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Maria Curie-Skłodowska University. Faculty of Political Science and Journalism

LILIIA HRYTSAI

ORCID ID: 0000-0002-3768-451X

The Nova Kakhovka Dam Collapse as an Example of Russia's Hybrid Warfare in Ukraine: A Threat to Environmental Security and Beyond?

Zniszczenie zapory wodnej w Nowej Kachowce jako przykład rosyjskiej wojny hybrydowej na Ukrainie: Zagrożenie dla bezpieczeństwa środowiskowego i nie tylko?

ABSTRACT

On February 24, 2022, Russia launched a full-scale war against Ukraine. On June 6, 2023, the Russian army blew up the Nova Kakhovka dam causing an ecological catastrophe that President of Ukraine Volodymyr Zelenskyy described as "ecocide" and addressed the international community to help to hold those responsible accountable for this monstrous crime. The main goal of this article is to explore the long-term results of the Kakhovka dam tragedy, which had an unmatched negative effect on environmental security in Ukraine, but is it limited only to ecology? Hypothesis in this paper states that the Kakhovka dam collapse caused a long-time negative impact on a number of non-military security dimensions. The present article is divided into three parts. The first one presents the Russia-Ukraine war as a background, the next section explains reasons of the dam's destruction and its short-term outcomes, whereas the final part analyzes the impact of the dam collapse on environmental security, as well as revises hypothesis by providing a list of its long-term effects transcending the scope of environmental security. The study proves that the long-lasting consequences of the Kakhovka dam collapse in Ukraine are not restricted to environmental security, but also apply to economic security, food security, energy security and even cultural security. In the conclusion, the author shares her opinion on the topic and policy recommendations. Methodology of this research is mostly based on a desk review of journalist English- and Ukrainian-taught articles, several scientific elaborations, expert interviews and official information from the President Zelenskyy website. Since the Kakhovka dam collapse is a relatively recent event, the current research includes only a limited number of scientific elaborations.

Keywords: Russia-Ukraine war, Kakhovka dam collapse, hybrid warfare, ecocide, environmental security

INTRODUCTION

On February 24, 2022, the Russian Federation began a full-scale war in Ukraine – a neighboring country that has been a sovereign state since 1991. This war was and still is something hard to realize. In addition to foreign intelligence reports and lots of information speculations, most of Ukrainians did not believe that the full-scale war is possible. The Ukrainian officials also tried to calm down people till the last moment. The fate of Ukraine and the whole nation changed on February 24, 2022 at 4 a.m. Kyiv time, when Russian troops invaded Ukraine. This day and pictures of Russian tanks on the streets of Kyiv will forever remain in the memory of every Ukrainian. Nevertheless, for Ukrainians, the war did not break out that morning in 2022, but eight years earlier in 2014 with the beginning of Russian aggression in Donbas[1] and the annexation of Crimea[2] [Filiu 2023].

The full-scale Russian invasion of Ukraine started with military forces entering the country from Russia in the east, Belarus in the north, and Crimea in the south. According to President of the Russian Federation Vladimir Putin, it was a "special military operation" designed to "demilitarize and denazify Ukraine" and defend the residents of Donbas. He disclaimed any intentions of Russia to "impose anything on anyone by force" or to take Ukrainian territory [Walker 2023: 4–5]. The European Union, NATO, the United States, Canada and many other countries instantly supported Ukraine realizing that Putin's words have no sense and are an absolute lie. It is important to mention that Ukraine is very lucky having an ability to rely on its partners. During the full-scale war, many state leaders visited the country to express their support for Ukraine. Ukrainian refugees can count on shelter and any kind of support in foreign countries. Ukraine receives countless military, financial and humanitarian assistance from state governments around the world [Haddad 2023].

The author underlines that, unfortunately, the war is not a new phenomenon in lives of Ukrainians. Indeed, Russia uses a hybrid war since 2014 by using different military and non-military methods, for example, cyberattacks and (in)famous Russian propaganda [Jacuch 2021: 1–11; Baker et al. 2023: 1]. Since the beginning of full-scale war, the Russian hybrid warfare is characterized by its inhuman treatment of civilians on occupied territories, deportation of children, barbaric attacks on civilian infrastructure, environmental and nuclear terrorism, and much more [Ovchynnikov 2022]. As of June 7, 2023, more than 9,000 civilians, including 500 children, were killed since the beginning of a full-scale war in Ukraine [Janowski 2023]. Armed Forces of Russia used mass rape as a weapon of war by committing at least 400 sexual assaults. Ages of victims ranged from 4 years of age to over 80 years old [Macias

[1] Donbas is a large industrial and mining region in the eastern Ukraine, remarkable for its considerable coal reserves. The Donbas area includes much of the Ukrainian Donetsk and Luhansk oblasts. Donbas has been occupied by the Russian army since April 2014 (Britannica).

