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Ukraine on Fire: The Non-Military Dimensions of the War



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Lublin 2022

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■ Theses

The Russian Federation's military invasion of Ukraine has become a major challenge to the statehood, sovereignty, and integrity of Ukraine. The aggression is being waged simultaneously in a number of dimensions, including the military, political, economic, social, humanitarian, cultural, informational, and ecological. This is contributing significantly to an increase in the harm done to the people of Ukraine and the damage to its infrastructure, economy, cultural heritage, and natural environment.

In spite of the continuing war, the loss of over 20% of arable land, and lower crop yields, in 2022 Ukraine was capable of covering its food requirements for almost every type of crop. In 2023, due to the dramatic reduction in land for sowing and growing winter wheat, it will probably be impossible to reap any particularly large harvests. This in turn noticeably reduces the share of Ukrainian produce on the world food market. However, due to the fact that Ukraine has considerable potential to increase agricultural production, and also because of the constantly growing world population, under favourable circumstances the country could in future rebuild its position on the global food market.

It is currently impossible to calculate the effect of the war on Ukraine's natural environment. Obviously, however, the longer military operations continue, the more damage will be done to the environment and the more negative consequences they will have in the future, including through the destruction of ecosystems, pollution of soil, and loss of biodiversity. Chemical contamination of soil and water will, in turn, increase rates of disease and mortality in the local population in the long term.

The full-scale Russian invasion of Ukraine has resulted in severe damage to cultural heritage sites, in particular religious buildings, memorial complexes, monuments, museums, theatres, and libraries. The destruction of public amen-

ities and religious sites is indicative of the mass bombardment and artillery fire constituting, beyond any doubt, war crimes committed by Russia against the Ukrainian nation and its cultural heritage.

During the eight months since the Russian invasion of Ukraine, there has been a major increase in the number of volunteer movements supporting the Armed Forces of Ukraine, helping to transport people, and providing humanitarian aid. In the first months of the war, it was volunteers who, due to their mobility, played a significant role in supplying the military.

The government of Ukraine, using methods it has developed, records crimes committed against critical and civilian infrastructure, as well as the natural environment and cultural heritage of Ukraine, in order to formally hold Russia to account and receive compensation for the devastation after the war.

List of Abbreviations

CAF	Charities Aid Foundation
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
IAEA	International Atomic Energy Agency
ICCROM	International Centre for the Study of the Preservation and Restoration of Cultural Property
ICOM	International Council of Museums
KSE	Kyiv School of Economics
SUCHO	Saving Ukrainian Cultural Heritage Online
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WFP	World Food Programme of the United Nations
ZAES	Zaporizhzhia Nuclear Power Station
НІСД	Національний інститут стратегічних досліджень

Introduction

On 24 February 2022, Europe and the world found themselves in a new reality – Russian forces had mounted a full-scale invasion of Ukraine. Right from the outset, rockets, bombs, and missiles began to destroy Ukrainian towns and cities, including the capital, Kyiv. Millions of refugees headed towards Western Ukraine and other European countries. Many politicians as well as military analysts and observers from all over the world were convinced that Kyiv would be seized by the Russian military within a week and that Ukraine would capitulate. The Russian Federation was also counting on this. However, the Ukrainian army, territorial defence units, and the rest of the Ukrainian nation thwarted

the aggressor's plans. The Russian advance was halted, and by early April 2022, its army had withdrawn completely from the Kyiv, Chernihiv, Sumy, and Zhytomyr regions and retreated to Russia and Belarus. The Kremlin's blitzkrieg had failed, which led to the invaders adopting a new strategy. This involved destroying Ukraine as a state, along with its economy, military, and population.

One tragic example of this strategy was Mariupol. Ukraine's tenth largest city, with a population of 459,000 people, was razed to the ground within three months. Over 22,000 of its inhabitants perished, and the 100–120,000 who remained are threatened by an epidemic of infectious diseases and by ecological disaster. Kharkiv and Zaporizhzhia are being systematically and ruthlessly destroyed, as are border areas of the Chernihiv and Sumy regions and many other towns located in the occupied territories of the Luhansk, Donetsk, Kherson, and Mykolaiv regions. No European cities since World War II have seen such targeted attacks on their civilian infrastructure. Inhabitants who were unwilling or unable to evacuate areas of active military operations are living in cellars in conditions not supporting basic life requirements, with no gas or electricity, and without sufficient food or water.

It should be stressed that the scorched earth tactics have proven to be the most effective for the Russian army. Unable to defeat the Armed Forces of Ukraine, which are being supplied with weaponry by a wide international community,

units of the “world’s second army” are effectively terrorising the civilian population. They are carrying out mass missile attacks on residential buildings and on medical and educational facilities in almost every city in the country, destroying businesses and elements of critical infrastructure, including railway hubs located deep behind Ukrainian lines, from Lviv to Rivne.

The most visible effect of the scorched earth tactics in the eighth month of the Russo-Ukrainian war is undoubtedly the worsening ecological catastrophe in the temporarily occupied territories in the Luhansk, Donetsk, Zaporizhzhia, and Kherson regions. It has been obvious from the start of the occupation that Russia does not intend to follow the requirements of international conventions determining the rules of warfare. As a result, Ukraine’s ecosystem has suffered and continues to suffer irreparable damage. The seizure of the nuclear power plants in Chernobyl and Zaporizhzhia led to the risk of radioactive contamination of the Kyiv region and may cause a nuclear disaster at Enerhodar (Zaporizhzhia region) which would affect the entire European continent. The destruction of the only functioning oil refinery in Kremenchuk and explosions at oil storage facilities across the country have also caused irreversible damage to the environment and population of Ukraine. Bombardment of ammonia stores has exacerbated the situation still further, as has the Russians’ use of phosphorus bombs, which are banned by the Geneva Convention.

The war also presents dangers for the Black Sea and the Sea of Azov. It is not currently feasible to diagnose the status of marine flora and fauna due to the impossibility of conducting any research there. However, it is already clear that the mining of ports and Russian exercises in July 2022 have resulted in the deaths of a large proportion of the cetacean population, including numerous dolphins, which is extremely harmful to the marine ecosystem¹. The Ukrainian government, aided by ecologists, is recording crimes committed against the natural environment and will use every opportunity to bring the Russian Federation to justice, in particular by the use of the mechanisms of the 1969 Vienna Convention on the Law of Treaties, in order to obtain compensation for the environmental destruction.

Russia is also ruthlessly destroying Ukraine's cultural heritage. This fact confirms once more that it is the Kremlin's aim to liquidate Ukraine as a state and Ukrainians as a nation. Alongside the thousands of ruined homes of the civilian population in cities, towns, and villages, there are also thousands of damaged or destroyed cultural sites, including churches, museums, theatres, community centres, libraries, monuments, and historical sites. At the same time, the contents of museums are being removed from the oc-

¹ Укрінформ, „Через розв'язану Росією війну в Чорному морі вже загинули до 50 тисяч дельфінів – еколог”, 1.10.2022, <https://www.ukrinform.ua/rubric-regions/3583796-cerez-roz vazanu-rosie-u-vijnu-v-cornomu-mori-vze-zaginuli-do-50-tisac-delfiniv-ekolog.html> [14.10.2022].

cupied territories, as are the art collections of educational establishments and private individuals. In these circumstances, inhabitants of cities subject to military action are demonstrating their ability to unite in order to save monuments, historic buildings, museum collections, and other relics. Museum workers in particular have stood out in this regard, as they quickly managed to organise the transfer of their collections to safer locations. From the earliest months of the war, however, it has been clear that there are no longer any such places in the country.

Ukrainian farmers have also shown a great deal of courage and solidarity during the war. Almost a month after the outbreak of hostilities came the time to start the sowing campaign. Fighting had reduced the area of land for sowing by 20%, and logistics in terms of fuel, seeds, and fertiliser became more complicated. The international community has been carefully observing Ukraine's "struggle for bread", and as early as April various experts and representatives of the UN Food and Agriculture Organisation (FAO) started to emphasise the likelihood of the military action resulting in famine in the Middle East and Africa. Before 24 February 2022, Ukraine exported around 70–80% of all of its agricultural products, with nearly half of all deliveries as part of the UN World Food Programme (WFP). The blocking of Ukraine's Black Sea ports in the first days of the Russian invasion halted exports and led to a logistical collapse. Ukrainian state railways and the ports on the Danube only partially

solved the problem which arose. This was finally resolved on 22 July 2022 by the activation of a grain corridor as part of a four-way initiative concluded between Ukraine, Turkey, the United Nations (UN), and Russia.

In addition, immediately after onset of the aggression, Ukraine experienced a surge in volunteer movements. To support the armed forces, Ukrainians have been volunteering to collect money, buy necessary items, help to transport people, and deliver humanitarian aid, etc. Some of the volunteers have worked independently, others joined existing charitable and community organisations, and some founded their own organisations. According to a declaration by Ukraine's Minister of Defence Oleksiy Reznikov, in the first months of the war, it was volunteers who, due to their mobility, played a significant role in supplying the military. For example, since 24 February 2022, 50% of the total number of bulletproof vests supplied to the Armed Forces of Ukraine (which numbers around 700,000 people) have been provided by the Ministry of Defence, and the remaining 50% were from various forms of charitable aid².

