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LEGAL COMMENTARIES

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The Role of Open-Source Intelligence in Protecting Cultural Heritage During Armed Conflict: The Case of Ukraine

Abstract: Russia's ongoing war of aggression against Ukraine, along with the resulting destruction and threats to cultural heritage, poses a major challenge to documenting the scale of the damage and identifying the perpetrators. Recent practice has demonstrated the significant value of information obtained through open-source intelligence (OSINT). The growing recognition of the importance of such information, and the need to safeguard it, highlights the interdependence between information security and the protection of cultural heritage. As information security often depends on visual documentation, this article uses data collected through OSINT to analyse cultural heritage losses in Ukraine between 24 February 2022 (the start of Russia's full-scale invasion) and 3 July 2025. The objective is to determine whether, and to what extent, information gathered via OSINT can serve as admissible evidence in criminal proceedings before international courts and tribunals when adjudicating crimes against cultural heritage committed during the war against Ukraine. Based

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on the material, the article posits that the collection and processing of information using OSINT should form the foundation of an institutionalized cultural heritage management system. The discussion is supported by maps and illustrations that visualize the research problem and demonstrate the potential of OSINT in documenting and safeguarding cultural heritage during armed conflicts.

Keywords: OSINT, information security, internal security, protection of monuments

Introduction

Open-source intelligence (OSINT) is one of the most relevant and widespread sources of knowledge about the war in Ukraine.[1] During armed conflicts, OSINT provides an opportunity to collect data from sites with active hostilities, as well as from territories where the occupying authorities restrict access to information. It should be emphasized that OSINT conducted in territories under occupation is often the only reliable source of information on the situation in such areas.[2] Oleksandr Manachynskyi points out that during the ongoing war in Ukraine, OSINT has been used to verify violations of international humanitarian law and to reveal radiological hazards related to military activities around nuclear power plants.[3]

The OSINT is based on the dedicated searching, comparison, analysis, and profiling (selection) of publicly available information from a variety of legitimate sources, particularly the news media, social media, online forums, blogs, and podcasts, as well as government, all publications (printed and online), and commercial data.[4] This methodology therefore processes extracted information that does not constitute legally protected secrets[5] and that has been developed and structured for this purpose ("open-source information"). It is worth noting that information extracted

[1] W. Mincewicz, *Internetowy OSINT jako źródło wiedzy o wojnie w Ukrainie* [Online OSINT as a Source of Knowledge about the War in Ukraine], "Zeszyty Naukowe Pro Publico Bono" 2023, Vol. 1(1), p. 303.

[2] *NATO Open Sources Intelligence Handbook*, November 2001, https://archive.org/details/NATOOSINTHandbookV1.2 [accessed: 01.07.2025].

[3] O. Manachynskyi, *Wykorzystanie OSINT do weryfikacji przypadków złamania międzynarodowego prawa humanitarnego podczas wojny w Ukrainie* [Using OSINT to Verify Violations of International Humanitarian Law during the War in Ukraine], "Analiza KBN" 2023, Vol. 9(124), https://zbn.inp.uj.edu.pl/documents/92718966/141790394/Manachynskyi+O.+-+A124/661a5ce9-ee15-4d98-9132-c79fdc34dddd [accessed: 01.07.2025]; also see H. Stone et al., *Open-Source Intelligence for Detection of Radiological Events and Syndromes Following the Invasion of Ukraine in 2022: Observational Study*, "JMIR Infodemiology" 2023, Vol. 3, https://doi.org/10.2196/39895.

[4] K. Liedel, T. Serafin, *Otwarte źródła informacji w działalności wywiadowczej* [Open Sources of Information in Intelligence Operations], Difin, Warsaw 2011, pp. 57-74.

[5] *NATO Open Source Intelligence Reader*, February 2002, https://cyberwar.nl/d/NATO%20OSINT%20Reader%20FINAL%20Oct2002.pdf [accessed: 01.07.2025].

from whitepaper sources very rarely provides comprehensive and definitive information.[6] As a result, information obtained by OSINT is usually confirmed using other methods of intelligence work (e.g. personal information sources [HUMINT] or technical intelligence [TECHINT]),[7] as long as it is possible to do so. This is then known as "validated open-source intelligence". It must be acknowledged that depending solely on OSINT can introduce cognitive, analytical, and technical errors,[8] influenced by human behaviour. However, it is crucial to understand that OSINT is an invaluable resource for gaining insights into the issues at hand. By meticulously processing the gathered information and rigorously verifying the conclusions, we can ensure the reliability of our findings before disseminating them further.

Russia's war against Ukraine has revealed the value of information extracted using OSINT methodology. According to social media, the Ukrainian army has ordered citizens to provide information about Russian military activity via social media so it can take action.[9] This is just one example of public administrations and armed forces acquiring strategic information through publicly available information distribution channels. However, it is important to be aware that OSINT has a wide range of uses during an international conflict: from indications and warnings to humanitarian development and protecting cultural heritage. OSINT is currently being used by various institutions and organizations, both Ukrainian and foreign. The purposes of collecting and processing information include documenting the destruction perpetrated by Russian troops in Ukraine in order to gather evidence of war crimes that may be committed and to estimate losses and support future settlement efforts. Indeed, the data may be used in both compensation proceedings, such as those to be conducted before the Claims Commission that will be established by the Council of Europe,[10] and as evidence in criminal proceedings. Accordingly, the scope of this article is narrowed down to crimes against cultural heritage in armed conflicts. These encompass crimes of destruction, damage, or theft of cultural property which constitute violations of international law and may fall under the jurisdiction of international criminal tribunals, including the International Criminal Court (ICC).[11]

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[6] P. Chodak, *Biały wywiad jako źródło informacji* ["Open-source Intelligence" as a Source of Information], "International Journal of Legal Studies" 2020, Vol. 2(8), p. 315.

[7] P. Casanovas, *Cyber Warfare and Organised Crime: A Regulatory Model and Meta-Model for Open Source Intelligence (OSINT)*, in: M. Taddeo, L. Glorioso (eds.), *Ethics and Policies for Cyber Operations*, Springer, Cham 2017, pp. 139-167; W.H. Lee, M.W. Yun, J.S. Park, *Intelligence in the Internet Era: Understanding OSINT and Case Analysis*, "Korean Security Journal" 2013, Vol. 34, pp. 259-278.

[8] Y. McDermott, A. Koenig, D. Murray, *Open Source Information's Blind Spot: Human and Machine Bias in International Criminal Investigations*, "Journal of International Criminal Justice" 2021, Vol. 19(1), pp. 85-105.

