeera, 2022b). France, the partner of the previous president of Burkina Faso in the fight against terrorism, was also accused of ineffective action against Islamists. Therefore, the new president, Captain Ibrahim Traoré, announced that he would turn to new partners, including the Wagner Group, which also operates in neighbouring Mali (Sedgwick 2022).

It was the arrival of the Wagner Group in **Mali** and the related increase in Russian influence in the state that contributed to the EU's decision to suspend its training mission (Euractiv 2022a). The French, who worked here outside the EU operations, withdrew already at the beginning of the year after ten years, also due to an increase in anti-French sentiment in Mali, which is also apparent in other former French colonies. In these conditions, people seek an alternative in ensuring security in Russia, or in the Wagner group, which strengthens Russian influence in the region. However, it turns out that since the arrival of Wagner's group, the security situation in Mali has not only not improved, but continues to deteriorate. In half a year, the number of terrorist attacks increased by 30% (France24 2022), while the number of deaths from terrorism increased by more than half in 2022 compared to the previous year (Institute for Economics and Peace 2023). Not to mention that the Wagnerites themselves are accused of violence against civilians (Doxsee 2022) and violations of human rights (similar to the Central African Republic (Human Rights Watch 2022)).

In other African countries, developments in 2022 were also marked by domestic tensions, protests, or the strengthening of Russian influence. In **Sudan**, the protests were accompanied by the signing of a framework agreement between political parties and the army to allow a two-year period of transition towards elections (Diez 2022) and thus contribute to resolving the situation that had persisted since the military coup in 2021. Since the beginning of its operation, the new post-coup government has shown interest in strengthening ties with Russia, which, on the contrary, is interested in gold mining and establishing its own naval base, while Russian influence in Sudan is also ensured by the presence of the Wagner Group (Doxsee 2023). In addition to the Central African Republic, Mali, and Sudan, it is also present in **Libya**. However, despite the presence of Russian influence, the said states expressed different attitudes towards the Russian invasion of Ukraine. While, for example, Sudan was more restrained in condemning the invasion and limited itself to calls for a dialogue, the Libyan prime minister called the invasion a 'clear violation of international law and the sovereignty of democratic Ukraine'. (Ramani 2022)

While in previous years, several states saw anti-government protests related to anti-COVID measures, in 2022, this topic fell into background, with the exception of the **PRC**. Residents protested against the extended lockdown and the zero-COVID policy, with some protesters even demanding President Xi Jinping's resignation. In the meantime, he became the most powerful Chinese leader since Mao Zedong, when he was elected the leader of the Communist Party of China for the third time in October 2022. In response to the protests, the government finally significantly relaxed anti-COVID measures, or switched from the zero-COVID policy to the policy of herd immunity, which led to the worst wave of COVID-19 in the PRC so far in December 2022.

International level

At the international level, efforts to revive the Iranian nuclear deal to prevent Iran from acquiring nuclear weapons continued in 2022. In 2022, the level of uranium enrichment reached 60% (Ibraheem 2022), which is historically the highest for Iran. However, the situation was complicated by the Iranian regime's repression of protesters as well as Iranian supplies of drones to the Russian Federation. The states that had sought to restore the already controversially perceived agreement thus faced a new dilemma: what message this agreement would send to Ukraine and the protesting Iranian people. Finally, the US said that the Iranian nuclear agreement was not a priority at that moment (Reuters 2022) and thus. However, there was talk of a final proposal and the last stage of negotiations, there was no significant shift in this direction until the end of 2022.

In 2022, the international environment was dominated by the topic of the Russian invasion of Ukraine. Relations between **Russia** and **Ukraine** (or Russia and NATO) were already entering 2022 at an escalating level (see Security Environment 2021). In this atmosphere, a meeting of the NATO-Russia Council was held in January 2022 to reduce tensions in Eastern Europe and resolve the situation regarding Ukraine through dialogue (NATO 2022a). Still, despite efforts for a diplomatic solution, the conflict continued to escalate, especially after Russia recognised the independence of the Luhansk and Donetsk People's Republics on February 21, 2022 in violation of the Minsk Peace Agreements (from among the UN states, only Syria and North Korea subsequently recognised the separatist republics in the east of Ukraine). At the same time, by the decree on the recognition of republics, Putin was given the opportunity to order the Russian army to enter their territory with the alleged goal of 'promoting peace', which again increased the risk of a military conflict, already at an unprecedented level at the time. Only three days after the recognition of independence, this conflict turned into an outright armed one when Russia invaded Ukraine, not limiting itself 'only' to separatist republics. Thus, Russia committed aggression against a sovereign state in violation of international law (more about the war in Ukraine in the military sector). The escalation in the ongoing military conflict came after Putin announced their annexation to Russia in the autumn after pseudo-referenda in four Ukrainian regions (Donetsk, Luhansk, Kherson, and Zaporizhzhia regions) (this is de facto 18% of the Ukrainian territory). Putin argued that "southeastern Ukraine is part of Russia because it was part of the Russian Empire before, and because the Soviet Union liberated this area from the Nazis during World War II" (Vasilko 2022b). He also repeatedly reminded that in the east of Ukraine there was an alleged (but unconfirmed) genocide of Russian-speaking people by the 'Nazi' regime (Fortuin 2022). On the contrary, after the start of the invasion (which Russia referred to as a 'special operation' to 'denazify' Ukraine as part of its propaganda), it is Russia that Ukraine accuses of genocide of Ukrainians due to war crimes and crimes against humanity committed by Russian soldiers there (Sen 2022).

The invasion itself was condemned by the **United Nations** in March 2022, where 141 states out of 193 voted for a resolution calling on Russia to end the offensive and withdraw its armed forces from Ukraine. Only 5 states voted against it (in addition to Russia, Belarus, Eritrea, North Korea, and Syria) (United Nations 2022a). In another resolution of October 2022, the UN condemned Russia's attempt to annex part of Ukrainian territory, with 143 states voting in favour of the resolution and only 4 states (Belarus, North Korea, Nicaragua, and Syria) voting against it (United Nations 2022b).

A united voice was also heard from the **European Union**, which condemned the Russian aggression, supported Ukraine (including providing financial, humanitarian, political, and military support), and imposed unprecedented sanctions against Russia (sanctions also concerned Belarus for its role in the invasion and Iran, whose drones Russia uses in attacks on Ukraine) (European Union 2023). EU countries have also systematically severed economic and energy ties with Russia (Meister 2022). The war has thus contributed to the unification of allies within the EU, although, paradoxically, Putin has been trying to weaken this alliance for a long time. While the topic of the Russian invasion and its impact on food and energy security dominated the European Union, over time, old disputes began to surface, including complaints from EU countries about Hungary's steering away from the democratic rule of law, which led to the freezing of EU funds and the recovery plan for Hungary. Hungary subsequently exercised its veto over the €18 billion aid package for Ukraine. In the end, the aid package was adopted only after a compromise, with Hungary being frozen 'only' €6.3 instead of the original €7.5 billion under the EU funds, and with the approval of a recovery plan if it met the conditions set for the fight against corruption, public procurement, and independence of courts (European Commission 2022). The aid package was finally approved, despite the unexpected problem in the approval itself, when Poland expressed disagreement with the global corporate tax.

Similarly, **NATO** condemned the invasion and declared support for Ukraine (NATO 2023). Paradoxically, the invasion of Ukraine revived the issue of enlargement again, when Finland and Sweden applied for NATO membership in direct response to the invasion. Subsequently, both countries received an invitation and signed accession protocols. By the end of 2022, all NATO countries, with the exception of Hungary and Türkiye, had ratified the accession protocols of Sweden and Finland. Hungary claims that it supports the accession of both countries, although it has repeatedly refused to include a vote on their accession on the agenda of the meeting and plans to discuss it only at the first parliamentary meeting in 2023 (Euractiv 2022b). Turkish President Recep Tayyip Erdogan criticises in particular the alleged lax approach of both Scandinavian states towards entities such as the PKK, its Syrian branch PYD, as well as the Fethullah Gülen movement. However, as some sources point out, Ankara can also use ratification as a leverage in the planned purchase of F-16 combat aircraft from the US, while the fact that significant economic resources are flowing into Türkiye from Russia (Cagaptay, Singh and Akgundogdu 2022) may also play a role in the decision-making process. Ukraine itself filed an application for an accelerated accession to NATO after the Russian invasion. The Ukrainian ambassador in Berlin has even said that if Ukraine does not become a member of NATO, it may be forced to strive to acquire nuclear weapons in order to ensure its own security (Al Jazeera 2022c). It has also turned out that a record number of Ukrainians currently want to join NATO (83%, while only 4% are against (Euractiv 2022c)). In this context, NATO has expressed that it applies an open-door policy on the basis of Article 10 of the Washington Treaty, but the priority is currently to help Ukraine defend itself against the aggressor.

In these conditions, both the European Union and NATO have adopted new key strategic documents. On 21 March 2022, the European Council adopted the so-called **Strategic Compass**, which defines the threats and challenges of the EU in order to strengthen its own security and defence policy by 2030, thus achieving a stronger and more resilient

position. In addition, the EU shows its commitment to bear its share of responsibility for global security also through crisis management operations, with the future of Africa in particular being defined as strategically important for the EU (Council of the European Union 2022). At the NATO summit in Madrid in June 2022, the so-called **NATO Strategic Concept** was adopted, which aims to continue the strategic adaptation of NATO and focus on its future political and military development (NATO 2022b). Thus, the EU and NATO must gradually adapt to the new security situation in the international environment and deepen not only existing mutual cooperation but also cooperation with other regional organisations, such as the OSCE. At the same time, these two key documents were a major impetus for the launch of the update of the strategic security documents of the Czech Republic in 2022.

The war in Ukraine, which was supposed to lead to the strengthening of Russian power from the point of view of the Kremlin, resulted in the exact opposite. Not only are unprecedented sanctions imposed on the **Russian Federation**, but also anti-government protests broke out in Russia after Putin announced partial mobilisation. The percentage of Russians who support the war in Ukraine has also slightly decreased (from 80% in March to 72% in September (Buchholz 2022)) despite the massive spread of government propaganda. Moreover, the invasion has led to the unification of the West, despite the fact that the Kremlin has long sought the exact opposite, while some traditional allies in Central Asia also turn away from Putin. Thus, the Russian Federation was reduced to maximum isolation, with only four countries of the world (with authoritarian regimes) refusing to condemn Putin's actions in Ukraine. This led to changes in the international system, with some sources talking about the end of the post-Soviet order (Laruelle 2022). Last but not least, another prominent global actor, the People's Republic of China, can benefit from the invasion.

The attitude of **the PRC** towards the invasion of Ukraine can also be perceived through the prism of China's geostrategic rivalry with the US. The PRC has not described the Russian actions against Ukraine an invasion and has not directly blamed Russia for the conflict, but instead leans towards the narrative spread by the Kremlin, according to which the West, led by the US, is responsible for the long-term problems that have resulted in the conflict. In general, China would abstain from voting on resolutions condemning Russia's actions at the UN, so its position cannot be described as explicitly anti-Russian, but neither anti-Ukrainian. China has no interest in Moscow suffering a crushing defeat (Kusa 2022). President Xi Jinping has close relations with Putin, and in December 2022, China and Russia even conducted a joint military exercise in the East China Sea. At the same time, China is interested in maintaining stability in Ukraine. This is due to significant Chinese investments as well as the fact that Kyiv is part of China's Belt and Road Initiative. Not to mention that China itself faces the threat of separatism in the border regions, where, moreover, imperial Russia and the Soviet Union have traditionally had interests. Despite close relations with Russia and problematic relations with the US, the PRC is trying to at least publicly adopt a relatively neutral attitude towards the conflict and calls for dialogue. At the same time, however, the Russian invasion indirectly increased tensions in the Taiwan Strait, where fears of a potential Chinese invasion of Taiwan grew. In this context, tensions also increased in Sino-American relations, as Joe Biden confirmed that in the event of an invasion, the US would defend Taiwan (Maizland 2022). In this context, the US adopted the so-called Taiwan Policy Act in 2022 in order to deter Beijing from a potential invasion. The document identifies

Taiwan as the closest US ally outside NATO and warns of harsh anti-Chinese sanctions in the event of an invasion (The Taiwan Policy Act of 2022). In August 2022, Nancy Pelosi visited Taipei as the first Speaker of the House of Representatives in 25 years, to which Beijing responded with an extensive military exercise. Thus, tensions in the Taiwan Strait and in relations between Beijing and Washington remain at a high level.

Moreover, in response to the ongoing changes in the global distribution of power (Kewalramani 2022), the PRC presented its own vision of the world order, the so-called **Global Security Initiative** (GSI), in April 2022. It is an alternative to the current geopolitical order, dominated by liberal democracies led by the US. The strategy consists of six points: (1) maintaining common, comprehensive, cooperative, and sustainable security; (2) respect for the sovereignty and territorial integrity of all states; (3) respect for the principles of the UN Charter, (4) peaceful resolution of disputes between states; (5) maintaining security in both traditional and non-traditional domains; (6) recognition of the indivisibility of security. In principle, it is a regrouping of the already existing principles under a new umbrella. The initiative builds on the Global Development Initiative (GDI) already presented in the previous year (see Security Environment 2021) and is part of the Chinese president's broader diplomatic efforts to promote his own vision of the world order and China's solutions to the challenges (Freeman and Stephenson 2022). The PRC took advantage to present this new initiative based on the opportunity in the form of the war in Ukraine, which was perceived differently (also due to the impact on food and energy security) by developed democracies and some less developed countries (Cash 2022). One of the regions where the PRC gained visibility in 2022 is the Persian Gulf, or the Arab world, where President Xi Jinping attended the first ever Sino-Arab summit in Saudi Arabia. This event is referred to as the beginning of a new era in Sino-Arab relations.

Evaluation of selected indicators

In order to illustrate the development in the political sector using quantitative indicators, six indicators were selected, namely: (1) democracy, (2) legitimacy of state power, (3) provision of public goods and services, (4) human rights and the rule of law, (5) corruption, (6) anti-state violence in the form of terrorism. These indicators are closely related to the current development described above within the political sector and their change may affect the stability of the state or political regime. Indicators are evaluated on the basis of existing datasets, or indices. The methodology of the indices used is explained below and some basic trends and results for 2022 are outlined. Subsequently, a self-assessment of the state and changes in indicators in the world, in the EU, and in the Czech Republic for 2022 is carried out. In order to assess the condition, the indicators are assigned a score from 1 to 5, where a higher value corresponds to a better condition. Where applicable, a + sign is added to the five, indicating that the best possible condition has been achieved. The change in condition is assessed on a scale from -2 to +2, where 0 indicates stagnation or a negligible change, -1 and -2 indicate a slight or significant deterioration, and +1 or +2 indicate a slight or significant improvement. This approach is primarily intended to unify the method of evaluation across indicators and thus simplify the identification of specific trends.

11: Democracy

The state of democracy is assessed on the basis of the so-called Democracy Index, which evaluates the state of democracy in countries around the world (with the exception of

microstates) and is published annually by the Economist Intelligence Unit (EIU). The EIU understands democracy as a system where citizens are free to make political decisions through majority rule, while minorities and individuals also have guaranteed rights. In addition, the government is able to implement the decision and a democratic political culture prevails in the system. At the same time, the EIU points out that democracy cannot be perceived dichotomously in the sense that states are or are not democracies. Instead, it ranks states on a scale ranging from non-democratic (i.e., authoritarian) regimes to full democracies, with a significant number of states located between these two extreme conditions, and thus can be described as flawed democracies (or democracies with deficiencies) or hybrid regimes. Full democracy is one where political rights and civil liberties are guaranteed, inter alia, by political culture, it is also characterised by freedom of the media, independent courts, and a functioning system of checks and balances. However, democracy may show certain shortcomings despite respect for fundamental political and civil rights (for example, problems in the government, political culture, etc.). If these deficiencies are of a more serious nature and, for example, elections take place, but they are not free or fair, it is already a hybrid regime. An authoritarian regime lacks political pluralism and, although there are some forms of democratic institutions, they cannot function effectively in such a regime and their relevance is minimal (Economist Intelligence Unit 2023).

In accordance with the above characteristics, the Democracy Index uses a system of 60 indicators in five categories: (1) the electoral process and pluralism, (2) the functioning of the government, (3) political participation, (4) political culture, (5) civil liberties. In each category, the state can score a maximum of 10 points, and the average value subsequently determines whether the state is a full democracy (score of 8 or more), a flawed democracy (6-7.99), a hybrid regime (4-5.99), or an authoritarian regime (less than 4).

The average value of the index itself has remained almost unchanged compared to 2021 and corresponds to a hybrid regime (5.29 compared to 5.28 in 2021). However, as many as 45% of countries (a total of 75) recorded an improvement in the resulting index in 2022 (which is significantly more than the 47 countries whose index increased in 2021), although on average, this improvement was almost negligible (an increase in the index by 0.15 on average). Although fewer countries (44 or 26%) experienced a deterioration in 2022, on average this deterioration was more pronounced (a decrease in the index by 0.21). The most significant deterioration was recorded by the Russian Federation in connection with the intervention in Ukraine (-0.96), followed by Burkina Faso, which faced two coups in 2022 due to the unsuccessful fight against Islamists, and Haiti, where the government is losing control of the state in favour of the drug cartels. In the remaining 48 countries (29%), the situation has not changed in terms of the overall index.

Table 1: States in terms of the degree of democracy.

	Number of states in 2021	Number of states in 2022	Change in 2022
Full democracy	21	24	+3
Flawed democracy	53	48	-5
Hybrid regime	34	36	+2
Authoritarian regime	59	59	0

Source: Authors according to the Economist Intelligence Unit (2022, 2023).

These results were described by the EIU as disappointing, as it was a period of lifting anti-pandemic measures, which raised expectations of a revival of democracy. The regions of the Middle East and North Africa as well as Latin America and the Caribbean experienced even further deterioration. The exception is Western Europe, where the average index increased by 0.14 in 2022, reaching the level from before the pandemic (the European Union itself also recorded an improvement, with the average index increased by 0.12) (Economist Intelligence Unit 2023).

Table 2: Democracy Index in individual regions defined by the EIU.

Region	Average index in 2022	Index change in 2022
North America	8.37	+0.01
Western Europe	8.36	+0.14
Latin America and the Caribbean	5.79	-0.04
Asia, Australia and Oceania	5.46	0.00
Eastern Europe ¹	5.39	+0.03
Sub-Saharan Africa	4.14	+0.02
Middle East and North Africa	3.34	-0.07
Total	5.29	+0.01

Source: Economist Intelligence Unit (2022, 2023).

Table 3: Countries with the lowest Democracy Index (the worst state of democracy) in 2022.

State	Democracy Index
Afghanistan	0.32
Myanmar	0.74
North Korea	1.08
Central African Republic	1.35
Syria	1.43
Democratic Republic of Congo	1.48
Turkmenistan	1.66
Chad	1.67
Laos	1.77
Equatorial Guinea	1.92

Source: Economist Intelligence Unit (2023).

In 2022, the Czech Republic improved its index by 0.23 points to a total value of 7.97 (improvement occurred in the field of political participation and civil liberties), thus reaching the first place in Eastern Europe, where it is ranked by the EIU, approaching the threshold of full democracy at the same. Although it was above the pre-pandemic level, it did not exceed the historical maximum of 8.19 (in 2008, 2010, 2011, and 2012).

For the purposes of this study, democracy is assessed as follows:

- *Table 4: State of democracy in 2022.*

¹ Including Russia and the post-Soviet states.

	Value	Score	Method of score allocation	
			Value	Score
Worldwide average	5.29	3	0.00-1.99 (authoritarian regime)	1
EU average	7.89	4	2.00-3.99 (authoritarian regime)	2
Condition in CR	7.97	4	4.00-5.99 (hybrid regime)	3
			6.0-7.99 (flawed democracy)	4
			8.00-10.00 (full democracy)	5

Source: Authors according to the Economist Intelligence Unit (2023).

The global average corresponds to a hybrid regime, while in the EU it is flawed democracy close to the threshold of full democracy. Similarly, the Czech Republic is only 0.03 points away from full democracy. In terms of the state of democracy, the Czech Republic thus occupied the same place as Greece and ranked 25th in the world (out of 167 countries evaluated) and 11th out of 27 EU countries.

- *Table 5: Change in the state of democracy compared to the previous year*

	Value	Score	Method of score allocation	
			Change in value	Score
Change in global average	+0.01	0	decrease by more than 1	
Change in EU average	+0.12	+1	decrease by 0.1 to 1	-2
Change in CR	+0.23	+1	-0.09 to +0.09	-1
			increase by 0.1 to 1	0
			increase by more than 1	+1
				+2

Source: Authors according to the Economist Intelligence Unit (2022, 2023).

Globally, there was a negligible improvement or stagnation in terms of the state of democracy. In the EU, the improvement was slightly more pronounced, while the Czech Republic recorded an above-average improvement within the EU. Compared to the previous year, the Czech Republic thus improved by 4 places on a global scale and by 2 places within the EU.

12: Legitimacy of state power

The legitimacy of state power is assessed on the basis of data published by the Fund for Peace think-tank within the Fragile States Index (FSI), where it takes into account the representativeness and openness of the government and its attitude to citizens. The FSI indicator monitors the level of trust of the population in state institutions and processes and assesses the impacts where this trust is lacking. These shortcomings can then be manifested by mass public demonstrations, permanent civil disobedience, or an increase in armed uprisings. The indicator assesses the integrity of elections and the representativeness of the government for the population it governs, assesses the openness of the government, precisely the openness of the ruling elites to transparency, accountability, and political representation, or, conversely, the degree of corruption,

clientelism, persecution or other exclusion of opposition groups. The indicator also takes into account the ability of the state to perform essential functions that arouse the trust of the population in their government and institutions (The Fund for Peace, 2017). It is rated on a scale from 0 to 10, when the higher value corresponds to a worse condition, and thus a lower legitimacy of the state power.

Table 6: States with the lowest legitimacy of state power from the point of view of citizens in 2022 according to the FSI.