² В. Орлова, „Міноборони орієнтується на необхідність забезпечення 1 мільйона військових – Резніков“, УНІАН, 13.05.2022, <https://www.unian.ua/war/minoboroni-orientuyetsya-na-neobhidnist-zabezpechennya-1-milyon-viyskovih-reznikov-novini-vtorgnennya-rosiji-v-ukrajinu-11824908.html> [15.10.2022]; Слово і Діло, „Як змінювалася чисельність Збройних сил України“, 14.10.2022, <https://www.slovoidilo.ua/2022/10/14/infografika/bezpeka/yak-zmyniyu-valasya-chyselnist-zbrojnyx-syl-ukrayiny> [15.10.2022].

The present paper aims to show various non-military dimensions of the Russo-Ukrainian war. The first part highlights the effects of the war on the Ukrainian economy, more specifically the agricultural sector. The second part focuses on the damage wrought on the natural environment of Ukraine and its consequences. In the third part, there is an analysis of the scale of destruction of the country's cultural heritage and a presentation of the actions taken to save it. Meanwhile, the fourth and final part of the paper shows how the war has contributed to a consolidation of the Ukrainian nation. Faced with an existential threat, civic society organisations, volunteers, and ordinary citizens have shown themselves capable of supporting their state and uniting millions of people within the country and all over the world in its defence against the aggression of the Russian Federation.

1. The Threat to Food Security in the Context of Russian Aggression

Ukraine is one of the world's largest food exporters and a guarantor of global food security. It is the largest exporter of sunflower oil, the third largest exporter of barley, fourth of maize, and fifth for exports of wheat³. The country previously exported around 70–80% of all of its agricultural products, which enabled 300–400m people to be fed each year, not counting Ukraine's own population. Altogether there were over 30 net importers of wheat in the world dependent on Ukraine and Russia. Ukrainian cereals were of particular significance for the UN. Before 24 February 2022,

³ А. Танська, „Не все так однозначно...“, *AgroTimes*, 21.10.2022, <https://agrotimes.ua/article/ne-vse-tak-odnoznachno/> [21.10.2022].

they were the main commodity ordered by the agencies of this international organisation (FAO, WFP) for their emergency food aid programmes during humanitarian crises, crisis situations, and famines around the world. These agencies acquired 40% of their produce in Ukraine to distribute food aid to countries such as Ethiopia, Somalia, and others stricken by drought or conflict. It should be stressed that in 2021, the share of agriculture in Ukraine's GDP was greater than 10%, the largest of all sectors of the economy.

Sowing campaign 2022

Russia's war against Ukraine has led to a forced reduction of sowable land by about 20% in comparison to 2021. Due to the numerous challenges facing farmers, the following factors were considered when choosing a crop:

- *Concentrating on the domestic market.* Exports of grain from Ukraine de facto ended due to the blocking of sea-ports.
- *Rising fuel prices.* Farmers tried various ways to limit fuel consumption during the sowing campaign, including the use of a no-till system⁴.
- *Minimising the use of fertilisers and crop protection chemicals.* Crops were preferred which required less fertiliser and protective chemicals.

⁴ The no-till system involves not using any cultivation practices and sowing directly into soil which has not been prepared for sowing.

- *Lowering the degree of labour intensiveness.* Concentrating on crops which require less labour.
- *Problems with storage.* Consideration was taken of the risk of downtime in the processing plants which are of vital importance for the maize and sunflower harvests⁵.

According to Ukraine's Ministry of Agrarian Policy and Food, in spite of the military operations and constant lack of fuel caused, among other things, by the destruction of the refinery in Kremenchuk, the 2022 sowing campaign proceeded successfully. Sowing began in March in every region of the country except for Luhansk, and also partially in areas near the front line. This work was completed by mid-June.

As of 16 June 2022, 13.4m ha of land had been sown with basic crops during the sowing campaign, which constituted 95% of the 14.16m ha planned for cultivation for that season. The area sown in the territories held by the Ukrainian government was 2.75m ha less than in 2021, when 16.92m ha were sown. The south, east, and northeast of the country saw the greatest losses of land⁶. Additionally, in autumn 2021, 7.6m ha were sown with winter crops, 6.5m ha with wheat

⁵ H. Bazhenova, *Drugi front Ukrainy: kampania siewna 2022*, „Komentarze IEŚ”, no. 575 (87/2022), p. 1.

⁶ Укрінформ, „В Україні завершили посівну”, 17.06.2022, <https://www.ukrinform.ua/rubric-economy/3509131-v-ukraini-zaversili-posivnu.html> [11.10.2022].

and triticale, 1.41m ha with rapeseed, 969,000 ha with barley, and 109,000 ha with rye⁷.

The greatest change in the sowing structure mainly concerned wheat, maize, sunflowers, soya, and buckwheat. The area of spring wheat cultivation increased fivefold, while that of soya and sunflowers decreased slightly compared to the previous year. Meanwhile, there was a significant reduction in the area of maize cultivation, from 5.5m ha in 2021 to 4.6m ha in 2022, mainly due to the fact that although it gives a higher yield, its transport is more difficult logistically. In total, all categories of farms sowed 191,100 ha of spring wheat; 951,400 ha of spring barley; 34,100 ha of spring rapeseed; 159,300 ha of oats; 131,000 ha of peas; 75,300 ha of buckwheat; 49,500 ha of millet; 4.6m ha of maize; 180,600 ha of sugar beet; 4.7m ha of sunflowers; 1.2m ha of soya; and 1.1m ha of potatoes⁸. Most farmers chose their crops on the basis of the seed supplies they had gathered before the start of Russia's aggression. According to Taras Vysotsky, first deputy minister of Agrarian Policy and Food of Ukraine, the crop structure dictated by the war was designed to guarantee the country's domestic food security⁹.

⁷ Міністерство аграрної політики та продовольства України, „В Україні завершена посівна кампанія 2022”, 17.06.2022, <https://minagro.gov.ua/news/v-ukrayini-zavershena-posivna-kampaniya-2022> [15.10.2022].

⁸ Ibidem.

⁹ Міністерство аграрної політики та продовольства України, „Україна цього річ може зібрати близько 65 млн тонн врожаю”, 13.06.2022, <https://minagro.gov.ua/news/ukrayina-cogorich-mozhe-zibrati-blizko-65-mln-tonn-vrozhayu> [10.10.2022].

Harvesting campaign 2022

The Russian invasion became a real test for Ukrainian farmers. Systematic bombardment of regions along the front line, mined fields, the complicated logistics of transporting crops to grain elevators, problems with fuel and transport, and a lack of financing for agricultural producers all made the harvest a particularly difficult task. It can be stated, however, that Ukrainian farmers met the challenge. Despite the risks, they went out into the fields to gather the crops, knowing that they could find themselves under fire or be killed by a landmine.

By 7 October 2022, agricultural producers had harvested 33.3m tonnes of the main crops covering 10.1m ha, which constituted around 67.7% of the planned area¹⁰. The harvesting of wheat (a total of 19.2m tonnes were threshed), barley (5.5m tonnes), and rapeseed (3.2m tonnes) was completed. Peas were harvested from 98% of the area sown (251,000 tonnes), millet from 76% (77,000 tonnes), buckwheat from 49% (85,000 tonnes), sunflowers from 28% (2.6m tonnes), sugar beet from 19% (1.6m tonnes), soya from 14% (505,000 tonnes), and maize from up to 2.3% (400,000 tonnes)¹¹. In general,

¹⁰ А. Жарикова, „Українські аграрії зібрали понад 30 мільйонів тонн зерна та інших культур”, *Українська правда*, 7.10.2022, <https://www.epravda.com.ua/news/2022/10/7/692355/> [14.10.2022].

¹¹ Міністерство аграрної політики та продовольства України, „Аграрії зібрали 26,4 млн тонн зерна нового врожаю”, 7.10.2022, <https://minagro.gov.ua/news/agrariyi-zibrali-264-mln-tonn-novogo-vrozhayu> [15.10.2022].

the gathered harvest was in line with the June forecast of Ukraine's Ministry of Agrarian Policy and Food. Harvests of grain and oleaginous plants are estimated to have totalled 67m tonnes, consisting of around 50m tonnes of grain and 17m tonnes of oleaginous plants. This will be 38.4% less than in 2021, when the combined gross harvests of grain and oil-producing plants stood at 108.8m tonnes.

In 2022, nearly every group of early crops exhibited a drop in yield – the average yield for all cultures was 3.8 t/ha. It should be stressed that Ukrainian farmers harvested a record amount of grain in 2021, meaning that 2021's figures were more an exception than a rule. Analysing statistics from previous years shows that the yield indices for winter wheat and barley in 2022 were almost consistent with the earlier amounts. The only exception was rapeseed, whose average yield grew from year to year. The harvests predictions for 2022 were among the five best since Ukrainian independence¹², although due to the war, the predicted figures were lower than the average harvests for 2019–2021.