[9] R. Baffa, *The Ukraine–Russia War Confirms the Value of OSINT*, "Babel Street", https://www.babelstreet.com/blog/the-ukraine-russia-war-confirms-the-value-of-osint [accessed: 01.07.2025].

[10] See Council of Europe, *Draft Convention Establishing an International Claims Commission for Ukraine*, 22 October 2025, CM(2025)139-final.

[11] In fact, Ukraine ratified the Rome Statute of the International Criminal Court (17 July 1998, 2187 UNTS 3) on 21 August 2024, and thus became a State Party to proceedings before the ICC as of 1 January

This article is based on a comparative analysis of the official data from the Ministry of Culture and Information Policy of Ukraine (MCIP)[12] – published from the beginning of the escalation of the armed conflict on 24 February 2022 until July 2025 – data from the UNESCO Report on Cultural Objects Destroyed as a Result of Hostilities in Ukraine[13] and open-source information on Ukraine obtained from internet sources using adequate search operators.[14] The author did not use information from the dark web and limited Google Hacking to legitimate cases.[15] The collected data were selected and processed, and this study is based on them. It is crucial to recognize that this article draws from a carefully selected set of publicly available information and does not serve as an all-encompassing report for specific stakeholders. Its primary aim is to provide a framework for critical thinking and analysis, rather than to deliver an exhaustive, multi-dimensional examination of the diplomatic interactions among the states involved in the conflict. Special emphasis is placed on the losses to Ukrainian cultural heritage attributable to actions taken by Russia during the period investigated by the Office of the Prosecutor of the ICC.

Losses in Ukrainian Cultural Heritage from 24 February 2022 to July 2025

Russia's war against Ukraine was initially limited to Crimea and eastern Donbas districts in 2014; since 2022 it has escalated into undisguised aggression against the whole territory of Ukraine. The escalation of the conflict occurred on 24 February 2022, when the Russian Federation launched a large-scale invasion of Ukraine, destroying material and human resources. Accordingly, the analysis presented in this article encompasses the period subsequent to that date. In addition to critical infrastructure, cultural heritage sites have been destroyed or heavily damaged, which the Ukrainian Ministry of Culture has reported since the beginning of the escalation of the conflict, considering it the deliberate destruction of Ukraine's cultural heritage.

2025. See N. Mamchenko, *Verkhovnaya Rada ratyfytsyrovala Rymskyy statut Mezhdunarodnoho uholovnoho suda* [The Verkhovna Rada Ratified the Rome Statute of the International Criminal Court], "Sudebno-yurydycheskaya hazeta", 21 August 2024, https://sud.ua/ru/news/publication/308622-verkhovnaya-rada-ratifitsirovala-rimskiy-statut-mezhdunarodnogo-ugolovnogo-suda [accessed: 01.07.2025].

[12] It should be noted that it only includes information on public institutions.

[13] UNESCO, *Damaged Cultural Sites in Ukraine Verified by UNESCO*, https://www.unesco.org/en/articles/damaged-cultural-sites-ukraine-verified-unesco [accessed: 01.07.2025].

[14] For more on search operators, see W. Mincewicz, op. cit., pp. 313-317.

[15] This point is crucial, as it shapes the manner in which information from legitimate sources is accessed. Google Hacking occupies a "grey area": although it is not illegal, its ethical implications remain subject to debate. In preparing this article, the author made extensive use of the capabilities of the Google search engine, particularly for the purpose of verifying information.

It should be emphasized that according to the rhetoric adopted by Russia's President, Vladimir Putin, Ukrainians and Russians are one nation and the state of Ukraine is an enemy of national unity.[16] Thus, he denies the existence of the Ukrainian people and their history, language, and right to form an independent state. From this viewpoint, the military action against Ukrainian culture is regarded as a form of struggle against Ukrainian nationalism and removing from the social consciousness the key heroes who played a significant role in forming the Ukrainian national identity and aspirations for independence.[17] It is also an attempt to undermine the morale of the Ukrainian army and the civilian population. As a result, culture becomes a victim of and hostage to the ongoing armed conflicts,[18] but it is not the main target of the occupying forces. The assessment of the destruction of Ukrainian cultural heritage should start with identifying heritage resources and analysing the distribution of cultural heritage sites throughout Ukraine. This task is complex, as a comprehensive inventory of these resources has never been taken.

While Ukraine maintains the State Register of Immovable Monuments at the national level (managed by the Kyiv administration), regional administrations (*oblderzhadministratsiya*) still refer to Resolution No. 970 of the Council of Ministers of the Ukrainian Soviet Socialist Republic of 24 September 1963, concerning the arrangement and protection of architectural monuments.[19] However, the State Register differs significantly from the electronic register of immovable monuments.[20]

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16 V. Putin, *On the Historical Unity of Russians and Ukrainians*, 12 July 2021, http://en.kremlin.ru/events/president/news/66181 [accessed: 01.07.2025].

17 N.A. Munawar, J. Symonds, *Empires of Lies? The Political Uses of Cultural Heritage in War*, "The Historic Environment: Policy & Practice" 2023, Vol. 14(3), pp. 308-325.

18 A. Jakubowski, *Safeguarding Ukraine's Cultural Heritage in War: Identifying the Obligations of Non-Parties to the Conflict, with Special Focus on the European Union*, "Polish Review of International and European Law" 2023, Vol. 12(2), pp. 141-166.

19 It should be pointed out that Ukrainian legislation does not establish the concept of a movable monument. In the words of Volodymyr Hulkevych: "The law defines 'movable objects related to immovable objects of cultural heritage', that is, elements, groups of elements of a cultural heritage object that can be separated from it, but form a single whole with it, and whose separation will lead to the loss of the archaeological, aesthetic, ethnological, historical, architectural, artistic, scientific or cultural values of the object (Article 2). In turn, the Law of 21 September 1999 on the export, import and return of cultural property (Pro vvezennia, vyvezennia ta povernennia kulturnych cinnostei: Zakon Ukrainy vid 21 veresnia 1999, No. 1068-XIV, VVR, 1999, No. 48, p. 405) defines the term 'cultural values', i.e. cultural goods or cultural assets (*kulturni cinnosti*), which are exclusively movable objects"; see also W. Hułkewycz, *Karnoprawna ochrona dziedzictwa kulturowego w Ukrainie w sytuacji konfliktu zbrojnego* [Protection of Cultural Heritage during Armed Conflict by Criminal Law in Ukraine], "Wrocławsko-Lwowskie Zeszyty Prawnicze" 2022, Vol. 13, p. 185.