[2] Crimea is a peninsula in the southern Ukraine that has been invaded and illegally annexed by the Russian Federation in February and March 2014 (Britannica).

2022]. As of June 8, 2023, about 19,505 Ukrainian children were abducted or forcibly deported to Russia [Daunt 2023; Wamsley 2022].

Russia intentionally targeted Ukrainian power stations and energy infrastructure with missile attacks in order to cause blackouts by cutting off civilians from electricity and, as a result, making them suffer from low temperatures and inability to cook during full or part-time blackouts in the period of October 2022 – March 2023 [Matuszak 2023]. As of November 2022, 10 million people in Ukraine were without electricity [Guy et al. 2022]. The estimated damage to energy sector of Ukraine is USD 10.6 billion, while costs of the total energy sector reconstruction are estimated at USD 47 billion [Energy Charter 2022: 6]. It is impossible to understand this unbearable scale of Russian cruelty. Most of Russians are less or more aware of the situation in Ukraine, and about 80% of them support war and many of them shamelessly rejoice the tragic death of Ukrainians in social media, at the same time calling for more casualties [Treisman 2022]. On the other hand, Armed Forces of Ukraine protect their country; Ukrainians express their solidarity with victims by volunteering for those affected by Russian aggression; people continuously donate for Ukrainian army and those in need.

At the beginning of October 2022, Russia recognized Donetsk, Luhansk, Kherson, and Zaporizhzhia oblasts as parts of the Russian Federation by signing annexation treaties, even though they were not entirely under Russian control [Mills, Butchard 2022: 2]. As in the case of Donbas and Crimea, Russia held referendums in these territories, which once again showed Russia's hypocrisy. While the Kremlin stated that the annexed regions will remain under Russian control forever, Ukraine swore to reclaim all of its sovereign territory, including Donbas and Crimea [Walker 2023: 5]. With Western military support, Ukraine started a significant counteroffensive in the middle of June and made territorial gains [Kyrychevskyy 2023]. On June 6, 2023, for fear of a Ukrainian counteroffensive [Berezyuk 2023], Russia blew up the previously occupied Nova Kakhovka dam on the Dnipro River in Kherson Oblast causing an ecological catastrophe comparable to the Chernobyl disaster in 1986 [Sergatskova 2023]. In addition, Russia continued to threaten to blow up the Zaporizhzhia Nuclear Power Plant (NPP) in southeastern Ukraine – the largest nuclear power plant in Europe [Bunn 2023].

Ukraine is the most biodiverse country in Europe and its environmental security has been seriously threatened as a result of the hybrid warfare led by Russia. Ukraine, especially its occupied territories and combat zones, experiences a constant environmental degradation due to explosions and fires caused by more than 8,000 Russian missiles, littered fields from 3,000 Russian tanks, and more. About 160 natural reserves are threatened, and approx. 1,500 plant and animal species are in danger of extinction. The most recent estimate of damage to land, water, and air reaches USD 53 billion – a figure that Ukraine is demanding as reparations from Russia. President Volodymyr Zelenskyy said that the cost would increase dramatically as a result of the Kakhovka dam attack [Hosa 2023].

The Ukrainian President called the Russian attack on the dam "ecocide" and, at the same time, appealed to the world community for a maximum and immediate response to the Russian terror [President of Ukraine Volodymyr Zelenskyy 2023; Haworth et al. 2023; TSN 2023]. As of August 1, 2023, the Kakhovka dam collapse was the largest environmental disaster caused by the Russian army in Ukraine [Pennington et al. 2023]. The destruction of the dam demonstrates the Russians' winning-at-all-costs mentality, in which Putin is capable of causing an environmental catastrophe [Anderson 2023]. The Russian population is about 144 million people [Worldometr 2023a] in opposition to Ukrainian population of 36 million [Worldometr 2023b]. Russian military commanders give orders that endanger the lives of thousands of their soldiers and no one cares about it, because Russia has an enormous human capital. If Russia does not value the lives of its citizens, will it value the lives of others? The answer seems to be obvious.

