



WAR IN UKRAINE: LESSONS IDENTIFIED AND LEARNED

ANALYSTS AND ASSOCIATES FROM INFORMATION DEFENSE HUB

2023

REPORT

EUROPEAN VALUES CENTER FOR SECURITY POLICY _____

European Values Center for Security Policy is a non-governmental, non-partisan institute defending freedom and sovereignty. We protect liberal democracy, the rule of law, and the transatlantic alliance of the Czech Republic. We help defend Europe especially from the malign influences of Russia and China.

We envision a free, safe, and prosperous Czechia within a vibrant Central Europe that is an integral part of the transatlantic community and is based on a firm alliance with the USA.

Authors:

Analysts and Associates from Information Defense Hub focusing on key areas of the war in Ukraine and publishing regular briefings of the latest development in Russian aggression since the invasion in February 2022.



CONTENTS

INTRODUCTION	4
SECURITY AND DEFENCE SECTOR	5
THE UKRAINIAN ECONOMY	17
ENERGY SECURITY	23
STRATCOM AND COUNTERING DISINFORMATION	32
MEDIA	36
UKRAINIAN CYBER RESILIENCE	39
CIVIL SOCIETY	42
CONCLUSION	45



INTRODUCTION

Ukraine's remarkable resilience in the face of Russian aggression rightfully deserves comparison to the biblical David and Goliath. Ukraine's courage and perseverance won the hearts and minds of many beyond its borders as a result. In addition to the inspiration that is democratic Ukraine, there are multiple practical lessons that can be learned from Ukrainians' tenacity. These lessons should be taken to heart by other democracies facing of threat of war, whether hybrid or conventional.

The aim of this paper's analysis is to demonstrate practical lessons that can be used by other democracies facing external, existential threats. There are democracies worldwide that need to protect against autocracies undermining international peace and order. Taiwan springs to mind, persistently threatened by the People's Republic of China. The Baltic states of Central and Eastern Europe are similarly situated vis-à-vis the Russian Federation.¹ This paper analyses the policies and practices that have successfully comprised Ukraine's resistance in seven sectors: defense and security; the economy; energy and critical infrastructure; strategic communications; media, and civil society.²

Our analysis considers positive and negative lessons learned in these sectors. As objectively as possible, this paper's authors assess what did and did not effectively buttress the country's resilience. The authors maintain all lessons are useful.

Ukraine's lessons in resilience should become the country's important asset for its further Euro-Atlantic integration. NATO and EU defense structures stand to learn a great deal from Ukrainian's combat experience. This paper further argues for democracy and democratic alliances. Ukraine is fighting for more than its territory and sovereignty. This is also an ideological conflict between democracy and autocracy as two systems of government. We believe that through the course of war it will become clearer that the agile and egalitarian nature of Ukraine's democratic principles have bested the vertical hierarchy of autocratic Russia. Accordingly, this paper considers the democratic components throughout Ukraine's effective resistance against Russian brutality and aggression.

This paper covers the timeframe between preparations to the invasion (before February 2022) until December 2022. The authors acknowledge that this work presents lessons in an on-going war and that this may limit the strength of some of our arguments. Further developments and new lessons that arise will be considered in future studies.

1 The presentation of this paper's preliminary findings was introduced in October 2022 within the framework of the Czechia-Taiwan-Ukraine Forum.
2 NATO. 2022. *Resilience, civil preparedness and Article 3*. 20 September. Accessed February 10, 2023. https://www.nato.int/cps/fr/natohq/topics_132722.htm?selectedLocale=en.



SECURITY AND DEFENCE SECTOR

Russia's second invasion in Ukraine in February 2022 continued a war that had started in 2014, then escalating to a level of conflict not seen in Europe since the Second World War.

The February Invasion started with concentrated armoured and infantry attacks from Russia and Belarus, supported by long-range missile strikes throughout the country as far west as Lviv. The Russian attacks in the north and northeast, directed largely against the Ukrainian capital of Kyiv, faltered due to strong resistance by Ukrainian forces. By early April, Russia had withdrawn all troops from Ukraine's capital region.

On April 18, Russia launched a new major offensive in eastern Ukraine. With May's arrival, Russian forces had taken control of Mariupol, a major and highly strategic south-eastern port city that had been under siege since the war's onset. Since the summer of 2022, most fighting has largely been confined to Ukraine's east and south, with Russian cruise missiles, bombs, cluster munitions, and thermobaric weapons devastating port cities along the Black Sea and the Sea of Azov. To wit: the 2022 Russian invasion of Ukraine has involved the largest use of land-attack missiles in history, with launches from all basing modes in Russia. As of September, Russia launched more than 3,500 missiles at Ukraine, targeting both military and civilian infrastructure objects.

By the fifth month of fighting, the war was showing signs of settling into a stalemate. Russia's gains in the east petered out after it took complete control of the town of Severodonetsk, Luhansk province, at the start of the month. By late August, Ukraine began a much anticipated counter-offensive to retake Kherson, a key city in the country's south. Then on September 6, Ukraine's army launched a surprise offensive in the country's north-eastern Kharkiv province. It met with success and in the space of a week. Ukrainian armies had liberated 1,000 square kilometres (386 square miles) of territory from Russia.

As of early October, Ukrainian forces have been able to make strong advances in the northeast and mounted a revitalized southern counteroffensive. Although Russia continues to hold onto much of Ukraine's south-eastern region, Ukraine has retaken significant territory, surprising Russian forces and cutting off important supply lines. Russia decided to send reinforcements to the eastern front to counter the new Ukrainian offensive. Between 21 September and 28 October 2022, Russia mobilized around 300 000 reservists.

On November 11, Ukrainian Armed Forces entered Kherson, following the announced withdrawal of the Russian troops to the left bank of the Dnieper River. Here, Russia continues to construct fortifications and defensive lines. Their goal is to keep under occupation parts of the Kherson and Zaporizhzhia regions, including control over the Zaporizhzhia Nuclear Power Plant.



As of September 25, 2022, the UN Human Rights Office has recorded six thousand civilian deaths, of which 382 were children. Over eight thousand civilians have been injured since February 24, 2022; however, actual numbers are likely much higher. In the decimated city of Mariupol alone, Ukrainian officials believe at least 22,000 have been killed, while investigations of morgue records indicate many more. The Second Russo-Ukrainian War has caused the largest refugee and humanitarian crisis within Europe since the wars of Yugoslavia's dissolution in the 1990s. The UN has described the current conflict it as the fastest-growing such crisis since World War II.

The authors acknowledge that it is too early to take away any definitive lessons from the war. Yet it is possible to start identifying those areas where Ukraine's successes or failures had significant impact.

STRATEGIC SECURITY AND DEFENCE PLANNING FRAMEWORK

When Russia annexed Crimea and invaded eastern Ukraine in 2014, the Ukrainian military had been weakened by years of neglect and underfunding. In the eight years preceding Russia's escalation, Ukrainian Armed Forces endeavoured to reform in line with NATO standards and practices, with the support of several of its member states.

Ukraine's defence has evolved over eight years of war from an 'anti-terrorist operation' to a 'joint forces operation'. Apart from the invaluable combat experience Ukrainian forces gained during this period, it also improved coordination and distribution of roles among various elements of the Ukrainian security and defence sector.³

This concept is based on the Strategy of the National Security of Ukraine (approved on May 26, 2015) and the Military Doctrine of Ukraine (as of September 24, 2015). The cycle of strategic defence planning following the annexation of Crimea was completed by adoption of the Strategic Defence Bulletin on June 6, 2016.

In 2018 Ukraine adopted the Law on National Security, which set the framework for the Ukrainian national security and defence planning system. In accordance with the Law, President Zelenskyy, upon taking his post in 2019 launched the development of the two crucial documents: **the National Security Strategy and the National Defence Plan**.

The National Security Strategy (NSS), enacted by the Presidential Decree in September 2020, is a public document⁴ which declared three pillars of Ukraine's national security: deterrence, resilience, and international cooperation. While Ukraine has not developed sufficient capabilities to ensure deterrence and prevent the escalation of conflict, the other two (i.e., resilience and international cooperation) proved to be valid for surviving

3 The first definition of which as "an integrated functional system" as provided in the Concept for the development of the security and defence sector, approved on March 14, 2016.

4 The Presidential Office of Ukraine, *Decree of the President of Ukraine*, Volodymyr Zelenskyy. No.392/2020, 2020. <https://ips.ligazakon.net/document/MUS26288> (accessed February 10, 2023).



the massive attack. The NSS set the framework for the development of 14 sectoral strategies and the National Intelligence Programme. The bulk of these strategic concepts were completed and enacted by January 2022, including the critically important Military Security Strategy (MSS)⁵ and the Strategic Defence Bulletin, which was completed and enacted in January 2022.

The classified Defence Plan is unique in the Ukrainian security planning system. Its development was initiated by the Secretary of the National Security and Defence Council (NSDC) Oleksiy Danilov in October 2019. In March 2020, President approved its structure – not open to public – and on October 15, 2020, the Plan was adopted by the NSDC, and approved by the President in November. According to the insiders, the fundamental document adhered to a “whole-of-government” approach to defending the country against conventional and hybrid military attack. It helped to structure the interaction of state authorities in the event of the security situation’s deterioration. Being enacted within hours following the attack at 04:15AM on February 24, 2022, the Defence Plan, together with the Complex Plan for Territorial Defence, successfully simplified coordination amongst the different governmental entities and security sector actors.

There were several other important documents that were developed and adopted by Ukraine in preparation for an expanded war. These include: the Law on Intelligence (2020), the Law on Fundamentals of the National Resistance,(2021), the Law on the Critical Infrastructure (2021), the Law on Intelligence (2020), and the Concept for the National Resilience System (2021) deserve special note. The Law on Fundamentals of the National Resistance enabled the establishment of **the Territorial Defence Forces in January 2022**, as well as granted Ukraine’s Special Operation Forces with the role of coordinating and supporting resistance movements in the occupied territories of Ukraine. The Law on Intelligence introduced the vision of an intelligence community in Ukraine that improves information exchange between different intelligence bodies. The Law on the Critical Infrastructure (CI) intended to set up a national system for protection of the CI objects, identifying key vulnerabilities.

Positive lessons

- **Amended legislation and two complete defence planning cycles** (2014-2018 and 2019-2022), combined with practical experience gained in the anti-terrorist and subsequent joint forces operations, significantly **improved coordination** between the various components of the security sector under armed forces command. It enabled enhanced defence cohesiveness in the first hours of martial law.
- Combat experience and implemented reforms helped to **improve the leadership skills at the middle level of military command**, changing the mindset of the Ukrainian military towards the encouragement of initiative and responsibility.