State	Indicator in 2022
Syria	10
Haiti	9.9
Equatorial Guinea	9.9
Yemen	9.8
Turkmenistan	9.8
South Sudan	9.8
North Korea	9.8
Iran	9.8
Guinea	9.7
Eritrea	9.7

Source: The Fund for Peace (2023a).
Indicator of the legitimacy of state power: 0 (high) - 10 (low).

The average for 2022, based on analysis in 179 countries, was 5.74 index points. The highest value was 10 index points in Syria and the lowest value was 0.3 index points in Denmark.

For the purposes of this study, the indicator of the legitimacy of state power is evaluated as follows:

- *Table 7: Legitimacy of state power in 2022.*

	Value	Score	Method of score allocation	
			Value	Score
Worldwide average	5.74	3	0.0-1.9	5
EU average	2.22	4	2.0-3.9	4
Condition in CR	3.9	4	4.0-5.9	3
			6.0-7.9	2
			8.0-10.0	1

Source: Authors according to The Fund for Peace (2023a).

In terms of the indicator of the legitimacy of state power, the Czech Republic ranked 128th in the world (out of 179 evaluated countries) and 6th in the EU with the result of

3.9 index points, which is 0.3 index points better than in 2021. This at least slightly approaches the EU average, i.e. 2.22 index points.

- *Table 8: Change in the legitimacy of state power compared to the previous year.*

	Value	Score	Method of score allocation	
			Change in value	Score
Change in global average	+0.02	0	increase by more than 1	
Change in EU average	-0.15	+1		-2
Change in CR	-0.3	+1	increase by 0.1 to 1	-1
			-0.09 to +0.09	0
			decrease by 0.1 to 1	+1
			decrease by more than 1	+2

Source: Authors according to The Fund for Peace (2023a, 2023b).

Compared to the previous year, the Czech Republic improved by 3 places in the global ranking and by 1 place in the EU.

13: Provision of public goods and services

The provision of public goods and services is assessed on the basis of the ‘Public Services’ indicator, which is also part of the Fragile States Index. Within the FSI, it refers to the presence of basic state functions and services that are provided to the population. It includes the provision of basic services, such as health, education, water and sanitation, transport infrastructure, electricity, Internet, communication, and mobile networks. It also includes police services, the ability of the state to protect its citizens, for example, from terrorism and violence. Among other things, the indicator also monitors the effectiveness of the state, i.e. whether the state serves the ruling elites, such as security agencies, presidential staff, the central bank or the diplomatic service, what is the level of services for the general public, it compares rural versus urban population (The Fund for Peace 2017). The Fragile States Index is also evaluated on a scale from 0 to 10, when the higher value corresponds to a worse condition, and thus a lower rate of provision of goods and services.

Table 9: Countries with the worst state of public service provision in 2022 according to the FSI.

States	Indicator in 2022
Afghanistan	10
Central African Republic	10
Somalia	9.8
Haiti	9.8
South Sudan	9.7
Mozambique	9.7
Yemen	9.6

Chad	9.6
Niger	9.5
Guinea	9.4

Source: The Fund for Peace 2023a.

The average for 2022, based on analysis in 179 countries, was 5.46 index points. The highest value was 10 index points in the Central African Republic and Afghanistan, and the lowest value was 0.9 index points in Iceland.

For the purposes of this study, the effectiveness of governments in providing goods and services is assessed as follows:

- *Table 10: State of the provision of public goods and services in 2022.*

	Value	Score	Method of score allocation	
			Value	Score
Worldwide average	5.46	3	0.0-1.9	5
EU average	2.52	4	2.0-3.9	4
Condition in CR	2.9	4	4.0-5.9	3
			6.0-7.9	2
			8.0-10.0	1

Source: Authors according to The Fund for Peace (2023a).

In terms of the indicator of public goods and services, the Czech Republic ranked 144th in the global ranking (out of 179 evaluated countries) and 9th in the EU with the score of 2.9 index points, which is 0.3 index points better than in 2021. The average of this indicator for the EU is 2.52 index points, which the Czech Republic approached again, also due to the decline of this indicator in 2022.

- *Table 11: Change in the provision of public goods and services compared to the previous year.*

	Value	Score	Method of score allocation	
			Change in value	Score
Change in global average	-0.12	+1	increase by more than 1	
Change in EU average	-0.2	+1	increase by 0.1 to 1	-2
Change in CR	-0.3	+1	-0.09 to +0.09	-1
			decrease by 0.1 to 1	0
			decrease by more than 1	+1
				+2

Source: Authors according to The Fund for Peace (2023a, 2023b).

Compared to the previous year, the Czech Republic improved by 1 place in the global ranking, while within the EU it held the same position as in the previous year.

14: Human rights and the rule of law

Human rights, or the rule of law, are evaluated by the respectively titled indicator within the Fragile States Index. As one of the indicators of the fragility of states, it deals with the relationship between the state and its population, or the protection of basic human rights and respect for and observance of freedoms. The indicator monitors whether there are widespread abuses of legal, political, and social rights, including the rights of individuals, groups, and institutions (e.g. harassment of the press, politicisation of the judiciary, internal use of the army for political purposes, repression of political opponents, including civilians). It also takes into account factors such as denial of due process in accordance with international norms and practices for political prisoners or dissidents, or whether there is a current or emerging authoritarian, dictatorial, or military rule in which constitutional and democratic institutions and processes are suspended or eliminated (The Fund for Peace 2017). Here, too, the state can reach a maximum value of 10, which corresponds to the worst possible condition in terms of respect for human rights and the rule of law.

Table 12: Countries with the worst human rights and rule of law conditions in 2022 according to FSI.

State	Indicator in 2022
Iran	9.9
Yemen	9.6
North Korea	9.4
China	9.4
Libya	9.3
Democratic Republic of Congo	9.3
Myanmar	9.3
Russia	9.3
Egypt	9.2
Sudan	9.2

Source: The Fund for Peace 2023a.

The average for 2022, based on analysis in 179 countries, was 5.44 index points. The highest value was 9.9 index points in Iran and the lowest value was 0.4 index points in Switzerland, Norway, Austria, and Iceland.

For the purposes of this study, the indicator of human rights and the rule of law is evaluated as follows:

- *Table 13: State of respect for human rights and the rule of law in 2022.*

	Value	Score	Method of score allocation	
			Value	Score
Worldwide average	5.44	3	0.0-1.9	5
EU average	2.02	4	2.0-3.9	4
Condition in CR	1.9	5	4.0-5.9	3
			6.0-7.9	2
			8.0-10.0	1

Source: Authors according to The Fund for Peace (2023a).

In terms of the indicator of respect for human rights and the rule of law, the Czech Republic ranked 157th (out of 179 evaluated countries) and 10th in the EU with a score of 1.9 index points, which is 0.1 index points better than in 2021. With this result for 2022, the Czech Republic is below the overall EU average of 2.02 index points, continuing the downward trend.

- *Table 14: Change in the state of respect for human rights and the rule of law compared to the previous year.*

	Value	Score	Method of score allocation	
			Change in value	Score
Change in global average	+0.07	0	increase by more than 1	-2
Change in EU average	+0.11	-1	increase by 0.1 to 1	-1
Change in CR	-0.1	+1	-0.09 to +0.09	0
			decrease by 0.1 to 1	+1
			decrease by more than 1	+2

Source: Authors according to The Fund for Peace (2023a, 2023b).

Compared to the previous year, the Czech Republic improved by 1 place in terms of global placement, while its position in the EU did not change.

15: Corruption

Corruption will be assessed on the basis of the Corruption Perceptions Index prepared by Transparency International. The index evaluates how the level of corruption is perceived by entrepreneurs and experts in 180 countries. The resulting index has a value on a scale from 0 to 100, where the higher value corresponds to a better condition, and thus a lower perceived corruption. The 2022 index shows significant levels of perception of corruption in the world, with up to two-thirds of countries having an index below 50. From a regional point of view, Western Europe and the European Union are among the best with an average score of 66, while sub-Saharan Africa is the worst with an average score of 32 (Transparency International 2023).

Table 15: Countries with the worst perceived corruption in 2022 according to the CPI.

State	CPI 2022
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Somalia	12
South Sudan	13
Syria	13
Venezuela	14
Yemen	16
Burundi	17
Equatorial Guinea	17
Haiti	17
North Korea	17
Libya	17

Source: Transparency International (2023).

For the purposes of this study, corruption is assessed as follows:

- *Table 16: Perceived corruption in 2022.*

	Value	Score	Method of score allocation	
			Value	Score
Worldwide average	43	3	0-19	1
EU average	63.6	4	20-39	2
Condition in CR	56	3	40-59	3
			60-79	4
			80-100	5

Source: Authors according to Transparency International (2023).

From the point of view of the perception of corruption, there is a significant difference between the global average, which is below the value of 50, and the average in the EU, which exceeded the value of 60, while the Czech Republic finds itself between the two values, closer to the EU average. Although the level of perceived corruption in the Czech Republic shows average values in absolute terms, the situation is significantly better compared to other countries in the world (41st place out of 180).

- *Table 17: Change in the perceived corruption compared to the previous year.*

	Value	Score	Method of score allocation	
			Change in value	Score
Change in global average	-0.3	0	decrease by more than 10.0	
Change in EU average	+10.2	+2	decrease by 1.0 to 10.0	-2
Change in CR	+9	+1	-0.9 to +0.9	-1
			increase by 1.0 to 10.0	0
			increase by more than 10.0	+1
				+2

Source: Authors according to Transparency International (2023).

Compared to the previous year, the Czech Republic improved not only in terms of absolute value, but also moved significantly in the global ranking (from 63rd place to 41st out of 180), where, on the contrary, the average value remained unchanged. The EU also recorded a significant improvement (even slightly bigger than the Czech Republic), where the Czech Republic took the 16th place along with Italy and Slovenia, after improving by 2 places.

16: Anti-state violence in the form of terrorism

Terrorism is usually referred to as a violent form of extremism because it uses violence to fight against the government, the state, or the social order. Thus, extremism, which is inherently anti-systemic, creates a breeding ground for terrorism as a form of anti-state violence. The increase in extremism is often related to the weakened legitimacy of the government, which may be the result of, among other things, insufficient efficiency in the provision of goods and services or corruption, and poses a threat to democracy. Extremism thus cuts across these indicators as both a potential consequence and a cause of their deterioration. The last of the selected indicators focuses on the violent form of extremism in the form of terrorism.

Terrorism or anti-state violence is assessed on the basis of the Global Terrorism Index (GTI), published annually by the Institute for Economics and Peace (IEP). The index is compiled based on TerrorismTracker data and takes its definition of terrorism as “the systematic threat or use of violence, by non-state actors, whether for or in opposition to established authority, with the intention of communicating a political, religious or ideological message to a group larger than the victim group, by generating fear and so altering (or attempting to alter) the behaviour of the larger group.” (Institute for Economics and Peace 2023, 6). The process consists of evaluating four indicators with different weights:

Table 18: Weight of indicators according to GTI.

Indicator	Weight
Number of terrorist attacks	1
Number of deaths due to terrorism	3
Number of people injured as a result of terrorism	0.5
Number of hostages due to terrorism	0.5

Source: Institute for Economics and Peace (2023, p. 86).

Due to the fact that the index evaluates the impact of terrorism, it also takes into account the situation from the previous four years (the earlier the period, the lower the coefficient).² According to the resulting index, the IEP distinguishes six degrees of impact of terrorism:

Table 19: Assessment of the impact of terrorism by GTI.

GTI result score	Impact of terrorism
0	None

² For a detailed methodology, see GTI 2023, p. 86.

0.001-2.000	Very low
2.001-4.000	Low
4.001-6.000	Medium
6.001-8.000	High
8.001-10	Very high

Source: Authors according to the Institute for Economics and Peace (2023).

In 2022, the average index reached 2.168 (corresponding to a low impact), which means an increase (and thus a deterioration) by 0.011 points compared to 2021. However, in most countries (78) the situation for 2022 improved compared to the previous year. On the contrary, 21 countries experienced a deterioration, but this deterioration was slightly more pronounced (on average by 1.12 points, while the improvement is on average by 0.44).

In the top 10 countries where the situation from the point of view of terrorism was the most critical in 2022, the countries of Asia and Africa prevail (see the table below). From a regional point of view, the Sahel is currently referred to as the epicentre of terrorism. At the other end of the spectrum, there are up to 71 countries whose index corresponds to 0, i.e., no terrorist attack took place there in the last 5 years.

Table 20: Countries with the highest impact of terrorism in 2022 according to GTI.

State	GTI
Afghanistan	8.822
Burkina Faso	8.564
Somalia	8.463
Mali	8.412
Syria	8.161
Pakistan	8.16
Iraq	8.139
Nigeria	8.065
Myanmar	7.977
Niger	7.616

Source: Authors according to the Institute for Economics and Peace (2023).

For the purposes of this study, the impact of terrorism is assessed as follows:

- *Table 21: Impact of terrorism in 2022.*

	Value	Score	Method of score allocation	
			Value	Score
Worldwide average	2.168	4	0.000 0.001 to 2.000 2.001 to 4.000 4.001 to 6.000 6.001 to 8.000 8.001 to 10.000	5+ (no impact of terrorism)
EU average	1.406	5		5 (very low impact of terrorism)
Condition in CR	0	5+		4 (low impact of terrorism)
				3 (medium impact of terrorism)
				2 (high impact of terrorism)
				1 (very high impact of terrorism)

Source: Authors according to the Institute for Economics and Peace (2023).

The average impact of terrorism in 2022 in the world is assessed as low, and in the EU as very low. The best situation is in the Czech Republic, where GTI did not identify any impact of terrorism in 2022. In terms of the impact of terrorism, the Czech Republic ranked 93rd globally in 2022 (which corresponds to zero impact of terrorism, or the best possible condition) along with 71 other countries. The same applies in the EU, where the Czech Republic shared the last 16th place with 9 other evaluated countries.

- *Table 22: Change in the impact of terrorism compared to the previous year.*

	Value	Score	Method of score allocation	
			Change in value	Score
Change in global average	+0.011	0	increase by more than 1	-2
Change in EU average	+0.01	0		
Change in CR	-0.29	+1	increase by 0.1 to 1	-1
			-0.09 to +0.09	0
			decrease by 0.1 to 1	+1
			decrease by more than 1	+2

Source: Authors according to the Institute for Economics and Peace (2022, 2023).

In the world and in the EU, there was a negligible increase in the impact of terrorism in 2022, while in the Czech Republic, on the contrary, the situation improved and the country reached the best possible condition. Compared to the previous year, the Czech Republic thus improved by 7 places on a global scale and by one place within the EU.

The GTI focuses on the number of attacks and victims and does not include the fight against terrorism in the index. Within the EU, this can be assessed on the basis of Europol data, which annually publishes the **Terrorism Situation and Trend Report (TESAT)**. It contains not only information on the number of attacks, including thwarted or unsuccessful ones, but also on the number of arrested persons suspected of terrorism. The following two tables display data from the TESAT report, which is used to supplement the above-presented GTI data.

Table 23: The number of attacks (completed, failed, or thwarted) within the European Union.

	2021	2022
Total number of attacks	18	28
Left-wing and anarchist attacks	1	18
Jihadist attacks	11	6
Right-wing attacks	6	4
Separatist attacks	0	0
Other	0	0
Unspecified	0	0

Source: Authors according to Europol (2023).

Table 24: The number of persons arrested on suspicion of terrorism within the European Union.

	2021	2022
Total number of arrests	388	380
Left-wing and anarchist terrorism	19	19

Jihadist terrorism	260	266
Right-wing terrorism	64	45
Separatist terrorism	26	18
Other	5	26
Unspecified	14	6

Source: Authors according to Europol (2023).

According to Europol data, the number of attacks in the EU increased compared to the previous year, especially in terms of left-wing and anarchist terrorism, while the number of jihadist attacks decreased to almost half. The total number of arrests of terrorism suspects across the EU remained at the same level as in the previous year, with the vast majority of arrests of jihadist terrorism suspects. According to Europol, no attack or arrest of a person suspected of terrorism was recorded in the Czech Republic in 2022.

Table 25: Summary of indicators and their scores for the situation in 2022 and the change from the previous year.

Indicator	Score					
	World		EU		CR	
	condition*	change**	condition	change	condition	change
Democracy	3	0	4	+1	4	+1
Legitimacy of state power	3	0	4	+1	4	+1
Provision of public goods and services	3	+1	4	+1	4	+1
Human rights and the rule of law	3	0	4	-1	5	+1
Corruption	3	0	4	+2	3	+1
Political violence in the form of terrorism	4	0	5	0	5+	+1

* The condition is rated on a scale of 1 to 5+, where a higher value corresponds to a better condition.

** The change from 2021 is assessed on a scale from -2 to +2, where positive values correspond to improvements (the higher, the more pronounced) and negative ones to deterioration (the lower, the more pronounced).

Source: Authors.

During 2022, there was stagnation or a negligible change in most of the studied indicators over the world. A slight improvement was recorded in the provision of public goods and services, possibly related to the abolition of anti-pandemic measures, which significantly limited the possibilities of states in this respect in the previous period. While the European Union improved in some areas, there was a slight deterioration in the area of human rights and the rule of law. Contrary to that, the Czech Republic recorded a slight improvement in all areas of interest. Regarding the status of individual indicators on a global scale, in most areas, the score remains at an average level, except for political violence, where the values show above-average, good condition. The Czech Republic is

above the global average in all areas, although in the area of corruption, despite the better situation in absolute numbers, it also falls within the mean values.

Implications for the armed forces

Developments in the political sector have several implications for the Czech Republic and its armed forces. First of all, after ten years, the ACR ceased their activities in the EUTM foreign operation in Mali, which the Czech Republic had commanded twice in the past. In addition, the embassy in Mali was closed. At the same time, however, like the EU, the Czech Republic also expressed its determination not to leave the Sahel region or West Africa (Zachová 2022). Due to the fact that the Sahel is currently the epicentre of terrorism and has been plagued by instability for a long time, it remains a priority for the Czech Republic (Ferkálová 2022). At the same time, the influence of the Russian Federation and China is growing in this area, with Russia, in particular, using its presence to ensure the support of African states in relation to the war in Ukraine. This points to the need for the EU, including the Czech Republic, to act against these activities, for which it is necessary to stay in the region. At the same time, it is also in line with the ambitions of the EU's Strategic Compass.

As for the Russian invasion of Ukraine, its immediate political consequence was the application for NATO membership by Finland and Sweden, subsequently supported by the Czech Republic. This creates a prerequisite for closer cooperation with these countries in the military field. This would also extend the possible application of Article 5 in the event they are attacked, in particular, by their immediate neighbour, the Russian Federation. Ukraine also applied for the membership. However, the question remains how NATO will approach this, or what position the Czech Republic will take. Russia's aggression against Ukraine has also increased the risk of a major interstate armed conflict involving NATO. The direction of the CR's foreign and security policy, including the development of its armed forces, must thus reflect the security situation that has arisen. This includes, for example, the promotion of democratic values in Slovakia, but also the strengthening of the ties with Germany. On the contrary, there a weakening of ties with Hungary has been observed, as it criticises military assistance to Ukraine and takes a more conciliatory position towards Russia, which contributes to the erosion of the V4 in the field of security.

The above-mentioned changes in the security environment were reflected in the new strategic documents adopted within the European Union and NATO, which define not only new threats and challenges, but also a vision for the coming decade. These documents are essential for the CR not only as a member state of the EU and NATO but also as an impulse for the CR to update its own strategic documents.

Although the above-mentioned indicators have rather stagnated in comparison with the previous year, in the CR and in the security environment immediately surrounding the CR (at the level of the European Union) the trend is slightly more optimistic. At the same time, however, indicators point to some specific states or regions where democracy, the legitimacy of state power, the effectiveness of the government in providing goods and services, or the rule of law are significantly weakened or which face high levels of corruption or political violence. This situation may be an indicator of the weakening of the state itself and may potentially lead to its failure. This is related to the sequence of other possible threats that may trigger requirements for the involvement of states in building stability or preventing armed conflict.

MILITARY SECTOR

The development in the military sector of the security environment was assessed, *inter alia*, using a set of indicators that enable registering changes and trends in the long term, but the key focus is also dedicated to the impact on the Czech Republic (geographical distance of ongoing conflicts, numbers of refugees from conflict zones, links to the armed forces of the Czech Republic and the defence industry, etc.). Each year, a separate CBVSS study also elaborates a more detailed analysis of the military sector from the perspective of the operating environment. The model used here is based on data from available open sources, which, however, are not always completely accurate in this sector for specific reasons. When preparing this strategic analysis, the option to focus only on selected actors and to incorporate the available data was chosen. With regard to the implications for the Czech Republic, attention was primarily paid to three regions, or rather to the ongoing conflicts with the most significant impact on the security environment of the Czech Republic. This concerns Ukraine and the Russian Federation, the South Caucasus, and the Sahel region. These regions are then evaluated on the basis of the monitored indicators and presented in a simplified, clear form in the table, together with the threat index and their relevance in relation to the security environment of the Czech Republic.

In 2022, 216 armed conflicts took place in the world with varying intensities. There was a limited quantitative increase, however, with the increase in the intensity of military activities in the European space absolutely crucial (HIIK 2023). This unprecedented phenomenon in the 21st century can, of course, be clearly linked to the Russian invasion and the subsequent war in Ukraine. The Ukrainian conflict has thus become a fundamental event that has had an utterly dominant impact not only on the year 2022 in the military sector but will also be a determining factor in the development of the security environment and in the response to this development in the future. The initially limited frozen regional low-intensity conflict has grown into a large-scale military confrontation with global impacts, which the EU and NATO countries also enter significantly as external actors. From the perspective of the Czech Republic, given the geographical proximity and many other factors, it is a conflict that entirely overshadows the current attention paid to other conflict regions in recent decades or the period since the disintegration of the bipolar world.