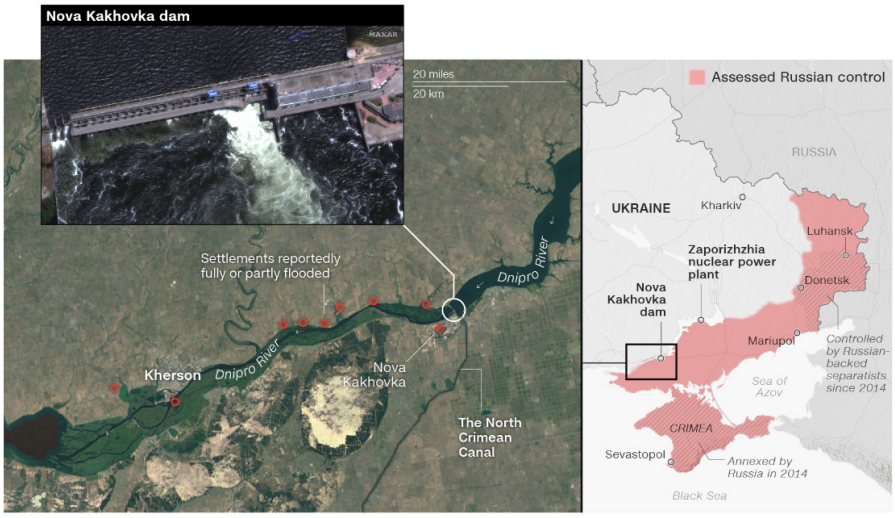
In this elaboration, the author examines an impact of the Russian hybrid warfare on the environmental security in Ukraine, using the Kakhovka dam collapse as a case study. The hypothesis of this research states that the dam's destruction had the long-term effects beyond the scope of environmental security by impacting thousands of civilians and civilian infrastructure, agricultural sector, energy industry, economic security and cultural pillar. While the hypothesis seems to be quite obvious, it is not, because we can understand that the consequences of dam collapse are far-reaching, however, the author aims to present the exact facts and figures of the Russian barbarism. The author tries to increase the awareness of the methods and consequences of Russian hybrid warfare in the scientific world and among the readers. The novelty of this research is based on, first of all, documenting one of the largest and most recent acts of Russian aggression in Ukraine; secondly, the problem of dam collapse presented here not only from the environmental perspective, but from different approaches, i.e. economic security, food security, energy security and cultural security; thirdly, there is a lack of scientific literature due to the novelty of the topic,and the author believes that she will be able to fulfil this research gap. The author aims to document one of the most serious Russian crimes in Ukraine, as well as to draw attention of academia to events happening in Ukraine and the lack of responsibility on the part of Russia.

The current study contains the following three parts: the introductory part sets abackground by providing the context of a hybrid nature of the Russia-Ukraine war and presents the research structure of this paper; the second section explains what exactly has happened on June 6, 2023 and its immediate consequences; the final section researches the long-term outcomes of the event for the environmental security and its impact on the food security, energy security, economic security and cultural security in Ukraine. In the conclusive part, the author shares her reflections on the topic and policy recommendations. Methodology of this paper is based on a desk review of up-to-date Internet sources, i.e. journalistic articles of independent international and Ukrainian media in English and Ukrainian, scientific elaborations, the UN Ukraine report and information from official webpage of President Zelenskyy. Limitations of study constitute a lack of scientific literature directly related to the Kakhovka dam

collapse, because of the novelty of the topic, however, as the author mentioned before, it gives her a unique chance to fulfil this research gap by conducting this elaboration. To supplement the data collection, the author decides to include into the research three interviews – one is the President Zeleskyy's interview for German tabloid "Bild" on June 9, 2023 about the Kakhovka tragedy [TSN 2023], and the following two are expert interviews, in which scientists explain the impact of dam collapse on agriculture [Suspilne Zaporizhzhya 2023] and biodiversity [Suspilne Odesa 2023].

THE KAKHOVKA DAM DESTRUCTION – WHAT HAS HAPPENED?