20 The electronic register of monuments in Ukraine does not align with the 1963 resolution, resulting in various practical challenges. Consequently, two registers currently function concurrently: the electronic register, established by the government in Kyiv, and the traditional register used by public administration entities, which derives from the 1963 resolution. The disparities between these two registers are substantial. The electronic register often includes monuments without the consent or knowledge of their owners, and regional administration bodies are not notified in advance. Furthermore, it excludes monuments situated in the Zhovkva oblast, instead prioritizing newly identified sites, many of which have been adversely affected or destroyed due to the ongoing military conflict.

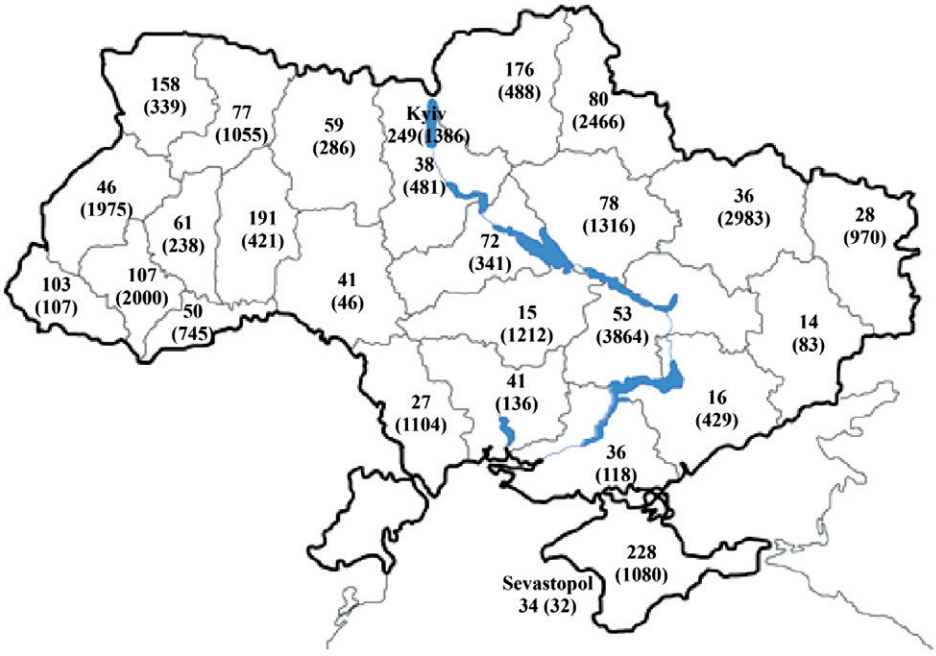

Fig. 1. Map of immovable monuments of Ukraine in the State Register of Immovable Monuments of Ukraine

Source: Based on the State Register of Immovable Monuments of Ukraine, Ministerstvo kul'tury ta stratehichnykh komunikatsiy Ukrayiny, *Derzhavnyy reyestr nerukhomykh pam"yatok Ukrayiny*, https://mcsc.gov.ua/kulturna-spadshchyna/derzhavnyy-reiestr-nerukhomykh-pam-iatok-ukrainy/ [accessed: 01.07.2025].

To ensure clarity, this research concentrates exclusively on the valuable data found in the State Register of Immovable Monuments of Ukraine, excluding data provided by Ukrainian human rights non-governmental organizations. This focussed approach will enhance the quality and relevance of the analysis. A map of immovable monuments of Ukraine was based on this data (Fig. 1).[21] The numbers of registered immovable monuments of local significance within each region (oblast) are given in brackets, while the number without brackets corresponds to the number of registered monuments of national significance located within the region.

[21] It should be mentioned that the above map differs significantly from the map created in 1986 by a team led by Nikolai Leonidovich Zharikov – Ukrainian architect and urban planner and former Chief Architect of Kyiv. At the time, it contained 915 settlements and 1,665 historic buildings, of which 1,087 were religious, 160 defensive, and 409 civil; 9 were parks and gardens. See N.L. Zharikov et al., *Pamyatniki gradostroitel'stva i arkhitektury Ukrainskoy SSR* [Monuments of Urban Planning and Architecture of the Ukrainian SSR], Vols. 1-4, Kiev 1983-1986, https://ua.vlasenko.net/_pgs/index.html [accessed: 01.07.2025].

According to the data on the map above, the State Register of Immovable Monuments of Ukraine lists 25,733 monuments of local significance (*Reyestr pam'yatok mistsevoho znachennya*)[22] and 2,114 monuments of national significance (*Reyestr pam'yatok natsional'noho znachennya*). Quantitatively, the largest numbers of monuments of local significance are located in the regions of Dnipropetrovsk (386), Kharkiv (2,984), Sumy (2,466), and Ivano-Frankivsk (2,000). The smallest numbers are in the oblasts of Donetsk (83) and Vinnytsia (46). The most monuments of national significance are in Kyiv (249) and the Autonomous Republic of Crimea (228), while the fewest are in Donetsk (14), Kirovohrad (15), and Zaporizhzhia (16). It should also be pointed out that on the territory of Ukraine before the current war there were more than 5,000 museums, 65 historical/cultural reserves, and about 170,000 monuments, including seven UNESCO World Heritage Sites.[23] Once an overall picture of the country's cultural heritage has been created, it will be possible to proceed with an analysis of the damage caused since 24 February 2022.

Ukraine has been reporting on cultural heritage losses since the beginning of the escalation of the armed conflict, although initially it did not do so on the official website of the MCIP, but through official social media channels. Sergii Iaromenko and Piotr Fogel conducted a detailed study of the destruction of Ukraine's cultural heritage by Russia in 2022.[24] According to their findings, from 25 February to 29 November 2022, 529 cultural heritage sites were destroyed during 1,567 attacks. Most of the destruction occurred in March 2022 – 274 heritage sites were destroyed during 99 attacks – and in April 2022, when 86 heritage sites were destroyed in 106 attacks. The least destruction was reported in October (287 attacks and 1 site destroyed) and in November 2022 (116 attacks and no cultural sites destroyed). The map below (Fig. 2) shows the level of destruction of cultural heritage sites in the different regions of Ukraine as of the end of November 2022.

The map in Figure 2 shows that the greatest destruction was reported in the Donetsk region, where more than 25% of the cultural sites were destroyed, and in the Mykolaiv region (15%–25% of resources). In Kyiv, Chernihiv, Luhansk, and Kherson, 5%–15% of the cultural sites were destroyed. When using the compiled data, it should be borne in mind that this is not primary data and it is therefore

[22] Most monuments of local significance are archaeological sites.