Despite the previous escalation taking place since 2014 and a number of clear signals from 2021, the Russian invasion of Ukraine was a strategic shock. The launch of the large-scale Russian invasion was also followed by a not-entirely-expected development. The very rapid failure of the Russian invasion and their ambitious goals in confrontation with the Ukrainian resistance pointed out the unexpectedly deep problems of the Russian army. The Russian invasion of Ukraine exposed the *de facto* weakness of the Russian armed forces and their shortcomings, as well as the incompetence of the Russian political leadership and Russian intelligence services. Miscalculations based on incorrectly assessed intelligence led to the decision to launch a military invasion, which led to an armed conflict in the European space on an unprecedented scale from the perspective of the last decades. This conflict also brought about extensive participation of the EU and NATO Member States in the area of support for the Ukrainian actor, while in the material area

it also exposed their significant deficits and the need to pay more attention to the sustainability of their military capabilities in the future in the event of a high-intensity conflict.

Russia's February invasion itself was preceded by an almost year-long escalation of tensions and concentration of Russian troops on the Russian-Ukrainian and later Belarusian-Ukrainian borders. Despite this, however, the scenario of a large-scale invasion seemed not entirely probable until the last days. The growing tension and uncertainty in the region itself and the persistent threat of the use of military force appeared to be a sufficient power tool to destabilise the Ukrainian state and gradually achieve Russian goals and promote their interests.

However, it can be concluded that this long-term Russian concentration of forces in border regions was ultimately counterproductive for Russian intentions and contributed to increasing the readiness of Ukrainian defence and resistance of the Ukrainian society. Undoubtedly, the Ukrainian determination to face the invading forces as well as the capabilities of the Ukrainian armed forces and the determination of the political elites played a crucial role since the beginning of the invasion. However, the Russian side itself contributed to Ukraine's success in the conflict, launching the invasion with an utterly unrealistic assessment of the situation and completely insufficient military resources (Stojar 2023).

The plan of the invasion was based on unrealistic assumptions from the beginning and was thus supposed to be a non-combat operation, in which Russian troops would quickly take control of the strategic points of the Ukrainian state and the special forces would quickly eliminate its political and military leadership. Then a new government would be installed there and any continuous resistance of part of the Ukrainian forces and population would gain the nature of a domestic conflict, with minimal external support at most. However, it seems that long-term Ukrainian resistance, even to this limited extent, was not adequately taken into account.

Although the first phase of the conflict was initially characterised by Russia's rapid advance into the Ukrainian interior, the main strategic goals were not achieved. The number of invasion units deployed was completely insufficient due to the situation, sizeable Ukrainian territory, and capabilities of the Ukrainian forces. The very progress of Russian units soon proved to be a problem for Russian logistics and the fact that just a few dozen kilometres from their own borders and starting positions, logistical elements were unable to ensure the necessary supplies of material indicates fundamental shortcomings in the very structure of the Russian ground forces.

The Russian plan included too many axes of action, many of which were not mutually supportive, and Russian ground forces were tasked with advancing at an extremely rapid pace. As a result, Russian units often proceeded without their own artillery, electronic warfare systems, and air defence coverage, which further exacerbated the logistical problems of larger units, as the Ukrainian side effectively exploited all these shortcomings. However, the failure of the Russian invasion in the first weeks of the conflict did not result in a political solution; the potential of both warring parties and their completely different ideas about the possibilities of a solution led to a long-term conflict of high intensity. In the first months, the initiative was mainly on the Russian side; in the southern section of the front line, Russian forces achieved partial success and occupied the land corridor connecting the annexed Crimea with the Donbas and Russian territory. Some territorial gains were also achieved by the Russian forces in the southeastern section in the first half of the year, but at the end of June 2022, they were forced to suspend their offensive efforts. In the second half of the year, the Ukrainian forces gradually took over the strategic initiative, achieving considerable successes, especially in the northeast, and forced the opponent to withdraw from the hitherto

occupied parts of the Kharkiv region. These Ukrainian successes subsequently forced the Russian political and military leadership to take the long-rejected step of mobilising the so far not engaged part of the Russian population together with deploying material reserves.

The conflict in Ukraine has brought into attention, inter alia, the great importance of territorial forces in ensuring the defence of the state. The territorial defence forces of Ukraine provided sufficient capabilities needed to repel the Russian invasion in the first weeks of the conflict. Due to the possibility of rapid mobilisation and activation of their prepared reserves, they were able to outnumber the enemy's invasion forces in the main directions and ensure the successful defence of the key territory. Since the beginning of the conflict, the broad participation of Ukrainian society and private civilian entities, which effectively complemented the main efforts of the armed forces and security forces of the state, has been of great importance. The growing importance of globally operating private companies, which can significantly affect the course of the war conflict and the capabilities of the warring parties, cannot be overlooked. In this respect, SpaceX, or its *Starlink* satellite system, can be mentioned, which enabled effective communication and operation of Ukrainian forces despite Russian electronic warfare. At the same time, there were also some negative aspects. Ukraine's dependence on the *Starlink* provider influenced the further course of the conflict, or allowed an external private entity to directly influence the actions of Ukrainian forces, in some cases limiting access to *Starlink* and effectively preventing some planned or ongoing combat operations.

On the Russian side, we can mention the unprecedented increase in the importance of the private military and security sector in the implementation of military operations. This is primarily the so-called Wagner Group, but it is not the only entity of this nature in the Russian space. The importance of this group in the Russian projection of military power in external space had become crucial in previous years, especially in operations on the African continent. The deployment of this group took place, in principle, in a close cooperation with the GRU intelligence service and Russian interests, but the official private nature of the company also allowed the Russian state to distance itself from many of its activities. However, the conflict in Ukraine led to an extensive increase in the importance and numbers of this group.

In the first phase of the conflict, after the failure of the invading forces and the intention to quickly achieve the set military and political goals, the conflict turned into a conventional war of high intensity. The Russian forces needed to significantly strengthen their numbers, but the Russian political leadership did not want to deploy basic military service members on the battlefield for domestic political reasons, and neither did they want to mobilise reservists in the first six months of the conflict. After the failure of the Russian invasion, the Wagnerites represented a suitable starting point for replacing the deficits of military personnel and were given previously non-standard options, such as recruiting convicts and guaranteeing them remission of the rest of their sentence after serving the agreed contract. There has been a de facto privatisation of the fundamental powers of state authorities and only the failure of the regular Russian armed forces can explain the unprecedented resignation to the state power monopoly to armed violence in the Russian environment. The conflict in Ukraine allowed for a gradual increase in the importance of the Wagner Group, logically associated with a significant increase in its numbers and equipment with heavy military arms from army reserves. However, as far as logistics is concerned, the Wagner group was always wholly dependent on the army, which led, due to the circumstances, namely the limited possibilities of army logistics, to complaints about inadequate supply or weak fire support from the army. For several

months, however, Wagner's group was one of the most effective Russian units, mainly due to the considerable experience of its combatants from previous conflicts. However, with the massive recruitment of new personnel, its original character and capabilities changed, as did the strengthening of its power importance and growing tensions with the army command.

Because of the long-term deployment of large forces, high intensity of fighting and the associated depletion of human and material resources, the sustainability of military capabilities became a key factor for both sides. Due to the limited material resources compared to the Russian opponent, external support from its Western partners, including the Czech Republic, became a crucial factor for the Ukrainian side, enabling the overall successful defence and implementation of subsequent offensive operations. However, 2022 did not bring an end to the conflict; neither side achieved fundamental strategic success and a significant weakening of the opponent. The large capacities of both sides of the conflict resulted in its intensive continuation in the following year.

The Sahel

As in previous years, attention had to be paid to the situation in the Sahel, where the current dynamics of development continued in 2022, i.e. the increase in instability despite the presence of stabilisation missions of external actors. We can also talk of the continued erosion of French influence in the region and the failure of long-term military efforts to suppress radical and terrorist formations destabilising the wider Sahel region. In some respects, this failure can be compared to the end of the Western presence in Afghanistan in the previous year. However, in this region, there is no dominance of an originally non-state opposition armed actor, but the overall fragmentation of state power, the exchange of political suits, and the growing aversion of new elites to external actors and their interests.

In particular, the conflict in Mali, which began in 2012, is a complex and multifaceted problem that has affected political stability, security, and the humanitarian situation in the wider Sahel region. This conflict was caused by a combination of internal and external factors, including ethnic tensions, terrorism, weak government authority, and the proliferation of light weapons. The insufficient government authority and high level of corruption weakened the government's ability to solve the fundamental economic and social problems of the population, which created the ground for the growth of radical movements that offered alternative solutions.

Deficiencies in state management, in particular deficits in equal opportunities for different ethnic groups, periodically contribute to the increase in dissatisfaction and conflict situations in the region. Over the past years, the Sahel region has become a haven for Islamist terrorist groups that have successfully used political instability and weak control of the territory by the government to expand their influence. The French military intervention in Mali was initially aimed at stopping the rise of the influence of these terrorist groups and restoring regional stability. However, during the long-term French presence, there were limits to the intervention and the fact that this conflict was and is of a much more complex nature than expected at the time of launching the operation. Thus, in 2022, the failure of the French military intervention, which had not brought lasting peace or security, was evident. Despite the partial military successes, it turned out that the intervention could not achieve long-term political and security stability despite the high costs. The inadequate resolution of internal political disagreements and the lack of credible institutions in Mali created an environment for a repeated increase

in the activities of terrorist groups. This development discredited the overall external stabilisation efforts to date and led local elites to look for alternatives, including other external partners. France was accused of not addressing the main structural problems of the conflict, as it primarily pursued its own post-colonial interests and that its intervention ultimately instead aggravated the situation.

Intervention in the development of the conflict in Mali failed for many reasons. Insufficient political input, limited ability to address ethnic tensions and polarisation, fatigue from a long-term conflict, and limited external support were the main factors contributing to this failure. The consequences continue to be present in regional instability, the terrorist threat, and the growing humanitarian crisis. The failure of this intervention has also sparked debate on the effectiveness and ethics of international interventions in armed conflicts.

Mali and the wider Sahel region remain one of the very problematic crisis regions, which generates a number of threats to European security. The activities of some external powers are then in direct confrontation with the interests of European states and can potentially increase both regional instability and its impact on geographically more distant regions, including the Mediterranean and EU states. For this reason, it can be expected that the involvement and activities of European actors in the Sahel will not be dampened entirely, and although it is not the immediate territory of interest of the Czech Republic, the participation of elements of the ACR in stabilisation and training missions will probably continue there, although probably in a more limited format than the previous operation in Mali.

The Caucasus region

In 2022, persistent latent tensions and military escalation could also be observed in the relationship between Armenia and Azerbaijan in the long-term dispute over the Nagorno-Karabakh region. The state of the 2020 ceasefire was seriously disturbed by several armed incidents, escalating into a renewed regular clash in the autumn of 2022. There were casualties of military personnel on both sides, which, although not reaching the level of 2020, were still quite significant. The security situation in the region was also significantly affected by the Russian invasion of Ukraine and the high-intensity conflict there. The current main guarantor of compliance with the ceasefire conditions, the Russian Federation, was forced to weaken its military contingent there and, given the overall decline of Russian influence and power potential, lost its previous authority among the opposing parties. Especially in the case of Armenia, it failed both as a guarantor of the ceasefire and as a trusted ally. Russia was unable to meet its allied obligations, which were to be activated due to the direct military operations of the Azerbaijani forces against the territory of Armenia, a Russian ally within the Collective Security Treaty Organization (CSTO). For Armenia, which participated with a smaller military contingent in the stabilisation intervention of the organisation in Kazakhstan in January 2022, Russian passivity was evidence of the failure of the existing allied system and the overall irrelevance of the CSTO to ensure the defence of the Armenian state.

On the other hand, the erosion of the Russian position of power in the South Caucasus made space for Azerbaijani assertiveness, disregarding both the parameters of the ceasefire brokered and guaranteed by the Russian Federation and Armenia's own territory, which was already covered by direct CSTO allied guarantees. Armenia's own territory was not the target of Azerbaijani military operations even during the 2020 autumn campaign, on the contrary, even during this conflict, Azerbaijani forces consistently avoided a possible violation of international borders, fearing the Russian

reaction. However, during the operations of the autumn of 2022, there were direct strikes on this territory as well, with the Russian response limited to verbal condemnation and calling on both sides to end the escalation. Similarly, Russian weakness was significantly manifested at the end of 2022, when the Azerbaijani side launched a de facto blockade of the so-called Lachin Corridor connecting Armenia with Nagorno-Karabakh, contrary to the terms of the ceasefire.

Still, regional dynamics were influenced by other external actors, especially Türkiye and Iran. During the autumn escalation, Iran very strongly profiled itself as a guarantor of regional balance. In response to Azerbaijani operations, the Iranian side announced that any attempt to break the Armenian-Iranian border would lead to the direct entry of Iranian forces into the conflict. On the Iranian-Armenian and Iranian-Azerbaijani borders, there was then a show of strength and preparedness, the units of the Iranian Revolutionary Guard and the armed forces were concentrated here in large numbers (Armenia News 2022). Türkiye responded to the Iranian demonstration by saying that the possible entry of an external power into the conflict would lead to Turkish intervention. However, there was no further escalation, but the position of regional actors (especially Azerbaijani activities) as well as the geopolitical interests of neighbouring external powers testify to the high-risk potential of this region and the real possibility of military confrontation with significant negative impacts on the wider area.

Kazakhstan

One of the other manifestations of the growing destabilisation of the post-Soviet space with implications for regional security comprised the internal unrest in Kazakhstan, which also resulted in the intervention by the Collective Security Treaty Organization forces. Kazakhstan, one of the largest countries in the post-Soviet space, has long been one of the most stable states since independence in 1991, without major internal political tensions and conflicts with neighbouring states. However, in January 2022, the deterioration of the economic situation disrupted the so far non-conflicting generational exchange of political elites in its authoritarian regime. The scale of the protests there necessitated the intervention of external stabilisation forces, primarily of the Russian Federation, which allowed the new Kazakhstani political establishment to consolidate its positions of power. This intervention probably also led to an inevitable postponement of the date of the invasion of Russian forces into Ukraine, as part of the Russian rapid deployment forces, later engaged on the Ukrainian battlefield, also participated in it. The operation itself took place under the CSTO with the participation of military units of all of its member states, albeit outside the Russian forces only to a symbolic extent. The operation was primarily non-combat in nature, it was a stabilisation mission to support Kazakhstan's force structures loyal to the current regime. From the perspective of the Russian Federation, it was generally successful, as it led to the restoration of the status quo in the region of interest. However, as confirmed by further developments, overall it testified to the gradual erosion of Russian power influence in the Central Asian region.

Nuclear weapons

One of the longer-term trends, the importance of which, however, was strongly emphasised by the war in Ukraine, is the attention paid to the potential of nuclear powers and the possible use of nuclear weapons in contemporary conflicts. The nuclear deterrent was one of the factors that the Russian side significantly emphasised in 2022 and which

probably contributed to the concerns of some states about the potential escalation of the conflict and a more restrained approach to the supply of certain weapons systems to Ukraine, especially in the first half of the year. Russia's use of nuclear military potential consisted mainly of threats, accusations, and ambiguity (Saradzhyan 2022). Russian threats mentioned the possible deployment of tactical nuclear weapons in Ukraine as a response to the possible active involvement of NATO forces in the conflict or other variants of escalation of the conflict with the involvement of external actors. At the same time, they were rather vague and were subsequently questioned by the Russian side itself. In fact, it was a form of psychological pressure, the effectiveness of which was problematic, and the very threat of the use of tactical nuclear weapons was also condemned by key partners of the Russian Federation, such as the PRC and India. However, despite Russia's failures in a conventionally conducted war, the possibility of deploying these weapons systems was very low and the Russian side also sent a number of signals aimed at relativising this threat and the possibility of nuclear escalation. However, since the end of the Cold War, it has been an unprecedented threat to the potential use of WMD by one of the nuclear powers, which has also resulted in the limitation of existing control regimes and mechanisms in this field. In the context of a possible nuclear threat, the issue of nuclear power plants that may be exposed to attack by conventional weapons in conflict zones can also be mentioned. This option was somewhat neglected from the end of the Cold War to 2022 and was perceived more in a theoretical level. Conflicts of the last decades took place in principle on the territory of states that did not have such advanced technologies, but the invasion of Ukraine brought a real threat of damage or destruction of nuclear power plants with possible extensive destructive consequences. In the first weeks of the conflict, Russian troops occupied the building of the decommissioned Chornobyl nuclear power plant. However, the occupation of the Zaporizhzhia nuclear power plant and the deployment of Russian units on its premises required key attention. The fact that the combat activities of both opposing parties took place in the immediate vicinity of this object and given that it is still de facto on the front line emphasises the threat of a nuclear catastrophe even without the use of nuclear weapons.

The total number of nuclear warheads (including decommissioned and pending dismantling) of the nine nuclear powers, i.e. the United Kingdom, the PRC, France, India, Israel, North Korea, Pakistan, the Russian Federation, and the United States, decreased to 12,512 at the end of the year compared to 12,710 at the beginning of 2022 (SIPRI 2023). However, the total number of warheads for possible deployment saw a slight increase in 2022 by 86 units to a total of 9576. However, this increase is associated only with some powers, in particular the PRC, where there was the largest increase in the number of nuclear warheads from a total of 350 in 2021 to 410 in 2022. It is in the Chinese case that in recent years, we can talk about the overall significant modernisation and strengthening of the nuclear arsenal, including the development and production of technologically advanced carriers. Given the power ambitions of the PRC, we can talk about a gradual departure from the traditional minimum deterrent and strengthening of the nuclear deterrent, although overall, Chinese capabilities are still orders of magnitude lower than that of the two dominant nuclear powers, the US and Russia. The current position of the PRC as the third major nuclear power is specific. Its nuclear arsenal has not yet been and is still not subject to international contractual restrictions, while the PRC has so far rejected initiatives to change the situation, arguing that Chinese nuclear weapons are several times lower in numbers than those of the United States or Russia (Potočník 2023).

A departure from the policy of reducing the nuclear arsenal can be observed in the case of the United Kingdom, which revised the previous plan for the reduction of warheads in 2021 and where the conflict in Ukraine emphasised the importance of the British nuclear deterrent at a time of increased instability and the threat of escalation of conflicts at the global level. In the case of the French nuclear forces, no significant debate took place in the past year, but it can also be expected that the extensive conventional conflict on the European continent and the verbal threats posed by Russia will emphasise the importance of strategic nuclear weapons for the defence of France, its power status, or the relevance of the French contribution to the defence of the EU together with its ambitions, or potential strategic autonomy.

Despite the costs associated with the conflict in Ukraine, the Russian Federation is completing the decades-long modernisation of its strategic and tactical nuclear forces. The aim is to completely replace older weapon systems, often of Soviet origin, with modern weapons. In December 2022, Defence Minister Shoigu announced that new modern weapons and equipment accounted for 91.3 per cent of the Russian nuclear triad, an increase of 2.2 per cent compared to the previous year (Kristensen, Korda, Johns 2023). Russia’s nuclear force modernisation programme is currently motivated by efforts to maintain parity with the United States and compensate for deficits in the quality of conventional forces. The overall failure of Russian conventional forces to confront Ukraine, the high losses of modern weapon systems, and the gradual depletion of reserves increase Russia’s dependence on nuclear forces in the event of a conflict with stronger or equivalent adversaries, and the potential need to defend its own territory. This trend is also reflected in the growing cooperation with Belarus, or the use of the Belarusian territory and air force to strengthen the potential of the Russian nuclear forces. In June 2022, the Russian leadership announced its intention to enhance the capability of Belarusian aircraft as carriers of tactical nuclear weapons, as well as to deploy the *Iskander* system in Belarus capable of launching missiles with both conventional and nuclear warheads. Also, the significant strengthening of Belarusian anti-aircraft defence with the most modern Russian systems can be interpreted as an effort to create a safe zone for potentially deployed Russian nuclear forces.

Table 1: Summary of indicators and their scores for the situation in 2022

Explanation of the index: The index ranges from 0 to 10, where 0 is the minimum threat and 10 is the maximum threat. Higher indices indicate a higher level of military and non-military threats resulting from the conflict area for the security environment of the Czech Republic.

Indicator	Relevance from the point of view of the security environment of the Czech Republic	Ukraine	The Sahel	South Caucasus
Geopolitical significance	0.15	8	6	7
Factors of conflict (ethnic, religious tensions, etc.)	0.12	7	8	6
Humanitarian crisis	0.10	9	9	5

Total threat index		7.9	7.4	6.8
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Implications for the armed forces

In terms of possible operation and construction of the ACR itself, there are fundamental changes due to the conflict in Ukraine. Participation in external missions (Afghanistan, Mali), which were a priority in recent decades, will probably be significantly reduced. However, experience and skills acquired from operations of a similar type should not be abandoned entirely. It cannot be ruled out that regional instability in geographically distant regions (especially on the African continent) will require the re-deployment of European military missions, on a comparable or larger scale than in previous years. The participation of the ACR in a similar type of operations, although outside its own territory of interest, would probably be one of the tasks that would be faced by the armed forces. Although the activities of European forces in the Sahel so far have not led to the desired stabilisation of the region, it can be expected that the negative effects of these developments will again lead to the demand for more active participation of European states, including in the form of military deployment.

The war in Ukraine has a primary impact on the future capabilities and construction of the armed forces of the Czech Republic as well as the formulation of the defence policy itself. One of the implications is the emphasis on building combined military capabilities, which in many cases (see heavy brigade) result from previously accepted commitments of the Czech Republic. In view of the deterioration of the security situation, the deployment of elements of the ACR outside of its own territory can still be envisaged in order to strengthen the eastern flank of the Alliance and to deter the Russian threat. Greater emphasis must also be put on the defence of airspace, as a potential opponent has the means to threaten the state's territory itself. In this respect, given the limited possibilities of the Czech Republic, the importance of strengthening cooperation with neighbouring states in missile defence programmes can also be emphasised. The Ukrainian battlefield also highlighted the importance of artillery, which became a decisive strike weapon in the conditions of relatively low activity of the air force. It also confirmed the high efficiency of artillery rocket launchers, which the ACR removed from its armament a decade ago. Modern Western systems of this type have demonstrated the ability to eliminate significant targets very precisely, thus becoming a means of strategic importance. Large acquisitions of these rocket launchers in neighbouring states, especially Poland, could also be inspiring for the Army of the Czech Republic.