Seismic sensors in Romania and Ukraine discovered evidence of an explosion nearby the Ukrainian city of Nova Kakhovka at 2.35 and 2.54 a.m. on June 6, 2023. Local witnesses assert that at around the same time, they heard a large explosion. Soon after, a sizable dam failure allowed enormous amounts of water from the Kakhovka reservoir to inundate an agricultural area, as well as numerous villages and cities that were further downstream. The Nova Kakhovka dam collapse put more than 40,000 residents in immediate danger from flooding [Holt 2023: 2028]. It was necessary to evacuate more than 11,000 people from the affected area, and it is believed that the flooding caused more than EUR 1.2 billion in property damage [Anderson 2023]. Picture 1 demonstrates an actual picture of the destroyed dam, a satellite image of the dam and surrounding areas, and a map of Ukraine with marked occupied territories, the Kakhovka dam and Zaporizhzhia NPP.



Picture 1. The Kakhovka dam collapse

Source: [Pennington et al. 2023].

Who did blow up the Kakhovka dam? The Kherson Oblast, which is currently (as of July 2023) occupied by Russia, is where the Kakhovka dam is located. The Ukrainian forces could use the Kakhovka dam as a crossing point in order to cross the Dnipro River and get to the Russian-held territory in order to launch a counteroffensive and retake the captured area. The Kakhovka dam's strategic location and the early signs of an explosion tend to indicate that deliberate sabotage was probably the cause of the dam's destruction. The majority of specialists believe that the dam was deliberately blown up, even if the complete chain of events cannot be fully understood without access to the dam and inspection by engineers and other experts [Beaumont et al. 2023]. Ukraine and the Western world have put the blame on Russians, however, the Kremlin and President Putin himself have refuted such charges, calling the dam's destruction "barbaric" [Chervonenko 2023]. Nevertheless, it is hard to believe that President Zelenskyy could give such an order, since the Ukrainian side experienced the biggest losses.

Large amounts of water that had been kept in the Kakhovka reservoir were discharged downstream, which is the Kakhovka dam collapse's most instant and noticeable effect. Villages along the Dnipro River near to the dam were immediately flooded, but extra water also spilled into smaller tributary rivers drowning areas far from the Kakhovka reservoir. On June 14, 2023, approx. 3,000 residences were reportedly still under water. Furthermore, they are not likely to be inhabitable even once the flood levels have fully subsided. Over 11,000 residents of the affected districts had to be evacuated due to the flooding [Anderson 2023]. NATO, the Ukrainian government, and the EU through its Civil Protection Mechanism mobilized to provide help to habitants residing in the impacted areas on the right-side bank of the Dnipro River, which is currently under Ukrainian control. This include giving out equipment, water pumps, shelter, generators and other emergency supplies.

The conflict in Ukraine has greatly increased the complexity of the situation. On the left bank of the river, which in that time was seized by Russian forces who forbid any foreign humanitarian agencies from entering, it was far more difficult to evaluate the damage and situation [Mykhaylov 2023; Anderson 2023]. Citizens living in the area had no access to basic needs like clean drinking water, medical care, shelter, etc. According to the UN, about 700,000 people in the area did not have an access to clean drinking water [Anderson 2023]. On June 20, 2023, the Ministry of Internal Affairs of Ukraine informed that due to the collapse of the Kakhovka dam, 21 people have died – 16 from drowning and 5 from gunshot wounds during the evacuation; another 28 people were injured [Zhernovska 2023]. In addition to causing an ecological catastrophe, Russians shot peaceful inhabitants and volunteers during the evacuation from the flooded territories.

Due to the structural damage caused by the ongoing violence, it is not always possible to evacuate civilians. Damaged, and in some cases totally destroyed, roads and other vital infrastructure, make it difficult for residents to flee. In the case of landmines that Russian forces deliberately planted in the area to obstruct Ukrainian forces

from advancing there is a risk of them being dislodged and floating downstream to uncharted territory, which is another cause for concern. For the local inhabitants, who can unintentionally step on one of these landmines, this poses a serious concern [Kozova 2023].