Military activity has caused major losses in the Ukrainian agriculture sector. Direct damage includes first and foremost granaries filled with the 2021 harvest that were destroyed or damaged by Russia's attacks along with greenhouses,

¹² MilkUA.info, „Попри війну в Україні прогнозують один з п'яти кращих врожаїв за 30 років”, 20.09.2022, <http://milkua.info/uk/post/popri-vijnu-v-ukraini-prognozuut-odin-z-pati-krasih-vrozaiv-za-30-rokiv> [15.10.2022].

farms, and agricultural machinery, as well as animals killed, fields burned and mined, crops left unharvested, and grain stolen. Seeds, grain, and machines were removed en masse from temporarily occupied territories in the Zaporizhzhia, Kherson, and Kharkiv regions. According to FAO estimates, direct losses to the Ukrainian agriculture sector between the end of February and July 2022 totalled USD 4–6bn¹³. Meanwhile, calculations by the Kyiv School of Economics (KSE) in mid-September showed that this figure had risen to USD 6.6bn¹⁴. Ukraine's Ministry of Agrarian Policy and Food believes that in 2022, the country lost up to 10m tonnes of potential crops due to the occupation of its territory¹⁵. According to research by the same ministry and the KSE, direct losses to Ukrainian agriculture due to military operations stood at USD 34.3bn on 15 September 2022¹⁶. This category

¹³ Interfax-Україна, „Збитки, завдані сільськогосподарському сектору внаслідок війни, становлять від 4 до 6 млрд доларів – FAO”, 29.07.2022, <https://ua.interfax.com.ua/news/economic/849293.html> [6.10.2022].

¹⁴ Center for Food and Land Use Research at Kyiv School of Economics, Ministry of Agrarian Policy and Food of Ukraine, *Огляд збитків від війни в сільському господарстві України. Непряма оцінка пошкоджень*, вип. 2, 10 листопада 2022, р. 1, https://kse.ua/wp-content/uploads/2022/11/Damages_report_issue2_ua-1.pdf [11.11.2022].

¹⁵ Укрінформ, „Україна втратила до 10 мільйонів тонн потенційного врожаю”, 19.09.2022, <https://www.ukrinform.ua/rubric-economy/3574695-ukraina-vtrata-do-10-miljoniv-tonn-potencijnogo-vrozau.html> [6.10.2022].

¹⁶ Center for Food and Land Use Research at Kyiv School of Economics, Ministry of Agrarian Policy and Food of Ukraine, *Огляд непрямих втрат від війни в сільському господарстві України*, вип. 2, 10 листопада 2022, р. 1, <https://minagro.gov.ua/storage/app/sites/1/uploaded-files/lossesreportissue2ua-2.pdf> [11.11.2022].

of damage included above all losses by producers from the forced reduction in domestic prices for crops intended for export due to the impossibility of planned exports of agricultural produce, the increase in production costs, and unharvested crops. Indirect losses were also borne by agri-food companies which were not affected by Russian shelling, but due to disrupted logistics had reduced production and received lower revenues.

Export of agricultural produce

Before the end of February 2022, exports of cereals and legumes from Ukraine stood at around 5.5–6m tonnes per month, totalling around 50–60m tonnes a year. In the 2021/2022 marketing year, this amount was expected to reach 65m tonnes, but Russia's full-scale invasion hindered realisation of these plans¹⁷. Nonetheless, in terms of exports, Ukraine remains one of the five largest cereal suppliers in the world, exporting three quarters of its production. It is worth noting that before the Russian invasion, Ukraine provided 12% of global wheat exports, 15–20% of barley, 15% of maize, 19% of rapeseed, and over 50% of sunflower oil¹⁸.

¹⁷ The marketing year in Ukraine runs from 1 July to 30 June of the following year.

¹⁸ Н. Іверук, „Розблокувати експорт зерна з України – місія нездійсненна. Які труднощі та наслідки в перспективі?“, *Юридична Газета*, 2.06.2022, <https://jur-gazeta.com/publications/practice/zemelne-agrarne-pravo/rozblokuvati-eksport-zerna-z-ukrayini--misiya-nezdiysnenna-yaki-trudnoshchi-ta-naslidki-v-perspektiv.html> [3.10.2022]; В. Пепеля, „З України відпливли перші судна з пшеницею у рамках програми Grain from Ukraine“, *Landlord*, 17.11.2022 <https://>

The major importers of Ukrainian agricultural produce in 2021 were Asian countries (49.1%); the European Union (EU) (30.1%); African countries (13.3%); and former Soviet states, excluding the Baltics (5%). Altogether, these regions bought 97.5% of Ukraine's exported agricultural produce.

The main export stream for cereals and legumes passed through the Black Sea ports of Mykolaiv, Odesa, and Chornomorsk. In 2021, a record year in terms of crops harvested, Ukrainian farmers shipped 49.5m of 51.2m tonnes of cereal by sea, while road and rail transport accounted for no more than 2–5% of exports¹⁹. Russia's invasion led to a logistical collapse and unprecedented chaos in the export of cereals by land. Due to the blockade of seaports, exporters were forced to drastically limit sales. As a result, in March 2022 Ukraine was only able to export 407,000 tonnes of agricultural produce by road, rail, and river (through ports on the Danube); in April this was 968,000 tonnes; and in May 1.7m tonnes. Most of this was sent directly through Poland, followed by Romania and other EU states.

Each of these solutions had its disadvantages, though. The Danube ports have limited flow capacity due to a lack of barges, quays, and terminals. Rail and road logistics, meanwhile, are hindered by long queues at the borders, a lack of

landlord.ua/news/z-ukrainy-vidplyvly-pershi-sudna-z-pshenytsiu-u-ramkakh-prohramy-grain-from-ukraine/ [17.11.2022].

¹⁹ Н. Іверук, „Розблокувати експорт зерна з України”.

wagons and fuel, phytosanitary procedures, and also differences in European and Ukrainian rail gauges. The next challenge was a lack of warehouse space in European ports, which were not prepared for so many loads of cereal²⁰. Unblocking Ukraine's ports and renewing maritime exports was thus of vital importance for the Ukrainian economy.

The liberation of Snake Island and the opening of the Bystre estuary on the Danube in the first half of July 2022 resulted in negotiations commencing with Turkey and the UN for the creation of a grain corridor. These were concluded with the signing on 22 July of the Istanbul Agreement, which designated the ports of Odesa, Pivdennyi, and Chornomorsk as being key to the export of Ukrainian agricultural cargo. This resulted in the country renewing its exports of grain by sea on 1 August. According to Ukraine's Ministry of Infrastructure, 334 ships had sailed from the aforementioned ports by 14 October 2022, delivering 7.4m tonnes of agricultural produce to Asia, Europe, and Africa²¹. In consequence, exports of these products reached 5.5m tonnes in September, which was almost as much as Ukraine typically exported monthly prior to the full-blown Russian invasion.

²⁰ H. Bazhenova, *Wojna na Ukrainie a bezpieczeństwo żywnościowe w perspektywie regionalnej i globalnej (część 2)*, „Komentarze IeS”, no. 631 (143/2022), p. 1.

²¹ UkrAgroConsultant, „3 судна з 84 тис. тонн агропродукції вийшли з портів Великої Одеси”, 14.10.2022, <https://ukragroconsult.com/news/3-sudna-z-84-tys-tonn-agroprodukcziyi-vyjshly-z-portiv-velykoyi-odesy/> [15.10.2022].

According to government estimates, at least 45m tonnes of the 2022 harvests of grain and oilseeds would go for export. Revenue from this will be divided as follows: maize – USD 5.8bn, sunflower oil – USD 3.2bn, wheat – USD 2.6bn, rapeseed – USD 1.6bn, barley – USD 600m, and soya and processed products – USD 750m. As a result, the total income for Ukrainian farmers in the marketing year 2022/2023 may total USD 14.6bn (according to calculations by KSE “Ahrocentr”). For comparison, in the 2021/2022 marketing year, Ukraine exported 61.5m tonnes of grain and oilseed for a total sum of USD 22.2bn²².

²² H. Bazhenova, *Żniwa na Ukrainie w cieniu wojny*, „Komentarze IeŚ”, no. 696 (208/2022), p. 2.

2. Military Actions and the Natural Environment

Documenting and typology of eco-crimes

In accordance with Protocol 1 of the Geneva Conventions of 1949 relating to the Protection of Victims of International Armed Conflicts, adopted on 8 June 1977, parties to a conflict are obligated to protect the natural environment against “widespread, long-term, and severe damage”. It is also prohibited to use methods and means of warfare which are intended to or may cause such damage. A similar position is taken in the Rio Declaration on Environment and Development, adopted in 1992, which includes inter alia the basic principles of ecological law. Principle 24 of the Declaration states: “Warfare is inherently destructive of sustainable

development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further development, as necessary.”²³ Eight months of full-scale military activity have shown that the Russian Federation has no intention of following the requirements of the international conventions which stipulate the principles for conducting war and protecting the natural environment.

During the first weeks of the invasion, public authorities, along with community organisations already involved in protecting the environment, quickly mobilised and began to record ecological crimes and to prepare lawsuits and petitions to international legal bodies. A large number of applications were created which help both specialists and ordinary citizens to register and collate information about the damage inflicted on the natural environment of Ukraine by Russia. Altogether, between 24 February and the end of September 2022, Ukraine’s Ministry of Environmental Protection and Natural Resources documented over 2,000 cases of environmental damage caused by the actions of the Russian military on the territory of Ukraine and in the Black

²³ United Nations General Assembly, „Rio Declaration on Environment and Development”, *Report of the United Nations Conference on Environment and Development*, A/CONF.151/26 (Vol. I), 12.08.1992, p. 4, https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.151_26_Vol.I_Declaration.pdf [25.10.2022].