In terms of development trends, the growing importance of drones has been confirmed. They have become an essential part of the activities of both parties in reconnaissance and combat activities in the conflict in Ukraine. The scale of deployment of these systems is unprecedented, with a mix of sophisticated and combat-ready drones together with low-cost commercial types widely used. The current implementation of similar means in the armed forces of the Czech Republic has only been limited and, with regard to the nature of future conflicts, it will be necessary to strengthen both their use at the tactical and operational level, as well as the capabilities of active and passive defence against drones of potential opponents. In 2022, the use of drones and defence against them in the Ukrainian conflict was to some extent a matter of improvisation, the method of deployment is still developing, yet this is a trend that must be reflected. The sustainability of military capabilities becomes a key issue in high-intensity conflicts, so one of the main implications should also be the emphasis on this aspect. The defence

policy of the Czech Republic should emphasise the possibilities of the Czech defence industry in the event of an increased need for material and potential disruption of supply chains on an international scale. Innovation in the acquisition process and building larger production capacities will be one of the trends in responding to the Russian invasion and the resulting long-term high-intensity conflict in Ukraine on a European and probably global scale. Although the Russian invasion has brought the need and considerable incentive for political will to invest in the defence sector, the Czech Republic remains within NATO in the group of countries with lower expenditures, and given the state of public finances, it can be assumed that investments in state defence will continue to be limited by actual possibilities.

SOCIETAL SECTOR

Social, or societal security, comprises the ability of human society to maintain balance, mutual trust, tolerance, reconciliation, intergenerational solidarity, and willingness to share public space (i.e., cohabitation) among its components, which differ from each other in their identity, value orientation, ideology, or political preferences. In practice, it means ensuring the conflict-free functioning, stability, and prosperity of the entire society, whose members, based on various identification attributes, are quite naturally divided into various (sub)cultures, tribes, families, groups, movements, and other components and parts of human society. From the point of view of security, this is an extremely relevant topic, as these groups and the identities on the basis of which they arise are subject to various changes, destabilisation, fragmentation, disintegration, mutual conflicts, and other processes, sometimes with the potential to pose a security risk (if not an acute threat) to the security, stability, prosperity, and peace of the whole society, due to internal and external pressures. An internally fragmented and polarised society is not able to function effectively, ensure its development, achieve strategic goals, and in the worst case, due to internal paralysis, it cannot even provide defence against an undeniable and eminent threat, exposing to danger its freedom, sovereignty, independence and, ultimately, physical existence (Buchtík et al. 2021).

Competition of identities and fragmentation of society

From the point of view of long-term trends that affect the ideological orientation, values, and political attitudes of Czech society (i.e., residents of the Czech Republic and foreigners residing on the territory of the Czech Republic for a long time), 2022 was a breakthrough year. The objectively divisive topic of the global pandemic, or rather the reaction of the state and society to it, after two years in the dominant position of the general political and social discourse, was replaced by the equally polarising topic of the ongoing war in Ukraine. In a broader context, the topic of the war in Ukraine was followed by other closely related topics, such as the attitudes of the Czech public to the civilisational and geopolitical anchoring of the Czech Republic in the structures of the geopolitical West (especially in the EU and NATO), the sympathy of Czech citizens for individual countries of the world, attitude to Ukrainian refugees seeking refuge in the Czech Republic, the level of support for the Czech Republic's response to the crisis situation, attitudes to the ongoing economic and energy crisis and, last but not least, the critical perception of events in the Czech media and disinformation space (STEM 2022a, STEM 2022b, STEM 2022c).

In the spring of 2022, i.e., in the period from one to three months since the outbreak of the war in Ukraine, according to public opinion surveys conducted by the Centre for Public Opinion Research (hereinafter "CVVM"), up to 78% of people were actively interested in the events in the attacked country. Approximately the same proportion of respondents

also considered the war in Ukraine to be a threat to world peace (72%) and to security in Europe (79%) as well as an immediate security threat to the Czech Republic itself (75%) (Červenka 2022b). Respondents then answered questions related to the Czech Republic's preferred response to the crisis, where up to 85% of respondents agreed to apply diplomatic pressure on Russia, 63% wanted its complete political and economic isolation, 73% agreed to provide financial assistance to Ukraine, while only 54% agreed with providing military equipment and only 18% with an active involvement of the Czech Republic in the conflict (Červenka 2022d). Regarding the problem of Ukrainian refugees flowing to the Czech Republic, in the spring of 2022, up to three quarters (75%) of Czech citizens agreed that the country would accept refugees, but the same share of people conditioned the aid to be temporary, expecting subsequent return of refugees to Ukraine. 10% of respondents were in favour of the possibility of permanent settlement of Ukrainian refugees, while roughly the same number (13%) did not want any admission of Ukrainian refugees to the Czech Republic (Červenka 2022c). However, it was already clear in the spring that the Czech public, regardless of their sympathy for refugees from Ukraine, was also aware of the risk factors for their presence and stay in the Czech Republic, especially the weakening of social security and the increase in unemployment, named as potential risks by 70% or 52% of respondents, respectively (STEM 2022a).

In the further course of 2022, there were significant shifts in the moods and attitudes of the Czech public towards the war in Ukraine and related phenomena. A reduced level of willingness to help Ukrainian refugees due to fears of deterioration of their own economic situation was already evident among respondents at the turn of spring and summer (STEM 2022c). In the autumn of 2022, more than 70% of respondents still considered war to be a threat to world peace, to security in Europe and an immediate security threat to the Czech Republic, but only 57% of respondents were actively interested in what was happening in Ukraine, i.e., 21 percentage points less than in the spring. There were also more significant decreases in support in a number of responses to the Ukrainian crisis by the government and the political elite of the Czech Republic - diplomatic pressure on Russia was approved by only 70% compared to 85%, support for its complete isolation fell from 63% to 49%. The willingness to support Ukraine also decreased, both in economic and humanitarian terms (from 73% to 55%) and in military and material terms (from 54% to 43%). The vast majority of the population - 85% - then absolutely rejected any direct form of involvement of the Czech Republic in the conflict. Support for temporary admission of refugees also decreased (from 75% to 63%), while the share of opponents to Ukrainian migration to the Czech Republic increased from 13% to 27% (Červenka 2022e). In connection with the development of long-term trends of (dis)satisfaction of the Czech population with the geopolitical orientation of the country or identification with the shared values, traditions and ideals of Western (liberal) democracies, the war in Ukraine worked as a one-time catalyst for increasing satisfaction with membership and trust in selected international organisations of which the Czech Republic is a member (STEM 2022a, STEM 2022c). The attitudes of the Czech population towards the North Atlantic Organization (NATO) were thus slightly more positive than in previous years - in the spring of 2022, 79% of respondents perceived the organisation as necessary (on the contrary, 15% considered it unnecessary), 73% of respondents were satisfied with the Czech membership

in NATO (19% of respondents were of the opposite opinion), and 67% of respondents expressed explicit trust in the organisation. However, given these results, it is striking that the perception of NATO as the guarantor of the independence of the Czech Republic then outweighed the view of the organisation as a tool of subordination of the Czech Republic to foreign powers only slightly, in the ratio of 50% to 42% (Čadová 2022). In addition to the support for the Czech Republic's membership in NATO itself, another indicative indicator of the relationship of the Czech society to NATO is the willingness of the Czech population to remain in NATO in the event that this issue is voted on in a national referendum. At the same time, thanks to the long-term data collected by NATO itself and the Slovak non-governmental and non-profit organisation GLOBSEC, these two parameters are perfectly comparable at the level of Central and Eastern European countries (in terms of total support for NATO membership), or at the level of the entire Alliance (in the case of a hypothetical referendum on the country remaining in NATO).

Support for NATO membership in the countries of Central and Eastern Europe in 2021				
Indicator	Value	Score	Method of score allocation	
			Value	Score
Total average index of Central and Eastern European countries	63%	4	81% - 100% 61% - 80% 41% - 60% 21% - 40% 0.001% - 20%	5 (very high support) 4 (high support) 3 (medium support) 2 (low support) 1 (very low support)
Index of CR	72%	4		

Source: Authors according to Globsec 2022. Individual NATO support values are converted to scores from 1 (very low support) to 5 (very high support). The change in values in individual years (here in 2022 compared to 2021) on a scale from 1 to 5 (with a higher value corresponding to a higher level of support for NATO membership) has a score of -2 (significant deterioration) to +2 (significant improvement).

Change in support for NATO membership in the countries of Central and Eastern Europe in 2022				
Indicator	Value	Score	Method of score allocation	
			Change in value	Score
Change in the total average index of Central and Eastern European countries	+ 9 (72%)	+1	(decrease by more than 21%; significant deterioration) (decrease by 2% to 20%; deterioration) (decrease by 1% to improvement by 1%; maintaining the status quo)	-2 (significant deterioration) -1 (mild deterioration) 0 (stagnation, status quo) +1 (slight improvement in condition)
Index of CR	+15 (87%)	+1		

			(increase by 2% to 20%; improvement in condition) (increase by more than 21%; significant improvement in condition)	+2 (significant improvement in condition)
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Source: Authors according to Globsec 2022. Individual NATO support values are converted to scores from 1 (very low support) to 5 (very high support). The change in values in individual years (here in 2022 compared to 2021) on a scale from 1 to 5 (with a higher value corresponding to a higher level of support for NATO membership) has a score of -2 (significant deterioration) to +2 (significant improvement).

Level of support for staying in NATO in the event of a hypothetical referendum in 2021				
Indicator	Value	Score	Method of score allocation	
			Value	Score
Total average index in all member states	62%	4	81% - 100% 61% - 80% 41% - 60% 21% - 40%	5 (very high support) 4 (high support) 3 (medium support) 2 (low support)
Index of CR	62%	4	0.001% - 20%	1 (very low support)

Source: Authors according to NATO 2021. Individual support values for staying in NATO are converted to scores from 1 (very low support) to 5 (very high support). The change in values in individual years (here in 2022 compared to 2021) on a scale from 1 to 5 (with a higher value corresponding to a higher level of support for NATO membership) has a score of -2 (significant deterioration) to +2 (significant improvement).

Change in the level of support for staying in NATO in the event of a hypothetical referendum in 2022				
Indicator	Value	Score	Method of score allocation	
			Change in value	Score
Change in the total average index	+ 8% (70%)	+1	(decrease by more than 21%; significant deterioration) (decrease by 2% to 20%; deterioration)	-2 (significant deterioration) -1 (mild deterioration)
Change in the index in the CR	+ 4% (66%)	+1	(decrease by 1% to improvement by 1%; maintaining the status quo)	0 (stagnation, status quo) +1 (slight improvement in condition)

			(increase by 2% to 20%; improvement in condition) (increase by more than 21%; significant improvement in condition)	+2 (significant improvement in condition)
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Source: Authors according to NATO 2022. Individual support values for staying in NATO are converted to scores from 1 (very low support) to 5 (very high support). The change in values in individual years (here in 2022 compared to 2021) on a scale from 1 to 5 (with a higher value corresponding to a higher level of support for NATO membership) has a score of -2 (significant deterioration) to +2 (significant improvement).

The level of trust of the Czech population in the European Union (EU) and the United Nations (UN) was traditionally slightly lower than in NATO, but both organisations saw an increase in trust compared to 2021, namely from 34% to 58% (!) in the case of the EU, or from 53% to 63% in the case of the UN (Stojar et al. 2022, Čadová 2022).

In relation to specific countries, Slovakia traditionally enjoyed the greatest favour of the Czech public, with as many as 73% of respondents evaluating their relationship with this country as positive or very positive. Perhaps somewhat surprisingly, our eastern neighbour was followed by two militarily strictly neutral countries, Switzerland and Austria, both rated positively by 64% of respondents. Other higher ranks continued to be occupied by smaller countries, less significant in terms of power or active ones, such as the Netherlands (60%), Norway (60%), and Sweden (59%), while the popularity of Western powers and important partners of the Czech Republic such as Germany (48%) and the US (37%) decreased compared to the recent past, falling below 50%. On the other hand, it still significantly exceeded the very low popularity rate of non-Western countries such as Serbia (only 28% of popularity), Türkiye (18%), the People's Republic of China (15%) and, in particular, Russia at war in Ukraine (12%). On the contrary, sympathy for the attacked country temporarily increased significantly in the spring of 2022, but at the end of the year, it more or less returned to the positions from the turn of 2021/2022, to the level of popularity about 30%, thus to the zone of rather unpopular countries which Ukraine had been among for a long time since 2013 (STEM 2022f).

As for the attitude of the Czech public to selected superpowers, over the last 28 years, the US and France experienced a significant decline in popularity (from 71% to 37% and from 74% to 58%, respectively), while the general popularity of the United Kingdom also decreased significantly (from 66% to 58%), Russia stagnated at the same level of 12-14%, and only Germany, despite the current decline in popularity, improved at least slightly in the long term (from 41% to 46%).

The original CVVM questionnaire survey in 2022, which focused on the popularity of specific foreign political leaders, also more or less correlated with the STEM surveys for 2022. As expected, the President of the Slovak Republic, Zuzana Čaputová, ranked highest in the popularity of foreign leaders, being the only foreign leader to exceed the popularity threshold with more than half of Czech respondents (60%). Ukrainian President Volodymyr Zelenskyy (49%) remained just below this limit, followed by French counterpart Emmanuel Macron (42%). The popularity of US President Joe Biden (36%) almost exactly copied the level of popularity of the US, while the results of the survey for Russian President Vladimir Putin, popular with only 10% of respondents (Červenka 2022a), turned out to be equally negative.

A decisive indicator of the degree of national social cohesion and resilience is the degree of trust that state residents, regardless of their ideological or value preferences, show towards each other and towards constitutional, state, and other administrative institutions. In this regard, the cohesion and resilience of Czech society after two years of the politically and socially polarising period of the COVID-19 pandemic (while in the autumn of 2021, even under strict sanitary measures, elections to the Chamber of Deputies of the Parliament of the Czech Republic were held) was subjected to another difficult test in the form of a complete flood of disinformation, hoaxes, evident lies, harmful propaganda, and hate speech related to the dynamically changing attitude of the Czech public towards the war in Ukraine and related phenomena. Already in the spring of 2022, 76% of the population of the country considered the spread of disinformation to be a threat to the security of the Czech Republic, and to the surprise of the researchers themselves, up to 71% of respondents expressed support for active actions of the authorities (in the form of blocking selected websites based on the recommendations of the Government of the Czech Republic and the Council of the EU) against the media spreading false, conspiracy, propaganda, and fake narratives. 61% of the population of the Czech Republic voted specifically for a ban on all Russian media in the EU. On the contrary, people of significantly pro-Russian or anti-Western value orientations were the most vocal against any restriction of any type of information, their share within the entire society ranges from roughly 4% to 10% (STEM 2022b). In correlation with the changing attitudes of the Czech public to the topic of the war in Ukraine, during the summer of 2022, instead of a potential military threat to the Czech Republic, a larger proportion of Czech citizens began to emphasise the refugee crisis or the spread of disinformation, concerns about sharply rising prices, a shortage in the supply of strategic raw materials and energy for industry and households, or fear of an overall deterioration of the economic situation - both national and their own (STEM 2022d).

In light of the problems with the spread of disinformation and the resulting economic complications, it is excellent news for Czech society that despite these challenges, it maintained a high level of interpersonal trust in 2022 - up to 98% of the population of the Czech Republic trusted their closest relatives, and all other fellow citizens were generally trusted by 79% of society (Hanzlová 2022). They could also boast a relatively high level of trust by the nature of their definition, function, and operation as strictly apolitical state

bodies and organisations. However, from the point of view of the armed forces, it is certainly gratifying that the Army of the Czech Republic has long ranked at the top of the notional ladder of trustworthiness of state institutions. Also, in mid-2022, with the support of up to 74% of the population, it ranked first, followed by the Police of the Czech Republic (72% confidence level) and municipal/town authorities in the places of residence of the respondents (69%). By the end of 2022, none of the aforementioned non-political institutions saw significant fluctuations in the level of public trust, with the exception of the Police of the Czech Republic (79% confidence level), which replaced the ACR with 73% (Hanzlová 2022), still a cosmetic difference in the range of statistical error. Legislative and executive constitutional institutions, the composition and functioning of which are inevitably linked to the course and results of political competition, performed significantly worse. The level of trust of Czech citizens in these institutions is traditionally and over the long term rather low. In the first half of 2022, it oscillated around one third of the population, namely from 30% trust in the members of the Government of the Czech Republic, 36% trust in the members of the Chamber of Deputies of the Parliament of the Czech Republic, and 37% trust equally in the Senate of the Parliament of the Czech Republic and in the President of the Republic (STEM 2022). At the end of 2022, all the examined constitutional institutions at least slightly improved their image - the government received the support of 34% of the population of the Czech Republic, the Chamber of Deputies and the Senate of the Parliament of the Czech Republic 38% and 41%, respectively, while the President of the Republic enjoyed the support of 38% of the public (Červenka 2022f). A high level of mutual trust between the inhabitants of the Czech Republic and a relatively high, stable in the long term, trust in at least some state institutions was also reflected in the positive attitude of the Czech population to the defence of the state - in the spring of 2022, as many as 93% of them agreed with the statement that the sovereignty of the state must be defended at all costs (an increase of 8 percentage points compared to the last survey of this type in 2020); the opposite opinion was expressed by only 6% of the population (Tuček 2022). On the other hand, up to 62% of respondents doubt the ability of the Czech Republic to defend itself, 55% consider the defence of the state to be insignificant due to its low geopolitical importance, and only 38% of the population of the Czech Republic consider the ACR to be an army qualitatively comparable to the armed forces of Western countries (Tuček 2022).

Migration

For several consecutive years, the Czech Republic has been one of the countries where a positive migration balance contributes to the growth of its total population in each calendar year. On the other hand, the different ethnic, racial, or religious identity of individuals, smaller or larger groups, subcultures, and even in some cases entire parallel societies from abroad is often a factor potentially threatening the internal cohesion and stability of society, the degree of its internal tolerance, peace, and understanding. Due to the increasing share of people of non-Czech origin in a society with a Czech ethnic majority, it cannot be ruled out that any of these factors will negatively affect its cohesion, stability, and resilience in the future. The topic of immigration, but also

emigration from the Czech Republic, is therefore a relevant aspect of mapping the current state of security within the societal sector.

As of 31 March 2022, a total of 922,516 people with foreign citizenship (most often of Ukrainian, Slovak, and Vietnamese origin) were registered in the territory of the Czech Republic, which is an increase of 40% compared to the same period last year (Ministry of the Interior of the Czech Republic 2022a); by the end of the calendar year, this number increased to 1,116,154 people. From the 49% share of Ukrainian citizens in March, their ratio rose to 57%. A long-term visa for temporary protection was issued to 473,216 people (again, especially Ukrainian nationals, based on a set of special laws collectively referred to as *Lex Ukraine*), and 1,649 people applied for international protection (political asylum), which is an increase of 281 people compared to 2021 (Ministry of the Interior of the Czech Republic 2022b, Ministry of the Interior of the Czech Republic 2023).

As for illegal migration, in 2022, 29,235 illegal residents were detected in the territory of the Czech Republic, which is an increase of 18,065 compared to 2021, i.e., enormous 162%. Up to 20,981 people out of this number are Syrian nationals, 2850 were from Ukraine, 1010 from Moldova, 772 from Türkiye, and 309 citizens of Georgia were also detained (Ministry of the Interior of the Czech Republic 2022b). Compared to 2021, when only 428 Syrians illegally crossed the border, we can note a drastic change in migration trends related to the territory of the Czech Republic, when in the second half of the year the numbers of migrants also exceeded the numbers from the peak period of the European migration crisis in 2015. The vast majority of identified and detained Syrians (or Indians, Pakistanis, and Afghans pretending to be Syrians) heading mainly to Germany and Austria arrived in a poor condition in the territory of the Czech Republic via the route from Türkiye through the Balkans, Hungary, and Slovakia. The probability that terrorists would be among them was assessed as minimal (Duda 2022, Svoboda 2022). In September 2022, the government of the Czech Republic temporarily reinstated border controls at the Czech-Slovak border, which led to an increase in the numbers of illegal migrants caught. In the autumn of 2022, ACR members were also involved in the surveillance of the state borders; the tightened regime finally lasted until the beginning of February 2023 (Kuchyňová 2022, Česká televize 2023). In the context of increased immigration from the Balkans, Serbia is the most often mentioned country. This is due to the visa-free regime it has with countries such as India, Tunisia, and Burundi (Euroskop 2022).

In the context of crime related to illegal migration in the Czech Republic, a total of 277 persons aiding in illegal migration, especially in the form of smuggling, were prosecuted in 2022. Compared to 2021, there was an increase of 225 people, i.e., alarming 432.7% (Urban 2023). The scope of criminal activity in the Czech Republic increased by up to 19% year-on-year, but the crime rate of foreigners increased only marginally, slightly above 1% - in the case of Ukrainians as the largest group of foreign nationals in the Czech Republic by only 0.6%, which is a really low score given their total number. In addition, with the exception of smuggling and financial crime committed via the Internet, the main victims of crime among Ukrainians were largely their compatriots residing in the Czech Republic (Česká justice 2023).

Comparison of migration trends in 2021 and 2022		
	Value (number of persons)	Increase (%)
Migration to the Czech Republic in 2021 (arrival in the Czech Republic)	660,849	-

Migration to the Czech Republic in 2022 (arrival in the Czech Republic)	922,516	39.5%
Illegal migration to the Czech Republic 2021	11,170	-
Illegal migration to the Czech Republic 2022	29,235	161.7%

Long-term demographic trends

The issue of direct migration is related to the long-term demographic development as the last of the critical and attention-worthy parameters that affect the cohesion, stability, prosperity, and resilience of Czech society and societal security in general. On the basis of complete data for the calendar year 2022, we can state that the total population of the Czech Republic increased by 16.7 thousand to 10.533 million, compared to 10.517 million in 2021. Since there were fewer deaths, births, and divorces in the Czech Republic compared to 2021 (while the number of marriages increased significantly), it is evident that the migration from abroad was again responsible for the slight increase in the total population of the country. The birth rate of the domestic population has not been able to compensate for mortality in the long term; 2022 was even worse in this respect than several previous years, because after a temporary increase in birth rates in 2021, 12,000 fewer children were born in 2022, the lowest number since 2004, which is rightly referred to as a sharp decrease in the annual birth rate (CZSO 2023b). Statistically, the average number of children born to one woman also decreased significantly year-on-year, from 1.83 to 1.66 (CZSO 2023b). On the other hand, the mean of life expectancy increased again last year (to 76.1 years for men and 82 years for women), thus returning to values from the period before the COVID-19 pandemic (Czech Statistical Office 2023a).