The threat to the Zaporizhzhia NPP was one of the many difficulties that the Ukrainian government and individuals who live downstream of the Kakhovka dam faced in that time. Zaporizhzhia NPP uses water from the Kakhovka reservoir to cool down its reactors. The International Atomic Energy Agency (IEA) – the UN's nuclear watchdog – has stated that there is no imminent risk to the nuclear station, because there is a supply of water stored in reserve for several months. However, when the temperature rises, there is a chance that more water evaporates than anticipated. Fortunately, there were backup plans for supplying water to the site, and water could be diverted from other sources to cool the reactors at the nuclear facility. Nevertheless, due to the escalation of the conflict in the region, there was a high risk of additional damage to infrastructure, which put the nuclear site in a precarious situation [Kapnik 2023].

LONG-TERM CONSEQUENCES OF THE KAKHOVKA DAM COLLAPSE

ENVIRONMENTAL SECURITY

The international media compared the collapse of the Kakhovka dam to the Chernobyl tragedy. Though it may sound dramatic, this is actually not too far from the truth. One of the worst man-made disasters to occur in Europe in recent times is the collapse of the Kakhovka dam [Suspilne Odesa 2023]. This is due to the considerable environmental risk in addition to the damage it poses to human life and the loss of vital infrastructure. Compared to the effects of all military actions since the start of the full-scale invasion in February 2022, the scale of destruction of species, natural ecosystems and national parks is unmatched [Watts 2023]. About 150 tons of oil-related products from the hydroelectric plant were released due to the dam breach, and they traveled downstream all the way to the Black Sea. In order to contain and pump the oil as quickly as possible, an immediate decision was made to install floating booms in the regions where it is possible. The released oil products pose a serious hazard to natural life and habitats, since they have the ability to contaminate soil, wildlife and vegetation. After water tests showed a decline in water quality, including alarming levels of salmonella and other harmful materials, authorities were obliged to restrict well-known beaches along the Black Sea and even enforce swimming bans [United Nations Ukraine 2023: 1].

There were about 43 distinct species of fish living in the Kakhovka reservoir. The reservoir's constantly declining water levels left some portions completely dry, killing over 9,000 fish and endangering other species that depend on this ecosystem

for their survival. Animals residing in flooded areas are likewise likely to suffer significant consequences. Some of the species are endemic to this area of the world, and the flooding might potentially cause them to go extinct. The Nordmann mouse is indigenous to this part of Ukraine, and more than 70% of its population resides in flooded areas. These mouse species face a very real possibility of tragically going extinct in the not-too-distant future. Numerous bird species that breed and raise their young in the area are also at risk from the abrupt physical shift in habitat. Many bird species construct their nests in flooded areas, and as a result, it is anticipated that swallows and tufted ducks would go extinct [Anderson 2023].

Both upstream and downstream areas of the land were impacted by the collapse of the Kakhovka dam. As of June 9, over 11 different nature parks, reserves and protected regions upstream of the Kakhovka reservoir were under danger; experts worry that these priceless natural places might even vanish entirely. The damage to ecosystems downstream of the Kakhovka dam was significantly larger, because 48 different protected sites were at risk of flooding. A biosphere reserve, 3 national parks, 16 reserves, 3 natural sanctuaries and 22 natural sites were among the list [Anderson 2023]. The Askania-Nova reserve and the Lower Dnipro natural reserve were among the 80,000 hectares of protected areas that could be destroyed and taken downstream to the Black Sea [United Nations Ukraine 2023: 2]. The whole world mourned the loss of about 300 animals from the Kazkova Dibrova Zoo in Nova Kakhovka, which could not be evacuated due to the entry ban to the zoo imposed by Russian occupiers [Zuyeva 2023].

FOOD SECURITY

We might anticipate a negative impact on food production as a result of the significant flooding that has affected large tracts of agricultural land in Ukraine, with potential repercussions for global food supply systems [Suspilne Zaporizhzhya 2023]. Ukraine is one of the major producers of crops like wheat, barley, maize, rapeseed and sunflower seeds. These exports are particularly important to nations in Asia and Africa. This season, planting and harvesting will be extremely challenging due to the flooding of agricultural land, which will ultimately have an impact on the output of these important crops. Experts believe that the effects might be widespread with rising costs and altered global supply networks. The demolition of Kakhovka's hydroelectric power facility as a result of the dam collapse is another unfortunate side effect. Also, the Kakhovka reservoir served as a source of water for the largest irrigation system on the territory of Ukraine and in Europe [Shumilova et al. 2023: 580]. Due to water shortages, it is estimated that approx. 1 million hectares of nearby land will be unsuitable for farming for the next three to five years as a result of the loss of this energy source. In the long run, the lack of water may potentially worsen the state of the soil in this region, making it parched and unsuitable [Orel, Petrushko 2023].