5 The Presidential Office of Ukraine, *Decree of the President of Ukraine, Volodymyr Zelenskyy*. No.121/2021, 2021. <https://www.president.gov.ua/documents/1212021-37661> (accessed February 10, 2023).



- A large component of the **volunteer defenders** who took arms in 2014 to protect Ukraine from the Russian aggression, were integrated into the armed forces, national guard and national police.

Negative lessons

- Many provisions outlined in the defence planning documents were **only partially implemented if implemented at all**. Crucial laws concerning national resistance, which launched the formation of the Territorial Defence Force as a separate branch of the Armed Forces of Ukraine (AFU), were adopted only few months prior to escalation.
- The Defence Plan of Ukraine focused on the strategic level of the state management (i.e. Ministries and other Central Executive Bodies). Those elements covering the regional and local levels of the administration were in the process of development at the beginning of the large-scale invasion; accordingly, the biggest number of mistakes were registered at these levels.
- The Defence Plan was not properly tested in the corresponding exercises that sought to bring together military representatives and civilian government. Security personnel and public servants were not effectively trained and prepared to implement its provisions.
- Strategic and financial commitments were insufficient. In the 2021 budget, the Ukrainian government allocated 267 billion UAH (\$9.44 billion) for defence and security sector, which constituted 5.93% of GDP; however, for the first time since 2014 the financing of AFU was decreased by 331 million UAH. Assurances that the strategic approach to introducing an accountable defence budget were not implemented until February 2022.



INSTITUTIONAL FRAMEWORK⁶

Despite the reforms' overall progress, a few controversies remained in the Ukraine-NATO dialogue concerning defence system management. Those persisting concerned civilian control and democratic oversight in respect to:

- The Ukrainian government's failure to clearly outline the defence ministry's responsibility for defence Policy development. Hence, the Commander-in-Chief (General Valerii Zaluzhnyy) has direct access to the President of Ukraine as Supreme Commander in Chief.
- Ukraine ignored the recommendations of the Euro-Atlantic partners to "kill the Stavka"⁷ element in the command-and-control structure. This rudiment of the Soviet system bolstered the potential President's engagement in military command. It remained in legislation as *"The Higher Collegial Strategic Body of the Military Command for the Defense of the State in a Special Period"*. The set-up of the Stavka, as well as its composition, are to be determined by the President on the recommendation of the National Security and Defence Council.

Being heavily criticised in relatively stable security situation, the above-mentioned institutional deviances from NATO-type systems were proved to be effectively used by the President Zelenskyy under the establishment of martial law. As the Supreme Commander-in-Chief, the President is fully informed on the development of the operational initiatives and gets insights into the military planning and analytical information of the situation unfolding in the battlefields.

According to Ukrainian experts, regular meetings of the *Stavka* are important element of various decision-making processes. However, Zelenskyy allows generals to run the show "without his direct interference into military business."

Ukrainian Parliament typically has oversight of the security sector vis-a-vis key committees (i.e., National Security, Defence, Intelligence and Law Enforcement Committees). however, in the run-up to the latest invasion **the presence in the parliament of the pro-Russian MPs**, who had access to the classified information, restrained interaction with the Rada. Fortunately, their number appeared to be much smaller than Russia expected, and most of them left the country hours after the invasion started.

6 Interesting fact: Ukraine embraced **the concept of the "comprehensive defence"** tailoring it to the inner hierarchical political culture, merging defence and measures to increase national resilience into a single system

7 The Stavka (Russian: Ставка) is a name of the high command of the armed forces formerly in the Russian Empire, Soviet Union and currently in Ukraine.



Positive lessons

- Being subjected to constant, and sometimes inconsistent transformations over the past eight (8) years, Ukraine's institutional security framework proved to be both flexible and sustainable. Core elements remained effective, enabling coordination of nation's response to major security risks.
- A limited circle of people involved in the decision-making process prevents information leakage. This group's integrity was is critical for efficient operational planning and quicker response times.

Negative lessons

- The current institutional arrangement is heavily centralized in the Presidential Office of Ukraine. A few elements of this structure (including the role of the Head of the Presidential Office) lack full accountability, enabling negative media coverage.
- While being depicted as effective in the times of war, this institutional architecture needs to be changed if Ukraine seriously endeavours towards a transatlantic agenda that allows for civilian control and democratic oversight.

MILITARY TRAINING AND LEADERSHIP

In 2015-2022, Ukraine benefited from the bilateral tactical training programs provided by Western allies. The largest training missions are Operation UNIFIER (CAN), Operation ORBITAL (U.K.), and the U.S.-led Joint Multinational Training Group-Ukraine (JMTGU).

Between September 2015 and February 2022, Canadian Armed Forces (CAF) trained 33,789 Security Forces of Ukraine (SFU) candidates under Operation UNIFIER. CAF assisted with the provision of 726 courses spanning all lines of efforts, including 1,951 members of the National Guard of Ukraine (NGU). Operation Orbital saw the UK military train more than 22,000 Ukrainian personnel from 2015 until the full-scale invasion of Ukraine. By January 2022, JMTGU programme trained a total of 23,000-plus AFU soldiers from 17 different battalions and 11 different brigades, employing a "train-the-trainer" approach. This mission supported Ukraine in developing and implementing systems to improve combat training and increase training centre capacity.

In February 2022, all training missions were suspended with international personnel having been withdrawn from Ukraine. Only in August 2022 was the UK-led programme Operation Interflex launched to train and drill the 10,000 personnel of the Armed Forces of Ukraine using battle-proven British army expertise. CAF personnel were also deployed to the U.K. to resume their training of Ukrainian recruits in order to assist with the war effort. Other nations such as New Zealand and The Netherlands have also afforded contributions.

U.S. service members, relocated to Germany, began training Ukrainian soldiers on key systems being used to defend Ukraine against the Russian invasion as of end of April 2022.



The European Union also announced its intent to launch large-scale programme for the training of the Ukrainian military (EUMAMUA) which aims to get about 15,000 Ukrainian military trained by February 2023.

Also, Ukrainian leadership took into account lessons of the poor performance of the Ukrainian military in Crimea, which demonstrated the deficiencies of a strongly centralised command system inherited from the Soviet past. Measures were taken **to integrate the mission command approach** into the military education and training across the services of the Ukrainian Armed Forces, as well as to **introduce and develop the professional sergeant corps in the AFU**. It is widely recognized that sergeants became an important backbone for the AFU, although the sergeant corps largely had not received sufficient training.

Positive lessons

- Unprecedented training programs for the Ukrainian defence sector (including the NGU) proved to be an important element in the capacity of the AFU to counter Russia's aggression. The continuation of the training programs now, outside of Ukraine, will be decisive factor for Ukraine's ability to deploy additional reserves to the battlefield.
- International trainings significantly contributed to the shifts in the perceptions of the Ukrainian military personnel. They have a better understanding of the NATO standards and principles, including mission command. This makes Ukrainian Armed Forces well-advanced in terms of operational art, more mobile and modern, when compared to their adversaries.
- Training programs also helped to develop military-to-military communications and network of the personal relationships, which proved to be useful to consolidate international support for the AFU and advocating the positive image of Ukraine's defenders.
- Starting in 2016, Ukraine has been building a professional sergeants corps in its armed forces, using approaches and practices of the Western countries.

Negative lessons

- Tactical-level trainings were not supported by the transformation of the Ukrainian doctrinal documents nor the **reform of the whole military training and professional education system**. As a result, large numbers trained personnel had already left the armed forces, thus their knowledge and skills were not properly applied in the time of the large-scale invasion.
- The system of the training-of-trainers remained undervalued in the AUF. The number of the trained personnel could have been significantly multiplied over the past few years.



- Extensive international training programs did not trigger improved English language integration in the AUF, with this language barrier being a constraining factor in the intensification of training programs.
- **Withdrawal of international personnel, according to the Ukrainians' view, along with the diplomatic personnel of the allied missions, was a crucial enabler for the Russian invasion.** It was also seen as a sign of the full disbelief in the Ukrainian defence potential and disregard of the progress the AUF achieved over the eight years. Moreover, some Ukrainian officials maintain that the presence of the international military personnel may have been a major factor in possibly deterring a Russian invasion.

EXERCISES

In early February, Ukraine launched a series of military exercises in response to Russian and Belarussian drills on the former's territory. Minister Reznikov named more than 10 locations of the exercises to media on February 8. No particular details were available to public until the recent interview of the Commander-in-Chief Zaluzhnyy to the Times Magazine and subsequent comments by officials, as well as in documentaries. These manoeuvres helped to identify cracks in Ukraine's defences. Notably, that large number of commanders, despite the media and intelligence warnings about the possible invasion, were still downplaying the potential risk. However, Ukrainian armed forces relocated and camouflaged military hardware, moving troops and weapons out of their bases and sending them on tours around the country. This included aircraft, tanks, and armoured vehicles, as well as the antiaircraft batteries Ukraine that would soon be needed to maintain control of its skies. These steps prevented Russia from destroying the Ukrainian air defence capabilities within the first 72 hours, as expected. However, according to experts at RUSI, the Russians succeeded in engaging 75% of static defence sites in the first 48 hours of the war.

Positive lessons

- Large scale exercises in February were a centrepiece for Ukraine's ability to defend critical military infrastructure, avoid the "shock effect" in first hours of the invasion, and maintain the communication and control system necessary to defend the capital.
- Ukraine's defense strategy remained largely unknown to the Russian and, to allied partners. This approach demonstrates integrity of the top level political and military command, thereby enabling effective intelligence information sharing.

Negative lessons

- The urgency of Russia's attack prevented the consideration of gaps in proper preparations in the southern regions of the country (e.g., Kherson).



- Political leadership's strategy of "not causing panic" diminished civilian preparedness exercises being held across the country, potentially decreasing the number of the civilian casualties.
- Due to the lack of time and resources, large-scale interagency exercises, involving not only components of the Armed Forces, but also law enforcement structures, intelligence, and emergency services were not held.
- According to some reports, Ukraine was constrained by allies from launching a series of the military exercises earlier than February. Some were advising against "provoking Russia" when it was still believed that diplomatic solution to Moscow's demands could have been found. Due to that, crucial time was lost that could have been spent in preparation.

INTERESTING FACT

Apparent were the **weaker aspects of the Ukrainian preparedness in its counterintelligence** as Russian agents, subversives, and private military representatives managed to enter Ukraine in the run up to the second invasion. Numerous media reports indicated signs of infiltration back to 2017, with Ukrainian citizens being approached and paid for sharing the coordinates, video, and photo images of Ukrainian military infrastructure in various regions of Ukraine., Simultaneously, pro-Russian parties and Russian Orthodox church activities were not fully visible to state leadership. To wit: Several pro-Russian members of parliament escaped the country following the invasion, though their role in it is yet to be determined.