Sea and the Sea of Azov²⁴. According to the State Ecological Inspection of Ukraine, the country incurred losses of UAH 1.3tr, equivalent to almost EUR 36bn. Nearly a third of this, or over UAH 407.3bn, was damage done to Ukraine's land resources. State inspectors are continually noting contamination of the ground by ammunition fragments, buildings and infrastructure destroyed, and pollution of the soil by hazardous substances which poison both the earth and the ground water. Pursuant to the methodology adopted by the Ukrainian government for calculating atmospheric pollution during military operations, air pollutants spread during fires caused by bombardment have resulted in UAH 176.5bn (approx. EUR 4,9bn) worth of atmospheric damage²⁵.

The Ministry of Environmental Protection and Natural Resources of Ukraine has recorded the following crimes against the natural environment:

- damage to nuclear facilities and potential radiation and nuclear hazards;
- destruction and damage to infrastructure and industrial facilities, which have led to major environmental pollution;

²⁴ В. Власенко, „РФ завдала нам екологічної шкоди на мільярди євро”, *Урядовий кур'єр*, 5.10.2022, <https://ukurier.gov.ua/uk/articles/rf-zavdala-nam-ekologich-noyi-shkodi-na-milyardi-ye/> [12.10.2022].

²⁵ Державна екологічна інспекція України, „Держекоінспекція: за 7 місяців війни найбільшу шкоду завдано земельним ресурсам, понад 407,3 млрд гривень”, 5.10.2022, <https://www.dei.gov.ua/posts/2385> [12.10.2022].

- contamination caused directly by military action (so-called *military waste*);
- destruction of nature reserves and other areas of special protection;
- mining and pollution of waterways.

Damage to nuclear facilities and potential radiation and nuclear hazards

On 24 February 2022, the Russian army took control of the Chernobyl Nuclear Power Station and other nuclear facilities in the Chernobyl Exclusion Zone. A base was immediately created at the power station for storing ammunition and transporting military equipment, and its personnel were held hostage for 600 hours. On 9 March there was an emergency disconnection of the plant, which made it impossible to control the nuclear and radiation safety parameters in its facilities. Importantly, the prolonged power outage could have resulted in overheating and evaporating of radioactive substances in the spent nuclear fuel store, where over 22,000 sets of spent reactor fuel are stored. After four days, Ukraine succeeded in renewing the power supply and stabilising the situation, thus protecting the country and others in Europe from contamination by radioactive substances.

The Russian army did not leave the exclusion zone until 31 March 2022, heading towards the border. During their stay, they damaged almost the entire office space in the plant's facilities, destroyed its years of archives, and plun-

dered the modern Central Analytical Laboratory, which contained nearly 100 items of top-quality modern equipment. In addition, numerous fortification works in the Red Forest, which is the most radioactively contaminated part of the zone around Chernobyl, led to the release of radioactive dust and an increase in background radiation. Initial estimates indicate that losses caused by the occupation of the power station and exclusion zone exceeded UAH 2.5bn (approx. USD 68m)²⁶.

The Pivdennoukrainsk (South Ukraine) Nuclear Power Plant near Mykolaiv, which has been under rocket fire since April 2022, continues to be a target for the Russian military²⁷. The greatest threat to the world's radiation security is, however, Zaporizhzhia Nuclear Power Station (ZAES), which has six reactors each with a power of 1,000 MW. This, the largest operating nuclear power station in Europe and the ninth largest in the world, was seized by the Russian army along with its satellite town Enerhodar on 4 March 2022. ZAES was immediately converted into a military base where Russian troops were stationed along with heavy equipment and large amounts of explosives. In addition, members of the

²⁶ О. Попов, „Окупанти завдали збитків у Чорнобильській зоні на понад 2,5 млрд гривень”, *Київвлада*, 19.05.2022, <https://kievvlad.com.ua/news/okupanti-zavdali-zbitkiv-u-chornobilskij-zoni-na-ponad-25-mlrd-griven> [5.10.2022].

²⁷ The situation at the end of October 2022.

Russian state nuclear energy corporation Rosatom have an illegal presence there²⁸.

Since early August 2022, the ZAES power plant has been under regular fire, as has the nearby town of Enerhodar, which has resulted not only in it being completely cut off from the power grid on several occasions but has also created a risk of hydrogen leaks and dispersion of radioactive substances. The military operations in this zone have already been condemned by the EU, UN, and the International Atomic Energy Agency (IAEA), and the G7 countries have insisted that Russia immediately return control of ZAES to Ukraine. A demand for the Russian Federation to withdraw its armed forces from the territory of the plant has been issued by 43 countries. Nevertheless, despite numerous requests and appeals by Ukrainian officials for help in removing the Russian military from the premises of the power plant and establishing demilitarised zones around Ukrainian nuclear power stations, the international community has failed to take any decisive steps towards securing the country's nuclear facilities.

²⁸ H. Bazhenova, *Wojna na Ukrainie: przestępstwa przeciwko środowisku (część 1)*, „Komentarze IEŚ”, no. 605 (117/2022), pp. 1-2.

Destruction and damage to infrastructure and industrial facilities

Russian missile attacks are causing major fires in Ukrainian critical infrastructure facilities, particularly in oil storage and chemical plants. The State Register of Potentially Dangerous Objects of Ukraine contains information on over 23,000 facilities²⁹, including nearly 3,000 warehouses storing highly toxic pesticides. An overwhelming number of them are located in the regions of Donetsk, Dnipropetrovsk, Zaporizhzhia, Kharkiv, and Lviv³⁰. Many of these objects are situated in areas of active military operations.

As of 5 September 2022, the amount of direct damage inflicted on Ukraine's infrastructure during the war had reached USD 114.5bn, while the total cost of destruction and damage to 412 industrial enterprises was valued at USD 9.7bn. In addition, the number of destroyed and damaged facilities and enterprises providing community services is constantly growing (there are now 141 of them), as well as cultural, sporting and tourist facilities (1153)³¹.

²⁹ Facilities of this type include industrial plants, mines, quarries, main gas pipelines, oil pipelines, water pipelines, railway hubs, bridges, tunnels, industrial waste dumps and landfill, warehouses of hazardous substances, etc. Государственная архивная служба Украины, Государственный департамент страхового фонда документации, „Государственный реестр потенциально опасных объектов”, 13.10.2015, <https://sfd.archives.gov.ua/RUS/page4.html> [5.09.2022].

³⁰ Є. Засядько, „Місяць війни. Злочини проти довкілля”, *Екодія*, 28.03.2022, <https://ecoaction.org.ua/zlochynu-proty-dovkillia.html> [6.09.2022].

³¹ The situation given is that of 5 September 2022. Later missile and drone attacks have caused these numbers to increase significantly.

The worst affected are in the Kyiv, Donetsk, Luhansk, Kharkiv, Mykolaiv, and Zaporizhzhia regions. The destruction is causing severe damage to ecosystems and leading to major pollution of the environment, namely the poisoning of the air, earth, rivers, underground and surface waters, and the basin of the Black Sea and Sea of Azov with particularly hazardous substances, drastically reducing the populations of plant and animal species³².

Russia's war against Ukraine is accelerating climate change and causing an increase in greenhouse gas emissions. According to Ukraine's Ministry of Environmental Protection and Natural Resources, during seven months of the war, forest fires and the bombardment of oil refineries and industrial facilities resulted in the release of at least 31m tonnes of carbon into the atmosphere. The head of this ministry said that at least 79m tonnes of greenhouse gases could potentially be produced during post-war reconstruction and restoration of the infrastructure of Ukrainian cities, towns, and villages³³.

³² Kyiv School of Economics, „Загальна сума прямих збитків інфраструктури зросла до \$114,5 млрд”, 8.09.2022, https://kse.ua/ua/about-the-school/news/zagalna-suma-pryamih-zbitkiv-infrastrukturi-zrosla-do-114-5-mlrd/?fbclid=IwAR2Pp-OT_KCnMSVSHpmOrRDAXrWml9PU_QbP7aBCCk5r2pPmwTgljd6MGY [5.10.2022].

³³ В. Власенко, „РФ завдала нам екологічної шкоди”.

Contamination caused directly by military action

During eight months of military aggression, the Russian military launched almost 4,500 long-range missiles at military and civilian targets in Ukraine³⁴. Meanwhile, the Armed Forces of Ukraine destroyed 15,700 pieces of Russian heavy military equipment in less than eight months of the war³⁵. In addition, dozens of tanks and heavy items of equipment sank in Ukrainian swamps, natural reservoirs, and marshy terrain. Altogether, reservoirs slowed down or blocked the movement of around 10–25% of Russia's entire military equipment.

It should also be emphasised that the Russian Federation's aggression has left nearly half the territory of Ukraine contaminated with mines and explosive devices. Although the area of potentially dangerous land has been successfully reduced from 300,000 to 185,000 km², the situation is complicated by the constant shelling in the Luhansk, Donetsk, Dnipropetrovsk, Zaporizhzhia, Mykolaiv, Odesa, Kharkiv, Sumy, and Chernihiv regions³⁶.