ENERGY SECURITY

The Kakhovka hydropower plant (HPP) – an essential source of clean electricity for southern Ukraine – has been lost as a result of the dam breach. More than USD 1 billion is expected to be spent on the HPP reconstruction. Even though Ukraine's primary power system has been cut off from the HPP, the disaster's effects are far-reaching. Long-term deterioration of the Kakhovka HPP reduces the Ukraine's power system's automatic frequency restoration reserves, making system balancing more difficult and expensive. As of June 9, around 20,000 people were without power as a result of the devastation of the electrical infrastructure. Additionally, there was a chance that the Kherson Thermal Power Plant would be impacted, which could affect about 140,000 people. Moreover, the Kakhovka HPP's reservoir is directly connected to a reservoir that supplies water to the Zaporizhzhia NPP – another large source of clean power in the country. The already difficult situation regarding nuclear safety and security worsened due to the loss of the main source of cooling water [Bunn 2023; Kapnik 2023]. It is important to mention that Zaporizhzhia NPP is frequently used as a tool in the Russian nuclear terrorism narration making the NPP especially vulnerable in the face of Russian diversions.

ECONOMIC SECURITY

Residential properties received substantial damages as a result of the massive floods, creating both short- and long-term housing issues. With an average depth of over 3 meters, the floodwater did serious damage to more than 2,500 buildings. As of June, more than 200 residential buildingswere confirmed to be destroyed. Structural integrity of the survived real estatewas affected, which caused a variety of damages. As a result, it is already possible for these buldings to develop cracks, sink or even collapse. In many circumstances, it may not be possible to restore and renovate the them. The overall impact on housing in the region includes both short-term demands for alternative property options and long-term rebuilding projects to return the real estate stock to its pre-flood condition [Bohdanyok, Serhiyets 2023; United Nations Ukraine 2023: 3].

The collapse of the dam caused the displacement of people from the impacted areas, which could subsequently result in a more organized process of internal and possibly international migration. According to an initial estimate, 2,200 individuals have been forced to leave their usual dwelling in flood-affected areas, and 81% of them are still present in the Kherson Oblast. Many people left their houses without documents that may be necessary to access services. The absence of suitable housing, the polluted environment, risks associated with mining contamination, loss of employment possibilities, food insecurity, and general unrest in the area may have an impact on mid- to long-term migration choices. It is predicted that up to 400,000 people may relocate from the southern regions of Ukraine. To stop widespread po-

pulation displacement and internal/external migration from this area, the Ukrainian government is required to guarantee an immediate and long-term solutions forshelter and housing, access to key services, economic recoveryand overall stability in the region [United Nations Ukraine 2023: 3–4].

The floods affected over 80 villages and put over 120 educational institutions in danger. Before the population may return to their homes, these places will need to be completely rebuilt. The proximity of these settlements to the front lines and the ongoing conflicts will make it extremely difficult to clear the debris and rebuild the infrastructure. Local media outlets may be hampered by the flooding as well, thus, restricting the affected population's access to vital and verified information on mine contamination, chemical risks, water availability, humanitarian help, evacuation plans, etc. According to the Ukrainian Media Business Association (UMBA), about 10 media organizations have direct bases in the flooded areas [United Nations Ukraine 2023: 2–3].

Removing debris from damaged infrastructure, as well as various types of natural and man-made garbage that have been transported downstream by the floodwaters requires significant effort. This includes the existence of potentially dangerous substances like the widespread usage of asbestos panels in earlier building materials. The significant number of mines and unexploded ordnance that have been swept downstream and are now dispersed throughout the affected areas as floodwaters recede, however, is the most urgent and serious effect of the flooding. This led to the creation of new low-density unrecognized mine fields. Numerous minefields have already been identified in the flood-affected area, and many more are still unidentified. Given the situation, it is reasonable to assume that all of these mines have moved and settled in the silt, turning the entire flood zone into a contaminated area, complicating thorough assessments and remediation efforts, and preventing many people from returning and putting those who stay at risk of having fewer opportunities for employment and requiring social protection services in the long run. Access to essential services may be denied to people who have particular vulnerabilities, such as the elderly or people with disabilities, increasing their short- and long-term needs [Kozova 2023; Kobzar 2023].