Implications for the armed forces

Trends affecting cohesion, stability, resilience, and the overall condition of social security in the Czech Republic serve as extremely relevant data for the Army of the Czech Republic, if only because Czech society, in the broadest possible sense of the term, is rightly and logically the only real recruitment base for building and replenishing the armed forces. Since the ACR aims to further increase the number of both professional soldiers (up to 30,000 in 2030) and members of the Active Reserves (10,000 in 2030), demographic trends are already forcing the ACR to look for recruitment methods that will increase the attractiveness of military service in a society that has been struggling with declining birth rates for a long time and has become increasingly multicultural in recent decades.

After the fall in meeting the recruitment goals in 2019, met by the ACR only by 86%, the trend reversed in 2020 and 2021 and the recruitment goals were met slightly above 100% also due to the effects of the COVID-19 pandemic (Army of the Czech Republic 2021, Ministry of Defence of the Czech Republic 2021). However, 2022 has already seen a decline to the current level of 92% fulfilment of recruitment targets, as the wave of interest in joining the ACR and active reserves just after the beginning of the war in Ukraine was not long and numerous enough to compensate for the later decline in interest in the next course of 2022 (Gruntová 2022, Bachorík 2023).

Meeting recruitment targets in 2021	
Recruitment target in 2021	Admitted

1,150 (100%)	1,228 (100+% met)
Of which women	426 (34.6%)
The share of women in the ACR as of 31. 12. 2021	13.6%
Meeting recruitment targets in 2022	
Recruitment target in 2022	Admitted
1800 (100%)	1667 (92% met)
Of which women	233 (13.9%)
The share of women in the ACR as of 31. 12. 2022	14%

Source: Authors according to Gruntová 2022

In the long term, in order to make military service more attractive and motivate new recruits from among the youngest generation cohorts, i.e., the so-called ‘Generation Z’ (born in 1995-2012) and, prospectively, the ‘Alpha Generation’ (2013-2025), it is necessary to carry out a complete reform and modernisation of recruitment processes and mechanisms. The first step in the right direction should be the emerging virtual recruitment centre, which is to facilitate interaction between the ACR apparatus and potential candidates for the service in the armed forces with the help of interactive elements and a simplified search for information (Horák 2023). However, in the long run, no recruitment campaign can do without the strategic strengthening of societal resilience, consolidating a broad consensus on the geopolitical orientation of the country, and increasing citizens’ trust in the institutions of the state, including the army. This requires the application of permanent, targeted, understandable, and unified strategic communication of all state bodies and authorities, including the armed forces (the so-called whole-government approach) for the purpose of proactive communication towards the domestic audience and providing information on the activities, functioning and decision-making of all state institutions, including explaining the strategic priorities of security policy at home and abroad (Divišová 2022).

Year	Meeting recruitment targets of the ACR	Score	Methodology
2016	100+ %	1	
2017	100+ %	1	
2018	98.9%	1	
2019	86%	-1	
2020	100+ %	1	
2021	100+ %	1	1 (100+ % - 95%)
2022	92 %	-1	-1 (94-80%) -2 (79-60%) -3 (59-40%) -4 (39-20%) -5 (19-0%)

ECONOMIC SECTOR

Some significant changes took place in the economic field in 2022. While in 2020 and 2021 the main economic topic was the COVID-19 pandemic and its impact on the economy, in 2022 the pandemic was put back by the conflict in Ukraine and the related energy crisis. High inflation, unprecedented for several decades, tightening financial conditions in most regions, the Russian invasion of Ukraine, and the lingering consequences of the COVID-19 pandemic, all of these affected the economy in 2022. The cost of the COVID-19 crisis in 2020-2024 was estimated by the International Monetary Fund at USD 12.5 trillion (Reuters, 2022).

Methodology and data source

Newly, the development in the economic sector of the security environment will be partially assessed using a set of indicators that will enable better recording of year-on-year changes and, in the longer term, identifying trends in the development of some of the phenomena. In addition to indicators for assessing the economy's ability to generate wealth (GDP) and price and financial stability, some development trends in selected areas will also be monitored annually. We will monitor the use of external sources of state financing (debt ratio), the qualifications of the workforce and the level of employment. All these factors have a great impact on the ability of the economy to generate state resources to secure defence.

The global economy is facing a number of major challenges. In 2022, according to the International Monetary Fund, it grew by 3.4%, slowing down its previous growth from 6.0% in 2021 (IMF, 2023). The main brake on growth was the energy crisis, which hit Europe the most. However, even the Chinese economy grew by only 3% in 2022, far below China's government target, which means one of the worst results in almost half a century. Growth was strongly influenced by months of widespread lockdowns due to COVID-19 and the historic decline in the real estate market (CNN Business, 2023).

Over the past year, individual countries faced various threats and risks - from political, military or economic, to environmental or health-related ones. From the point of view of external economic relations, they can be divided into three groups:

The first group consists of risks that are transferred from the COVID-19 pandemic in the form of very high inflation. The second one is based on the long-term transformation of world trade, which the COVID-19 pandemic accelerated by several years. The third, latest group of risks results from the largest armed conflict in Europe since World War II - the Russian invasion of Ukraine (Moderní ekonomická diplomacie MZV, 2022).

In recent years, the COVID-19 pandemic has caused significant damage to the global economy, which has not yet been eliminated. "The problem resides in the broken original customer-supply chains. Their disruption significantly affected the just-in-time delivery model, a system allowing companies to produce in a specified quantity and at a specified time according to specific customer requirements. Fluctuations in demand, which

decreased significantly at the beginning of the pandemic in 2020 and subsequently increased sharply, thus caused persistent problems in supply and production. The situation in transport, especially in the shipping industry, also contributed to this situation. The price of transporting a container from East Asia to Europe increased by almost 700% since the end of 2020 and did not fall even with the receding pandemic.” (Moderní ekonomická diplomacie MZV, 2022). “The tension in shipping has also affected the price of transport. The spot price of a container from Asia to the US reached USD 20,000 In 2022 (including surcharge and premium) compared to USD 2,000 a few years ago.” (CNB, Frydrych, M. 2022).

“The second group of risks is related to the significant transformation of the global business environment. In the period before the pandemic, the principle of a gradual shift of the focus of the world economy from the west to the east, i.e. to Asia, was applied. Instead of deglobalisation or regionalisation, protectionism started taking place during the pandemic, and the role of self-sufficiency in production was emphasised. In addition to the transformation of the office work model, rapid digitisation across sectors, and strengthening health capacities, the development of world trade accelerated by several years due to the pandemic. Speed of delivery, proximity of the supplier to the customer, and adaptability are now factors that can no longer be replaced by a low price at any cost. For companies, this means the need to adapt to end customers not only in the form of services or products but also within the position in the production and supply chain.” (Moderní ekonomická diplomacie MZV, 2022).

In previous years, the word war was used primarily in connection with cyberspace. That is why the conflict between Russia and Ukraine caused a shock, which spilt over from the financial markets to the real economy. (Moderní ekonomická diplomacie MZV, 2022). Apart from Russia, Belarus, and Ukraine, the crisis also affected other European countries. All industrial sectors were affected, and problems were also recorded in agriculture, when there was a large increase in the price of input components, e.g. fertilisers, which had a direct impact on the production and price of food. The Food and Agriculture Organization of the United Nations (FAO) reported that food prices rose by 28 per cent in 2022 and were the highest in a decade (FAO of UN, 2023).

Disrupted supply chains at the time of the pandemic greatly affected the automotive industry. Still, in 2022, the problem with semiconductor chips could not be solved, and their shortage and thus the problem in the production and assembly of new cars persisted. Although the Semiconductor Industry Association (SIA) announced that global sales of semiconductor chips increased by 26.2 per cent in 2022 to a record USD 556 billion, over CZK 12 trillion (SIA, 2022), this was not enough. Therefore, in an effort to reduce dependence on imports of scarce microchips, the European Union announced that it would **release EUR 11 billion (CZK 266 billion) to support their development in Europe (ČT24, 2022, Brussels)** and the American company Intel would build a microchip production plant in the German city of Magdeburg for EUR 17 billion, more than CZK 422 billion (ČT24, 2022, Intel).

China became one of the world's leading car exporters, surpassing Germany in car production at the end of 2022. In Europe, the number of newly registered cars fell sharply due to limited production at the time of the pandemic, and this loss has still not been made up (CNB, Komárek, 2023). For example, Škoda Auto delivered 731,300 vehicles

worldwide in 2022, which is a decrease of 16.7% compared to 2021, when it delivered 878,200 vehicles (Škoda, 2023).

China's economic growth in 2022 fell to its second lowest level in at least four decades under pressure from antivirus checks and a property slump, but after lifting the restrictions that had kept millions of people at home and triggered protests, activities in the area resumed. The world's second largest economy grew by 3% in 2022, less than half the pace of 8.1% the previous year. This was the second lowest annual rate since at least the 1970s, second to 2020, when growth fell to 2.4% at the beginning of the COVID-19 pandemic. China's slump hurt its trading partners by reducing demand for oil, food, consumer goods, and other imports. The recovery would be an encouragement for global suppliers, who face an increasing risk of recession in Western economies (NPR, 2023).

The Russian economy, with a gross domestic product of \$1.7 trillion (slightly less than, for example, Italy), accounts for just under 0.8% of world GDP (Trading Economics, 2022), but its withdrawal from the world economy caused significant complications for European companies.

Outages of imports of raw materials from all three countries involved in the conflict (Russia, Belarus, Ukraine) caused a temporary increase in prices (of wheat, grain, corn) or their temporary unavailability (iron and titanium ore, steel, nickel, cobalt). In the long term, however, the partial withdrawal from these markets supported the trend already started and accelerated by the pandemic, i.e., the transformation of global supply chains. This concerned, in particular, the transfer of production to India or under the concept of strategic autonomy of the European Union. Business chains are not immutable and most countries or economic blocs have learned lessons from the previous course of the pandemic. It is thus possible to record the transfer of production to specific territories and regions, or efforts to concentrate it within countries with the same view on the functioning of the market economy. The degree of impact of the crisis on Western economies was directly proportional to the scale of the conflict and the level of sanctions imposed on Russia by the Western world. In October 2022, the Executive Director of the International Energy Agency (IEA), Fatih Birol, declared that the world was hit by the first truly global energy crisis, and in November of the same year, he announced that Russia had forever lost Europe as its largest energy client (IEA, 2023).

Of course, it is not possible to replace business activities with Russia in the short term. However, even in the long run, a quick return to this market cannot be expected, mainly due to high risks, barriers, but also difficult financing. It is therefore possible to expect a territorial regrouping of the world trade, not only from the areas involved in the conflict, but also from China, where, in general, companies have been failing to operate and fulfil the market growth potential for a long time. China is still difficult for Czech companies to access from the business point of view, mainly due to significant market barriers. In addition, China strives for maximum self-sufficiency and import restrictions.

Czech Republic

In the first half of 2022, the economy was supported by post-pandemic recovery, and in the second half of the year, the impact of high inflation on the real value of household incomes and savings and, subsequently, their consumption was already significantly reflected.

The gross domestic product (GDP) increased by 2.4% in 2022. Capital expenditures and foreign demand, in particular, contributed to this. On the contrary, domestic consumption decreased in 2022. During the year, growth weakened, and in the 4th quarter, GDP

increased by 0.2% year-on-year. In the second half of the year, the year-on-year economic growth was mainly supported by foreign demand (CZSO, Q4 2022).

Gross domestic product increased overall by 2.5% in 2022. Services mainly contributed to the growth, while various problems persisted in industry - interruptions in the supply of components or increased prices of energy and raw materials. Consumer prices increased by 15.1% in 2022 (CZSO, Q4 2022).

The COVID-19 pandemic, along with the war in Ukraine, also contributed to high energy prices. While at the end of 2019, 1 MWh of electricity on the spot market cost EUR 15, in 2022 it exceeded the limit of EUR 200. The price of gas doubled and a similar situation took place on the oil market - at the end of 2019, one barrel traded for USD 60, while in the first quarter of 2022 the value exceeded USD 120. Rising electricity prices combined with long-term labour shortages and the associated pressure on wages resulted a hazardous situation for Czech companies, which reduced their global competitiveness

The original state budget of the Czech Republic for 2022, which envisaged a deficit of CZK 280 billion, had to be amended twice as a result of the conflict in Ukraine and its effects. For the first time, the planned deficit increased to CZK 330 billion; in the second round it reached CZK 375 billion. In the end, the budget ended with a deficit of CZK 360.4 billion (Deloitte ČR, 2023). The year-on-year reduction in the overall deficit was mainly due to more favourable management of the state budget in the first quarter. The impact of the war in Ukraine, i.e. the acceleration of the rising of energy and fuel prices and the costs associated with the refugee wave, initially had a negative impact on the expenditure side of the budget. However, at the end of the year, their negative impact on budget revenues was also increasingly evident, especially in the area of indirect taxes (CZSO, Q4 2022).

The conflict in Ukraine thus had an impact on Czech companies that had business relations with any of the countries involved in the conflict, either directly or indirectly, in the form of disrupted re-exports and indirect exports.

The price increase was broad in 2022 and reached double-digit value in 7 of the 12 parts of the consumer basket. The three most important sections of the consumer basket, i.e. housing and energy, food and non-alcoholic beverages, and transport, had the biggest impact on price growth last year. In the case of food, growth accelerated in the second half of the year, while in the case of housing and energy and transport, on the contrary, the dynamics slowed down. Total employment rate increased by 1.7% last year (CZSO, Q4 2022).

The deterioration of the balance of trade in goods in 2022 was most affected by trade in oil and natural gas as well as other imported goods and raw materials, for which a significant increase in prices was recorded. For example, in August 2022, the price of a critical electricity futures contract on the European Energy Exchange (EEX) in Leipzig exceeded EUR 500 per megawatt hour (MWh) for the first time. This means about 500% increase over the year, mainly due to the reduction of Russian gas supplies. In November, the price of gas for the European market fell by more than a tenth, thus returning below the limit of EUR 100 per MWh. High gas reserves, relatively warm weather in Europe, and austerity measures at all levels contributed to the decrease.

European Union

The EU27 accounts for approximately 14% of world trade in goods. The EU, China and the United States are the three most prominent global players in international trade (EU. 2023. Facts and figures on the EU). *"In 2022, the EU goods trade balance recorded a large deficit of €432 billion, reaching its lowest level since the start of the time series in 2002.*

The deficit was mainly caused by the sharp increase in the value of energy imports, which began at the end of 2021 and continued for most of 2022.” (Eurostat, 2023).

Already in 2014, in connection with the annexation of Crimea by Russia, the EU introduced economic sanctions aimed at trade with Russia in specific economic sectors. They targeted the financial, commercial, energy, transport, technology, and defence sectors. Since 2016, the validity of economic sanctions was repeatedly extended by six more months. On the very first day of the invasion in 2022, EU leaders agreed at the summit to introduce the first set of sanctions against Russia. Gradually, the Union adopted a number of other packages of anti-Russian sanctions - a total of 9 by the end of 2022. The EU sanctions list, which is being gradually supplemented, has included almost 1,500 people and 205 entities. For example, the EU has excluded some Russian and Belarusian banks from the SWIFT system. The closure of the EU's airspace to Russian airlines, a ban on imports of Russian coal, and a ban on imports of most Russian oil also continue to apply.

In October 2022, the presidents and prime ministers of the countries of the European Union agreed on measures against high energy prices in order to reduce energy prices, ensure security of supply, and reduce consumption. Voluntary joint purchases of gas or a price correction mechanism in the event of an extraordinary increase in prices were also part of the measure. In addition, EU member states agreed to reduce peak electricity consumption and tax the exceptional profits of power plants and fossil fuel suppliers. During 2022, the short-term outlook for economic activity in the eurozone gradually improved. However, the eurozone economy was further hampered by high inflation and tighter financing conditions, which dampened both consumption and production. However, both retail sales and industrial production returned to month-on-month growth in November (CNB, Export, 2023). Inflation continued to decline, but monetary policy remained tight. The continued slowdown in growth of energy prices reduced headline inflation (9.2% in December, -0.3% month-on-month). However, the rise in prices of food, services, and industrial goods remained accelerated (CNB, Outlook, 2023).

Key central banks continued to tighten monetary policy, albeit at a milder pace than initially expected. Consumer inflation in the eurozone also declined slightly. Despite efforts to find a consensus across EU countries on how to relieve consumers, the impact of increased energy prices per capita in each country was very different.

Nord Stream

Works on the Nord Stream 2 gas pipeline began in 2015, and in September 2021, it was ready for putting into operation. In connection with the war in Ukraine, the operator of this German-Russian gas pipeline **dismissed all of its 140 employees in March 2022**. In April, the Russian gas company **Gazprom announced that it was withdrawing from Germany** and that it had terminated its participation in the German division of Gazprom Germania. At the same time, **it also completely stopped gas supplies to Poland and Bulgaria**. It was explained by the fact that the local gas companies there refused to pay for the gas in rubles. Then it cut off gas supplies to a number of other countries. In June 2022, the International Energy Agency (IEA) announced that due to a sharp reduction in supplies from Russia, the EU imported more gas in the form of liquefied natural gas (LNG) from the US for the first time than through gas pipelines from Russia. Bloomberg also reported that **after six years, Europe surpassed Asia** and became the largest customer of American oil.

In September 2022, Swedish and Danish measuring stations recorded massive underwater explosions in places where gas subsequently started to leak from the Nord Stream gas pipeline. The cause of a total of three leaks on the Nord Stream 1 and 2 gas pipelines is under investigation. Denmark, Russia, and experts did not exclude sabotage (IŘozhlas, 2022). So far, it has not been possible to reliably determine the cause of the damage, but the event did not have an immediate impact on gas supplies to Europe - neither of the gas pipelines was in operation. The Nord Stream 1 gas pipeline, which consists of two parallel branches, had not transported any gas since August 2022, when Russia shut it down for maintenance; the Nord Stream 2 gas pipeline had never been put into operation. Although neither of the gas pipelines was in operation, gas was still flowing in both pipelines to maintain the necessary pressure, and methane started to leak into the Baltic Sea. Scientists began to talk about the damage to the Nord Stream pipelines as one of the worst natural gas leaks in history, posing a significant risk to the climate (Seznam Zprávy, 2022).

Implications for the armed forces

2022 was, in particular, a year of energy shock, which, inter alia, triggered other unprecedentedly high fiscal costs and a year of very high inflation, accompanied by a delayed response of key central banks.

The resulting problems among manufacturers and suppliers in the world led to a significant increase in demand for goods, which were also produced in lesser quantities. This in turn led to an increase in prices. Very high energy prices are the result of the Russian aggression in Ukraine, which is mainly associated with the rising prices of natural gas, electricity and, partly, oil. Even with slightly reduced demand, a significant reduction in supplies (offer) caused a significant increase in prices. *“This price increase was also supported by the forced savings of the population from the COVID period. The inability to travel or go to a restaurant led to a shift in demand from non-tradable to commercial goods and ultimately also led to an increase in prices. The generous financial support of individual governments to households and companies also contributed to this. They received money for working or producing less (or not at all).”* (CNB, Komárek, L. 2023). Energy and commodity prices were rising sharply due to Russian aggression in Ukraine; however, contrary to the original assumptions, the detachment from the strong raw material dependence on the Russian Federation was quick and successful. The prices of energy raw materials gradually ceased to be the main factor of high inflation, and inflationary pressures, in Europe resulting mainly from high energy prices, eased considerably.

“However, further reduction of prices of raw materials used in power engineering is not very likely in the foreseeable future, moreover, the prices of raw materials outside the energy sector, especially food commodities, remain high. For industrial metals, a gradual increase in prices is expected in connection with the growing demand from Chinese industry after the abolition of local anti-epidemic measures.” (CNB, Komárek, L. 2023).

All of these factors have a direct impact on the armed forces. The gradual slowdown of the COVID-19 pandemic created the expectation that investment in regional defence would decline in the short term. The growth of expenditure was smaller in the light of fiscal pressure after the coronavirus pandemic, which was reflected in the first

announcements of defence budgets in 2022. However, the Russian invasion of Ukraine in February caused a significant change of course.

Western countries, especially NATO members, headed by the Czech Republic, basically immediately launched material and financial assistance, which consisted in the supply of weapons, ammunition, and equipment to the Ukrainian army to defend themselves against the Russian aggressor. In the first phase, they supplied ammunition for Russian equipment, which was used by the Ukrainian army, and gradually added supplies and heavy equipment such as tanks, infantry fighting vehicles, or artillery systems. For example, the Czech Republic (the Ministry of Defence together with armament manufacturers) delivered a total of 89 tanks, 226 armoured vehicles, 38 howitzers, 4 combat helicopters, 6 anti-aircraft systems, 33 salvo rocket launchers, over 1.5 million pieces of ammunition - incl. 60,000 missiles - to Ukraine by the end of 2022 (E15, Česko patří mezi největší dodavatele vojenské pomoci Ukrajině). *“The total value of the Czech Republic’s aid amounts to a market price of about ten billion CZK. In addition, citizens who collected 1.55 billion CZK as part of the crowdfunding account also participated in military assistance to Ukraine* (PR vláda.cz, 22.03.2023).

Supplies also took place in the field of anti-tank weapons or unmanned vehicles, drones. Aircraft, formerly of Russian origin, and air defence systems, including those used by NATO countries, were also moved to Ukraine.