[23] Narodowy Instytut Dziedzictwa, *Centrum Pomocy dla Kultury na Ukrainie – podsumowanie działań w 2022 roku* [Centre for Assistance to Culture in Ukraine – Summary of Activities in 2022], 29 December 2022, https://nid.pl/2022/12/29/centrum-pomocy-dla-kultury-na-ukrainie-podsumowanie-dzialan-w-2022-roku/ [accessed: 01.07.2025].

[24] S. Iaromenko, P. Fogel, *Loss and Rebuilding of Historical Sites in Ukraine after the War with Russia in the Context of Balkan Experiences*, "Turystyka Kulturowa" 2024, Vol. 4, pp. 81-98.

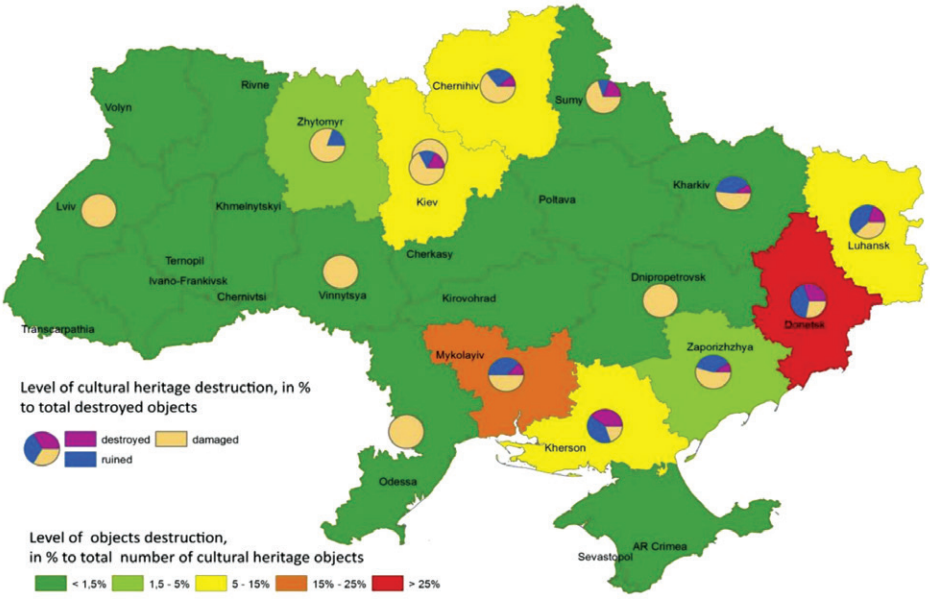

Fig. 2. Percentage of damaged cultural heritage, by region, on November 2022

Source: S. Iaromenko, P. Fogel, *Loss and Rebuilding of Historical Sites in Ukraine after the War with Russia in the Context of Balkan Experiences*, "Turystyka Kulturowa" 2024, Vol. 4, p. 89.

often difficult to verify, but it may nevertheless be useful in framing the phenomenon. In fact, until the beginning of February 2024, the MCIP published on its official website comprehensive information on the number of cultural heritage sites lost, with a breakdown by region and an indication of which monuments were destroyed (see Table 1). On 8 February 2024, the reporting of the data on destroyed heritage sites changed: the data were last provided with a breakdown by region and district (*raion*) and the type of monument,[25] while the data published since 2 August are more general, as they indicate only the number of monuments destroyed in each region.[26]

[25] Until early February, data on the destruction of Ukrainian monuments were reported by region and by type. Subsequent reports no longer included this level of detail. See Ministerstvo kul'tury ta stratehichnykh komunikatsiy Ukrayiny, *Cherez rosiys'ku ahresiyu v Ukrayini postrazhdaly 902 pam"yatky kul'turnoyi spadshchyny* [902 Cultural Heritage Sites Have Been Damaged as a Result of Russian Aggression in Ukraine], 8 February 2024, https://mcsc.gov.ua/news/cherez-rosijsku-agresiyu-v-ukrayini-postrazhdaly-902-pamyatky-kulturnoyi-spadshhyny/ [accessed: 01.07.2025].

[26] See Ministerstvo kul'tury ta stratehichnykh komunikatsiy Ukrayiny, *1096 ob"yektiv kul'turnoyi spadshchyny postrazhdaly v Ukrayini cherez rosiys'ku ahresiyu* [1,096 Cultural Heritage Sites Have Been Damaged in Ukraine as a Result of Russian Aggression], 2 August 2024, https://mcsc.gov.ua/news/1096-obyektiv-kulturnoyi-spadshhyny-postrazhdaly-v-ukrayini-cherez-rosijsku-agresiyu/ [accessed: 01.07.2025].

Table 1. Destruction of cultural heritage sites in Ukraine as a result of hostilities from 24 February 2022 to 21 March 2025[27]

Name of region (oblast)	Number of damaged or destroyed cultural heritage sites					Name of district (*raion*)	Number of damaged or destroyed heritage assets				
	Data as of 29 November 2022[28]	Data as of 25 January 2024[29]	Data as of 5 December 2024[30]	Data as of 31 December 2024[31]	Data as of 21 March 2025[32]		Data as of 29 November 2022[33]	Data as of 25 January 2024	Data as of 5 December 2024	Data as of 31 December 2024	Data as of 25 March 2025
Kharkiv	56	**234** (10 of national significance, 220 of local significance, and 4 newly discovered)	322	324	**329**	Bohodukhiv	56	5	322	324	329
						Izum		14			
						Krasnohrad		2			
						Lozova		1			
						Kharkiv		197			
						Chuhuiv		15			

[27] The table includes only data published by the Ukrainian government. The country consists of 24 regions (Cherkasy Oblast, Chernihiv Oblast, Chernivtsi Oblast, Dnipropetrovsk Oblast, Donetsk Oblast, Ivano-Frankivsk Oblast, Kharkiv Oblast, Kherson Oblast, Khmelnytskyi Oblast, Kirovohrad Oblast, Kyiv Oblast, Luhansk Oblast, Lviv Oblast, Mykolaiv Oblast, Odesa Oblast, Poltava Oblast, Rivne Oblast, Sumy Oblast, Ternopil Oblast, Vinnytsia Oblast, Volyn Oblast, Zakarpattia Oblast, Zaporizhzhia Oblast, and Zhytomyr Oblast), one autonomous republic (Crimea), and two cities with special status (Kyiv and Sevastopol). Below that are 136 districts (*raions*) (Cherkasy Oblast – 4, Chernihiv Oblast – 5, Chernivtsi Oblast – 3, Dnipropetrovsk Oblast – 7, Donetsk Oblast – 8, Ivano-Frankivsk Oblast – 6, Kharkiv Oblast – 7, Kherson Oblast – 5, Khmelnytskyi Oblast – 3, Kirovohrad Oblast – 4, Kyiv Oblast – 7, Luhansk Oblast – 8, Lviv Oblast – 7, Mykolaiv Oblast – 4, Odesa Oblast – 7, Poltava Oblast – 4, Rivne Oblast – 4, Sumy Oblast – 5, Ternopil Oblast – 3, Vinnytsia Oblast – 6, Volyn Oblast – 4, Zakarpattia Oblast – 6, Zaporizhzhia Oblast – 5, and Zhytomyr Oblast – 4). At the lowest level are *hromadas* (1,469). Ukrainian authorities have provided partial data concerning the destruction of cultural property. Initially, the MCIP detailed the *raions* where Russian actions destroyed monuments. However, this practice was discontinued in February 2024. Consequently, the information presented in the table reflects only what has been reported by the Ukrainian government. To ensure accuracy and fidelity to the data released by these authorities, I have excluded certain administrative divisions of Ukraine from the table. The table indicates that, according to the MCIP, certain data is classified as unavailable. During armed conflict, the flow of information is often impeded or intentionally restricted (e.g. due to war tactics), which is the reason the Ukrainian authorities have not released this data to the public.