Another challenge was **the leakage of the Ukrainian personal databases to the Russian military**. According to multiple reports, Ukrainian citizens were checked against various lists at checkpoints manned by Russian occupiers, reflecting data that could only be obtained from Ukrainian national registries. Some suspect leakages in the information system of the Privat Bank - one of Ukraine's largest - while others suggest that national police databases were compromised by Russian hackers. This data was then used in the compilation of lists of Ukrainians subjected either to execution or arrest by the Russian Federal Security Service.

POST-INVASION PERIOD

A full and complete analysis of the post-invasion lessons learned is constrained by the lack of the fully verifiable information that can only be based on media reports and interviews with Ukrainian officials. Also, given the short time horizon, the situation remains dynamic, particularly considering the Ukrainian counter-offensive in Kharkiv and Kherson regions, as well as its noteworthy resistance in the early stages of the war.



SUSTAINABILITY OF THE GOVERNMENT AND MILITARY COMMAND

During the first hours of Russia's large-scale invasion of Ukraine, President Volodymyr Zelenskyy fiercely declined numerous recommendations to leave the country or, at least, the capital. Zelenskyy remained in Kyiv, which proved to be the decisive factor for the legitimacy of the Ukrainian government. Subversive groups linked to Moscow attacked the Presidential Office more than ten times, according to the media reports. Zelenskyy himself said he survived about a dozen assassination attempts. His decision to stay in his office at Bankova Street, despite the risk to his personal safety bolstered his reputation in the Armed Forces of Ukraine and further strengthened morale.

According to the media reports, within 36 hours of the second Russian invasion, the government was divided into the groups and dispersed around the country to ensure its continuity in case of key officials' demise. Yet according to government officials, the reality was that the whole process was chaotic and totally disorganized. For instance, the Ukrainian parliament did not have an alternative venue to conduct the plenary session needed to approve the President's decree of martial law. This oversight resulted in a convening of the Rada that exposed more than 400 MPs to a possible missile attack.

Another noteworthy aspect of **civil-military relationship was the allegedly low level of engagement of the Ministry of Defence. In the first hours of the war**, civilian personnel sought to flee from the capital and bring their families to safe haven. Ministry personnel returned to their offices within weeks. Nonetheless General Staff cited this occurrence as a poor policy guidance from the Ministry.

Positive lessons

- The personal decision of the President Zelenskyy to stay in the capital was crucial to country's survival within first hours of the invasion.
- The Ukrainian State Protection Service (УДО) showed a high level of professionalism in ensuring the personal security of the top officials and their families. Physical protection of the political leadership remains the priority.
- Key classified communication lines remained functional despite several attacks.



Negative lessons

- Despite the warning of invasion, protocols of action in case of war for ministers, MPs, public servants were not clarified and distributed in advance. The evacuation process for the governmental officials was rather unplanned.
- In the event that Russian forces succeeded in capturing or assassinating President Zelenskyy, as initially planned, that would have significantly undermined Ukraine's resistance.
- While relatively secure locations for the political leadership of the country were ensured within limited amount of time, wholly secure communications remained elusive. For example, several cyber-attacks compromised the government's electronic communications system.

MOBILISATION. VOLUNTEERS. TERRITORIAL DEFENCE FORCES

The draft, on announcement by President Zelenskyy, **clearly demonstrated the weaknesses of the country's mobilisation system**. Military recruits across the country reportedly were ill-equipped for the mass mobilisation. Long queues were the norm, as well as problems with equipping new recruits.

The decision of the President and the Armed Forces of Ukraine (AFU) to ban the border crossing for males aged 18-60 proved to be very controversial. A majority of the experts, however, believe it was ultimately correct. In the ensuing months, regulations for draftable men leaving the country were strengthened, as a number of younger Ukrainians had fled. Also challenging was the Ministry of Defense and the Armed Forces' opacity around the military draft of women as of October 1, 2022. This step led to media speculations that ultimately forced deputy Minister of Defense Hanna Maliar to tell Ukrainian women "not to panic" as women's recruitment is only voluntarily.

A national culture of military volunteerism, which emerged after 2014, remains an important factor for national resistance. As of now, the Ministry of Defence reports of the "execution of the mobilization plan by 100%"; however, given the protracted nature of the conflict, and losses of the Ukrainian Army, the issue of the next wave of the mobilization remains crucial. In July, Ukrainian officials reported that up to 700,000 people were mobilized in the Armed Forces, 60,000 in the State Border Guards Service, 90,000 in the National Guard of Ukraine, and up to 100,000 in the National Police.

Territorial Defence Forces, established on 1 January 2022, proved to be the fastest growing component of Ukraine's Armed Forces. More than 110,000 citizens of Ukraine have joined the territorial defence forces of the Armed Forces of Ukraine. More than 450 voluntary formations of territorial communities have been established. Not undervaluing the sentiment and readiness of the citizens to defend the country, it should be noted that many people joined the territorial defence forces in the hope that they will stay and serve within the territories



of their relatively secure communities (especially in the central and western Ukraine), thereby not exposing themselves to higher risk on the eastern frontlines. This changed in May 2022, when territorial defence forces (TDF) were permitted by law to conduct activities in combat areas beyond their locale. This afforded the deployment of the territorial defence battalions beyond their assigned territory. Currently, the total TDF amounts to 32 brigades.

In terms of supply and equipment, the AUF significantly improved multiple supply chains since 2014. Still, individual Ukrainian volunteers, as well as large-scale NGOs, play a key role in supporting the AUF. For instance, a well-known Ukrainian TV host has crowdfunded a gift to help Ukraine's armed forces beat back Russia's invasion: Usage rights to a radar satellite. Numerous fundraising platforms, whether affiliated with the state (i.e., Army of Drones, or United24), or purely private (e.g., Come Back Alive, Serhiy Prytula Foundation) accumulate vital resources to support the AUF, including cars, uniforms, drones, medical kits, etc.

Positive lessons

- Territorial defence forces shall evolve into a more visible presence in liberated regions. Better trained, better prepared, and sufficiently equipped, TDF shall be the enabler of the defensive actions across the country given the possibility of the repeated attacks.
- Ukrainian experience in crowdfunding and volunteering for the Armed Forces can be further applied for recovery and reconstruction of impacted communities.

Negative lessons

- Mobilisation and basic training for new recruits needs to be revised, quickly adapted to evolving challenges.
- The chaotic assemblage of the International Legion required considerable time for its further transformation and “normalization” under the guidance of the Central Intelligence Department of Ukrainian Defence Ministry.
- The increased number of the Ukrainian defenders requires extension of training programs (including basic training in international humanitarian law) and the sufficient amount of equipment. One particular challenge concerns the protection of military facilities and civilian infrastructure in the face of long-range artillery and the targeted use of missiles and kamikaze drones. These bombardment tactics demand new standards for the deployment of military units, control points, warehouses, and training sites. Personnel dispersal is a matter of survival. As a consequence, large trainings and exercises take place outside the country.



THE UKRAINIAN ECONOMY

The extent of damage to Ukraine's economy as a result of the second invasion is immense. It is impossible at present to calculate the exact volume of the losses due to ongoing hostilities. Ukraine's GDP lost and estimated 33-35% in 2022.⁸ In addition, inflation has accelerated due to the destruction of industry, disruption of supply chains and costly logistics, and diminishing enterprise capacity. Ukraine, however, has thus far withstood massive economic contraction mainly with the help of the entire democratic world. According to forecasts of the National Bank of Ukraine, the Ukrainian economy's recovery rate in 2023-2024 will be around 5-6% per year.⁹ As long as Russia continues its aggression against Ukraine, accurate economic forecasts will remain elusive.

War is a shock to any economy. And a war of such scale as in Ukraine would cause massive losses in any country, even with a strong economy. At the beginning of the war, there were fears that the Ukrainian public finance system might not survive, that the country's economy will collapse within a couple of weeks, or at best in a few months. The Ukrainian economy is, with massive help from Western partners, resilient nonetheless. The Kyiv government's approach is complex and on-going.

PRIVATE SECTOR SUPPORT

In previous years, state support for business in Ukraine was low. Most technical assistance was provided by international organizations supporting Ukrainians. The state created the Ukrainian Startup Fund as a greenfield resource, as well as those operating. Recipients receive grants ranging from \$25,000-\$50,000. Before the second invasion, this was the state's primary aid for small-to-medium size enterprises. For perspective: In the 2022 budget, more than \$1.3 million was allocated to this fund.

State support for Ukrainian businesses remains operative, bolstered by increased tax revenues. The assistance has been effective. Within five months since the invasion 48-to-65 percent of SMEs have fully or partially resumed operations. The government's (draft) 2023 budget appropriated additional support. It includes grants for business development (€39 million), on the Fund for the Elimination of the Consequences of Armed Aggression (€546 million), as well as subsidies for liberated regions (€679 million). The government further plans to expand financing through its Entrepreneurship Development Fund, increasing from €262 million to €452 million. In particular, this fund finances the "5-7-9%" program. The agricultural sector remains the main sphere of this support. The state not only expanded means of business support but also simplified bureaucracy related to this assistance.

8 According to the approved budget for 2023, the deficit will amount to 38 billion dollars, which Ukraine plans to receive as aid from international partners.

9 Depending on the battlefield situation.



Positive lessons

- Since the second invasion, the state has financially supported entrepreneurs and promoted the relocation of enterprises to safer regions of Ukraine.
- The state has introduced tax incentives for many types of business activities to ease the financial burden of entrepreneurs affected by military actions.
- The expansion of the program of affordable loans for entrepreneurs with the "5-7-9%", with a focus on agriculture.
- The simplification for entrepreneurs to obtain permits and licenses through Diia electronic services.
- Grant programs for entrepreneurs.
- Assistance with the relocation of enterprises from hostilities or temporary occupation to safer regions.
- The compensation from the state budget reserve fund to employers who hire people who became IDPs due to hostilities.

Negative lessons

- On October 12, the Cabinet of Ministers of Ukraine updated the procedure for blocking the registration of VAT invoices by adopting Resolution No. 1154. Afterwards, the frequency of blocked invoices overloaded the system. Reaching two million in a month. For businesses already suffering, this kind of bureaucracy bears a harsh blow.
- For years the Kyiv government promised to introduce tax reforms, adopting EU standards. Alas, they have yet to materialize. Presently, there are several options for tax reform that are currently being discussed among representatives of state authorities and experts; however, no tangible steps have been taken due to disagreement among participants.
- Most of the country's industrial capacity was concentrated in the east and south of Ukraine, while the western part of the country is largely rural. At present, heavy industry can't operate at total capacity due to the war. Relocating such industry is a challenge that the government addressed only after the second invasion, one difficult to resolve given the timeframe and active conflict.