The European Union pays compensation to those member countries that have supplied and are supplying military equipment to Ukraine from the European Peace Facility (EPF), originally established to finance EU missions and operations and stabilise partner countries in Europe’s neighbourhood. Already on 28 February 2022, the EU Council decided that the EPF funds should also be used to compensate those member countries that supplied military equipment to Ukraine and released the first EUR 500 million for this purpose. Subsequently, several other packages of financial support from this fund were approved. The agreed rules contain strong control and monitoring mechanisms (Army.cz. ČR obdržela refundace z EPF).

“In addition to eight helicopters, the Czech Republic received financial assistance from the US for the purchase of military equipment necessary to modernise the army in the amount of almost seven billion CZK. The Czech Republic should then receive at least another two billion CZK for its supplies from EU funds. Earlier, Prime Minister Petr Fiala announced after a meeting with German Chancellor Scholz that the Czech Republic would receive 15 Leopard tanks from Germany.” (PR vláda.cz, 22.03.2023).

At the same time, shortly after the invasion, around 20 European countries undertook to increase their defence spending. Significant increases were reported, for example, by Germany and Poland, including the addition of special funds, primarily aimed at strengthening investment capabilities. The existing trend reversed and gradually increased the pressure on new arms acquisitions over the course of the year. The large increase in demand, together with the above-mentioned external economic circumstances, resulted in delays in the delivery of not only previously contracted orders, but also in the extension of delivery times for new acquisitions. In the field of production and supply of more sophisticated weapons (fighter aircraft, tanks, self-propelled artillery systems), the terms range from half to a whole decade. Large manufacturers of weapon systems in Europe, but also in the US or South Korea were overwhelmed by new orders. The situation is all the more complicated because most NATO countries verbally supported the increase in defence spending (some countries actually increased the spending), however, the combination of the immediate increase in demand and the simultaneous increase in the prices of energy, raw materials, and labour or high inflation caused great pressure on rising the prices of final products.

Even in the case of previously ordered and partially paid projects, an increase in the price of these contracts cannot be excluded. This includes, in particular, comprehensive service support, i.e., life cycle security. This can be as long as four decades for some types of technology (aviation, anti-aircraft systems, tanks). It is clear that price stability of contracts cannot be fully guaranteed for such a long period of time. In the case of large contracts, it is necessary that the licence for further production or service is held by the state or state-owned enterprises, so that the state is not absolutely dependent on a private supplier. Furthermore, it is necessary to negotiate the terms of cooperation with the Czech industry, which should participate in offsets worth 40% of the contract. This is an important element not only with regard to significant value - the army needs to be assured of stable and reliable services provided in real time, reachable, and carried out on the territory of the given state, i.e., the Czech Republic.

In acquiring new technology for the Army of the Czech Republic, it is also necessary to follow well-thought-out plans in order to eliminate as much as possible any problems with ensuring logistics and reliable communication between individual weapon platforms. 2023 will be a very important year from the point of view of military purchases, as more than a third of the MoD budget is planned for investment in armaments, equipment, infrastructure, or information technology.

ENVIRONMENTAL SECTOR

The strategic shock of the war in Ukraine has inevitably affected environmental security as well. It has exacerbated the already worsening food security situation in various regions of the world and opened debates on rethinking the existing policy to radically reduce greenhouse gas emissions and thus mitigate ongoing climate change. These are the topics that will receive special attention. The chapter again focuses predominantly on climate change, which to a greater or lesser extent is inextricably linked to almost all threats of an environmental nature.

Methodology and data source

Newly, the development in the environmental sector of the security environment will be assessed using a set of indicators that will enable better recording of year-on-year changes and, in the longer term, identifying trends in the development of some of the phenomena. In addition to indicators of climate change (global average temperature, concentration of greenhouse gases in the atmosphere, and the values of the area of sea ice and ice sheets and ocean level rise depending on them), the development trends of the driving forces will also be monitored annually. We will monitor the burning of fossil fuels expressed as the amount of CO₂ in gigatonnes released into the atmosphere in a given year as the main driver of climate change as well as the growth of the population expressed as an absolute and percentage increase in a given year. Population growth is crucial in terms of the availability of limited resources, such as quality drinking water and food, and the depletion of non-renewable resources and also in terms of greenhouse gas emissions. Marginally, two other indicators of environmental risk drivers will also be monitored, expressing human treatment of the environment and basic resources in the context of an ever-growing population. Deforestation, expressed as a percentage of the planet covered by forests, is a major contributor to climate change (IPCC 2019) and the contribution of agriculture to water consumption is a crucial factor in terms of water scarcity (FAO 2019).

However, for the purposes of the chapter, it is crucial to monitor the impacts of environmental risks in the security area - both in terms of human security (food security, access to water, extreme weather events, and natural disasters) and national security (conflicts caused by environmental factors - typically water shortages). Due to the nature of the available data, these factors will be evaluated using qualitative data, when the occurrence of natural disasters will be assessed as well as the occurrence of conflicts and crises, the origin or escalation of which were significantly influenced by factors of an environmental nature. Furthermore, the situation in the field of food security will be evaluated, the development of which in an unfavourable direction is often negatively affected by the occurrence of armed conflicts, natural disasters, or in the worst case, the occurrence of both in a single year. The latter area will also help us evaluate the quantitative indicator of the number of people seriously affected by *acute food*

insecurity,³ which, however, is significantly determined by the situation in a few countries - often affected by armed conflict - which should be taken into account when interpreting the development of this indicator. From the point of view of implications for the Czech Republic and its defence policy, it is crucial to monitor the occurrence of extreme hydrometeorological phenomena in the environmental sector, the impacts of which may require, and have already required, the assistance of the ACR. Again, we will monitor both qualitative criteria - evaluation of the hydrometeorological situation in the Czech Republic with an emphasis on deviations from long-term average values, the occurrence of natural disasters requiring the assistance of the ACR - and quantitative ones in the form of an indicator expressing the number of meteorological warnings of the CHMI. This makes it possible to monitor the year-on-year development of dangerous hydrometeorological phenomena, again with the awareness of significant year-on-year variability requiring the evaluation of development in the longer term.

It is necessary to assess the security implications in terms of these indicators with great caution, bearing in mind their selective nature due to the availability of data as well as due to the high year-on-year variability of some phenomena - especially natural disasters, when the occurrence of one extreme event can significantly affect the overall observed values. Some indicators, such as the number of people seriously affected by food shortages, depend fundamentally on developments in other security sectors - here, for example, the ability of states to provide basic functions for (all) their citizens or solidarity and assistance of the international community.

Table 1 - Indicators of the development of the environmental sector and evaluation of security implications

Drivers	Climate change indicators	Security Implications
Burning fossil fuels (I: amount of CO ₂ in Gt released into the atmosphere in a given year)	Concentration of CO₂ in the atmosphere (I: absolute value / CO ₂ ppm at the end of the year)	HUMAN SECURITY Food security I: number of people in millions severely affected by food shortages Climate and weather extremes in the Czech Republic I: number of CHMI meteorological warnings for a given year
Deforestation (I: % of the planet covered by forests)	Global average temperature (I: increase in global average surface temperature since 1880)	NATIONAL SECURITY (I: occurrence of conflicts and crises with a significant share of environmental

³ These are phases 3-5 of the IPC (Integrated Food Security Phase Classification) scale: phase 3 = crisis, phase 4 = emergency, phase 5 = catastrophe/famine, that require immediate action to address the crisis (see FSIN 2022b, p. 234).

		factors in their origin/escalation)
Population growth (I: population - absolute value + % growth per year)	Area of sea ice (area of sea ice in the Arctic in millions of km ² as of September each year)	
Depletion and pollution of resources (I: % share of agriculture in water consumption)	Area of ice sheets (loss of mass of ice sheets in Antarctica and Greenland in Gt as of September of a given year*)	
	Sea level rise (I: average sea level rise in mm since 1993)	

N.B.: I = indicator.

Scientific agenda

The discussions on the development of environmental risks must again be divided into two agendas - scientific and political. The first one reflects the current 'hard data' - indicators of the ongoing climate change and its drivers as well as new scientific knowledge that helps put this data into context and understand the scale and urgency of the problem along with the possible ways of coping with it. The political agenda will then summarise the current debates on climate and environmental policy in general.

Global average temperature

Despite the conditions of La Niña, which are generally associated with a slight cooling effect, 2022 was recorded as the fifth warmest, with the last eight years also being the eight warmest ones (Copernicus 2023a). In 2022, according to estimates, the global average temperature increased by $1.15 \pm 0.13^{\circ}\text{C}$ compared to the average for the period 1850-1900 (Copernicus 2023b). In 2022, the European continent experienced the second warmest year after 2020. At the same time, Europe faced record values for the summer period, while autumn was one of three and winter one of ten warmest respective periods in this region. Compared to the global average, temperatures on the European continent were rising twice as fast as on other continents (ibid.). In accordance with this development, 2022 was also a thermally abnormal year in the Czech Republic with an average annual temperature of 9.2°C , which means a deviation of 0.9°C from the period 1991-2020, where the months of June and October can be considered as thermally extremely above-normal months, and January, February, May, and August as thermally above-normal (CHMI 2023, p. 3).

Record temperature values were also recorded in both polar regions in 2022, with temperatures higher by more than 2°C in parts of Siberia and the Antarctic Peninsula compared to the average values from the reference period 1991-2020. Some regions experienced the warmest year - among them large parts of Western Europe as well as parts of the Middle East, Central Asia and China, northwest Africa, and the Horn of Africa (Copernicus 2023a).

Concentration of greenhouse gases in the atmosphere

In 2022, there was a further increase in the concentration of greenhouse gases, with average values of approximately 417 ppm (parts per million) for carbon dioxide and 1894 ppb (parts per trillion) for methane - the former being the highest concentration in about 2 million years, the latter in a period of about 800,000 years (Copernicus 2023b).

Table 2: Development of global temperature and carbon dioxide concentration over the last five years

Indicator/year	2018	2019	2020	2021	2022
Global average temperature	0.85	0.98	1.02	0.85	0.89
Concentration of CO ₂ (as of 12/2022)	409.99	412.74	414.96	417.41	419.66

Source: NASA 2023a, NOAA 2023.

Size of sea ice, ice sheets, and glaciers

The area of sea ice in the Arctic observed in September, when it reaches its lowest values, indicates the rate of warming in this region. The loss of white area reduces the so-called albedo - reflectivity, which leads to a feedback process due to further warming and melting. As of September 2022, the Arctic sea ice covered an area of 4.67 million square kilometres, which means a decrease of 1.55 million square kilometres from the average lowest value for the period 1981-2010 (NSIDC 2022). The Arctic sea ice is currently declining at a rate of approximately 13% per decade (EEA 2022). In the Arctic, the area of sea ice is subject to greater year-on-year variability, when it was possible to register both a record high and a record low values of the area of this ice in the last decade. As of February 2022, the extent of Antarctic ice was 1.92 million square kilometres - the lowest ever recorded (Copernicus 2023b).

Due to melting, there is further loss of ice sheets in Antarctica and Greenland, since 2002 at a rate of 151 billion metric tons per year in the former case and 273 billion metric tons per year in the latter one. Record melting took place in the European Alps, with glaciers in Switzerland losing 6% of their volume between 2021 and 2022 due to very little snow in the winter period, dust from the Sahara, and a long and persistent period of heat. Between 2001 and 2022, this volume decreased by more than a third from an area of 77 km³ to 49 km³ (Copernicus 2023b). The melting of ice sheets and glaciers is directly linked to the rise in ocean levels.

Ocean level, temperature, and acidity

The trend of sea level rise continues due to the melting of glaciers and ice sheets and the expansion of water due to warming. The same applies to the trend of the increase in the average temperature of the oceans and their acidity. Since 1993, based on data from satellites as of July 2022, there was a 102.8 mm increase in global average ocean level (NASA 2023b). According to the World Meteorological Organization, the rate of sea level rise is accelerating significantly. Over the last 30 years (1993-2022), the rate of increase in the level is estimated at 3.4 ± 0.3 mm per year, but between the first and last decade of the reporting period, the rate doubled with growth exceeding 4.4 mm per year in the period 2013-2022. At the same time, since January 2020, the increase in the average global ocean level is around 10 mm, which is almost a tenth of the growth recorded in the last three decades (WMO 2022).

Given the inertia of many phenomena associated with climate change, be it the lifetime of greenhouse gases already concentrated in the atmosphere or the melting of glaciers and ice sheets as a result of warming, it will not be possible to quickly reverse the rise in ocean levels even in the case of a significant reduction in greenhouse gas concentrations. In the longer term, the risk of loss of liveability for islands and other low-lying areas will remain. In the short term, the risk of saltwater intrusion into soil and groundwater remains, with negative consequences for the agriculture of the affected areas and greater destructive power of storm tides.

Drivers

Anthropogenic climate change is mainly attributable to two activities: the burning of fossil fuels and deforestation. The level of these activities is largely influenced by population growth and at the same time by the raising standard of living, which places increased demands on the use of basic resources beyond the pace of population growth.

Combustion of fossil fuels can be expressed as the amount of CO₂ in gigatonnes released into the atmosphere in a given year. In 2022, this value exceeded 36.8 Gt, an increase of 0.9% (321 Mt). However, according to the International Energy Agency, this growth did not meet the concerns caused by leap changes in energy prices or rising inflation. Despite the increased use of coal by some countries at the expense of gas, higher growth in emissions was avoided by the use and introduction of low-emission energy sources and savings in the consumption of other fossil fuels. Another positive news is the return to the trend where CO₂ emissions are growing slower than global GDP (3.2%) (IEA 2023).

The rate of deforestation is monitored through the proportion of land covered by forests. As of 2020, this amounted to 31% of the Earth’s surface (4.06 billion in absolute figures), with a downward trend of 420 million hectares less due to deforestation between 1990 and 2020. In the period 2015-2020, deforestation was taking place at a rate of 10 million hectares per year, while overall this rate is at least slowing down (FAO 2022a).

As of November 2022, the world population was projected by the UN to exceed the 8 billion mark for the first time (Crowfoot 2022). At the end of 2022, this value amounted to a total of 7,975,105,156 people, a 0.83% increase compared to the previous year (Macrotrends 2023). This continues the trend of slowing population growth, which fell below 1% in 2020 for the first time since 1950 (UN 2022). The most numerous regions were East and Southeast Asia with 2.3 billion inhabitants (29% of the population) and Central and South America with 2.1 billion (26% of the population). As mentioned above, population growth necessarily has an impact on the availability, depletion, and possibly pollution of resources. This development can be illustrated by the share of agriculture in water consumption. Currently, 70% of groundwater is used in agriculture, with an even larger share being used in dry and semi-dry areas, especially for irrigation purposes (FAO 2022b). Water scarcity has a major impact on food security, especially in the context of a growing population, changes in rainfall distribution, and rising average temperatures in some regions.

Table 3 - Indicators of the development of selected drivers in the environmental sector

Indicator	2020	2021
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Population growth (absolute value/percentage increase)	7,909,295,151 (0.87%)	7,975,105,156 (0.83%)
Amount of CO ₂ in Gt released into the atmosphere	36.3 Gt	36.8 Gt
Share of land surface covered by forests (absolute value/share)	4.06 billion ha / 31%	Data not up to date
The share of agriculture in groundwater consumption	70%	70%

Source: Macrotrends 2023; IEA 2022, 2023; FAO 2022a; FAO 2021, 2022b.

Political agenda

In November, Sharm el-Sheikh, Egypt, hosted the 27th United Nations Climate Change Conference 2022 (hereinafter also referred to as COP27). Despite the initial disagreements, the historic success was the agreement to establish a fund to compensate for damage caused by climate change to particularly vulnerable countries (known as ‘Loss and Damage’), which were affected by floods, drought, or other climate disasters. Specific requirements regarding the financing and beneficiaries of this assistance will be the subject of the next COP28 conference (Masood, Tollefson, and Irwin 2022). In the field of mitigation of ongoing climate change, there was a significant confirmation of the commitment of states to limit the increase in global average temperature to 1.5°C compared to values before the industrial revolution, rather than keep this warming at 2°C – a target also compliant with the requirements of the Paris Agreement, which, however, is associated with significantly higher security risks (IPCC 2021). However, in contradiction to this declaration, only a few countries have announced more ambitious, so-called nationally determined contributions (NDCs), which commit to reducing greenhouse gas emissions – among them, for example, the EU or Australia (United Nations Climate Change 2023). A more significant shift did not take place in the area of fossil fuels, where the final statement, despite greater ambitions of some countries, continued to talk only about *phasing-down* coal instead of definitively *phasing out* fossil fuels, while the wording “*transition to low-emission power systems*” does not exclude the use of gas in principle (UNFCCC 2022). The commitment of developed countries to increase aid to developing countries in adaptation to climate change was reaffirmed, while serious concerns were expressed about the fact that the target of developed countries collectively raising USD 100 billion per year for climate action in the developing world by 2020 had not yet been met (ibid.).

Discussions on adequate steps to ensure the implementation of the objectives of the Paris Agreement continue. However, according to the United Nations Environment Programme’s annual ‘Emissions Gap Report 2022’, nationally determined contributions since COP26 will hardly affect the expected temperature increase by the end of the century. The so-called ‘*emissions gap*’ – the difference between the promised emission reductions and the emission reductions needed to achieve the Paris Agreement temperature target – narrowed only marginally, with new NDCs reducing projected global greenhouse gas emissions by only 0.5 gigatonnes of CO₂ (GtCO₂e). At the same time, countries are not currently on track to meet these already insufficiently ambitious nationally determined contributions. Current climate change mitigation policy, as projected, aims at warming by 2.8°C by the end of the century, while achieving the goal of limiting global warming to 1.5°C would require a 45% reduction in emissions in just eight years with continued rapid reductions after 2030. The actual fulfilment of all conditional and unconditional NDCs would, according to estimates, reduce global emissions by only 5%, or 10%, respectively, and, according to estimates, would lead to

warming by 2.6°C, or 2.4°C, respectively, by the end of the century (with a 66% probability). In addition to fulfilling the NDCs, achieving the temperature goal of the Paris Agreement also implies the implementation of commitments to achieve *net-zero* carbon neutrality and a broad and rapid transformation not only in individual sectors (electricity supply, transport, industry, construction), but also in the entire system, while addressing the negative effects of such changes on countries, communities, companies, and supply chains (UNEP 2022).

In 2022, the issue of food security and the negative effects of the food system is also part of the political agenda. It contributes to about one-third of all emissions - fundamentally contributing not only to climate change but also to biodiversity loss, ecosystem pollution, land-use change, and the depletion of freshwater resources. According to projections, the impact of the food system on greenhouse gas emissions could increase from 18 GtCO₂e per year to 30 GtCO₂e per year by 2050. The goals of the Paris Agreement will require a rapid transformation of this system, both in terms of ecosystem protection, dietary changes, and decarbonisation (ibid.). The COP27 declaration then emphasised the importance of food security and ending hunger as well as the need to protect the food production system from the negative effects of climate change. However, specific measures to achieve these goals have not yet been presented (UNFCCC 2022).

Czech Republic

In June 2022, the Municipal Court in Prague ruled on the so-called climate action (filed by the municipality of Svatý Jan pod Skalou, an association of over 200 members and four other citizens), according to which the state (specifically the Office of the Government and the Ministries of Transport, Industry and Trade, Agriculture, and Environment) failed to take sufficient steps to address the ongoing climate change, as follows from its legal obligations (Climate Action of the Czech Republic). The municipal court ruled that the state had indeed not sufficiently fulfilled its obligations in the field of mitigation and had to tighten the measures in this respect. On the contrary, in the area of adaptation measures, the state was acquitted of charges, where, according to the court, its performance was sufficient (Málek 2022). In July, all respondent ministries filed a cassation complaint against the decision (Dimun 2022).

Risks of environmental nature

Projected impacts of climate change according to the IPCC report

As of 2022, the latest IPCC report “Climate Change 2022: Impacts, Adaptation and Vulnerability” highlighted the mutually interconnected nature, and thus the inseparability, of climate, ecosystems and biodiversity, and human communities. At the same time, it confirmed the ability of contemporary science to better attribute the impact of climate change to specific action in terms of climate and weather extremes - their frequency and severity. These include, in particular, extreme temperature values on land and ocean, heavy precipitation, drought, and the so-called fire weather (IPCC 2022). The IPCC report analyses in detail the impacts of climate change on human security and, to a lesser extent, on national security. In the area of human security, the impacts on food security and water availability are crucial. Although there has been an overall increase in agricultural productivity, climate change has slowed this growth in the last 50 years, both due to climate and weather extremes, and the warming of the ocean and increasing its acidity. Specifically, communities in Africa, Asia, Central and South America, small islands, and the Arctic, in particular indigenous peoples, small food producers, low-income households, children, the elderly, and pregnant women, faced *acute food insecurity, malnutrition, and water insecurity* problems. Around half of the

world's population suffers from *severe water scarcity* for at least part of the year (ibid., p. 9).

The IPCC report further describes the negative impacts in the field of health. Temperature extremes continue to cause morbidity and mortality across all regions. The incidence of food- and water-borne diseases and vector-borne diseases has increased further. Diseases of people and animals, including zoonoses, break out in new areas. Negative mental health impacts caused by rising temperatures, traumas caused by extreme climatic and weather events, or loss of livelihoods are also mentioned. Cardiovascular and respiratory problems can be observed as a result of smoke from fires or aeroallergens. Various extreme events further disrupt infrastructure and systems associated with transport, water, or energy (ibid., p. 11).

The impacts of climate change on specific affected societies and states depend on the vulnerabilities⁴ of these entities depending on their socio-economic development, marginalisation of groups in society, functioning of the state or occurrence of violent conflicts, and the existence of groups whose livelihoods are prone to climate change (for example, fishing or pastoral communities) (ibid., p. 12). For those entities that are unable to withstand the negative impacts of climate change and adapt accordingly, these risks are increasingly leading to resettlement. Less obvious is the relationship between climate change and the emergence of violent conflicts, when, according to the IPCC, the main causes of these conflicts are other than climatic factors, but in some areas “*extreme climatic and weather phenomena had a small, adverse impact on their duration, severity, or frequency, but with a low statistical correlation*” (ibid., p. 11). In general, however, in the short term, both migration and conflicts will probably be caused by socio-economic factors or problems in the field of state administration (ibid., p. 13).