³⁴ В. Зеленський, „Можна позбавити сенсу альянс Росії та Ірану, якщо ми будемо діяти разом – звернення Президента України Володимира Зеленського до учасників Саміту демократії Haaretz”, *Президент України*, 24.10.2022, <https://www.president.gov.ua/news/mozhna-pozbaviti-sensu-alyans-rosiyi-ta-iranu-yaksho-mi-bude-78681> [24.10.2022].

³⁵ Слово і Діло, „Втрати російської армії в Україні перевищили 63 тисячі військових”, 11.10.2022, <https://www.slovoidilo.ua/2022/10/11/novyna/bezpeka/vtraty-rosijskoji-armiyi-ukrayini-perevyshhyly-63-tysyachi-vijskovykh> [15.10.2022].

³⁶ Міністерство захисту довкілля та природних ресурсів України, „Дайджест ключових наслідків російської агресії для українського довкілля за 1-7 вересня

Altogether, from the time the full-scale invasion began until 5 October 2022, 223,300 explosive objects were neutralised in Ukraine – among them 2,122 aircraft bombs – and an area of 71,960 ha has been inspected³⁷. Destroyed military equipment and ammunition, as well as detonated rockets and aircraft bombs, pollute the atmosphere, soil, and ground water of Ukraine with chemicals including heavy metals. It is particularly dangerous when military equipment finds its way into rivers and lakes, since oxidising metals and chemical compounds can adversely affect water quality.

Destruction of nature reserves and other areas of special protection

The geography and climate of Ukraine have contributed to an enormous wealth of flora and fauna. The territory of the country contains 35% of Europe's biodiversity, namely 70,000 species of plants and animals, of which many are rare or endemic – in other words characteristic of this region only. Military operations at one time covered a third of the area of Ukraine's nature reserves (around 1.2m ha). The Ukrainian army's successful offensive reduced this area to 20%, according to the situation in early October 2022. Protected natural areas, including nature and biosphere reserves, na-

2022 року", 10.09.2022, <https://mepr.gov.ua/news/39747.html> [3.10.2022].

³⁷ Міністерство захисту довкілля та природних ресурсів України, „Дайджект ключових наслідків російської агресії для українського довкілля за 29 вересня – 5 жовтня 2022 року”, 8.10.2022, <https://mepr.gov.ua/news/39975.html> [9.10.2022].

tional parks, zoos, and national nature parks, are experiencing heavy losses. There are eight reserves and ten national parks currently in the occupied territories³⁸. Among the best know are Europe's largest nature reserves, the Askania-Nova Biosphere Reserve and the Black Sea Biosphere Reserve (both protected by UNESCO). Because of the hostilities, they are vulnerable to complete destruction.

Also under threat are nearly 200 areas of the Emerald Network (2.9m ha), which was created in order to maintain species and habitats of plants and animals requiring protection at a European level. These include in particular brown bears, black storks, lynxes, white-tailed eagles, and many other animal and plant species. The habitats and colonies of some rare and endemic species are found within active war zones, which threatens their existence, such as virgin unploughed steppes, chalk slopes in the Donetsk region, coastal habitats in southern regions, and marshes in the north of the country.

A total of 397,700 ha of land protected by the Ramsar Convention on Wetlands is also being destroyed on the Black Sea and Sea of Azov, and on the lower stretch of the Danube and Dnipro rivers. These wetlands are considered areas of international significance, e.g. the Danube Biosphere Reserve.

³⁸ В. Власенко, „РФ завдала нам екологічної шкоди“; Орел Дністер, „Природні чудеса України в окупації: Росія взяла в полон заповідники та нацпарки“, 8.10.2022, <https://dnister.in.ua/articles/242093/prirodni-chudesa-ukraini-v-okupacii-rosiya-vzyala-v-polon-zapovidniki-ta-nacparki> [9.10.2022].

One unrecoverable loss was the destruction of the plant genetic resources bank during the bombardment of Kharkiv. This was the only such facility in Ukraine and one of the largest in the world, holding samples of over 160,000 plant variants and their hybrids from all over the world.

Mining and pollution of waterways

The contamination of natural landscapes and agricultural land by mines and other explosive devices is another threat to the natural environment of Ukraine. Exploding mines cause chemical pollution of the soil with heavy metals and toxic substances. A high concentration of these makes the soil dangerous and in some cases it is no longer suitable for agricultural use. Running a business on such land without serious recultivation work would lead to significant hazards to the human body in the future. In addition, detonations of explosive materials cause forest fires and significantly complicate efforts to extinguish them. At the same time, the Russian army frequently does not allow Ukrainian specialists in to deal with fires and prevent further damage. According to UN data, Ukraine is currently one of the most heavily mined states in the world. It could take 5–10 years to demine the country.

What is more, water mains, communications, and sewage systems have been seriously damaged during the Russian offensive, particularly in the Donetsk, Luhansk, Kharkiv, Zaporizhzhia, and Mykolaiv regions. This threatens fresh-

water supplies and causes the pollution of rivers³⁹. The Russian occupation of the hydroelectric power plant at Nova Kakhovka is a serious menace. The opening of two sluices resulted in partial flooding of Nova Kakhovka, the waterfront, and a local park. In the event of damage to the dam on the Kakhovka Reservoir – the country's largest – there is the danger that Kherson and the Dnipro floodplains with their unique protected nature will be flooded.

³⁹ H. Bazhenova, *Wojna na Ukrainie: przestępstwa przeciwko środowisku (część 2)*, „Komentarze IEŚ”, no. 606 (118/2022), pp. 1-2.

3. Challenges to Cultural Heritage

The scale of destruction

Before the Russian Federation started its military invasion, Ukraine was home to over 5,000 museums, 65 historical and cultural sites, and around 170,000 monuments, including seven UNESCO World Heritage sites (one is situated in Crimea). By 6 October 2022, 540 cases of war crimes by the Russian military against cultural heritage had been recorded in 14 regions of Ukraine. The Donetsk, Kharkiv, Kyiv, Luhansk, Chernihiv, Sumy, Zaporizhzhia, and Mykolaiv regions suffered the most in this regard. The lowest amount of destruction of cultural heritage was observed in the Zhy-

tomyr, Kherson, Dnipropetrovsk, Odesa, Vinnytsia, and Lviv regions, and in Kyiv itself⁴⁰.

Before 6 October 2022, Ukraine's Ministry of Culture and Information Policy confirmed damage to 161 cultural heritage sites, including 23 monuments of national importance, 129 of local importance, and 9 newly discovered sites, as well as 143 valuable historic monuments⁴¹. Moreover, 377 sites of art and cultural institutions were destroyed or damaged, including 169 religious buildings; 75 community centres, theatres, cinemas, and other artistic centres; 52 monuments and artworks; 45 libraries; 36 museums and historical and cultural sites (situation as of 3 August 2022)⁴². It should be emphasised, however, that all figures referring to destruction are indicative, as it is currently difficult to obtain information from the temporarily occupied territories and active war zones.

⁴⁰ Укрінформ, „Станом на жовтень МКІП зафіксувало 540 пошкоджень об'єктів культурної інфраструктури”, 7.10.2022, <https://www.ukrinform.ua/rubric-culture/3588369-stanom-na-zovten-mkip-zafiksuvalo-540-poskodzen-obektiv-kulturnoi-infrastrukturi.html> [15.10.2022]; Читомо, „Росія вчинила вже 500 воєнних злочинів проти культурної спадщини України”, 5.09.2022, <https://chytomo.com/rosiia-vchynyla-vzhe-500-voiennykh-zlochyniv-proty-kulturnoi-spadshchynu-ukrainy/> [15.10.2022].

⁴¹ Укрінформ, „Станом на жовтень МКІП зафіксувало 540 пошкоджень”.

⁴² Міністерство культури та інформаційної політики України, „МКІП зафіксувало півтисячі епізодів воєнних злочинів РФ проти українських об'єктів культурної спадщини та закладів культури”, 4.09.2022, <https://mkip.gov.ua/news/7646.html> [14.10.2022].

The Russian aggression has resulted in the burning of the National Literary Memorial Museum dedicated to Hryhoriï Skovoroda, the great Ukrainian philosopher born in 1722, situated in the village of Skovorodynivka (Kharkiv region), and of the Historical and Local Museum in Ivankiv near Kyiv, which housed works by the outstanding folk painter and representative of the so-called art naif movement Maria Prymachenko. A significant part of their collections was rescued, however, and transported to a safe place. Among the buildings almost entirely destroyed were those of the Donetsk Academic Regional Drama Theatre in Mariupol, the Okhtyrka Municipal Local History Museum (Sumy region), the former Shchors cinema in the centre of Chernihiv, and the Lysychansk multidisciplinary gymnasium, which was a monument of late 19th century Belgian architecture (Luhansk region). Not even Ukraine's only museum dedicated to the Russian poet Sergei Yesenin, located in a school in Kharkiv since 2010, was spared.

The buildings of the Kharkiv Art Museum and Mariupol's Arkhip Kuindzhi Art Museum were also damaged, as were the Cathedral of the Assumption of the Blessed Virgin Mary in Kharkiv and the Trinity-Elias Monastery complex in Chernihiv. In addition, the monastery at Sviatohirsk Lavra – one of three Orthodox lavras (monasteries) in Ukraine – was seriously damaged by repeated bombardment after finding itself within an active conflict zone since the beginning of the Russian invasion. Archaeological sites are also being de-

stroyed, some as a result of the movements of army units and the construction of fortifications. Discussions are still ongoing as to how this destruction should be documented.