EXPORTS

Ukraine was globally the second largest exporter of grains after the United States in 2019-2020. To put in perspective: In February 2022 the country exported more than 13 million tons of goods worth \$5.3 billion, primarily by sea. Since the mass invasion, however,



Russia has blockaded all seaports. Food crises and budgetary losses have been the results. In addition, maintaining open supply chains remains a high priority.

Positive lessons

- The Office for Entrepreneurship and Export Development has launched an operational platform with up-to-date information for Ukrainian exporters ready to ship their products abroad during wartime.
- The EU-Ukraine business matchmaking platform has been created to support the export of Ukrainian goods.
- Diia.Business launched an English-language section - "Buy Ukrainian products and services" to establish international partnerships.
- On July 22, Ukraine, Turkey, and the UN signed an agreement on the safe export of grain through the Black Sea. A similar agreement was concluded between Turkey, UN and Russia. that enables the delivery of grain through the Ukrainian ports of Odesa, Chornomorsk, and Pivdennuy. In 2021, these ports processed 70% of Ukraine's trade turnover. Moreover, Ukraine has exported more than 11 million tons of agricultural products to 38 countries. In November, Russia announced that it had planned to withdraw from the agreement since August 2022. International pressure kept Russia in the deal.
- Since the beginning of the war, the state has been increasing trade through river ports, railways, and trucks. Nonetheless, Ukraine can't reach full level of pre-war exports. Therefore, the state is working on a strategy to improve the work of customs traffic with Poland and the establishment of duty-free corridors.
- The European Commission launched of the "Paths of Solidarity" initiative. This initiative reduces transport delays and enhances transport infrastructure between Ukraine and the EU.
- In November, the "Grain from Ukraine" program was launched. Its goal is to help poor African countries overcome the food crisis brought about by the war. Any state can pay for grain to be exported to a state with a hunger problem. For example: At the beginning of December, Ukraine sent to Ethiopia ships with grain within the framework of this program.¹⁰

Negative lessons

- Ukraine did not do enough to simplify logistics corridors connecting it with Europe during all the years of independence. **In this sense Ukraine export/import**

¹⁰ More than 30 countries and the European Union announced their financial participation in the program "Grain from Ukraine". The total amount of announced contributions is almost 190 million dollars. As part of this initiative, 110,000 tons of wheat have already been shipped to developing countries. <https://uatv.ua/uk/ukrayina-zabezpechuye-globalnu-prodovolchu-bezpeku-oglyad-initsiatyvy-grain-from-ukraine-na-2023-rik-video/>



infrastructure and system was not ready for the full-scale Russian invasion. It took several months to adjust to the new situation. The Ukrainian government managed to fix the most severe problems with the help of its international partners.

Recommendations

Since the EU countries have extensive and convenient transport connections between each other, this problem would not be so acute in the event of an emergency. However, every government needs to create plans for exporting and importing goods in case of the unexpected. In addition, countries that depend on the transportation of goods by sea should focus more on protecting their territorial waters, especially countries close to Russia.

WAR BUDGET

Since 2014, the defense budget of Ukraine has not exceeded 2.5% of the country's GDP. Even though this is a typically standard percentage of military spending in other countries, this amount could not cover military expenses associated with eight years of conflict. With the full-scale invasion most of the country's funds go to defense. This is made possible by the generous donations of Ukraine's international partners.

Positive lessons

- The state has concentrated all resources at its disposal for the war effort. The country's planned budget for 2022 - adopted at the end of 2021 - underwent major changes. The additional financing of the military-defense complex, increased social payments, and outlays for reconstruction were added to the current budget. **The military budget now represents a staggering 3/4 of the entire state budget.** Previously, the annual budget of the Ukrainian army was approximately €4.4 billion. Presently, its monthly expenditure amounts to €6.6 billion. One of the primary sources of support for the Ukrainian army and related security institutions is the budget reserve fund. In the draft budget for 2023 now being prepared, the country's defense expenditures **reaches the level of 17.8% of GDP** (i.e., versus the six percent planned for 2022).
- To obtain additional funds for the national budget, the State Property Fund commenced with privatization auctions in September. Last summer, the Verkhovna Rada simplified this procedure and made it more accessible. Accordingly, the state hopes to attract up to €26 million euros by the year's end. As of mid-November, the State Property Fund had completed 65 auctions totaling nearly €41 million euros, significantly exceeding expectations.
- On May 23, the President of Ukraine signed a law simplifying the procedure for confiscating the property of Russians and Belarusians under sanctions. The law establishes a new type of sanction in the form of the confiscation of assets belonging to an individual or legal person.



Negative lessons

- **The national budget - the defense budget in particular - were not drafted for war footing** nor the ensuing destruction of Ukrainian infrastructure. Only with the unprecedented solidarity and financial support of international partners (see below) has Ukraine able to keep its economy afloat. In the future, the Government must plan with increased funding the defense industry.
- The confiscation of property of Russians in Ukraine directly depends on the cooperation of state institutions and the necessary political will. For several months since the introduction of the law on confiscation, only one lawsuit was filed and is being adjudicated against the Russian oligarch V. Yevtushenkov¹¹. Although the process of confiscating the property of Russians is progressing, it remains unnecessarily prolonged.

FOREIGN SUPPORT FOR UKRAINE'S ECONOMY

Despite preparations for a war economy, Ukraine would not be able to maintain relative financial stability without the help of international partners. This assistance comes in the form of soft loans or grants and helps support Ukraine's economy during a time of great crisis.

As of October 1st, Ukraine has received \$19.4 billion in grants and loans from foreign partners. Foreign aid has covered 55% of the needs for additional budget expenditures (i.e., deficit and debt repayments). This amount exceeds what could be collected in the form of taxes and duties.

UNITED24 is a new initiative of the President of Ukraine. The task of the fundraising platform is to become the main way of collecting donations supporting Ukraine. Funds are deposited into the National Bank of Ukraine's accounts and dispersed by various ministries.

Negative lessons

- Ukraine has created many funds for reconstruction¹². However, the disparity of funds, the lack of clear procedures, and overall opacity will result in corruption and subsequent distrust. **Ukraine needs a single transparent mechanism for budgetary management and donor funds.**

11 https://court.gov.ua/userfiles/media/new_folder_for_uploads/hcac/judgments/administrative/991_3183_22_01-09-2022.pdf

12 It is crucial for the country to strike a balance between closing urgent recovery needs and transparency. It is necessary to develop the same for all funds and a transparent mechanism for using funds for reconstruction. Also, the creation of a single body for the coordination of revenues and distribution of funds in the post-war period will minimize the risks of corruption. After all, it is easier to analyse the activity of one body or institution than the activity of a large number of different funds.

Source: Boguslavets, Martyna, Maksym Diomin, Olena Kupina, and Anna Novak. n.d. *Initial Steps to Mitigate Corruption Risks During Ukraine's Recovery*. Institute of Legislative Ideas. <https://izi.institute/research/initial-steps-to-mitigate-corruption-risks-during-ukraines-recovery/>



THE NATIONAL BANK OF UKRAINE IN WARTIME

The country's financial system was and remains under significant strain. There have been various attempts in recent months to keep the country's economy afloat, but not all of them have been successful. However, **the National Bank of Ukraine and the government have consistently responded to the public demands and reformed accordingly.**

Positive lessons

- Since the beginning of the war, the National Bank of Ukraine (NBU) was forced to start actively printing money to support the war economy. The NBU became the Government's largest creditor, covering the budget's needs by nearly €6.9 million. Yet the government still prints Hryvnas. In periods of such crisis, countries have two main ways out of the situation: either limit all payments and underfinance various sectors of the economy or print currency in mass amounts. Ukraine's government chose to print money despite inflationary effects. Thus far, Ukraine has managed to maintain relative financial stability; however, inflation will be the likely result.

Negative lessons

- On July 21, the NBU introduced several additional restrictions on the foreign exchange market. The new rules addressed use of the hryvnia abroad. Limits were set for non-cash settlements, cash withdrawals, and P2P transfers. An unintended outcome were the limits on ordering and transporting military supplies from abroad. After public pressure, the National Bank decided to remove the limits for payments abroad for persons engaged in volunteer activities as of August 6, 2022.
- To maintain a stable currency, the NBU limited cash withdrawals and froze the official exchange rate at UAH 29.25 for 1 USD. This exchange rate lasted until the summer and caused manipulation on the black "forex market" (i.e., 38-40 UAH for 1 USD). In July, the NBU was forced to fix a new exchange rate (UAH 36.56 for 1 USD). The difference between the official and black-market exchange rates causes problems, particularly for volunteers purchasing aid for the army.



ENERGY SECURITY

Since the second invasion, energy once again became the main means of Russian leverage to blackmail Ukraine and the Western world, especially the EU. At first, this was manifested through a decrease in gas transit that led to an unprecedented hike in prices of hydrocarbons and electricity in general. Then, in October, Russia began the constant shelling Ukraine's energy infrastructure in order to create a humanitarian crisis. Neither Ukraine nor its partners could fully assess the risks posed by Russia, resulting in severe consequences for its citizens. The complete restoration of the energy system won't be possible until the fall 2023, assuming that the war ends. At present, the Ukrainian energy system is demonstrating its resilience even under constant bombardment. The assistance of international partners further increases the speed of restoration of Ukrainian energy sector.

How was the government improving country's energy resilience, which measures were effective, and what could have been done better?

GAS PRODUCTION

Prior to the second invasion, the government took important steps to reduce its dependence on natural gas imports from Russia by increasing its own production. It began exploratory drilling on the Black Sea shelf and has started the development of the Yuzivska Square on the border of Kharkiv and Donetsk regions. These two steps were supposed to make Ukraine completely independent for its gas needs within a two-to-three years.

Ukrainian annual consumption is 30 billion cubic meters (bcm), of which approximately two-thirds (20 bcm) is produced domestically. The plans for exploration and extraction of gas in its Black Sea exclusive economic zone (EEZ) were realized prior to the beginning of the war. In 2021, the government adopted measures to intensify the production from active gas fields, thereby decreasing its dependence on imported gas.

After February 24, the Yuzivska Square and almost all other active wells in the Kharkiv region ended up either in the war zone or under Russian occupation. The drop in production in Ukraine as of October 1 amounted to five percent. Yet at the same time gas consumption fell by 40 percent, largely due to the shutdown of industry and the migration abroad. This means that domestically produced gas can still cover most of the need.

A significant drop in gas production did not occur due to the fact that gas fields in Poltava region and Lviv oblast (comprising 40 and ten percent of total production, respectively) were not subject to hostilities. For now, the gas fields in liberated as of September 2022 in the Kharkiv region are approaching to pre-invasion volumes.

Ukrgezvydobuvannya (a state-owned mining company) carried out the protection of facilities and mining infrastructure in places in a timely manner, despite the risk of hostilities



and personnel evacuation. Due to these measures, the energy infrastructure damage has been kept to a relative minimum.