In the Czech Republic, security implications related to the European region in general will be relevant. These are negative impacts on people, the economy, and infrastructure due to floods as well as difficulties and mortality associated with rising temperatures and temperature extremes, water shortages, and reduced agricultural production due to the simultaneous occurrence of drought and heat and the negative effects of extreme weather, such as fires or floods (ibid., p. 17).

Impacts of environmental risks in 2022

Some negative impacts of climate change can be observed already today, in particular, extreme climatic and weather phenomena with an impact on human life and health, food security, and access to water, but also impacts of an economic nature. Although for many of these events, the impact of climate change cannot be clearly attributed as a cause, it is true that climate change increases the likelihood or intensity of these extreme events (see IPCC 2022, WWA n.d.).

Exceptional flooding during the monsoon season occurred, for example, in Pakistan, Bangladesh, China, or the South African region as well as in the region of Eastern Australia. The most devastating floods were experienced by Pakistan, where this disaster

⁴ Human vulnerability is directly related to the degradation and destruction of ecosystems, which is caused by a number of factors, such as deforestation, unsustainable management of natural resources and land, demographic pressures, loss of biodiversity or pollution (IPCC 2022, p. 12).

caused 1,700 deaths, death of about a million cattle, damage to an area of 9.4 million acres of crops, and resettlement of about eight million people (WMO 2022, Christian Aid 2022). Bangladesh was hit by the worst flooding in 20 years, forcing the resettlement of around half a million people (WMO 2022).

Unprecedented heat waves hit mainly Europe, North Africa, China, but also India and Pakistan. China experienced the longest recorded heatwave to date, lasting from mid-June to the end of August 2022, making it the warmest summer period ever recorded. Heat waves were also associated with some record values in Europe, for example, the temperature in the United Kingdom exceeded 40°C for the first time ever. Tens of thousands of people in Europe died as a result of high temperatures (WMO 2022, Christian Aid 2022). In this context, the Czech Republic experienced the fifth warmest summer since 1775 (the beginning of the measurements at the Clementinum station) with an average temperature of 22.2°C from June to August - a deviation of +3.2°C from the long-term average for the period 1775-2014, or + 1.5 °C from the normal for the period 1991-2020 (Jůza 2022).

Drought is a major challenge for food security. It affected the wider area of the Horn of Africa, Europe, China, and Brazil the most in 2022. As a result of the drought in eastern Africa (Kenya, Somalia, Ethiopia), tens of millions of people were exposed to severe food shortages. More than a million people were internally displaced in Somalia as a result of drought and conflict (WMO 2022). Drought in all of the mentioned regions negatively affected agricultural production and thus led to an increase in the prices of some foods (Christian Aid 2022).

The trend of increasing the number of people exposed to food shortages continues. The latest data for 2021 indicate 193 million people across 53 countries/territories exposed to *acute food insecurity* and in urgent need of assistance. It is an increase of 40 million compared to 2020. However, it should be borne in mind that this growth reflects not only an objective deterioration of the situation, but also population growth and, where applicable, an improvement in data collection in this field. 70% of the total number of people exposed to severe food insecurity were located in only ten countries: Democratic Republic of the Congo, Afghanistan, Ethiopia, Yemen, Northern Nigeria, Syria, Sudan, South Sudan, Pakistan, and Haiti (FSIN 2022a).

At the same time, 2.3 billion people were exposed to food shortages to varying degrees as of 2021. An estimated 702 to 828 million people faced hunger - 46 million more than in 2020 and 150 million more than in 2019, before the COVID-19 pandemic. However, there are large regional differences in this area, with Africa being the most affected, with one in five people suffering from hunger (FAO, IFAD, UNICEF, WFP, and WHO 2022). In 2022, the situation continued to deteriorate with initial estimates of 201.4 to 205.1 million people exposed to acute food insecurity. This situation is mainly the result of ongoing armed conflicts, economic shocks, and the continuing impacts of the pandemic on supply chains, food prices, people's incomes, inflation, and purchasing power, and finally also the effects of extreme weather - especially droughts and floods (see above) (FSIN 2022a).

Table 4 - Number of people exposed to acute food insecurity (in millions)

Year	2017	2018	2019	2020	2021
Number of individuals	124	113	135	155	193

Source: FSIN 2022b.

In 2022, the war in Ukraine also affected global food security. The blockade of the Black Sea ports by Russian forces fundamentally limited the export of agricultural products, which had taken place by sea for the vast majority, around 90%, before the war. The situation improved only after the intervention of the UN, when it was possible to negotiate the suspension of the blockade of ports, and thus the resumption of exports, which, however, did not reach the pre-war volume (Council of the EU and the European Council 2023). Partly, exports were shifted to road and rail, which, however, meant a significant increase in transport costs, and thus a further increase in the price of commodities (Welsh 2023). The war significantly contributed to the increase in global prices of basic agricultural commodities due to the fact that before the Russian invasion, Ukraine contributed 50% to the production of sunflower oil as well as to the export of barley by 18%, maize by 16%, and wheat by 12% (Council of the EU and the European Council 2023).

Food prices rose not only as a result of export restrictions, but also a significant reduction in production on the territory of Ukraine due to large-scale attacks on agriculture - land, infrastructure, technology, and workforce. At the same time, a number of farmers had to enter the service in the armed forces to defend their homeland. Food security was also negatively affected by the increase in fertiliser prices. Although fertilisers were exempted from the sanctions imposed against Russia, their price was mainly reflected in the increase in gas prices. The countries most affected were Africa, the Middle East, and Asia, which depended the most on the import of agricultural commodities from the Black Sea ports. At the same time, some of them were affected by severe episodes of drought, which did not allow them to mitigate the effects of the crisis resulting from the war in Ukraine by their own production, especially in the situation of rising fertiliser and fuel prices. At the same time, this situation means the overpricing of humanitarian aid, which is required by more and more people due to the deterioration of global food security. Thus, the requirements for humanitarian aid currently exceed the capacity available to help the countries in need (Welsh 2023).

According to available data, there was no armed conflict in 2022 that was primarily affected by water shortages. Still, in the previous year, it was possible to record several conflicts at the local level (Iran, Somalia), with the dispute over access to water at their core. However, water resources and infrastructure became the target of attacks, or water was directly used as a weapon, for example to flood the area and thus make it inaccessible. These were identified, for example, in Ukraine, Syria, Mali, or Yemen (Pacific Institute 2022). The impact of climate change also entails the complex conflict dynamics existing in some African countries. Violent clashes occurred in South Sudan as a result of the internal migration of shepherds to the south to the province of Equatoria, where conflicts with local residents, especially farmers, broke out. These movements were compelled by the situation over the past four years during which South Sudan suffered from unprecedented flooding exceeding its capacity to cope with the disaster (International Crisis Group 2022). Violent clashes between different groups in Kenya, on

the Laikipia Plateau, whether between competing pastoral communities or between shepherds on the one hand and farmers on the other, also reached a higher intensity in 2022. In this case, the two-year drought was reflected in the conflict dynamics (Nazanine and Delaunay 2022).

Impacts of environmental threats in the Czech Republic

The Czech Republic generally has a low risk of natural disasters, as evidenced by the WorldRiskIndex. This indicates the risk of disasters for individual countries, when the CR occupies the 180th place out of a total of 192 with the value of the index 1 (very low risk has values between 0.00 and 1.84 and very high risk between 12.89 and 100) (Bündnis Entwicklung Hilft 2022). Nevertheless, an increase in the occurrence of extreme weather events could be observed in 2022. This can be demonstrated by the number of meteorological warnings of the Czech Hydrometeorological Institute (Hujšlová et al. 2023). The number increased by more than a third year on year, amounting to 275 warnings, incl. 159 predictions and 116 warnings of imminent occurrence of a dangerous phenomenon (ibid.). In the case of warnings of imminent occurrence of a dangerous phenomenon, the number actually increased from 38 to 93 year-on-year. This can be mainly attributed to the development in the months of June and August associated with the number of dangerous storms (with more than 50% of the total number of warnings), extreme rainfall, and the long-term risk of fires. In terms of manifestations of extreme weather, we can mention, in particular, two tornadoes of IF1 intensity in the municipality of Lanžhot in the Břeclav region and near the municipality of Sviny in southern Bohemia, extreme torrential rainfall in some regions, for example in the Prachatice and Strakonice regions, when in the latter case, in the municipality of Katovice, a daily total of up to 187.5 mm was recorded. Furthermore, heat waves, drought, and an increased risk of fires repeatedly occurred. Although the average rainfall in the Czech Republic was normal in 2022, the distribution of rainfall in individual months varied with above-normal rainfall values in June and September, and, on the contrary, with strongly below-normal rainfall values in March, which was the third driest since 1961 (CHMI 2023). As for floods, the CHMI stated in the 2022 report that although this year was “*mostly average or below average in terms of hydrology, it was still relatively rich in flood situations*”, due to the melting of snow and summer flood events in the Vltava, upper Morava and Odra basins, with a large proportion of severe storms with very intense downpours (ibid.).

Table 5 - Number of meteorological alerts by CHMI

	Number of alerts	Forecast alerts	Warnings of the imminent occurrence of the phenomenon
2021	202	148	54
2022	275	159	116

Source: Hujšlová et al. 2022; 2023.

The ACR participated in the management of the fire that broke out in the České Švýcarsko National Park in July and which, with an area of more than 1,000 hectares, became the largest recorded wildfire in the history of the Czech Republic (BEZK 2022). The army

continuously helped extinguish the fire for 19 days with the help of two helicopters (W3A Sokol and later also Mi-17) with Bambi Buckets and also provided a unit with a vehicle for refuelling. The pilots flew almost 226 flight hours and made 422 drops. According to the representatives of the army, the ACR provided the maximum possible, when out of the total of 10 W3A Sokol helicopters, only three were available due to maintenance and earmarking for the Air Rescue Service, and these were gradually used (Army.cz 2022). The situation also required the use of technology from abroad using the EU Civil Protection Mechanism and cross-border cooperation with Germany. Aviation technology was also provided by Italy, Poland, Slovakia, and Sweden (Fire Rescue Service of the Czech Republic 2022). For this purpose, the Slovak government approved the deployment of 30 members of the armed forces equipped with the UH-60M Blackhawk helicopter with a fire extinguishing module (CTK 2022).

As for the context of the fire, according to the analysis of Hruška et al. (2022), the primary cause of the rapid spread of fire in the first days were *“extremely favourable conditions, in particular high wind speeds, very low humidity of wood, air, and soil, as well as high temperature in the first three days of the fire”*, while *“the place, time and probably also the method of ignition”* appeared to be substantial (ibid., p. 110). They also stated that a week before the fire occurred, the site was affected by a warm episode with temperatures exceeding 30°C and even 35°C, which is 9°C more than normal, and at the same time, according to the SPI-6 index, the drought in the location was the biggest in the last 60 years (ibid., p. 70, 110). For the future, the authors consider it important to note that from the *“climatic and meteorological point of view, the susceptibility of the entire Central Europe to fires has been increasing in the long term”*, when the area of this national park recorded an increase in the average annual temperature by 1.0-1.2°C in the period 1991-2021 compared to the period 1961-1990 (Trnka et al. 2021, p. 110). It is therefore evident that the risk of fires and, in the longer term, floods (see Štěpánek et al. 2019) is gradually increasing in the Czech Republic.

From the point of view of the negative impacts of climate change for the Czech Republic, the economic impact in the fields of agriculture, transport, industry and energy, forestry, and also crisis management as a result of extreme weather events cannot be neglected. At the same time, it is necessary to take into account the growing costs incurred for mitigation and adaptation measures (MoE 2021, CHMI 2019).

Implications for the armed forces

The Czech Republic does not feel the effects of climate change to the same extent as other countries, therefore the implications for the armed forces are less tangible. Still, already in the short and medium term, we can expect more frequent occurrences of natural disasters, especially floods or fires, and their increasing destructiveness due to the increase in extreme climatic and weather phenomena, that may require the deployment of forces and resources of the ACR. The risk of the simultaneous occurrence of several natural disasters or the simultaneous performance of other tasks by the army could exceed its available capacities, as demonstrated by the deployment of firefighting in České Švýcarsko in 2022, when the ACR's deployable resources were exhausted to the maximum. The increase in average annual temperatures, which is significantly reflected in the summer months, including the number of tropical days, may then have an impact

on the training of soldiers, with risks for the health and lives of members under these conditions (see, for example, Hauschild 2022).

In addition to the impacts on tasks and training, it is necessary to expect an increase in the pressure on the contribution of the armed forces, including the ACR, in the field of climate change mitigation through reducing its own carbon footprint. At the EU level, and less so at the NATO level, it is possible to observe the gradual formation of specific principles and standards that are likely to place increased demands on the armed forces - the emissions of which are not yet specifically addressed under the Green Deal or the Paris Agreement (IMCCS 2022, Department of the Army 2022). However, in the opinion of experts from the International Military Council on Climate and Security (IMCCS 2022), it is no longer sustainable to believe that reducing the carbon footprint of the army automatically means a reduction in operational efficiency. The change in the attitude of the armed forces of many countries can be observed for a long time, with the US Army even adopting the first climate strategy (Army Climate Strategy, ACS) in 2022. Therein, it declares its ambition to *“increase capability and installations’ resiliency; prepare for new hazards and new environments; modernise processes, standards, and infrastructure; and decrease operational energy demand”* - all with the effect of reducing greenhouse gas emissions produced by the armed forces (Department of the Army 2022). To this end, it proposes actions in three areas: (1) increasing the resilience and sustainability of the infrastructure; (2) measures in the field of acquisitions and logistics; and (3) adapting the training to the changed operational environment in terms of climatic conditions.

Although the US military has accepted the role of a leader in efforts to make the activities of the armed forces more sustainable, where this does not threaten the mission of the armed forces and brings comparative advantages, the armed forces of many other countries have also understood the need to implement considerations on mitigation and adaptation to climate change into their planning activities in a timely manner. In this area, there are a number of opportunities that the armed forces can take advantage of, such as the construction of buildings and bases with lower energy demands, the transition to environmentally friendly vehicles used to ensure the normal operation of the army (e.g., US plans to electrify the ‘non-tactic’ fleet), better (predictive) planning in the field of logistics, incorporating environmental criteria into the acquisition process, but also distance education and training, where the nature allows it without negative impact on the outputs defined. A greater challenge in the future is reducing the carbon footprint of military equipment, which must withstand even extreme operational conditions while existing solutions from the civilian sector do not meet these requirements for a number of reasons. Fuels, such as diesel and petrol, currently have the best energy density and thus bring the greatest operational benefits compared to existing alternatives. The operation of military technology contributes the most to the greenhouse gas emissions of armies, but further improvement in this area will require massive investment in research and development, which can gradually fill this gap (IMCCS 2022). At the same time, the current increase in defence spending represents an opportunity to reflect better the requirements of higher energy efficiency and lower carbon footprints in modernisation, which will also contribute to reducing energy dependence on the Russian Federation.

TECHNOLOGICAL SECTOR

This text covers the main areas of technological development with regard to defence technologies in 2022. The text consists of two parts. The first part presents indicators that assess the readiness of countries for new technologies (with special regard to the Czech Republic) to better illustrate the development within the technological sector and the comparability of data with the following studies. The second part contains case studies of individual aspects of technological development that are relevant to the defence and security of the Czech Republic.

Methods of data collection and evaluation

As part of the use of quantitative data, the analysis primarily operates with the *Technology and Innovation Report* published by the United Nations Conference on Trade and Development. The report applies the so-called *Readiness for Frontier Technologies Index* to assess the readiness of countries for the use of new technologies. The report is issued annually and always includes leading technologies (UNCTAD 2023). For the 2022 analysis, additional indicators related to the use of green energy have been added to the index. The list of technologies according to the index is as follows:

- Internet of Things (IoT)
- Solar energy (from 2022)
- Blockchain
- Nanotechnology
- Big data
- 5G
- Biofuels (from 2022)
- Electric vehicles (from 2022)
- Gene editing
- Robotics
- Unmanned assets
- 3D printing
- Wind energy (from 2022)
- Biofuels and biomass (from 2022)
- Green hydrogen (from 2022)
- Photovoltaics

The following semi-quantitative analysis will focus on technologies from the report that are relevant to security, military, and armed forces. The resulting index evaluates the state of readiness of the country for new technologies. The following indicators are included in the index:

- Internet users (% of population)

- Average download speed (Mbps)
- Duration of study of experts working subsequently in the respective technological sectors
- Employment of highly qualified people (% of the working population)
- Number of publications related to the respective technologies (Scopus source)
- Number of patents in leading technologies
- High-tech exports (% of total trade in goods)
- Exports of digitally supplied services (% of total trade in services)
- Share of domestic loans to the private sector (% of GDP)

For easier orientation in the values and the use of the index in the analyses in the following years, the values in this study have been converted to values in the range of 0-4, corresponding to the quartile division.

The first quartile corresponds to the countries ranking from 1 to 40; the score based on indicators is between 1 - 0.65, for our analysis it corresponds to the set value of 3.

The second quartile (countries ranking 41-79); score of 0.65-0.44; corresponding to a value of 2.

The third quartile (countries ranking 80 -118); score of 0.43 - 0.24; corresponding to the value of 1.

The fourth quartile (countries ranking 119 158); score of 0.23 - 0; corresponding to 0.

The following section first presents the total final values of readiness for new technologies in the Czech Republic. Here, the values from 2021 (UNCTAD 2021) and then 2022 are compared. The following part works only with technologies relevant to security, military, and armed forces. These were determined primarily based on the expert knowledge of the authors of this study.

These are the following leading technologies.

- Internet of Things (IoT)
- Blockchain
- Nanotechnology
- AI
- Big data
- 5G
- Gene editing
- Robotics
- Unmanned assets
- 3D printing

The authors of the study subsequently reviewed the literature on the latest technologies relevant to the military. If the report does not mention them, but they cannot be omitted due to their importance, they are also included in the analysis.

The chapter on outer space includes such technologies and discusses the significance of this increasingly frequently mentioned domain. The analysis also includes a chapter devoted to hypersonic technologies, augmented virtual reality, and unmanned systems (drones). IoT and blockchain are included together in the chapter on cyberspace. Last but

not least, the text addresses artificial intelligence, robotics, big data, and human genome modifications.

In addition to the state of readiness, the report also evaluates the use of information and communication technologies. We also present the outputs of this evaluation as part of the analysis, as we consider ICT to be an essential element associated with the latest technologies and military applications. For the purposes of the study, the values are again converted to 0-3 format. In the same way, the assessment is supplemented by the level of skills of individual countries, which are essential for adopting new technologies.

State of readiness for new technologies in 2021 and 2022

Based on the index, the United States is the most prepared for 2021, (UNCTAD 2021) followed by Switzerland, the United Kingdom, Sweden, Singapore, the Netherlands, and South Korea. Some transforming and developing economies are also highly rated on the list - for example, China, which occupies the 25th place, or the Russian Federation in the 27th place. The majority of the least prepared countries are located in sub-Saharan Africa and developing countries in general.

The Czech Republic is in the first quartile, its readiness is assessed as high (26th place).

State of readiness for new technologies in 2021

Indicator	Value	Score	Method of score allocation	
Indicator	Description	Score	Value	Score
Total average index	0.44	3	(0, 20 - 0) -> 1 (low)	1
Index of CR	0.75 (rank 26)	4	(0.40 - 0.21) -> 2 (lower-medium)	2
			(0.60 - 0.41) -> 3 (higher-medium)	3
			(0.80 - 0,61) -> 4 (high)	4
			(1 - 0.81) -> 5 (very high)	5

The higher the score, the higher the level of readiness.

Change in the state of readiness for new technologies in 2022 compared to 2021

Indicator	Value	Score	Method of score allocation	
Indicator	Description		Change in value	Score
Total average index	0.50 (3)	+1	(decrease by more than 0.21; significant deterioration)	-2
Index of CR	0.77 (4); (rank 30)	+1	(decrease by 0.02 to 0.20; deterioration)	-1
			(between decrease by 0.01 and increase by	0
				+1
				+2

			0.01, maintaining the status quo) (Increase by 0.02 to 0.20; improvement) (Increase by more than 0.21; significant improvement)	
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The score of the Czech Republic remained the same at the value of 4 - high readiness, based on the value of 0.77 according to the index. This is higher compared to 2021, when it was 0.75. Thus, we evaluate the change according to the given methodology with a score of +1. However, in the ranking of countries, the Czech Republic fell from the 26th to the 30th place (UNCTAD 2023). The United States remains in the first place, followed by Sweden, Singapore, Switzerland, Liechtenstein, the Netherlands, and South Korea.

ICT use and skills

Using, deploying, and adapting new technologies requires a sufficient ICT infrastructure, especially as artificial intelligence, Internet of Things, big data, and blockchain are Internet-based technologies. Two aspects of ICT infrastructure need to be considered: scalability, which will ensure that everyone has access to it, and quality of the infrastructure, enabling more advanced and efficient use. For these purposes, Internet users capture the prevalence of Internet infrastructure as a percentage of the population, while the average download speed measures the Internet connection quality (Technology and Innovation 2021, 144). The two indicators form the value of ICT use. The table below calculates the values from the countries in order (total 151).

In 2021, the Czech Republic ranked 30th, which, according to our methodology, corresponds to a score of 5, i.e. the highest value of ICT use. In 2022, it fell to the 47th place, rated with a score of 4, higher-medium ICT use.

Using, introducing, and adapting new technologies also requires human capital with appropriate skills. These may be advanced, but generally less than those required to create these technologies. Two types of skills need to be considered: skills acquired through education and skills acquired at the workplace through practical training or experience at work. The overall level of education attained by the population is measured in the index by the expected years of schooling. In contrast, the level of skills on the labour market is measured by the range of highly qualified employment - according to the ILO definition, it is the sum of managers, experts and technicians, and associate professionals according to the International Standard Classification of Occupations (ISCO). These indicators should be interpreted with caution, especially in developing countries, due to the emigration of highly qualified or skilled people, the so-called brain drain, as a result of which the actual level of qualifications may be lower than the official estimate.