Saving cultural heritage

Despite numerous appeals by museum heads, Ukraine's Ministry of Culture and Information Policy did not issue any instructions prior to 24 February 2022 regarding early evacuation of cultural property. As a result, the authorities at some museums, galleries, and historical and cultural sites took it upon themselves to safeguard their most precious exhibits. For example, the most valuable items of the collections of museums in Odesa, Dnipro, Kharkiv, Sumy, Chernihiv, Zhytomyr, and Vinnytsia were transported to Western Ukraine under the guise of guest exhibitions before the Russian invasion.

Numerous community initiatives played a vital role in rescuing artworks and artefacts. One of these was the Lviv Centre to Rescue Cultural Heritage, which since March 2022 has been providing help to museums, cultural institutions, and religious sites with regard to preserving their collections⁴³. During the first 100 days of its activity, over 50 Ukrainian museums and other institutions received aid

⁴³ В. Тиравський, „Як ентузіасти у Львові рятували культурну спадщину від російських ракетних обстрілів”, *Foreign Ukraine*, 13.09.2022, <https://foreign-ukraines.com/2022/09/13/how-enthusiasts-in-lviv-saved-cultural-heritage-from-russian-missile-attacks/> [14.10.2022].

via the Centre, either financially or in the form of materials for packaging, preservation, and protection. The Heritage Emergency Response Initiative was also active, formed on 3 March 2022 on the basis of the Tustan Community Association (Lviv region) and the Museum of the Revolution of Dignity (Kyiv). This initiative supplied packaging materials and humanitarian aid to museum institutions in 19 regions of Ukraine, as well as providing them with cloud space to store digital materials. The actions of the initiative were coordinated by the United Nations Educational, Scientific and Cultural Organisation (UNESCO), the International Council of Museums (ICOM), the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM), and other international organisations.

In addition, the Museum Crisis Centre operated dynamically in helping smaller institutions and their employees without their own means to evacuate. Priority was given to museums from smaller towns in the east and south of Ukraine, where volunteers provided fire extinguishers and packaging materials, assisted in the relocation of collections, and helped deliver financial support to employees. Another institution that contributed to the preservation of cultural sites and artefacts not included on red lists was the Assortment Room (“Асортиментна кімната”) gallery in Ivano-Frankivsk. Volunteers from this gallery provided humanitarian aid to regions which had suffered during the

war and evacuated artists and artworks from areas vulnerable to bombing⁴⁴.

Ukrainian entrepreneurs, community organisations, and volunteers were also actively involved in protecting historical sites in various towns and cities by covering them with fire-resistant materials, plywood shields, and sandbags. In this way they attempted to protect them from damage that could be caused by shrapnel, fire, or shockwaves. Some of the equipment for protecting Ukraine's historic sites, particularly firefighting equipment, was received from Poland. Among the first monuments which the citizens of Odesa rushed to save was the statue of the prominent French politician and esteemed governor of Odesa Duke de Richelieu, which has been a symbol of the city since 1828. Similarly, in Kharkiv the statue of Ukrainian poet Taras Shevchenko was protected with sandbags in spite of constant shelling. By mid-April 2022, around 30 sites had been protected in this way in Kyiv.

International protection and help from foreign partners

Ukraine and the Russian Federation are parties to the Hague Convention of 14 May 1954 for the Protection of Cultural Property in the Event of Armed Conflict. The signatories

⁴⁴ Discover Ukraine, „Перемогти і зберегти: як в Україні захищають пам'ятки від війни”, 20.04.2022, <https://discover.ua/inspiration/peremohty-i-zberehty-yak-v-ukrayini-zakhyshchayut-pamyatky-vid-viyny> [11.10.2022].

to this agreement undertook to protect cultural property against damage, destruction, theft, looting, and illegal seizure during war or armed conflict. Both countries are also parties to the First Protocol of that Convention, which regulates, among other matters, the preservation and transportation of cultural property in the event of occupation and war. In addition, an Act on Ukraine's accession to the Second Protocol to the Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict was adopted by the Verkhovna Rada (Parliament) of Ukraine on 30 April 2020. This concerns in particular personal criminal responsibility for the destruction, export, or removal of historical artefacts, and of movable or immovable cultural property, and states that deliberate destruction of artefacts and sites is treated as a war crime. Russia is not a signatory to the Second Protocol to the Hague Convention, which may complicate efforts to hold it responsible in the future.

From the first days of the war, Ukraine's partners from Poland, Latvia, Slovenia, Switzerland, Germany, the United Kingdom, Denmark, Norway, Finland, and other countries were active in preserving Ukraine's cultural and historical heritage by providing material, technical, and financial assistance. For example, in early March 2022 representatives of Polish museums appointed the Committee for Aid to Museums of Ukraine, which aimed to support all Ukrainian museums and cultural institutions to protect their collections, including the most valuable artefacts of Ukrainian

culture, and to help document, digitise, and catalogue their collections. By 22 April the same year, support from the Committee had reached 40 museums and cultural institutions in Kharkiv, Kyiv, Dnipro, Vinnytsia, Lviv, and other cities⁴⁵.

All of Ukraine's cultural heritage sites are additionally being digitally archived by volunteers from the international Saving Ukrainian Cultural Heritage Online (SUCHO) project. Its staff consists of over 1,500 librarians, archivists, researchers, programmers, and IT amateurs. By mid-October 2022, they had succeeded in saving over 50 TB of scanned documents, works of art, and many other digital materials from over 5,000 webpages of Ukrainian cultural institutions dealing with cultural heritage, including museums, libraries, and archives. The second phase of the SUCHO project is now under way, involving coordinating the transportation of equipment for digitisation, exhibiting Ukrainian culture online, and organising training in digitisation methods for the employees of Ukrainian cultural institutions⁴⁶.

⁴⁵ L. Lemaniak, „Polska pomaga muzeom na Ukrainie. Komitet przekazał pieniądze”, *l.pl*, 30.04.2022, <https://l.pl/polska-pomaga-muzeom-na-ukrainie-komitet-przekazal-pieniadze/ar/c1-16317733> [12.10.2022]; H. Bazhenova, *Ochrona dziedzictwa kulturowego Ukrainy w czasie wojny*, „Komentarze IEŚ”, no. 595 (107/2022), pp. 1-2.

⁴⁶ *Saving Ukrainian Cultural Heritage Online*, <https://www.sucho.org> [13.10.2022]; see also K. Kiebużiński, „Ukraińska kultura i książki: biblioteki na całym świecie pomagają je chronić”, *The European Times*, 11.04.2022, <https://www.european-times.news/pl/2022/04/biblioteki-kultury-i-ksiazek-ukraińskich-na-całym-swiecie-pomagają-je-chronić/> [15.10.2022].

4. Consolidation of Civic Society

Development of the volunteer movement

The Ukrainian volunteer movement is relatively young compared to those in other countries. According to a ranking by the World Giving Index, in 2010 Ukraine was in 150th place globally in terms of voluntary sector involvement, with activity in this field confined to only 5% of the population⁴⁷. The time of Euromaidan and the beginning of the armed conflict in Donbas in 2014 was significant in this regard. It was then that the volunteer movement did most to unite Ukrainian society, with NGOs and groups of people ready

⁴⁷ Charities Aid Foundation (CAF), *The World Giving Index 2010*, West Malling 2010, p. 7.

to solve the country's most burning and painful problems. The initiatives which appeared at that time showed the high level of civic awareness of Ukrainian society and its ability to organise itself effectively.

These initiatives began their activities by helping participants in the Euromaidan protests and then concentrated on replenishing the supplies of the Ukrainian army – soldiers were bought uniform items, footwear, helmets, bulletproof vests, thermal imaging cameras, drones, and medical kits. Within a few months, volunteer initiatives had transformed into powerful organisations which focused on satisfying practically every need of both the security forces and the civilian population affected by the armed conflict. Four main areas can be identified among the many volunteer undertakings aimed at countering Russia's aggression:

- collecting and supplying necessary resources for the Anti-Terrorist Operation zone (food, clothing, medicine, ammunition, vehicles, military equipment);
- rendering medical assistance to victims of military actions, equipping hospitals and clinics;
- providing assistance to people resettled within Ukraine, including legal, humanitarian, and psychological help and help with everyday needs;

- searching for missing soldiers and working towards the release of prisoners⁴⁸.

A dramatic increase in the number of state-registered community and charitable organisations was observed at that time. As a result, by 2018 Ukraine had advanced to number 81 in the World Giving Index⁴⁹. Since then, the intensity of involvement in the voluntary sector has varied. It can, however, be stated that Ukrainian society has reacted to each successive crisis actively and with rapid self-organisation. This is what happened during the first lockdown caused by COVID-19 in spring 2020 and after the full-blown invasion of 24 February 2022. Hundreds of Ukrainian citizens began to support the armed forces and help the internally displaced.

According to Ukraine's Ministry of Justice, between 24 February and 30 June 2022, 4,365 civic society organisations were registered in the country, including 3,364 charities and 1,001 community organisations⁵⁰. In April 2022 alone, 1,199 new charitable organisations appeared, of which 93 were international⁵¹. The key difference between these

⁴⁸ В. Попов, „Ефективні цивільно-військові відносини – ключ до перемоги”, *Defense express*, 28.08.2019, <https://old.defence-ua.com/index.php/statti/8276-efektyvni-tsyvilno-viyskovi-vidnosyny-kyuch-do-peremohy> [3.10.2022].