[28] S. Iaromenko, P. Fogel, op. cit., p. 88.

[29] Ministerstvo kul'tury ta stratehichnykh komunikatsiy Ukrayiny, *Cherez rosiys'ku ahresiyu…*

[30] Ministerstvo kul'tury ta stratehichnykh komunikatsiy Ukrayiny, *1222 pam"yatky kul'turnoyi spadshchyny postrazhdaly v Ukrayini cherez rosiys'ku ahresiyu* [1,222 Cultural Heritage Sites Have Been Damaged in Ukraine as a Result of Russian Aggression], 5 December 2024, https://mcsc.gov.ua/news/1222-pamyatky-kulturnoyi-spadshhyny-postrazhdaly-v-ukrayini-cherez-rosijsku-agresiyu/ [accessed: 01.07.2025].

[31] According to the Ukrainian Ministry of Culture, almost the entire territory of Luhansk region and a significant part of the territories of Zaporizhia, Donetsk and Kherson regions are under occupation, which makes it difficult to estimate the exact number of cultural heritage sites destroyed during the fighting and

Odesa	2	**119** (28 of national significance and 91 of local significance)	136	137	**159**	Bilhorod--Dnistrovskyi	2	1	136	137	159
						Odesa		117			
						Izmail		1			
Donetsk	83	**117** (15 of national significance and 102 of local significance)	164	164	**169**	Kramatorsk	83	42	164	164	169
						Mariupol		26			
						Bakhmut		28			
						Pokrovsk		17			
						Volnovakha		4			
Kherson	5	**88** (13 of national significance, 45 of local significance, and 30 newly discovered)	159	180	**279**	Beryslav	5	12	159	180	279
						Bilozerka		2			
						Kakhovka		32			
						Kherson		42			
Chernihiv	28	**70** (27 of national significance, 37 of local significance, and 6 newly discovered)	65	65	**65**	Chernihiv	28	63	65	65	65
						Koriukivka		1			
						Novhorod--Siverskyi		2			
						Nizhyn		3			
						Pryluky		1			
Kyiv	39	**69** (16 of national significance, 37 of local significance, and 16 newly discovered)	81	83	**100**	Bila Tserkva	34	1	81	83	100
						Brovary		5			
						Bucha		14			
						Vyshhorod		6			
						Kyiv City	5	43			

occupation. Ministerstvo kul'tury ta stratehichnykh komunikatsiy Ukrayiny, *1255 pam"yatok kul'turnoyi spadshchyny postrazhdaly v Ukrayini cherez rosiys'ku ahresiyu stanom na kinets' hrudnya 2024 roku* [As of the End of December 2024, 1,255 Cultural Heritage Sites Have Been Damaged in Ukraine as a Result of Russian Aggression], 3 January 2025, https://mcsc.gov.ua/news/1255-pamyatok-kulturnoyi-spadshhyny-postrazhdaly-v-ukrayini-cherez-rosijsku-agresiyu-stanom-na-kinecz-grudnya-2024-roku/ [accessed: 01.07.2025].

[32] According to the Ukrainian Ministry of Culture, almost the entire territory of Luhansk region and a significant part of the regions of Zaporizhzhia, Donetsk and Kherson are under occupation, which makes it difficult to estimate the exact number of cultural heritage sites destroyed during the fighting and occupation. Ministerstvo kul'tury ta stratehichnykh komunikatsiy Ukrayiny, *1482 pam"yatky kul'turnoyi spadshchyny ta 2302 ob"yekty kul'turnoyi infrastruktury postrazhdaly v Ukrayini cherez rosiys'ku ahresiyu* [1,482 Cultural Heritage Sites and 2,302 Cultural Infrastructure Facilities Have Been Damaged in Ukraine as a Result of Russian Aggression], 3 June 2025, https://mcsc.gov.ua/news/1482-pamyatky-kulturnoyi-spadshhyny-ta-2302-obyekty-kulturnoyi-infrastructure-postrazhdaly-v-ukrayini-cherez-rosijsk-agresiyu/ [accessed: 03.06.2025].

[33] S. Iaromenko, P. Fogel, op. cit., p. 88.

Zaporizhzhia	11	**38** of local significance	56	57	**63**	Vasylivka	11	12	56	57	63
						Zaporizhzhia		15			
						Polohy		10			
						Melitopol		1			
Lviv	1	**35** (2 of national significance and 31 of local significance)	60	60	**61**	Zolochiv	1	1	60	60	61
						Stryi		1			
						Lviv		33			
Luhansk	40	**30** of local significance	32	32	**32**	Svatove	40	5	32	32	32
						Sieviero-donetsk		23			
						Shchastia		2			
Sumy	20	**25** (5 of national significance and 20 of local significance)	31	33	**37**	Konotop	20	5	31	33	37
						Okhtyrka		12			
						Sumy		7			
						Shostka		1			
Mykolaiv	8	**22** (3 of national significance, 15 of local significance, and 4 newly discovered)	41	44	**47**	Mikolaiv	8	22	41	44	47
Khmelnytskyi	No data available	**10** (1 of national significance, 6 of local significance, and 3 newly discovered)	10	10	**11**	Shepetivka	No data available	2	10	10	11
						Khmelnytskyi		8			
Vinnytsia	1	**4** (1 of national significance and 3 of local significance)	4	**4**	**4**	**Vinnytsia**	1	4	4	4	4
Poltava	No data available	**4** (1 of national significance, 2 of local significance, and 1 newly discovered)	6	6	**6**	Kremenchuk	No data available	4	6	6	6