Compared to 2021, the Czech Republic fell from the 23rd to the 27th place in the ranking of countries. However, the use of skills remains at a high level.

ICT use and skills in 2021

			Method of score allocation
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Indicator	Rank	Score	Value	Score
Index of use of ICT in the Czech Republic	30.	5	121.-151. (very low) (91. -120) (low) (61. - 90.) (lower - medium) (31. - 60.) (higher - medium) (1. - 30.) (high)	1 2 3 4
Skills index in CR	23	5	(151. +) -> 0 (low) (101. - 150.) ->1 (lower - medium) (51. - 100.) -> 2 (higher - medium) (1. - 50.) -> 3 (high)	5

The higher the score, the higher the use rate.

ICT use and skills in 2022

			Method of score allocation	
Indicator	Rank	Score	Value	Score
Index of use of ICT in the Czech Republic	47.	4	121.-151. (very low) (91. -120) (low) (61. - 90.) (lower - medium) (31. - 60.) (higher - medium) (1. - 30.) (high)	1 2 3 4 5
Skills index in CR	27.	5	(151. +) -> 0 (low) (101. - 150.) ->1 (lower - medium) (51. - 100.) -> 2 (higher - medium) (1. - 50.) -> 3 (high)	

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. The time when the outer space domain was used only by a few technologically and economically advanced actors is over. Even faster than the number of operators, the number of users of products and services whose provision is enabled by space domain systems is growing. Today, these products and services have a fundamental impact on every area of human activity and a fundamental impact on the military operations of all more advanced armies, private security companies as well as terrorist groups. This trend continued in 2022. 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) (Taverney 2022). In 2022, China launched the last of the three modules that make up its space station. It will become the second permanently inhabited station in low orbit after the International Space Station. The unmanned *Mengtian* or 'Dreaming of Heaven' module was launched on a Chinese Long March rocket. The completion of the Chinese space station, designed for a lifespan of at least 10 years, will be a milestone in China's low-orbit ambitions, with the International Space Station likely to stop functioning by the end of this decade.

The 'Divine Palace', as the space station is called at home, will also symbolise China's growing influence and self-sufficiency in its space endeavours and present a challenge to the United States in this sector afterwards. During the station's lifetime, China plans to conduct more than 1000 scientific experiments - from studying the adaptation of plants in space to the behaviour of fluids in microgravity(Woo and Gao 2022).

At the same time, however, there are growing concerns about the development of Chinese space systems that could threaten American satellites, in particular. Some representatives of the US military and space sector warn of China's rapid progress in space and the fears resulting from it. In its report to Congress, the Pentagon emphasises the advances of China's space programme, including the successful landing on the far side of the Moon and the construction of a communication system between the Earth and the Moon. The report warns of the possible threats the Chinese presence on the Moon could pose, including the possibility of influencing communication and interfering with space-based activities. However, representatives of the Chinese government argue that these fears are unfounded and that China promotes the peaceful use of space(Bender 2023).

In 2022, American NASA under the Artemis programme successfully carried out the first mission in which the Orion spacecraft reached the orbit of the Moon. It is a huge step towards an ambitious plan to bring people to the surface of the Moon as early as 2025. This mission is also the beginning of the White House's extensive efforts to establish a permanent space base on the Moon. The White House has released a new strategy for science and technology in lunar space, which includes investing in research and development, cooperating with other countries, building communication networks in space, and improving overall awareness of the situation near and on the Moon (Heilweil 2022). Canada will also participate in the Artemis programme, among other countries: in its case, it is worth mentioning that its legislators have amended the local criminal code, which now allows prosecution of crimes committed by Canadian astronauts during trips to the Moon or directly on the lunar surface. Aliens who threaten the life or safety of a Canadian astronaut in space can also be punished (Karlík 2022). Insufficient legislation is one of the stumbling blocks for the conquest of space, so it can be expected that other countries may also start taking similar legislative steps.

Western relations with the Russian Federation, which hit a low point in 2022, are also reflected in cooperation in the space-related matters. After the invasion of Ukraine, the European Space Agency (ESA) stopped cooperation with the Russian state space agency Roscosmos, in particular the Luna programme associated with exploration of the Moon, also stopping the European rover mission to Mars, the development of which also involved Roscosmos (Hunt 2022).

Space races, however, also form a competition between private entities, which are now equal in importance or even surpass the state-level actors. These companies include especially Elon Musk's SpaceX, Jeff Bezos's Blue Origin, and Richard Branson's Virgin Galactic. In January 2022, SpaceX launched the Transporter-2 mission, which brought 88 small satellites to the orbit. In March, it launched the Crew-3 mission, transporting four astronauts to the International Space Station (ISS). In May 2022, it launched the Starlink-28 mission, bringing 60 Starlink satellites to the orbit. In June, it launched the GPS III-5 mission, which carried the GPS III satellite to the orbit. In July, it launched the CRS-24 mission, which brought supplies to the ISS (Wall 2023). Blue Origin also achieved significant successes in 2022. In March, they carried out their fourth human space mission, bringing six people into space. In April, Blue Origin announced that they had signed a contract with NASA to develop a lunar landing module for the Artemis programme (O'Shea 2023). Among other achievements, Virgin Galactic signed an agreement with a Boeing subsidiary to build two new aircraft to be used as launchpads for their next-generation

suborbital spacecraft (Foust 2022). The company of the British billionaire also wants to continue the development of space tourism, and in early 2022 they started selling tickets for space flights to private individuals (Šára 2022).

Hypersonic technologies

Hypersonic technologies represent another area of strategic competition among major powers (Temin 2021). These weapons systems operate at speeds higher than Mach 5 (6125 km/h), which together with their high manoeuvrability makes them almost unstoppable by the current means of missile defence (Congressional Research Service 2023). The hypersonic phase of their flight generally occurs during the return from space or its proximity to the atmosphere or during their atmospheric flight powered by rocket or *scramjet* propulsion. These technologies include *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, 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.

In 2022, hypersonic weapons were mentioned both in the context of the Russian invasion of Ukraine and in connection with the ongoing testing. Regarding the means deployed by the Russian Federation against Ukrainian forces, the media space was filled mainly with KH-47M2 Kinzhal missiles. Although Kinzhal missiles can develop speeds exceeding Mach 5 (albeit only theoretically), more precisely they are ballistic missiles fired from the air (Hollings 2022). A more significant strategic shift is that the Russian Federation has announced the end of testing of the Zirkon hypersonic missile, which can develop a speed of nine times the speed of sound and has a range of about 1000 km. According to Russian officials, these missiles are ready for combat deployment (Evans 2022).

On the American side, after several unsuccessful attempts, about a dozen hypersonic weapons components were tested (Stone 2022). At the end of the year, the US Air Force conducted a test of the AGM-183A missile, the first US hypersonic missile to pass the test. After separating the missile from the aircraft, it reached a speed of more than five times the speed of sound, completed the flight path, and exploded at the desired location. According to some representatives, these missiles can develop a speed of up to Mach 20, but this remains only in the theoretical level (Tingley 2022). Hypersonic weapons, especially in the context of successful American tests, will gradually become an important part of Western strategic thinking. The United States, the United Kingdom, and Australia jointly announced cooperation in the development of hypersonic weapons as well as protection against hostile ones (TA3 2022).

Augmented and virtual reality

In addition to the above-mentioned trend of 'robotisation 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 2022, the U.S. Army issued a requirement for the defence industry to design and manufacture virtual reality (VR) technologies to support next-generation simulations for infantry and training. In March 2022, the U.S. Army's 3rd Infantry Division demonstrated the use of augmented reality to train, diagnose, and troubleshoot military equipment. The top-of-the-line headset displays a user manual and tutorials, introducing operators to military vehicles that need to be repaired. The member can see the actual piece of equipment they are working on in real time, which is then overlaid by a virtual layer that informs about the progress of the work (Saballa 2022).

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 emphasised again. The development of augmented and virtual reality makes it possible to simulate very faithfully, in our case, combat situations and environments in which the units will operate, including the opponent's possible behaviour. Similar applications can also be identified for 'non-combat' activities (e.g., healthcare, logistics, or repair of equipment mentioned above). Cyberspace and the phenomenon of 'metaverse', which is a mix of augmented reality, artificial intelligence, and video game graphics, are closely linked to the augmented and virtual reality. In 2022, the U.S. Army started to build their own 'metaverse' and exercises have already taken place enabling fighter pilots to train air combat against virtual opponents, including Chinese and Russian warplanes, under increased gravitational overload (Knight 2022).

Unmanned systems

Unmanned Aerial Systems (UAS), commonly also known as drones, are currently used by the armed forces of more than sixty countries worldwide 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 such devices, including UASs equipped with weapons systems, such as the notorious MQ-9 Reaper (*BBC News* 2022).

The use of drones is often mentioned in the context of the war in Ukraine, where they are used by both sides of the conflict. On the Ukrainian side, we can mention, for example, Aerorozvidka R18 drones, a Ukrainian produced octocopter specially designed for bomb drops. It has a payload of around 5 kilograms and can fly without lights in the dark for complete visual secrecy, using thermal imaging cameras to detect enemy units and vehicles. Ukraine, especially in the early stages of the conflict, made extensive use

of the Bayraktar TB2 equipment of Turkish origin, which allowed it to successfully destroy Russian facilities by dropping microbombs. Over the year, however, the usefulness of these drones decreased, as the Russian side learned to detect, jam, and destroy them. Later, they were more often used for reconnaissance missions instead. Both sides of the conflict also used commercial drones of the Chinese production DJI Mavic mainly for reconnaissance and targeting of artillery, sometimes also for dropping smaller grenades. In the conflict, the Russian Federation used Iranian-made Shahed 136 drones (in the Russian context called Geran-2), which are kamikaze drones often deployed in 'swarms', thus able to overcome the enemy's air defence and successfully hit targets (Chapple 2022).

Unmanned Ground Systems (UGS) are so far 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 urbanised areas). In this segment, it is worth mentioning that the European Defence Industrial Development Programme has demonstrated the project of an integrated Modular Unmanned Ground System (iMUGS), which is a set of ground systems for various defence missions, including intelligence gathering, casualty evacuation, and 'last mile' logistics ("EDIDP: The iMUGS Consortium Demonstrates Autonomous Missions with Robotic Systems" 2022).

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.

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 cyber-attack forms include 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 a ransom (typically in cryptocurrency) to enable unlocking the data. The trend of these attacks continued in 2022. In July 2022, the largest DDoS attack against a European customer occurred on the Prolexic platform with 853.7 Gbps and 659.6 Mbps of globally distributed attack traffic (Sparling a Gebhardt 2022). Almost on the eve of the kinetic invasion, in February 2022, Ukraine was hit by the largest DDoS attack in the country's history, which hit government websites and banking web services. In May 2022, Microsoft experienced an attack of 3.25 terabits per second (TB/s) in the Azure network (Azure Network Security Team 2023). The number of DDoS attacks recorded a significant increase in 2022 compared to previous years. The total number of attacks increased by 73% year-on-year, with threat actors focusing mainly on the media (18.5%), but also on banks (10%) and payment systems (13%). The duration of DDoS attacks increased ten times in just one year (Fadilpašić 2023).

The trend of successful attacks with ransomware also continued, for example Microsoft Exchange servers were affected by the 'windows.exe' ransomware. Although Microsoft fixed the vulnerabilities already in 2021, many system administrators did not update their servers and became victims of this attack. Even this case has shown that organisations must pay special attention to server and client software updates, regularly changing

complicated passwords, they should limit access as much as possible, and train employees in the field of cybersecurity (Jawad 2022).

2022 saw the follow-up to the previous year's discovery of the Pegasus spyware developed by the Israeli company NSO Group that uses 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 politicians of many countries. In 2022, it was revealed that this spy software was used in at least five EU countries (including Spain, Poland, and Hungary) against opposition representatives and the press (Roussi 2022). NSO has been placed on the sanctions list of several major countries (including the US and at home in Israel) due to the media coverage of the cases and has found itself in a reorganisation (Ackerman 2022); comparable software entitled Predator, also of Israeli origin, is already being deployed and has been found, for example, in the devices of Greek journalists and opposition politicians (Kyselicová 2022).

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, particularly for the critical and information infrastructure, must take this trend into account at present. Especially when considering the potential misuse of a large number of discussed devices within the so-called botnets to carry out targeted attacks against information systems of relevant state and non-state entities. In 2021, this trend continued with an increasing pace (IoT.Business.News 2022).

Simultaneously with the intensification of the interconnection of humanity within this space, there is an increase in the number of networks created and used on a distributive basis, i.e., without 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, among other things, 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. It is also necessary to mention the phenomenon of the so-called 'darknet', or the 'dark side' of the Internet, which is usually used for illegal activities and the black economy. In this area, the success of German criminal justice authorities in 2022 resulted in the closure of the world's largest darknet 'marketplace', Hydra Market. The platform enabled, among other things, money laundering and was operated in Russian. The German forces disconnected three data centres (about 500 servers) and confiscated bitcoins worth about 23 million euros (Dev 2022).

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 storing 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 2022. IBM has announced an expansion of its plans to achieve large-scale and practical quantum computers. This plan details new modular architectures and networks that will enable

IBM's quantum systems to have more qubits - up to hundreds of thousands of qubits (IBM 2022b). For more readily available devices, IBM also introduced a quantum processor with a performance of over 400 qubits ('Osprey') (IBM 2022a).

Virtual and augmented reality, 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. Deepfakes have become practically a common part of the information struggle and it is not surprising that during 2022, for example, videos were distributed in which Ukrainian President Zelenskyy allegedly called on Ukrainians to surrender to the Russian occupiers (Metz 2022).

AI, robotics, and big data

Until recently, the possibilities of mass use of artificial intelligence were marginal but the inflow of capital into the industry in recent years has made this technology available to every Internet user (Rizzuto 2023). The use of artificial intelligence has become an essential part of the functioning of the army and its importance will continue to grow (Sentient Digital 2023).

A specific application is, for example, the use of swarming for drone operations (see above for drones). AI-controlled drones will act like insects, allowing algorithms to collect and process data from many different sources to help make decisions, especially in crisis situations. They can also neutralise errors caused by human decision-making. Other forms of AI application in combat are combat simulations, data processing, research, monitoring, and use in transport. By using artificial intelligence, the decision-making process itself can be shortened from hours or days to minutes (Hirsh 2023).

AI could also be used by armies in health care. As soldiers and paramedics work in high-stress situations, AI can help in decision making and provide faster response. The most adequate health care will be provided using algorithms and access to an extensive database (Sentient Digital 2023).

Artificial intelligence is also relevant for current and future information influencing. The modern concept of combat using information influence was gaining importance since the Gulf War and the Russian aggression in Ukraine in 2014. However, with the invasion of Ukraine at the beginning of 2022, the assumptions about the prioritisation of information influence weakened compared to the conventional struggle. In addition to future research, the position of information influence is also an important topic of connection with the latest technologies, such as AI in particular, which can significantly affect the position itself in relation to conventional warfare.

AI can be used by information actors to create very sophisticated and manipulative disinformation or fake image content (e.g., using Midjourney) or deepfake videos. In conjunction with AI, very convincing and realistic videos, audio recordings, or photos can be created. Bots and algorithms that are controlled by AI can create a massive amount of content, interact with real users, and create the impression of an authentic campaign from below. Thanks to AI, propaganda will be more optimised, able to identify the most sensitive groups of users, AI will enable the selection of the most effective channels for the dissemination of information and the generation of content in real time.

Big data is usable in the military context, especially in the field of information processing, monitoring, simulation, and modelling. The connection with artificial intelligence will allow for faster and more efficient processing of large amounts of data, which can then be used at the strategic, tactical as well as operational levels.

It is also relevant for information influencing. In this context, we speak mainly of the so-called micro-targeting - a tactic that will have serious consequences for companies and political decision-making in the near future. Through micro-targeting in conjunction with big data and AI, especially private companies hired by political actors, can seriously influence electoral decision-making in democratic societies. Advanced algorithms identify vulnerabilities, preferences, and psychological profiles of individuals, thus enabling attackers to set up precisely targeted campaigns (Dannagal and McGregor 2020; Watson 2017).

The potentially huge breakthrough is the introduction of the ChatGPT product by the American company OpenAI (Vallance 2022). It is the so-called large language model (LLM), which is a computer model of language based on a neural network with a huge number of parameters (typically billions of weights or even more). The language model is not AI in the traditional sense, although thanks to the popularity of products such as ChatGPT, this distinction is gradually disappearing (Mollick 2022). However, since the ChatGPT service was launched only in the last days of 2022 (and other similar services even later), it is not possible to talk about the degree of its impact on global affairs and the security environment, which would become fully apparent only in 2023.

Human gene editing

A symbolic milestone in this field is the announcement that in 2022, the human genome was fully sequenced, thus completing a process lasting more than twenty years. Scientists have created the most completely sequenced human genome to date, filling in gaps and fixing bugs in the previous version. The sequence is the most complete reference genome for any mammal to date. Findings from six new genome-describing papers published in the *Science* journal should lead to a deeper understanding of human evolution and potentially reveal new targets for tackling a range of diseases (SciVerse 2022).

Recent technological developments in the field of human genome modification focus mainly on the controversial intervention of a Chinese biophysicist, who announced the creation of genetically modified twins in 2018, in which he tried to create resistance to HIV using the CRISPR method. The CRISPR technology (Broad Institute 2014), also known as 'genetic scissors', can interfere with the genome and cut out or replace the defective gene (Cohen 2023; Sedláček 2021). However, in addition to the application of this technology in healthcare, some actors can use genome editing for military purposes. US government authorities have concluded that control over biotechnology will be crucial not only for the health of citizens but also for national security (Miller 2023). Genetic data itself will become a critical source; for example, companies that own data from prenatal tests or swabs as part of COVID-19 testing. These can then be potentially used to produce biological weapons against a specific group of genomes (Miller 2023) or to protect against them; for example, there is a talk of changes in liver enzymes, which would allow people to better resist biological weapons (McKie 2023).

The futuristic scenario is the use of genome modification to protect soldiers from harmful radiation (which can also be used in the conquest of space) or the use of genetically printed 'super soldiers', which will be more resilient, more intelligent, and able to cause the

greatest possible damage (Cohen 2023). It also mentions the possibility of seeing in the infrared or ultraviolet spectrum, like some animals, which would allow soldiers to operate more easily at night or in other hostile conditions (McKie 2023).

Implications for the Armed Forces of the Czech Republic

Modern technologies drive ambitions to conduct the so-called ‘multidomain operations’ that dilute traditional trust in the rational conduct of military conflicts. It must be said that none of the commonly cited operational domains (outer space, airspace, land, sea, and cyberspace) are actually ‘new’. For example, cyberspace, as the ‘youngest’ of the operational domains, has been used since the mid-1980s, and the outer space domain has been used since roughly the mid-1960s. However, technological progress and the proliferation of technologies have had three major impacts on the modern conflict:

- There is a growing effort to coordinate the operations of one’s own forces within individual domains in detail and, at the same time, to have an accurate overview of the opponent’s situation to the extent that the uncertainty in the management of operations will be practically eliminated.
- There is an ambition to plan and accurately coordinate one’s own forces’ operations across individual operational domains and to conduct the so-called ‘multidomain operations’, envisaged by the United States doctrine, or the so-called ‘joint all-domain operations’ according to the doctrine of the North Atlantic Alliance.
- With the availability of modern military and commercial technologies, the number of players who can operate within individual domains is growing; for example, the outer space domain, until recently, the arena of the United States and the Soviet Union (or the Russian Federation), today ‘hosts’ a number of governmental and commercial players - which is a challenge as well as an opportunity for the defence of the Czech Republic.

The growing influence of outer space is beginning to be reflected both within the Army of the Czech Republic and at the NATO level, where this aspect is further strengthened by the approval of outer space as a separate operational domain, which creates conditions for further cooperation across the whole organisation for the ACR. Similarly, the growing opportunities resulting from the privatisation/commercialisation 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 its 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 and 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 studied areas.

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.

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 programmes and simulating conditions for the needs of preparation of members of the Army of the Czech Republic, for instance,, closely resembling the real combat deployment. Currently, positive experiences 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.

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. An interesting 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, it is 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.

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 emphasise 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 surveys to direct encounters 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.

From the perspective of the cyberspace operational domain, there are increased demands on training and preparation, both in order to maximise 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 centralisation and decentralisation 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 decentralisation 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, this concerns eliminating the opponent from cyberspace or possibly vice versa: the state's ability to eliminate itself from cyberspace. (Russell 2017)

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 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.

Regarding artificial intelligence, for military and academic professionals, the challenge will consist in its use in information warfare, or as officially framed - strategic communication. The discussion was stirred by the plan of the US Special Operations Command to include “influence operations, digital deception, communication disruption, and disinformation campaigns at the tactical and operational level” under MISO (Military Information Support Operation), a successor to psyops (Biddle 2023). The plan also directly mentions the use of deepfakes as part of these operations. The document represents an almost unprecedented case, in which the US government - or any other government - openly signals its desire to use this highly controversial technology for offensive purposes (Biddle 2023). The plan may also pose a challenge for the armed forces of the Czech Republic. There are different approaches to information influence among individual NATO member states, especially of their domestic populations. The point for the joint discussion may also be the use of artificial intelligence tools, e.g. deepfakes, evaluation of the ethical point of view, or setting the boundaries of use against the enemy.

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SUMMARY

This analytical study evaluated the development of the security environment of the Czech Republic in 2022. 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 2022 and tries to capture the main events and trends in specific sectors with impact on the security environment and to identify the implications for defence policy and the armed forces. Due to its specific nature, each sector was processed using a slightly different methodology. A specification of the methodological approach is thus given at the beginning of each chapter. These differences were caused, among other things, by the availability of quantitative data. This data has been implemented here to a greater extent than in previous CBVSS analytical studies in recent years. However, the goal of this study was to maintain proportionality between the individual sectors, and the overall assessment of the security environment also tries to reflect the importance of all investigated sectors.

Security Environment.

Sectoral Analysis and Implications for the Armed Forces of the Czech Republic 2022

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