CULTURAL SECURITY

Absolutely unexpected aspect of the Kakhovka dam collapse is creation of a direct threat to the Ukrainian cultural heritage. After the destruction of the dam, floodwaters immediately impacted about 15 museums, archaeological sites and historical locations. Among the affected areas are Korsunka, Nova Kakhovka, Dnipryany, the historic settlement of "Ponyativske" in Ponyativka village (4th century BC – 4th century AD), Mykolaivka village (2nd–5th centuries), Burgun settlement, Tyaginka village (13th–17th centuries), Tyagin fortress site and Lviv settlement (4th century BC – 4th century AD). These cultural institutions are probably going to sustain structural damage as a result of the flooding. The integrity of archival collections and transportable heritage are also at risk of deterioration, leaving them vulnerable to theft and

illegal trafficking [United Nations Ukraine 2023: 4]. Moreover, the house-museum of the artist Polina Rayko in the city of Oleshky has been almost completely destroyed by the flood [Kabatsiy 2023].

CONCLUSIONS

As President Zelenskyy said, the Kakhovka dam collapse is the act of ecocide that, besides of causing major negative consequences for ecology, took lives of 21 civilians. The research presents the long-lasting consequences of the natural catastrophe for environmental security in Ukraine, including destruction of natural ecosystems, species and entire parks, as well as soil and water contamination with chemicals and mines. Moreover, it proves the hypothesis set in this paper about the outcomes that transcend the scope of environmental security. Indeed, the Kakhovka dam collapse also had a long-term impact on food security, economic security, energy security and cultural security. Large flooding affected sizable tracts of agricultural land in the region compromising food security in Ukraine with potential consequences for global food supply systems in African and Asian countries. The Kakhovka HPP used to be a key source of renewable (and cheap) energy in Ukraine, as well as provided water for the Zaporizhzhia NPP, thus, the destruction of the dam weakened Ukrainian situation in terms of energy security. The mass destruction of civil infrastructure, including private property, educational institutions, roads, and so on, displacement of people, and loss of income are the following consequences that we can classify as the economic security challenges. The far-reaching outcomes of the dam collapse have also an impact on cultural security by threatening the integrity of museums, historical sites and archaeological locations in the flooded area.

The author has a great hope that the presented elaboration helps to understand the nature of Russian hybrid war in Ukraine, as well as fulfils the research gap in this field. The Kakhovka dam collapse and its far-reaching consequences are the particular case of Russian aggression in Ukraine in terms of the scale of the disasterand different aspects involved. What kind of policy recommendations could the author provide? President Zelenskyy is doing the right thing by appealing to the global community to bear responsibility on the Russian Federation and President Putin himself. The International Criminal Court (ICC) could play here a key role. It has already issued an arrest warrant for Putin over deportation of Ukrainian children. However, there is still a long list of Russian crimes that need to be prosecuted. In March 2023, the European Parliament voted in favor of including ecocide in EU law, but Russia is not an EU member, and we need some reaction from the ICC. The issue is that the ICC jurisdiction is limited to four "most serious crimes" like genocide, crimes against humanity, war crimes, and the crime of aggression; thus, there are two options – the first one is to recognize ecocide as fifth major crime or the second one is to integrate ecocide into the "crimes against humanity" section. In

any case, the activity of Ukraine in this area is priceless, because it will help to gain more attention to environmental issues in the future.

The study's novelty stems from the three main factors: (1) capturing one of the biggest and most recent instances of Russian aggression in Ukraine; (2) addressing the issue of dam collapse from multiple angles, including economic, food, energy and cultural security; and (3) fulfilling the existing research gap of a relatively new topic. The author started her work on the study right after the tragedy has occurred without no scientific elaborations in background, thus, the author aims to present her own perspective on the Kakhovka dam collapse based on the journalistic publications and information from officials. The novelty of this approach is based on the documentation of a "fresh", ongoing situation with a great international significance from an academic perspective with a minimum amount of corresponding scientific literature. The author's key idea is to immediately document one of the most serious Russian environmental crimes in Ukraine on the basis of available sources. Another reason why the author wishes to pioneer in this topic is her sincere aspiration to draw attention of academia to crimes committed by Russians in Ukraine, as well as gain additional support for Ukrainians protecting their country.