Positive lessons

- The level of **domestic gas production has been kept at a sufficient level due to dispersed regional production**. This and the timely protection of important gas production facilities in the areas of active fighting were crucial. For such an event, many companies had pre-invasion contingency plans.

GAS TRANSIT

Despite the war, Ukraine remains a reliable transiter of the remaining volume of Russian gas to the EU. There are no viable plans at present as what to do with the extensive gas pipeline system after its full suspension.

The transit of Russian gas to the EU through the Ukrainian gas transport system (UGTS) is based on a five-year transit contract between PJSC Gazprom (Russia) and JSC Naftogaz of Ukraine (Ukraine) on “ship or pay.” terms This formula was a good safeguard against Russia’s refusal to supply gas to Europe. In May, Ukraine lost control over one of the two entry points, finding it impossible to transport gas through occupied territory.

Ukraine proposed that Russia transfer those volumes to the second point. Gazprom didn’t accept this solution. Since May 2022, Gazprom has violated the terms of the contract and reduced its payment accordingly. In response, Naftogaz initiated international arbitration.

Positive lessons

- Ukraine, with firm legal backing and experience from previous successful arbitrations with Gazprom, has insured itself with better contractual terms in the event of another reduction in transit. Nonetheless, Russia continues to violate the terms of this agreement and similar agreements with other EU countries.

Negative lessons

- Ukraine has not taken any steps to adapt the UGTS to the full cessation of the transit of Russian gas.

DOMESTIC GAS DISTRIBUTION

Most of the gas distribution networks inside the country belong to the pro-Russian figures (e.g., the largest firm is controlled by oligarch Dmytro Firtash)¹³. The risks associated with this critical segment of economy were known for a long time. Yet no steps were taken to reduce his influence either before the war or in its first months. It was only in May that

13 under sanctions and wanted in USA



the government deemed it a matter of national security, legally transferring 26 regional gas distribution operators to state-owned Naftogaz management. As of October 22, Naftogaz has not taken full control over regional gas distribution system from Firtash's group. Legal disputes are ongoing.

As a result of the fighting, the gas pipeline networks and central heating systems in the Donetsk region have been destroyed to that extent that the mandatory evacuation of its population – approximately two million people – had to be carried out.

Positive lessons

- The evacuation of people from the most war-affected regions to regions where this type of infrastructure remains relatively intact.

Negative lessons

- The government failed to preemptively deprive pro-Russian figures of the right to own and/or control such a significant share of critical infrastructure. There were legal grounds for state seizure before the beginning of war. Currently, the state still does not have a sufficient control over the domestic gas distribution networks in most of regions.

GAS STORAGE

Ukraine has the largest underground gas storage (UGS) facilities in Europe. They are properly equipped and heavily guarded. Before the war, hundreds of traders from other countries used its facilities. Although Ukraine was well-prepared, using its UGS to the full capacity. There was enough gas for the heating season of 2021-2022 (i.e., 8.9 bcm was in storage at the end of the season). As of October 1, about 13.9 bcm was stored in Ukraine's UGS, which is a normal standard for that time of year. In terms of infrastructure, Ukraine's UGS is fully ready for the 2022-2023 heating season.

Positive lessons

- Ukrainian UGS facilities are in excellent technical condition. The geographical diversification of UGS located in regions not directly affected by active fighting contributed to its protection. Sufficient volumes of gas were pumped in before the previous and the upcoming heating seasons.

Negative lessons

- The government failed to use UGS facilities more efficiently and to attract foreign investment. There is tremendous market potential, especially for European companies. Only 50 percent of UGS capacity is currently in use.



GAS SUPPLY TO DOMESTIC CONSUMERS

More than 70% of the gas market for household consumers is controlled by the pro-Russian oligarch Dmytro Firtash, as noted above. The rest is provided by other private suppliers and by the state-owned Naftogaz, which is also the “supplier-of-last-resort.” In 2020, gas market reforms were completed, thanks to which Ukrainians had a real opportunity to change suppliers. However, Firtash group continued to block the transfer of his assets to other companies. Only three months after the Russian invasion Firtash traders became unwilling and technically (in part) unable to supply gas to the population at the limited price introduced by the Government. As a result, in mid-June, about 10 million customers used the supplier-of-last-resort - Naftogaz - retroactively.

Positive lessons

- A timely implementation of the gas market reforms and the supplier of-last-resort mechanism saved millions of consumers from being left without gas. The Government’s introduction of price restrictions on the sale of gas and heat-generating companies saved the country from civil unrest. In wartime, consumers would not be able to pay higher tariffs. From the market’s perspective, prices should not be set administratively. However, given the conditions of martial law - it was a sound political decision.

Negative lessons

- Complete negligence of the government allowed the concentration of a large part of the domestic gas market in the hands of pro-Russia business group. Moreover, these suppliers are affiliated with companies that also transport gas.¹⁴ Measures were taken too late.

OIL TRANSPORTATION

On August 4, the Ukrainian company Ukrtransnafta - a subsidiary of Naftogaz Group - stopped the transit of Russian oil to the EU through the Ukrainian section of the main oil pipeline “Druzhba.” This termination was in connection with the non-payment by PJSC Transneft (RF). These payment problems, according to Russian side, arose due to the introduction of an “oil embargo” and related EU sanctions against Russia. These events caused serious concern to all parties and were resolved only with the help of the European partners who made the payment.

Positive lessons

- Ukraine managed to maintain the transit of Russian oil to European consumers, acting as a reliable supplier. It also provided transportation for its own needs despite war conditions.

¹⁴ NB The unbundling process was rather fictitious, despite the requirements of European legislation.



Negative lessons

- Although the problem with payments in August was solved quickly, it showed that the mechanisms for implementing EU sanctions need to be adjusted.

OIL REFINING

In May-June 2022, there occurred a large shortage of car petrol. The main reason for this was poor energy portfolio diversification. Before the war, 80% of oil products were imported from Russia and Belarus. The remainder was provided by Ukrainian producers. The largest - Kremenchug Refinery - was destroyed by the Russians only several weeks after the beginning of the invasion. Other producers such as the Shebelinsky and Lysychansky refineries, as well as oil depots, were also hit during the first phase of the war. Their destruction, return of many Ukrainians to their homes, and active seasonal work in the agricultural sector were the main reasons. Another factor that negatively affected fuel markets was the government's restriction of maximum fuel prices. Finding new suppliers and getting a necessary volume of fuel from other sources was neither easy nor quick.

Positive lessons

- New suppliers from EU were found. By May diesel fuel began to flow to Ukraine through the existing pipeline from Hungary. A "green corridor" for gasoline trucks was launched on the border with Poland. The government also changed the order of fuel purchases under martial law, making the state JSC Ukrzaliznytsia the main customer for the state's primary needs. The state has since lifted retail price restrictions.

Negative lessons

- The shortage of fuel could be easily predicted in advance and sources of supply could be diversified by refocusing on EU countries. The incentives for market operators that were applied (e.g., a reduction of excise duty on fuel and reduction of VAT) were insufficient. Ukraine didn't possess sufficient oil and fuel reserves despite the high risk of invasion. The biggest mistake was the overreliance on Russian and Belorussian producers. Logistics and related infrastructure were not ready. For example: Ukrainian and European railway tracks and cars are incompatible.

THERMAL ENERGY PRODUCTION

Ukraine's large thermal power plants (TPP) run on coal and are quite outdated. Coal reserves before the invasion were very low, despite the fact that the main mining regions in the Donbas had been occupied since 2014, and sea transit routes have been vulnerable to Russia's blockade. Small-boiler houses mostly operate on gas; to a lesser extent on biofuel. With the beginning of the war, the Russians predictably began to attack thermal power plants, destroying them completely. Whole cities were left without electricity and heating.



Positive lessons

- Currently, critical infrastructure facilities including TPPs are under increased air defense protection, but this was not the case at the beginning of hostilities. Coal for TPPs was stored in sufficient quantities.

Negative lessons

- Cities did not have powerful diesel generators to secure a power supply for hospitals and other important facilities. Networks of most of cities' boiler houses lack a jumper scheme (i.e., a system which allows it to automatically switch one boiler house to another in case of damage or malfunction). Conversion of boiler plants from gas to biofuel is complicated due to lengthy bureaucratic procedures. Generators and special equipment have not been purchased in sufficient quantities. Repair crews at the beginning of the war were not well funded nor equipped with spare parts to quickly repair damaged facilities.

NUCLEAR ENERGY PRODUCTION

Ukraine has four nuclear power plants (NPPs) which produce about 60% of all electricity in the country. In 2021 they were used at maximum capacity, thereby reducing coal reliance by four million tons. The daily output of the NPPs exceeded 300 million kWh.

A well-planned and optimized repair campaign paid off. However, in March, the largest power plant in Europe Zaporizhzhia NPP (ZNPP) was captured by the Russian occupiers and is still under their control. Representatives of the Russian operator Rosatom were trying to switch it to power system of the occupied Crimea. Shelling of the station and the possibility of radioactive contamination, kept the whole world in fear of a nuclear disaster. In September, the IAEA inspected ZNPP and installed its representatives there.

Positive lessons

- Ukraine maximized the utilization of its NPPs well in advance, reducing dependence on coal and ensuring maximum operation of nuclear units following high-quality repairs. Under conditions of Russian nuclear blackmail, the cold shutdown of the ZNPP was the safest means of response taking into account threats to its physical integrity. The involvement of the IAEA mission and the presence of its representatives at the station partially helps reduce the risks of a nuclear disaster.

Negative lessons

- For years, Ukrainian NPPs operated on Russian fuel. Then in recent years, Ukraine started switching to American fuel supplied by Westinghouse. However, **all power units at the Rivne and Khmelnytskyi NPPs, two at the Zaporizhzhia NPP, and one at the Yuzhnoukrainsk NPP are currently running on Russian fuel.** The rest is fueled by Westinghouse. Since the beginning of the full-scale invasion, Ukraine has refused to



purchase any more Russian fuel. Currently, there is a two-year supply of Russian fuel for Ukrainian power units. Ukraine signed an additional condition with Westinghouse to expand production during this period to completely close the need for Russian nuclear fuel. **It should have been done earlier.**

- Ukraine did not raise the issue of the introduction of sanctions by the EU and the United States against Rosatom, despite successful cases with sanctions against gas and oil companies. Moreover, Ukraine itself was also in no hurry to impose sanctions against Rosatom, approving the relevant decision only on September 2, 2022.

HYDROPOWER GENERATION

Ukrainian hydropower plants (HPP) built on a cascade of artificially created reservoirs produce only about seven percent of the country's electrical output. They perform an important function in balancing the energy system.