Zhytomyr	5	**2** (1 of national significance and 1 of local significance)	4	4	**4**	Korosten	5	2	4	4	4
Kirovohrad	No data available	**1** of local significance	1	2	**3**	Oleksandriia	No dataavailable	1	1	2	3
Dnipropetrovsk	1	**34** (1 of national significance, 27 of local significance, and 6 newly discovered)	49	49	**49**	**Dnipro**	1	15	49	49	49
						Kryvyi Rih		4			
						Nikopol		14			
						Pavlohrad		1			
Cherkasy	No data available	No data available	1	1	**1**	Cherkasy	No data available	No data available	1	1	1

Source: Based on official data from the Ministry of Culture and Information Policy of Ukraine, Ministerstvo kul'tury ta stratehichnykh komunikatsiy Ukrayiny, *Cherez rosiys'ku ahresiyu v Ukrayini postrazhdaly 902 pam"yatky kul'turnoyi spadshchyny* [902 Cultural Heritage Sites Have Been Damaged as a Result of Russian Aggression in Ukraine], 8 February 2024, https://mcsc.gov.ua/news/cherez-rosijsku-agresiyu-v-ukrayini-postrazhdaly-902-pamyatky-kulturnoyi-spadshhyny/ [accessed: 01.07.2025].

According to data from the MCIP, between 24 February 2022 and 25 March 2025 Russia destroyed or damaged 1,419 cultural heritage sites of Ukraine, of which 139 are monuments of national significance, 1,184 of local significance, and 96 newly discovered sites.[34] From 25 January to 31 December 2024, 352 cultural heritage sites were destroyed or damaged,[35] while from 1 January to 25 March 2025, 164 sites were damaged. In 2024, the largest numbers of additional cultural heritage sites were damaged or destroyed in the regions of Kherson (+92),

[34] See Ministerstvo kul'tury ta stratehichnykh komunikatsiy Ukrayiny, *1419 pam"yatok kul'turnoyi spadshchyny ta 2233 ob"yekty kul'turnoyi infrastruktury postrazhdaly v Ukrayini cherez rosiys'ku ahresiyu* [1,419 Cultural Heritage Sites and 2,233 Cultural Infrastructure Facilities Have Been Damaged in Ukraine as a Result of Russian Aggression], 2 April 2025, https://mcsc.gov.ua/news/1419-pamyatok-kulturnoyi-spadshhyny-ta-2233-obyekty-kulturnoyi-infrastruktury-postrazhdaly-v-ukrayini-cherez-rosijsku-agresiyu/ [accessed: 01.07.2025].

[35] This number takes into account the correction for Chernivtsi Oblast, i.e. 5 fewer sites.

Fig. 3. Map illustrating the destruction of cultural heritage sites in Ukraine as a result of hostilities from 22 February 2022 to 3 July 2025

Source: Based on official data from the Ministry of Culture and Information Policy of Ukraine and UNESCO.

Kharkiv (+90), and Donetsk (+47). In the period under analysis, 22 more sites were destroyed or damaged in Mykolaiv, 25 more in Lviv, 19 in Zaporizhzhia, 15 in Dnipropetrovsk, 14 in Kyiv, and 8 in Sumy. Minor damage was done in the Poltava (+2), Zhytomyr (+2), and Kirovohrad and Cherkasy regions (+1 each). In addition, in the Chernivtsi region, the number of sites lost or destroyed at the end of 2024 was 5 higher than in January of that year; in Khmelnytskyi and Vinnytsia regions there was no change.

Based on the current data from the MCIP, as of 25 May 2025, the total number of destroyed cultural heritage sites in Ukraine was 1,482 (145 of national significance, 1,232 of local significance, and 105 newly discovered).[36] Another 63 sites were destroyed between 25 March and 25 May 2025: 19 sites in Sumy region, 12 sites in Dnipropetrovsk region, 6 each in Kharkiv, Kyiv, and Mykolaiv regions, 4 each in Poltava and Zaporizhzhia regions, and 3 each in Donetsk and Kherson regions. Figure 3 illustrates the destroyed sites of Ukrainian cultural heritage as

[36] See Ministerstvo kul'tury ta stratehichnykh komunikatsiy Ukrayiny, *1482 pam"yatky…*

a result of the hostilities between 22 February 2022 and 3 July 2025. The map juxtaposes official Ukrainian government data with UNESCO data; the latter appears in brackets.

The current data published by UNESCO on its official website[37] should be considered a reliable source of information on the destruction of cultural heritage in Ukraine. The organization's website states that it is currently carrying out a preliminary assessment of damage to cultural property, as defined in Article 1 of the 1954 Hague Convention,[38] by verifying reported incidents with a number of reliable sources and carrying out visual inspections of cultural property where practicable. The data presented by UNESCO has been met with criticism from the Ukrainians, who contend that the figures are significantly underestimated, asserting that the actual extent of destruction is greater than indicated. Thus, it must be concluded that UNESCO uses OSINT methodology in its research on the destruction of cultural property in Ukraine, even though it does not officially call it so.

The data published by Ukraine are not verified on an ongoing basis, but are based on partial data provided by the military administration and the regional public administration. Thus, they contain not only duplicate entries, but also unverified information on the damage. It should be pointed out that due to the ongoing armed conflict, the Ukrainian side does not have sufficient technical and organizational means to verify every piece of information received from the administration; moreover, the warfare has revealed new monuments – mainly archaeological sites – which poses a challenge for Ukrainian heritage protection authorities. A real impediment to the efficient protection of tangible heritage and the recording of losses is the lack of an efficient heritage protection system. Currently, heritage protection is not sufficiently regulated in Ukraine. In fact, it has been claimed that the legal provisions are unclear and they insufficiently protect movable monuments.[39] Nevertheless, irrespective of the deficiencies of the legal system of heritage protection, it must be carried out by state bodies, which, in addition to their current tasks, should collect evidence of war crimes committed in Ukraine.

Cultural Heritage Management in Armed Conflict: Insights from Ukraine

The armed conflict in Ukraine has shown the role and importance of information on monuments and sites – direct information, e.g. the location of historical sites, as well as indirect information, i.e. all information, including cultural institutions'

[37] UNESCO, op. cit.

[38] Convention for the Protection of Cultural Property in the Event of Armed Conflict, 14 May 1954, 249 UNTS 215.