⁴⁹ CAF, *CAF World Giving Index 2018: A Global View of Giving Trends*, West Malling 2018, p. 9.

⁵⁰ Центр демократії та верховенства права, „За час повномасштабної війни в Україні з'явилося 4365 громадських благодійних організацій”, 21.07.2022, <https://cedem.org.ua/news/4365-gromadskyh-ta-blagodijnyh/> [1.10.2022].

⁵¹ Vkursi Pro, „Динаміка реєстрацій благодійних організацій під час війни: дослідження Vkursi та Zagoryi Foundation”, 13.05.2022, <https://vkursi.pro/news/>

organisations is the purpose of their activities – charities are involved in humanitarian action, while community organisations aim to bring people together to solve specific problems. Some of the organisations were recently formed, while the remainder previously functioned unofficially and then obtained official status. It is worth stressing that the aforementioned numbers greatly exceed those for 2021, when a total of 792 new charities were formed, including 94 in April⁵².

The existing voluntary organisations can be divided into official and unofficial ones. Official organisations are obligated to be registered with the state, which enables them to cooperate with international institutions and legal persons, as well as attract investment and receive subsidies from the Ukrainian government. Such organisations usually have a wide range of assistance at their disposal: they can purchase large batches of ammunition and military equipment from neighbouring countries and also accept financial or material help in the form of various products from foreign foundations. Unofficial voluntary organisations form spontaneously, have no legal status, may not accept financing from legal persons, and the members function on their own behalf as private individuals. These organisations usually satisfy a narrow range of needs; for example, they collect

content/splesk-reiestratsiy-blahodiynykh-orhanizatsiy-doslidzhennia-vkursi-ta-zagoriy-foundation-234986 [1.10.2022].

⁵² Ibidem.

food and other items for people who have suffered during military operations, or buy arms for specific people – friends or relatives from territorial defence units.

Areas of activity and effectiveness of the voluntary sector

Since the onset of full-scale aggression by the Russian Federation, the voluntary sector has become one of the major social phenomena in Ukraine. Community organisations, volunteers, charitable foundations, and socially active citizens have united in order to solve the problems which have appeared and to support the military and suffering population. The main areas of volunteer activity can currently be categorised as follows:

- supplying the Armed Forces of Ukraine and territorial defence units with ammunition and military equipment;
- evacuating and transporting refugees and internally displaced persons;
- seeking shelter for victims of the war;
- helping elderly people living alone;
- donating blood;
- looking for missing persons;
- providing supplies of clothing, food, medicine, and basic items;
- animal rescue;
- demolishing and renovating damaged buildings and facilities;

- help in providing construction materials and machinery;
- documenting war crimes and crimes against humanity;
- informational support and conducting information resistance (debunking so-called fake news).

In addition, volunteers provide help free of charge within their professional specialisation – medical, psychological, educational, culinary, hairdressing, tailoring, advertising, and other services. Nevertheless, a clear majority of volunteers and voluntary organisations concentrate on satisfying the needs of the Ukrainian military and territorial defence, and on bringing help to displaced people and those affected by the war⁵³. In reality, their functions are to a great degree parallel to those of state structures, which due to bureaucratic delays and a lack of funds are often inefficient, particularly in wartime conditions.

There was even a Volunteer and Humanitarian Initiatives Summit in Truskavets on 30 June and 1 July 2022, which was attended by representatives of social and state sectors, local authorities, and international institutions. The organisers of the meeting justified the need for such an event by the intensive development of the volunteer movement in

⁵³ Національний інститут стратегічних досліджень (НІСД), „Безпрецедентна консолідація українського громадянського суспільства у протидії російському вторгненню”, 2.04.2022, <https://niss.gov.ua/news/novyny-nisd/bezpretsedentna-konsolidatsiya-ukrayinskoho-hromadyanskoho-suspilstva-u-protydii> [30.09.2022]; Finance.ua, „Волонтерські організації, які зараз працюють в Україні”, 15.07.2022, <https://finance.ua/ua/saving/volonterskie-organizacii-v-ukraine> [2.10.2022].

Ukraine, as well as the necessity to coordinate the actions of civic society organisations and volunteer networks with the activities of state bodies and local authorities. The main aim was to direct their aid towards the most important needs of the army and of internally displaced persons. The summit additionally presented the results of the activities of the most effective charitable foundations which had been functioning for years in Ukraine⁵⁴.

Among the largest and most efficient civil society projects for the army, one should mention: "Help Army", "Veteran Hub", the "Come Back Alive" Charity Foundation, Army SOS, Medical Battalion "Hospitallers", "Ukrainian Philanthropic Marketplace", and the "Phoenix Wings" Charitable Foundation. There are dozens of organisations and foundations providing humanitarian aid to the civilian population affected by the Russian invasion, in particular the "Voices of Children" Foundation, Serhiy Prytula Charity Foundation, Find Help Quick Platform (Паляниця.Інфо), "SOS East", "Euromaidan SOS", and many more. Apart from these, a range of initiatives have focused on rescuing domestic and wild animals put in danger as a result of Russian aggression. These include the "Cats of Solomianka" organisation, the

⁵⁴ H. Bazhenova, *Rola ruchu wolontariackiego w obronie Ukrainy przed rosyjską agresją*, „Komentarze IEŚ”, no. 665 (177/2022), pp. 1-2.

“Home of Rescued Animals”, and the “Help for Ukrainian Animals” association⁵⁵.

In order to show the scale of the effects of the volunteer movement, it is worth taking a look at two particular examples. The “Come Back Alive” Foundation is Ukraine’s largest charitable foundation supporting the armed forces and structures of the security and defence sector. It specialises in protective equipment (bulletproof vests, helmets), non-lethal weapons (thermal imaging cameras, drones, targeting devices), and technical equipment ranging from short-wave radios to cars. Between 2014 and early October 2022, this foundation collected over UAH 4.463bn (including UAH 4.181bn since 24 February 2022) and bought over 4,400 thermal imaging optical devices (including 3,450 since 24 February), more than 3,000 quadcopters, and over 125 unmanned air reconnaissance systems. Since the beginning of the full-scale invasion, more than 22,800 pieces of protective equipment have been bought for Ukrainian soldiers, in particular bulletproof vests and helmets⁵⁶. In addition to this, the Foundation’s instructors are training sappers, drone operators, artillerymen, and snipers, as well as teaching first aid and supporting secret missions.

⁵⁵ НІСД, „Безпрецедентна консолідація українського громадянського суспільства“.

⁵⁶ *Повернись живим*, <https://savelife.in.ua> [4.10.2022].

In March 2022 the “Come Back Alive” Foundation became the first charitable organisation to receive a licence to purchase goods for dual and military use, including deadly weapons. In July of the same year, it acquired a number of Bayraktar TB2 drones for a total of USD 16.5m, and in September, 11 armoured vehicles for EUR 321,000. At the moment, the foundation is focusing on providing long-range mortars to all 31 brigades of Ukraine’s Territorial Defense Forces⁵⁷.

The Serhiy Prytula Charity Foundation is also effective. Serhiy Prytula, a Ukrainian TV presenter, actor, and showman became a volunteer in 2014. At that time, he was buying clothing, bulletproof vests, and food for the military, and then precision equipment, drones, and fittings for command posts. In 2020, during the COVID-19 pandemic, he set up the Charity Foundation for extra-military aid, which since February 2022 has focused on humanitarian assistance and the purchase of uniforms, equipment, and medical supplies, and enabling military transportation. In particular, it invested in supplying the 72nd Territorial Defence Brigade, which defended Kyiv. The organisation also sends some of its resources to humanitarian headquarters at the front,

⁵⁷ В. Ейсмунт, „Фонд «Повернись живим» придбав ударний авіакомплекс Bayraktar TB2”, *ZAXID.NET*, 26.07.2022, https://zaxid.net/fond_povernis_zhivim_pridbav_dlya_ukrayinskih_viyskovih_tri_bayraktar_n1546936 [30.09.2022]; М. Лиманський, „«Повернись живим» придбав 11 броньованих машин для морпіхів, які обороняли Маріуполь”, *Повернись живим*, 8.09.2022, <https://savelife.in.ua/materials/news/povernys-zhyvym-prydbav-11-bronovanykh-m/> [13.10.2022].

which helps the civilian population in occupied and front-line towns.

Serhiy Prytula has taken up various creative initiatives to attract people's attention and encourage them to help. One of the most famous was a collection for Bayraktar drones. In late June 2022, the foundation collected UAH 600m (around USD 17m) in three days for four Bayraktar TB2 drones. Most of the contributions (44.7%) consisted of sums ranging from UAH 100–1,000. As a result, the Turkish manufacturer decided to provide drones to Ukraine free of charge. The foundation instead used the money raised to buy an ICEYE satellite for the Armed Forces of Ukraine⁵⁸. Altogether, by mid-October 2022 the Serhiy Prytula Charity Foundation had purchased 7,933 communication devices, over 4,000 optical devices, 2,445 unmanned aerial vehicles, 620 ground vehicles, and 4,000 individual first aid kits for Ukrainian soldiers⁵⁹.