Yet the dams are old. Furthermore, Ukrainian HPPs were negatively affected by the war. Russian forces seized the Kakhovskaya HPP and tried to seize the Kyiv HPP. The risk of destruction of dams from shelling remains high. Russians have already made several such attempts e.g., flooding occurred due to the destruction of the dam in Kryvyi Rih. The dam of Kakhovskaya HPP also sustained damages.

Positive lessons

- HPPs play an important role in synchronizing the energy systems of Ukraine and the EU.

Negative lessons

- Old dams, long in need of investment for repair, are at risk of flooding densely populated areas; even more so during wartime. Currently, the flood risk is minimized, largely thanks to an improved air defense. Nonetheless, these dams are highly vulnerable.

RENEWABLE ENERGY SYSTEMS (RES)

RES were not sufficiently developed before the war, despite their necessity and a favorable investment environment with incentives in the forms of credit, grant programs, and preferential tariffs. It will be the government's task to bolster the confidence of investors in RES after the war. An active diversification of energy sources, reduction of coal consumption, fulfillment of obligations to the EU regarding energy decarbonization, and the fight against climate change will all be factored in throughout reconstruction.

Positive lessons

- RES in Ukraine may provide up to twenty percent of the total volume of electricity production, but currently does not exceed more than five percent. This is largely due to and the lack of companies to using autonomous energy sources and alternative fuels.



TRANSMISSION AND DISTRIBUTION OF ELECTRICITY

The synchronization of the energy systems of Ukraine with the EU (ENTS-O) throughout 2022 is a success story. Originally planned for completion in 2022, the prospect of war accelerated process. Ukraine disconnected its transmission grids from the energy systems of Belarus and Russia and adopted the EU energy system. In June 2022, Ukraine was granted the right to sell electricity to EU markets.

Following the large-scale shelling of the energy infrastructure that led to an acute electricity shortage, Ukraine successfully imported electricity from the European Union (i.e., from Romania and Slovakia) in October. These electricity imports effectively supplement Ukraine's energy sector. Still, Ukraine can supply only 10% of its electricity needs through imports.

On November 15, Ukraine experienced the largest Russian attack yet on its energy infrastructure. The goal was the total blackout of Ukraine. Russian UCVs¹⁵ and missiles hit scores of power sector infrastructure, further aiming to disconnect the Ukrainian energy system from ENTS-O. The country's spare parts reserve is almost depleted. Kyiv lacks equipment for repairs and is asking partners for help in a future with limited access to electricity and gas. Under blackout conditions, the ability to conduct military operations will be complicated and civilians would have to be evacuated.

Indeed, instability in the energy sector carries fatal consequences. In particular, the production and transportation operations would come to a halt. Transformers, mobile generators, and heaters are most needed. There is also an urgent need for electrical current and voltage transformers, circuit breakers, protection systems and network filters. Even if the equipment does not fit perfectly according to its characteristics, Ukrainian engineers are able to adapt and use it. Any new, used or even slightly broken equipment that international companies have in stock would be of immense value.

The Ukrainian energy transmission system is also subjected to numerous cyberattacks from Russia every day, yet remains resilient.

Positive lesson

- Extensive preparatory work saved the energy system of Ukraine from collapse and helped to turn a profit due to the sale of electricity to EU countries. Blackout risks are now much lower than they could have been.
- Experience gained during cyberattacks in 2015 made it possible to build a system resistant to cyber threats.
- Since the beginning of the war, the Secretariat of the Energy Community has been actively working to attract equipment and supplies. The organization has created a special task force for support of Ukraine (USTF), which cooperates with

15 Unmanned combat vehicle



the Coordination Center of the European Commission for responding to emergency situations and the Ministry of Energy of Ukraine. The equipment is also delivered within the framework of the EU Civil Protection Mechanism, while the actual shipment is coordinated by the European Commission.

Negative lessons

- Russian attacks during October-December 2022 were largely aimed at disabling transformer substations and equipment for electricity transmission to the network through high-voltage lines. At this time, there were no stocks of such equipment.
- The Europeans announced a creation of the Energy Support Fund for Ukraine at the beginning of April 2022. It was a great platform through which Ukraine could get significant funding. Regrettably, Ukraine was unable to propose real projects and as a result the fund languished.
- As it turned out, the capacity of the power grid and the possibility of import are insufficient. Ukraine aims to have the potential possibility of importing a significant amount of electricity from the EU, i.e., 1.5 thousand MW while the 500 MW is the current import limit.
- Recent events have forced Ukraine to think about the processes of decentralization of the energy system. For this, it is necessary to build smaller-scale local generation networks. This would contribute to the diversification of risks and diminish energy network vulnerabilities. The transformer stations produced in the USSR occupy an area of 15-40 hectares. They are uniquely and expensively equipped. The system included powerful thermal, nuclear, and hydroelectric power plants generating 10,000 kV and main high-voltage networks with autotransformers of 75 kV. All are now Russian targets.



STRATCOM AND COUNTERING DISINFORMATION

Ukraine has been at the epicenter of the Kremlin's hybrid war and disinformation campaigns since 2014. Kyiv's experience in detecting and countering Russia's disinformation campaigns is unique. Until recently, these were mainly initiatives of civil society (e.g., "[Stop Fake](#)", "[Detector Media](#)", and the "[Ukrainian Crisis Media Center](#)"). The strategic communication in Ukraine (STRATCOM) was being established and remained quite weak a year before the invasion. STRATCOM worked fragmentarily in sectors of the top government institutions (i.e., the Office of the President of Ukraine, Cabinet of Ministers, Verkhovna Rada of Ukraine), as well as in the security and defense sector ([Chapter IV](#)). The national government's internal coordination was weak, as were communications with local government.

PREPARATION FOR WAR

In order to improve STRATCOM in response to the constant information attacks emanating from the Russian Federation, the government simultaneously created two institutions ten months before the full-scale invasion:

- 1) The [Center for Strategic Communications and Information Security of Ukraine under the Ministry of Culture and Information Policy of Ukraine \(CSC\)](#)
- 2) The [Center for Countering Disinformation](#) at the National Security and Defense Council of Ukraine (CCD)

The Centers function similarly yet with complementary focus. At the onset of the second invasion, the CSC and CCD became the leading channels of government communication about the war with significant audience [coverage](#). The Center for Strategic Communications and Information Security of Ukraine united the efforts of the government, civil society, and international partners, to strengthen the information front at a critical moment. In December 2021, the CSC organized [Kyiv Stratcom Forum](#), aiming to improve approaches to STRATCOM and increase resilience at the state level in Ukraine and NATO partner countries in Eastern Europe.

Six months before the invasion, the Ministry of Culture and Information Policy of Ukraine, together with the Center for Strategic Communications, took a leading role in establishing STRATCOM framework both at the level of the Cabinet of Ministers and with security and defense sector leadership.

Since 2011, the National Academy of the Security Service of Ukraine has been constructing the National System of Strategic Communications, comprising scientists, practitioners, volunteers, and journalists. It is noteworthy that the Academy has created an international STRATCOM hub, issuing educational [publications](#) and [videos](#) for practitioners.

All the coordination efforts between different governmental institutions brought about unified and clear governmental STRATCOM in those crucial weeks following February 24.



It also improved efficiency of information dissemination, as well as the refutation or confirmation of information by representatives of Ukrainian intelligence agencies.

At the same time, since Russia's war against Ukraine began in 2014, each new government has tried to create its own STRATCOM. But after the end of the term of the prime ministers' office, teams of specialists in strategic communications also depart. Such personnel turnover didn't contribute to a systematic approach and as a result some goals were not achieved. Accordingly, it negatively affected the STRATCOM effectiveness in the long-term.

Positive lessons

- State institutions established to counter Russian propaganda and disinformation campaigns (CSC and CCD) managed to improve communication and cooperation between different governmental bodies (i.e., the Cabinet of Ministers, security and law enforcement bodies, ministries, and the president's office); the efficiency of information dissemination; access to official speakers, and information integrity.
- Combining the efforts of the state, public sector, and international partners helped to come up with unified, clear and consistent messaging. This resulted in greater social trust as the war was approaching.
- Strategic communication units and centers were effectively established in security and state institutions.
- A modern educational model for the training of state STRATCOM specialists was implemented. Moreover, a number of Ukrainian specialists were trained under NATO programs.

Negative lessons

- The lack of institutional capacity in STRATCOM due to personnel turnover. *What should be done?* Ideally, the office of the government's STRATCOM should have an institutional basis with a clear, functional, and appropriate management mandate without undue political influence.

DEVELOPING STRATEGIC COMMUNICATIONS PRE-INVASION

Ukraine was one of the first countries in the world to introduce the concept of STRATCOM into state doctrinal documents, including [the Military Doctrine](#), [the Information Security Doctrine of Ukraine](#), and [the Information Security Strategy of Ukraine](#). However, the process of normalization and codification of both the STRATCOM terminological apparatus and these primary documents is still ongoing. Considering Ukraine's strategic course for integration into NATO, that Organization's doctrines and statutes are fundamental. In autumn 2021, Ukrainian civil servants and NATO representatives drafted the conceptual document - the [Strategic Communications Policy](#) - in the security and defense sector. It remains to be adopted.



In autumn 2021, the CSC launched its permanent cooperation with representatives of Ukraine's security and defense sector (i.e., representatives of strategic communications units and press services). Several coordination meetings were held. From this effort, participants created an online platform for the tactical exchange of information on countering disinformation and hostile propaganda.

Positive lessons

- Coordination of the STRATCOM-related institutions – especially in the security and defense sector – helped ensure functional exchange and distribution of information through communication channels of at all levels of law enforcement and the government institutions.
- The legal framework of STRATCOM in the security and defense sector has been effectively implemented.

POST-INVASION SITUATION

After February 24, the communication work of government bodies, international technical assistance projects, and NGOs was shifted to the wartime footing. Thanks to stakeholders' cooperation early on, it was possible to manage crisis communications; in particular, informing the world of events quickly and truthfully. As Russian propaganda was generating multiple messages about the battlefield situation, such as about capturing Boryspil and Gostomel airports, or Ukrainian top leadership leaving the country, etc., the Ukrainian government responded with unified, coordinated message. For example, alerting citizenry that the President and government are remaining in Kyiv and official information about the situation in the front-line comes from the army general staff.

In February 2022, the President enacted the Defense Plan of Ukraine and the Combined Plan of Territorial Defense of Ukraine. During the early hours before and after invasion, the government adopted this as a resolution on crisis response, which set the vertical structure of the national and local government bodies.