[39] W. Hułkewycz, op. cit.

requests for resources[40] and materials for securing objects and sites. Seemingly insignificant information has revealed the institutions' plans for their collections. Lists of requests for resources for the preservation of historical monuments, sent by employees of Ukrainian cultural institutions to European cultural institutions and international governmental and non-governmental organizations (such as the European Union, UNESCO, ICOM, or ICOMOS), once verified by experts in the preservation of cultural property, can be a source of knowledge regarding plans for the preservation of collections. For example, a museum's urgent procurement of dehumidifiers or humidifiers may indicate the storage of collections in suboptimal environments, such as basements prone to fluctuations in humidity. In contrast, the acquisition of or inquiry concerning an air crate may reasonably suggest an intention to transport certain items abroad by air, reflecting distinct operational and logistical priorities within the institution.

The practice of the Ukrainian cultural sector revealed a limited awareness of the human factor – and its vulnerabilities – in crisis situations. This appears to result primarily from inadequate or absent procedural frameworks, insufficient familiarity with existing protocols, and the lack of well-rehearsed emergency response mechanisms. The relevant procedural documents, paradoxically, are relatively accessible, as they can often be obtained through public information channels or through temporary employment or volunteer engagement within institutions. The principal weakness of cultural institutions in emergency contexts does not lie in the procedures themselves, but rather in logistical constraints and insufficient technical resources necessary to safeguard cultural assets.[41] Limited storage capacity and corresponding budgetary constraints compel institutions, in times of crisis, to depend largely on the efficiency of national civil defence structures, given that military forces are typically engaged in other operations. Globally, no cultural institution possesses the financial or material capacity to fully secure its entire collection under conditions of immediate threat,[42] and the increased demand during crises inevitably leads to shortages of essential materials, such as crates, humidifiers, dehumidifiers, bubble wrap, and cardboard.[43]

[40] At the beginning of the war, Ukrainian cultural institutions (museums, theatres, cinemas, community centres, etc.) sent a number of letters to European cultural institutions and to the authorities of the European Union and UNESCO requesting material means for safeguarding cultural property. The Ukrainians requested crates, bubble wrap, power generators, air humidifiers and dehumidifiers, among other things. These letters were also sent in private messages to museum professionals from Poland and Western Europe. For more, see Ż. Gwardzińska-Chowaniec, *Incoherence of the Provisions of the 1954 Hague Convention and the Importance of Information on Heritage Resources on the Example of the Armed Conflict in Ukraine*, "Journal of Heritage Conservation" 2024, Vol. 80, p. 25.

[41] From the discussions during the 26th ICOM General Conference – ICOM Prague 2022.

[42] Ibidem.

[43] Based on an analysis of the market for means of securing cultural property from February to September 2022 and on the experience of the Polish Support Centre for Culture in Ukraine.

During armed conflicts, personnel shortages also become a critical issue, as it is natural for civilians to seek safety in the face of imminent danger.[44] Under such circumstances, the rational and economical management of available resources becomes imperative.

At the same time, it is essential to move beyond the historical and fictional representations of armed conflicts perpetuated by popular media. Contemporary warfare differs fundamentally from that of 80 years ago, as it is characterized by automation, cyber operations, and the extensive use of unmanned aerial systems. Ukraine currently serves as a testing ground for emerging military technologies, where the prioritization of defence objectives inevitably places cultural heritage protection in a secondary position. Consequently, heritage safeguarding efforts must rely on ad hoc, context-specific measures grounded in adaptive or lateral change management strategies and supported by effective civil defence mechanisms. It is important to recognize that heritage protection in conflict settings constitutes a complex and multidimensional process requiring flexibility, strategic planning, and empathy. Moreover, the geographical location of cultural heritage sites plays a significant role in determining both the level of risk and the feasibility of implementing protective measures.

An analysis of the spatial distribution of cultural heritage damage in Ukraine, conducted with OSINT methodology, indicates a strong correlation between the affected sites and the presence of strategically significant infrastructure, including military bases, airports, seaports, power plants, refineries, shipyards, and industrial facilities – particularly those associated with heavy industry, metallurgy, chemical production, and food processing. During active hostilities, such installations constitute potential targets, as their destruction disrupts logistical networks and undermines the operational capacity of the armed forces.[45] In fact, the destruction of cultural heritage sites in Ukraine has predominantly resulted from drone and rocket strikes, fires, the construction of temporary earth fortifications, the mining of archaeological sites, and theft. Beyond documenting losses, the spatial and typological patterns of damage can serve as indirect indicators of broader military dynamics, including the movement of foreign forces, the location of active hostilities, the operational effectiveness of air defence in non-deployed regions,[46] and the

[44] T. Andriichuk, *Theatres and Museums Volunteering during the War*, "Ukraïner", 6 November 2022, https://www.ukrainer.net/en/theatres-and-museums-volunteering/ [accessed: 28.10.2025].

[45] For a more extensive discussion, see R. Rochowicz, *Drones in War of Ukraine with Russia*, "Problemy Techniki Uzbrojenia" 2022, Vol. 160(2), pp. 97-117.

[46] A concept originating from military terminology. Cultural property is at considerable risk in areas affected by military operations – whether offensive or defensive – as well as within the broader range of a weapon's potential impact. Assessing the damage can provide crucial insights into the effectiveness of anti-aircraft defences. Moreover, safeguarding military assets currently positioned far from combat zones is essential before they are deployed to the front lines. Protecting both cultural heritage and military resources is vital for ensuring immediate and long-term stability.

distribution of strategically significant infrastructure such as seaports, airports, refineries, and power plants. Indeed, the majority of historical and cultural sites that have sustained damage or destruction are situated within major urban centres of strategic economic and military importance. This spatial overlap highlights the indirect yet profound vulnerability of cultural heritage to the dynamics of modern warfare. Table 2 presents a concise overview of the Ukrainian cities most affected by heritage loss and outlines the specific factors contributing to their strategic significance in the context of national defence.

Table 2. Characteristics of selected cities in Ukraine

Name of city	Population (as of 1 January 2021)[47]	Areas of strategic importance for defence
Kharkiv	2,633,834	airport, Antonov aviation plant, armoured vehicle production
Kherson	1,016,707	dam and hydroelectric power station, refinery
Khmelnitsky	1,243,787	nuclear power plant, air base and refinery near the city
Chernihiv	976,701	industry: machinery, food, electronics, wood, chemicals, building materials
Donetsk	4,100,280	Donetsk Coal Basin, heavy industry, mining and steel
Lviv	2,497,750	military bases, airport, rail transport, bus production, pharmaceutical and food processing plants
Kyiv	2,962,180	military bases, airport, machine repairs
Nikolayev	1,108,394	shipyards, engineering, food, building materials
Odessa	2,368,107	airport, (Ukraine's largest) seaport, naval fleet, aircraft repair base, industry: engineering, shipbuilding, chemicals, electronics, refining, foodstuffs
Sumy	1,053,452	industry: engineering, chemicals, construction materials
Zaporizhzhia	1,666,515	power plants, river port, metallurgy, aircraft repair

[47] Source: M. Timonina (ed.), *Number of Present Population of Ukraine, as of January 1, 2021*, State Statistics Service of Ukraine, Kyiv 2021, https://web.archive.org/web/20210526125741/http://database.ukrcensus.gov.ua/PXWEB2007/ukr/publ_new1/2021/zb_chuselnist%202021.pdf [accessed: 21.01.2025].