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ZNISZCZENIE ZAPORY WODNEJ W NOWEJ KACHOWCE JAKO PRZYKŁAD ROSYJSKIEJ WOJNY HYBRYDOWEJ NA UKRAINIE: ZAGROŻENIE DLA BEZPIECZEŃSTWA ŚRODOWISKOWEGO I NIE TYLKO?

Abstrakt: 24 lutego 2022 r. Rosja rozpoczęła pełnoskalową wojnę przeciwko Ukrainie. 6 czerwca 2023 r. rosyjska armia wysadziła zaporę wodną w Nowej Kachowce, powodując katastrofę ekologiczną, którą prezydent Ukrainy Wołodymyr Zełenski określił mianem „ekobójstwa" i zwrócił się do społeczności międzynarodowej o pomoc w pociągnięciu winnych do odpowiedzialności za tę potworną zbrodnię. Głównym celem tego artykułu jest zbadanie długoterminowych skutków zniszczenia zapory w Kachowce, które miały niezwykle negatywny wpływ na bezpieczeństwo środowiskowe na Ukrainie, ale czy ten wpływ jest ograniczony jedynie do ekologii? Hipoteza postawiona w tym artykule głosi, że zniszczenie zapory w Kachowce spowodowało długotrwały negatywny wpływ na szereg pozamilitarnych wymiarów bezpieczeństwa. Niniejszy artykuł został podzielony na trzy części, z których pierwsza przedstawia wojnę rosyjsko-ukraińską jako tło; kolejna sekcja wyjaśnia przyczyny i krótkoterminowe skutki zniszczenia zapory wodnej; a ostatnia część analizuje wpływ zawalenia się zapory wodnej w Nowej Kachowce na bezpieczeństwo środowiskowe, a także rewiduje hipotezę, przedstawiając listę jej długoterminowych skutków wykraczających poza zakres bezpieczeństwa ekologicznego. Badanie dowodzi, że długotrwałe konsekwencje zniszczenia zapory wodnej w Kachowce nie ograniczają się tylko do naruszenia bezpieczeństwa środowiskowego, ale odnoszą się również do pogorszenia bezpieczeństwa ekonomicznego, żywnościowego, energetycznego, a nawet kulturowego. W podsumowaniu autorka przedstawia analizę polityki i rekomendacje. Metodologia tego badania opiera się głównie na przeglądzie artykułów dziennikarskich w języku angielskim i ukraińskim, kilku opracowaniach naukowych, wywiadach z ekspertami i oficjalnych informacjach ze strony internetowej Prezydenta Zełenskiego. Ponieważ zniszczenie zapory wodnej w Kachowce jest stosunkowo niedawnym wydarzeniem, obecne badanie obejmuje jedynie ograniczoną liczbę opracowań naukowych.

Słowa kluczowe: wojna rosyjsko-ukraińska, zniszczenie zapory wodnej w Nowej Kachowce, wojna hybrydowa, „ekobójstwo", bezpieczeństwo środowiskowe

BIOGRAPHY

Liliia Hrytsai, MA, is a PhD candidate at the Faculty of Political Science and Journalism at the UMCS in Lublin. She is a laureate of numerous awards for her scientific achievements and social engagement. In 2020, she became the winner of the Baltic University Program Mobility Research Grant, which funded her research stays at KTH Royal Institute of Technology in Stockholm and at the Gdańsk University of Technology. In 2021, she realized her research stay at the University of British Columbia within the NAWA PROM program. From October 2021 till February 2022, she was a Schuman trainee at the Research Unit of the European Parliament in Brussels. Since 2022, she has been participating in the Horizon 2020-funded REINITIALISE project, which gave her an opportunity to conduct the research stay at KU Leuven, Belgium in the period of June–July 2022. In 2020–2022, she served as a Representative of the Lublin Voivodeship at the Youth Climate Council of the first term at the Ministry of Climate and Environment of Poland. She is the author of several research articles about sustainable urban development, which have been

published in prestigious scientific journals. Her scientific achievements also include active participation in international scientific conferences in Germany, Sweden, Belarus and Ukraine, as well as participation and organization of numerous conferences.
E-mail: lillahrytsai@gmail.com