Ukraine was also trying to limit the space and impact of Russian war propaganda in the EU and Western countries. Ukraine repeatedly contacted international partners with proposals to close the Kremlin's propaganda channels. As a result, Russian media outlets Sputnik, Russia Today, RTR Planeta, Russia 24, and TV Center International are banned from EU airwaves. This step significantly secured the information space of the EU, whose citizens were and remain targets of the Kremlin's propaganda machine. There is further need to expand the sanction list to include First Channel, NTV, REN TV etc. In addition to that, after February 24, Ukraine introduced new information operations which included not only defending of its information space but also information offensive in the enemy's information domain. A network of information dissemination channels in the Russian Federation was



created mainly by using Telegram channels. The process of creating relevant content was organized and coordinated.

In the wake of Western intelligence reports about the Russia's preparation of a full-scale war, panic commenced in the Ukrainian information space. To restore calm, the president's office wisely chose to downplay the threat. At the ministerial level, an interdepartmental working group to coordinate information response was created with a specific mandate to report on security matters.

This decision had both advantages and disadvantages. Ukraine's leadership justified this tactic to minimize the chance of widespread panic. At the same time, the lack of official communications about upcoming attacks on civilian targets prevented the public from proper preparation, including the timely evacuation of children and elderly that could have saved more lives.

Positive lessons

- Centralization of the information flow kept social panic at bay.
- Limitation of the space for propaganda due to the outlawing of Russian TV channels in the EU.
- Changing the response method from purely defensive (monitoring, analysis, prognostication) to counter-offensive actions, some of which were in Russia's information space (units, conducting special information operations)

Negative lessons

- The state's ambiguous tactics in crisis response before the invasion of the Russian Federation. Timely and correct information could have contributed to a better evacuation of the civilian population.



MEDIA

As a result of the Revolution of Dignity and the 2014 Russian invasion, several independent media outlets were created. They were critical in covering the situation on the ground for the local and international public. Among them were Hromadske, Euromaidan Press, etc. The National Public Broadcaster Suspilne underwent transformations.

In December 2021, NGO Detector Media conducted a survey on media consumption in Ukraine. The results showed that traditional media, especially television, remains the primary source of information for Ukrainians. The share of users of various media types was as follows: national TV channels - 67%, newspapers - 6%, radio - 7%, social media - 44%, Ukrainian online media - 29% and different types of messengers 16%. One popular source of information remains personal connections - 28%.

PREPARING TO WAR

Until February 2021, a significant part of Ukrainian media space was controlled by the head of the Opposition Bloc party - Viktor Medvedchuk, the main Ukrainian pro-Kremlin politician. His media outlets disseminated openly pro-Russian narratives and were regularly hosting pro-Russian politicians. In February 2021, the National Security Council decided to suspend the broadcasting of three channels that were part of Medvedchuk's media empire. The total audience of the three channels was estimated at two million viewers. This step was not perceived as an attack on freedom of speech, but strictly as a protection of Ukrainian media space against Russian propaganda. Currently, there are no Ukrainian TV channels which openly take pro-Russian positions.

Positive lessons

- Limiting the space for Russia-controlled messaging through banning media outlets that disseminating Moscow's narrative.

AFTER THE INVASION

In the first days of the invasion a **group of Ukrainian TV-channels started a national telethon "Edyni Novyni"(United News)**. Its founders were the heads of Ukraine's four largest media groups. TV channels divided the air waves among themselves and worked in 5-6-hour intervals. A given channel would be responsible for the content in its own time slot. This was an unimaginable and unprecedented step in uniting different public and private TV channels. It was called "an informational air defence in the civilizational warfare". United News helped to provide non-stop 24 hours broadcasting and minimized risks of a signal interruption. It further undertook various risks, such as the potential destruction of a studio or front-line news coverage. According to the November poll, 32% of Ukrainians are watching the national telethon and almost all of those trust it.



In the first days of the invasion, the Russians began shelling TV towers in major Ukrainian cities. They also attempted to block internet providers. Their main aim was to stop the broadcast of Ukrainian TV channels, disrupt the flow of objective information, and create widespread panic. Yet even the physical destruction of TV towers didn't interrupt the dissemination of TV content via internet, cable networks and satellites. The websites of key online news outlets were targets of massive DDoS attacks. As a response to threats the media faced, on March 18 President Zelenskyy issued a decree "On the Neutralization of Threats to the Information Security of the State." According to [media experts](#), enhancing the oversight of digital television in the wartime is a logical step, facilitating a company's interaction with authorities. This helps to ensure open television and radio broadcasting operations.

That same day, the President issued another [decree](#) "Regarding the Implementation of a Unified Information Policy in the Conditions of Martial Law." It required TV channels to broadcast the telethon nationwide. National TV channels that were not a part of the telethon started broadcasting it, while requesting explanations how this order should be implemented. The National Regulator, Ministry of Culture and Information Policy, and the National Security Council failed to provide answers to these requests. Instead, on April 2022, the National Regulator suspended the broadcast of national TV channels Espresso, Pryamyi, and 5 Channel. While banning pro-Kremlin channels in February 2021 was seen as a national security measure, the closure of the some channels was largely [perceived](#) as restricting the freedom of speech.

Information and psychological operations (IPSO) comprised an important component of Russian operations. Disinformation aimed at sowing panic and distrust was disseminated mainly with the help of a number of newly [created Telegram channels](#). These channels falsely reported, for example, the complete capture of Kyiv, Kharkiv, and other cities, as well as the surrender of Ukrainian government; they were even used in calling for a coup d'état.

As of May 27, at least 214 broadcasters, online and print media (national, regional, and local) have suspended their activities in whole or partially due to hostilities and occupation. Ukrainian media was not ready for the sudden disruption of the supply chain. Before the Russian invasion, 90 percent of the newsprint paper was imported from Russia and Belarus. Poland, Belgium, and Finland became the main suppliers only later. As a result, newsprint paper prices have increased significantly due to costly logistics. In addition, it has become practically impossible to maintain the entire production chain, including printing, deliveries, and distribution resulting from the closure of numerous newspapers and magazines.



Positive lessons

- Uniting TV channels under the national telethon helped to secure national information space and protected their broadcasting from various disruptions caused by military activity.
- The effort to coordinate digital broadcasting and control of national TV channels was another step that helped to secure media space, ensuring technical and content security in the media space.

Negative lessons

- The lack of communication from the state regarding the actions of the channels that were not a part of telethon and eventual closure of three channels put to question freedom of speech in Ukraine. It did not appear an essential step for the sake of national information security.

Recommendations

- To work effectively in wartime, journalists must have a distinct set of skills. For those who will be reporting from the areas of active hostilities, it is vital that he or she undergo training in personal safety and tactical medicine, *inter alia*. Training for the journalists should not be provided by editorial offices, but by specialized institutions.
- Particular attention must be paid to verifying information. A self-censorship or state-imposed censorship must guarantee that no information, especially graphics (maps) and video materials that can be used by the enemy for military purposes, is published in real-time.
- Mass media should be flexible regarding the forms of work, as well as cooperation among themselves. A good example in this regard is the telethon *Yedini Novyni*.
- The editors of independent publications, for which the main source of income is commercial advertising, should establish a fund that will allow them to pay employees' wages for 3-6 months.
- Ukrainian media needs to secure the appropriate supply chains for traditional media production.



UKRAINIAN CYBER RESILIENCE

Russian attacks against Ukraine have always been more than just occupying territories and installing puppet governments. They labour to seize minds and paralyze civil and commercial activity. In pursuit of outright victory, Russia launched multiple cyber operations aimed to cause instability and panic. Before the war, Ukrainian government digital systems were lacking secure data storage, and official websites before the war were outdated. This made Ukrainian governmental data systems easy targets for Russian cyber-attacks.

PREPARING FOR WAR

Ukraine was hit by the most devastating cyber-attack in history in 2017. A malware called NotPetya - which affected the Chornobyl nuclear power plant, among others - was spread to many countries in the world at a cost of \$10 billion. Yet cyber-attacks became less frequent. The case of NotPetya showed that cyber-attacks against Ukraine are also attacks against the global digital system. Ukraine's deep integration into these systems created the risk of contagion. Thus, Ukraine managed to consolidate international support to strengthen its cyber resilience. This, in turn, served Ukraine pre-invasion when cyber-attacks intensified, as well as during the invasion.

AFTER THE INVASION

Ukraine had become a testing ground of cyber weaponry shortly before and after the invasion. Attacks were various, ranging from deep-fake video of President Zelenskyy calling Ukrainians to surrender, to wiper attacks on Romanian border services allegedly preventing refugees from entering the country. The most widespread types of attacks were data theft (phishing), DDoS (distributed denial-of-service), wiper attacks (deletion of data), and deep fake technologies. All of those were launched against the government, critical infrastructures, banks, and businesses before and during the second invasion.

GOVERNMENT ACTIONS IN CYBER DEFENCE AND CYBER-COUNTERATTACK

On the third day of war, Ukraine's Minister of Digital Transformation Mykhailo Fedorov announced a call to join Ukrainian IT Army. Similar to Teroborona (Ukrainian territorial defence), the IT Army of Ukraine is a community of volunteer "hacktivists" coordinated by Ministry of Digital transformation through social media channels like Telegram. The results are being multiplied by actions of independent groups such as Anonymous, who declared a cyber war against Russia. Anonymous hacked e.g. Roskomnadzor and Russia-controlled TV-channels making them broadcast Ukrainian music and pro-Ukrainian content.



The case of NotPetya was a valuable lesson. Ukraine worked to consolidate international powers to strengthen its cyber resilience. One successful case was when Microsoft helped neutralize a Russian wiper attack, working with other governments to prevent its further spread. NATO allies have also invested in Ukraine's cyber defence through information-sharing and support on the ground. In March 2022, Ukraine became a contributing participant in NATO's Cooperative Cyber Defence Centre of Excellence. Upon Ukraine's request, the EU activated its PESCO's Cyber Rapid Response Teams. Ukrainian government launched a campaign to push private tech giants to stand with Ukraine and against Russia. Microsoft, Amazon, and Google are assisting Ukraine in detecting and countering cyber-attacks during the invasion. Elon Musk provided his Starlink systems to help Ukrainians get reliable satellite connection to the Internet.

The government required that all governmental institutions and state information systems and registries move to cloud-based systems. In order to protect government data and critical infrastructure, the government introduced secure cloud-based system and strong multifactor identification system that allows the same authenticator for PC login, VPN access, cloud-based productivity, email systems, ERP system and mobile applications. Mykhailo Fedorov also said that it was helpful to create his own "Red Team" that looks for vulnerabilities in the systems through feigned attacks.

Positive lessons

- Given the previous lessons with Petya and Not-Petya, Ukraine managed to consolidate the international community to counter attacks on Ukrainian cyber security.
- In order to protect government data and critical infrastructure, the government required all state institutions to move to cloud-based systems, as well as introduced a secure cloud-based system and strong multifactor identification system.
- The Ministry of Digital Transformation launched an analogue of Territorial Defence Forces in the digital realm to defend Ukrainian cyber space and attack enemy's cyber capabilities.
- The Red Team helped the Ministry of Digital Transformation to discover weak spots in its digital systems and prevent future attacks.