It also needs to be recalled that the genesis of the conflict can be traced back to the dissolution of the Soviet Union and its aftermath. The official Russian propaganda and state doctrine does not acknowledge Ukraine as an independent sovereign state, but rather perceives it as a constituent entity of the Russian Federation. Indeed, endeavours to foster closer alignment with European structures were met with a violent response and aggression in Crimea in 2014. Russia is also dependent on Ukraine's land and resources, its natural resources in particular, which include deposits of rare earth metals and critical minerals (including lanthanum, cerium, neodymium, beryllium, and titanium). These deposits are predominantly concentrated in the Donetsk, Luhansk, Zaporizhzhia, Dnipropetrovsk, and Kherson regions (Fig. 4). With the above in mind, it should be noted that the map of destruction of cultural heritage sites corresponds to strategic areas due to the location of rare and critical natural deposits in Ukraine. In 2022, the Washington Post, citing DevSet data, stated that Russia was occupying 63% of Ukrainian coal mines, as well as half of its manganese, caesium, tantalum, and rare earth deposits[48] (cf. Fig. 2).

The war against Ukraine thus demonstrates that protecting cultural heritage is inseparable from broader military, logistical, and geopolitical dynamics. The patterns of damage reveal both the vulnerability of sites located near strategic infrastructure and the indirect insights that preservation activities can provide for institutional priorities. Limitations in resources, technical capacity, and personnel underscore the challenges of safeguarding collections, while the complexity of modern warfare demands adaptive, context-sensitive strategies. The Ukrainian case highlights the need for flexible, resource-conscious approaches that integrate strategic planning, human factors, and the realities of contemporary armed conflict. In this regard, the OSINT method can serve as a critical tool for safeguarding cultural heritage during armed conflicts. By analysing publicly available data – ranging from satellite imagery and social media activity to institutional communications and procurement records – researchers and cultural organizations can monitor threats, anticipate risks, and support rapid, evidence-based decision-making. OSINT enables the identification of vulnerable sites, tracks damage patterns, and provides indirect insights into military movements or operational priorities that may affect heritage protection. In the context of Ukraine, OSINT has demonstrated its value in mapping the spatial distribution of damage, assessing the strategic context of affected sites, and informing adaptive preservation strategies under uncertain conditions.

[48] A. Faiola, D. Bennett, *In the Ukraine War, a Battle for the Nation's Mineral and Energy Wealth*, "The Washington Post", 10 August 2022, https://www.washingtonpost.com/world/2022/08/10/ukraine-russia-energy-mineral-wealth/ [accessed: 01.07.2025].

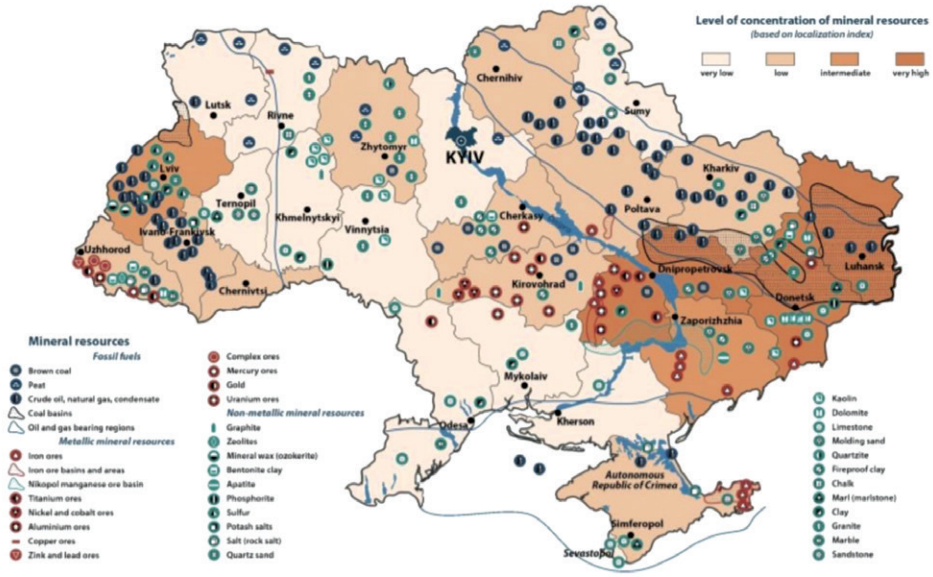

Fig. 4. Map of Ukraine's natural resources
Source: https://www.techpedia.pl/index.php?str=tp&no=44055 [accessed: 14.07.2025].

Final Remarks

The analysis of the collected research material demonstrates that cultural heritage sites are recurrent casualties of armed conflicts. They may become deliberate targets of occupying forces and they may suffer incidental damage resulting from attacks on strategically significant locations. Although international humanitarian law provides for the protection of cultural property during armed conflicts, the practical exigencies of warfare and the prioritization of military objectives often preclude the full realization of these legal safeguards.

Accordingly, the systematic documentation of a state's losses in cultural heritage assets is of paramount importance, as it enables the substantiation of war crimes committed by an aggressor, particularly those directed against cultural heritage. The abundance of information available in the public domain underscores the need for rigorous verification. Only verified and reliable data can accurately convey reality and possess the evidentiary value required to support justice at the international level.

In the context of an increasingly information-orientated global environment, OSINT has emerged as an indispensable instrument for documenting violations of international law. Its utility lies in both its cost-effectiveness and the extensive availability of relevant data within cyberspace, rendering it an invaluable tool for truth-seeking and accountability. The application of OSINT techniques facilitates

the efficient collection and analysis of information, and their growing popularity reflects their adaptability to contemporary informational challenges. Moreover, in proceedings before international criminal courts and tribunals, including the ICC, admissible evidence encompasses any material deemed reasonable by a state to demonstrate the commission of a war crime. Consequently, information and reports gathered by international organizations may legitimately serve as evidentiary material in future legal proceedings.

Finally, it can be argued that the collection and processing of information through OSINT should constitute the foundation of an institutionalized system for the protection and management of cultural heritage. Whether this futurological vision will materialize depends on a broader evolution in society's understanding of law – one that embraces a prospective and preventive approach to law and its practice.

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