⁵⁸ Волинські новини, „На 600 млн грн Фонд Сергія Притули придбав супутник для ЗСУ. ВІДЕО”, 18.08.2022, <https://www.volynnews.com/ua/news/all/na-600-mln-hrn-fond-serhii-prytuly-ptydbav-suputnyk-dlia-zsu/> [30.09.2022].

⁵⁹ *Благодійний Фонд Сергія Притули*, <https://prytulafoundation.org> [13.10.2022].

Conclusions

The Russian Federation's military invasion of Ukraine begun on 24 February 2022 has become a challenge to the statehood and sovereignty of Ukraine. The aggression is being conducted in different dimensions simultaneously – military, political, economic, social, humanitarian, informational, cultural, and ecological. This fact significantly increases the damage and harm caused on Ukrainian territory to its infrastructure, economy, natural environment, and cultural heritage, and among its citizens. The war has also threatened the entire European and global security system, caused a significant wave of refugees, and inflicted a serious blow to the world economy, which was already weakened by the effects of the COVID-19 pandemic.

One of the most burning problems is the question of regional and global food security. Before the full-scale invasion by the Russian Federation, Ukraine's agro-industrial sector created five times more agricultural produce than its internal consumption required. This is why, in spite of the continuing war, the loss of over 20% of land, and lower crop yields, Ukraine is still capable of covering its food requirements for almost every type of crop. However, the reduction in exports in the 2021/2022 marketing year led to some Ukrainian agricultural firms and the farmers themselves lacking sufficient financing and motivation to carry out another sowing campaign. Consequently, the 2023 harvest of Ukrainian wheat will be smaller than the previous year's. This can be, *inter alia*, concluded from the decreasing areas under winter wheat.

The suspension of sea-borne exports from Ukraine in February 2022 revealed the disadvantages of agricultural production geared towards export. This resulted in a gradual increase in demand for niche, high-margin crops, in particular peas, forest fruits, and mustard, which are easier to transport. Such tendencies are likely to intensify in the coming years. It is worth noting, though, that diversification of agriculture would in the future enable Ukraine to expand the range of its goods destined for the markets of neighbouring countries where they could be delivered by road.

The waiving by the EU of customs duty and quotas on Ukrainian products for a period of a year from 4 June

2022 should also contribute to increased diversity of Ukrainian agricultural produce. This means that Ukrainian exports will become more competitive, while at the same time less dependent on the situation on the world grain, legume, and oleaginous plant markets. Nevertheless, none of these changes should harm the crops of wheat, sunflowers, or maize as the principle cultures, since Ukraine is striving, in spite of all difficulties, to maintain its position on the global agricultural market.

The four-party grain initiative signed on 22 July 2022 between Ukraine, the UN, Turkey, and the Russian Federation was a major economic achievement. On one hand, the agreement accelerated exports of Ukraine's 2021 harvests and partially freed up grain stores for the 2022 harvests. On the other, it allowed an income of at least USD 1bn to be made per month and opened up the possibilities of sowing winter crops. It should be pointed out that it is the autumn sowing season that creates the main harvests of Ukrainian wheat for the next year; in other words, the food security not only of Ukraine but also of countries dependent on Ukrainian exports is conditional on a successful autumn sowing campaign. By September 2022 there were already clear visible signs that Russia might break the grain agreement, but despite various problems, it still functions⁶⁰. It is difficult to

⁶⁰ See, for example, А. Стець, „Україна зупинила експорт зерна через блокування росіянами «зернового коридору»”, *ZAXID.NET*, 30.10.2022, <https://zaxid.net/>

predict how the situation will develop at present, as it depends to a great extent on the approach of the international community, particularly the UN and Turkey.

The Russian invasion has also inflicted serious damage on the natural environment. The active war zone contains nuclear power plants, seaports, hazardous waste storage facilities, industrial plants, supply bases for petroleum products, and petrol stations. There are currently four nuclear power plants in operation in Ukraine with 15 reactors, each of which may be a potential target for Russia and constitute a severe threat to the environment and to the lives of millions of people in the world.

While the war is ongoing, it is impossible to fully estimate its impact on the natural environment of Ukraine due to a lack of precise data. Obviously, however, the longer military operations continue, the more damage will be done to the environment and the more negative consequences they will bring in the future, including through the destruction of ecosystems, soil pollution, and loss of biodiversity. The destroyed ecosystems may take years or even decades to recreate.

Serious chemical contamination of soil and water will, in turn, increase rates of disease and mortality in the local population in the long term. Therefore, it is important to

ukrayina_zupinila_eksport_zerna_cherez_blokvannya_rosiyanami_zernovogo_koridoru_n1552005 [31.10.2022].

ensure that after the war, an efficient system is created for monitoring the state of the environment which will record the actual extent of damage inflicted and enable the most effective actions to be taken in order to avoid further exacerbation of the situation and to facilitate the restoration of the ecosystems to a condition safe for both people and wildlife. It is also vital that the future reconstruction plan for Ukraine allows for resources to recreate and maintain ecosystems, and that the plans for rebuilding ruined settlements contain environmentally friendly solutions and take into account aspects serving to adapt to the changing climate.

As well as the numerous human casualties and the destroyed infrastructure and economy, Russia's aggression has created a genuine threat to Ukraine's cultural and historical heritage in every region of the country. Bombardment of so many religious buildings, memorial complexes, monuments, museums, historical and cultural sites, theatres, and libraries has resulted in a level of damage that Ukraine has not seen since World War II. Current estimates are, however, far from being final, as most of the destruction is impossible to record at present, especially in cities and towns which have been completely demolished, such as Volnovakha, Popasna, Mariupol, and Zaporizhzhia, where entire historic quarters have been razed. Calculating the damage is made all the more complicated by the fact that large amounts of the destroyed or damaged sites are in the war zone. At the same time, the scale and nature of the

devastation wrought by Russia clearly indicate that this is deliberate, widespread destruction of the Ukrainian nation, its culture, and its identity.

The demolition of cultural heritage sites is a war crime according to the 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict. For this reason, proper documentation of war crimes is currently a strategic task of Ukraine's Ministry of Culture and Information Policy. All of this material, along with information about damage inflicted on the environment, may serve as evidence for bringing to justice persons involved in those crimes, pursuant to Ukrainian and international law, in front of the International Criminal Court at The Hague and the special tribunal which will probably be set up after military operations cease. Global experience shows, however, that forcing aggressor states to pay reparations or other financial compensation to the injured party is practically impossible while the perpetrators of the aggression remain in power. Nonetheless, the value of the decisions by the International Criminal Court stems above all from the fact that they constitute a qualified legal determination of the facts of war crimes and crimes against humanity. They may thus serve as a crucial argument in favour of extending or strengthening sanctions against the Russian Federation and also increasing international support for Ukraine in its resistance against Russian aggression.

The Russian-Ukrainian war has highlighted the question of the consolidation of the Ukrainian nation as a guarantee of national security. It is thanks to the efforts of Ukrainians who have been defending their country in the ranks of the Armed Forces of Ukraine, the National Guard of Ukraine, and volunteer formations, as well as the mass volunteer movement, that it was possible to halt the Russian military offensive in the first months of full-scale armed aggression. As in 2014, volunteers are actively assisting in maintaining the defensive capabilities and humanitarian stability of the state. Some of those volunteers are working independently, some are joining existing charitable and community organisations, while others are forming their own organisations, enabling them to operate more effectively.

During the first days of the armed aggression, various institutions of civic society rapidly switched the focus of their activities to concentrate on humanitarian and information projects. An extensive network of community and social activities formed, ranging from assisting the Armed Forces of Ukraine, territorial defence units, and the civilian population, to countering Russian propaganda. Hundreds of thousands of civilians joined the “volunteer front”. Every day they buy, collect, and distribute humanitarian and charitable aid for the Ukrainian military and people affected by hostilities and also help to evacuate people and organise free accommodation for them. Often risking their own lives, they

ensure timely delivery of humanitarian aid to areas where there are problems with food, water, and medicines.

In this way, the Russian invasion has contributed to a consolidation of Ukrainian society, both at the front and in other parts of the country. There has additionally been an increase in mutual trust among citizens. Civic society organisations have demonstrated that they are capable of supporting the state and uniting millions of people both in their country and beyond its borders in order to defend it against Russian aggression. All this creates conditions conducive to socio-economic changes which can in turn become a vital motivating factor in the post-war reconstruction of Ukraine.

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Russia's invasion of Ukraine has posed a significant challenge, not only to Ukraine's statehood, sovereignty, and integrity but also to the European and global security system. The objective of this paper is to explore the non-military dimensions of the ongoing war. The primary focus is on the adverse effects of hostilities on the Ukrainian economy, namely the agricultural sector, as well as on the country's natural environment and cultural heritage. Additionally, the paper analyses the impact of the armed invasion on the consolidation of the Ukrainian nation. In the face of an existential threat, civil society organisations, volunteers, and ordinary citizens have demonstrated that they are able to support their state and unite millions of people inside and outside the country to defend themselves against the aggression of the Russian Federation. This leads to the conclusion that favourable conditions are being created for a socio-economic transformation in Ukraine, which, in turn, could serve as an important motivating factor for the reconstruction and development of a modern state after hostilities cease.

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