Negative lessons

- The strengthening of Ukrainian digital system, especially concerning governmental data and critical infrastructure, should have started earlier before the war. The outdated Ukrainian governmental systems were vulnerable well before Russian cyber-attacks.



DIGITAL TOOLS FOR CITIZENS UNDER ATTACK

Citizens' digital resilience in the face of Russian aggression was possible due to the country's recent digital transformation. During his election campaign, Zelenskyy spoke of a "smartphone state" in which state services would go online to optimize bureaucratic procedures. He maintained that this could serve as a solution to endemic corruption. It was implemented through the Diia system that was created as an online application combining different state registers. Ukraine's digital transformation was recognized internationally in 2021, as Ukraine showed impressive growth and came in 6th in the Open European Data maturity ranking.

These tools proved to be especially helpful in the wartime. A notable example is eMaliatko ("eChild"), a digital one-stop shop for birth registrations, which was available to residents of the occupied regions, helping them register children as Ukrainian citizens. For citizens who lost their ID documents during military actions or evacuation, Diia introduced a simplified war-time digital ID, recognized by local authorities as well as in Poland and Moldova. One-time government support was also possible through Diia tool e-Pidtrymka (E-Aid) which gives 6,500 UAH to employees and self-employed people in war-affected regions. A big advantage of Diia is that as a digital based solution, it allows for updates and new tools rapidly when the need arises, e.g., temporary identification documents.

Positive lessons

- Introducing agile digital tools for the provision of state services afforded in crisis situations, as well as allowed for the introduction of software updates as needed.

WHAT WOULD BE IMPORTANT FOR OTHER COUNTRIES?

Countries that are vulnerable to external aggression should invest in their digital resilience. Strong digital security should be applied to the government data and critical infrastructure, such as cloud-based systems of data storage, multi-factor identification, strong anti-virus systems etc. The governments should raise committed digital security teams in-house, as well as attract its own tech-savvy citizens as volunteers to safeguard country's digital domain. Digital government solutions that build effective citizens-government cooperation in peacetime can help governments support their citizens in a state of emergency¹⁶.

16 Del Fierro, Christopher, and John Dwyer. 2022. *New Destructive Malware Used In Cyber Attacks on Ukraine*. 24 February. Accessed February 10, 2023. <https://securityintelligence.com/POSTS/NEW-DESTRUCTIVE-MALWARE-CYBER-ATTACKS-UKRAINE/>.
Iosad, Alexander, and Oliver Large. 2022. *State of Resilience: How Ukraine's Digital Government Is Supporting Its Citizens During the War*. 18 March. Accessed February 10, 2023. <https://institute.global/policy/state-resilience-how-ukraines-digital-government-supporting-its-citizens-during-war>.
<https://niss.gov.ua/doslidzhennya/natsionalna-bezpeka/kiberskladnyk-rosiysko-ukrayinskoyi-viyny-uroky-ta-otsinky>



CIVIL SOCIETY

Ukrainian civil society has played a most critical role in the process of nation and identity building of Ukrainians, shaping the nation's resistance, supporting reforms and the EU integration process, and helping ensure its security.

After transfer of power in 2014 and unexpected invasion of Crimea and Donbas, the Ukrainian government was not capable of providing crucial state services. This inspired civil society organizations (CSOs) to take responsibility for many state functions, including: the evacuation of civilians; weapons procurement; ensuring civilian supply lines; and the implantation of reforms and new laws. The need to “close loopholes in state institutions” led to a significant growth in the capacity of Ukraine’s civil society. CSOs became the main actors in providing humanitarian relief to the population, as Ukrainian society became active participants in defending the country and taking the responsibility for its future. The experiences of the Revolution of Dignity followed by the Russian invasion in 2014 prepared Ukrainian civil society for these new challenges.

Before the start of the full-scale war, the Ukrainian authorities began to regularly consult CSOs. For example, the Cabinet of Ministers began to involve citizens in decision-making and held public consultations. During consultations held by the Ministry for Veterans Affairs of Ukraine, the CHESNO Movement helped to attract not only representatives of public organizations and local self-government bodies, but also veterans.

AFTER THE INVASION

The solidarity and willingness of Ukrainians to help each other was multiplied in part due to the practical experience after 2014. During this period, CSOs achieved noticeable results in solving the issues of evacuation, the accommodation of internally displaced persons (IDPs), and the provision of humanitarian aid. CSOs launched many hotlines for legal assistance, as well as opened rooms to provide secondary legal assistance, prepare procedural documents, and assist in courts. People who were displaced or stayed in the occupied territories were able to obtain the necessary up-to-date information through these CSOs.

Cooperation between local authorities and CSO volunteers improved. Examples of services rendered include: the assembly and delivery of first-aid kits, medicines and equipment; the rehabilitation of military and civilian wounded; the repair and reservation of equipment for the AFU; the reception and settlement of IDPs; and massive fundraising. A good example of such cooperation is represented by philanthropic foundation “Come Back Alive”. It was the first non-governmental organization that was granted permission to purchase lethal material from abroad and deliver it to the frontline. Since February 24, this foundation raised over UAH 5 billion (over \$125 million) which, according to the charity, is the size of Ukraine’s 2004 military budget.



Due to a dysfunctional law enforcement system unprepared for war, many human rights organizations began documenting war crimes committed during the hostilities. Several organizations joined in documenting horrors (e.g., indiscriminate shelling, killings and torture of civilians, extrajudicial executions, etc.) committed during the war. CSOs further learned the mechanisms of legal appeal to various authorities so that the criminals were punished. Only some days after the horrors of Bucha and Borodyanka became known, the Government of Ukraine opened talks about the creation of a special tribunal on the crime of aggression against Ukraine.

Another process where civil society is proactive is in the **oversight of Ukraine recovery, post-war reconstruction and the EU integration process**. During the Lugano Reform Conference in July 2022, Western partners stressed that funds for the reconstruction of Ukraine will be provided only on the condition that reforms are carried out and civil society continues to play its important oversight role. Moreover, civil society presented their manifesto pointing out to for the Government of Ukraine that the challenges of corruption and the establishment of effective judiciary and law enforcement need be prioritized. Democratic civil society noted that further delay in the introduction of reforms could endanger the European integration processes and that Ukraine's civil society is here to best ensure accountable and transparent government.

Civil society is an active voice on the international arena, advocating for Ukraine and building narratives of united Europe. As of September 30, after pseudo-referendums were held in occupied territories, the government of Ukraine turned to civil society to convince the West to speed up the military assistance. The questions of Russian reparations and using Russian assets for Ukraine reconstruction also remain pivotal in this regard.

At the same time, it remains critical to complete the establishment of legal framework for public participation in policy-making. Currently, the government conducts public consultations as required by the Cabinet of Ministers decree. A wider range of authorities, including the Parliament, may involve citizens in law drafting process but is not obliged to do so. That is why the adoption of the draft law "On Public Consultations" in its second reading is extremely important. This draft law will make the consultation process mandatory for authorities at various levels.

Positive lessons

- As during 2014 invasion, Ukraine's civil society proved to be crucial in providing humanitarian relief and aid for displaced populations.
- Cooperation and coordination between local authorities and CSOs. Volunteers improved which helped to increase aid effectiveness.
- Legal assistance and war crime documentation practices. CSOs helped citizens solve countless problems with lost documents and incomplete administrative procedures.



- Civil society's international advocacy focused on establishing a special tribunal for Russian regime, and a system for reparations to Ukraine for the war crimes committed by Russia.
- CSOs are reliable watchdogs for reconstruction and recovery fund usage.

Negative lessons

- Ad hoc practice of war crimes documentation, especially connected with low capacity of law enforcement bodies.
- Legal framework for public consultations remains to be established. In this regard civil society is expecting adoption of the law "On Public Consultations" that will set the legal process of public participation in decision-making.



CONCLUSION

The full-scale war unleashed by Russia against Ukraine has shaken the world order. Globally there is increased turbulence as more and more countries are facing military or hybrid threats, as well environmental or biological crises. National governments need to invest more in their capacity to withstand those threats. Resilience linked with national security should become a deciding factor in policy making worldwide. Ukraine has many lessons from its own resilience to share for consideration by other democracies under threat. The authors also believe that Ukraine's resilience should become a crucial pillar for its integration into Euro-Atlantic institutions.

Drawing from Ukraine's experience, several primary lessons can be taken:

- Security and defense sector: Developing security and defense planning framework that could be both flexible and sustainable and tested in the exercises is a key. The main focus should be given to core elements of the national security while local and regional level security measures should receive proportionate attention as well, where capacity was especially limited. Training, including international programs such as the ones under the auspices of NATO are vital. In addition, mobilizing civilian volunteers and building Territorial Defense Forces (TDF) are factors that significantly strengthen the national defense capability.
- It is essential for the government to support domestic businesses. Small-and-medium sized enterprises will need assistance if they are to survive the war. Such support can reduce the impact of war on the social sphere and provide taxable revenues to the national budget. Contingencies for additional supply chains should be in place.
- Diversification of energy sources supplies will help avoid severe shortages in emergency cases. Early preparation of the energy system for potential emergency will reduce their impact in case of occurrence.
- On countering hostile propaganda: Working with civil society will help to protect a country's information space from attack. Uniting TV channels under the national telethon "Edyni Novyny" (United News) helped to secure a genuinely national information space. It further protected their broadcasting from various disruptions caused by the fighting. Ukraine's efforts to improve STRATCOM established state institutions responsible for strategic communications. The Centers united crucial stakeholders to jointly strengthen the information front and further channel of official communications about the war. All the coordination efforts between different governmental institutions brought about a unified and clear governmental STRATCOM in the crucial weeks following February 24.
- Cyber attacks are an integral part of the modern warfare. Based on Ukrainian case, it is crucial to strengthen cyber security internally as well as strengthen cooperation



in this realm with international actors, such as intergovernmental organizations and tech businesses. Developing country's e-governance and introducing agile digital tools for the provision of state services will raise societal resilience.

- Ukrainian civil society played a significant role in providing humanitarian aid to war-affected civilians, documenting war crimes, and crowdfunding for supplies and ammunition for the Armed Forces. This remarkable level of societal mobilization was possible due to the experiences following 2014 and should be capitalized upon during the recovery and reconstruction period.

Russia's current war against Ukraine demonstrated the readiness of the democratic world to unite in the fight for freedom and liberal values. However, there are democracies all over the world in need of protection against autocracies willing to challenge international order. Resilience and democratic unity will remain fundamental in preserving international peace and stability.





WWW.EUROPEANVALUES.CZ