UDC 165.242.2:(330.15:502.171)
DOI: 10.32518/sals4.2023.132

Соціально-правові студії. 2023. Т. 6, № 4
Social & Legal Studios. 2023. Vol. 6, No. 4

Protected area genocide in Ukraine: An aspect of genocide

Tetyana Nikolaychuk*

PhD in Economics, Associated Member of Young Academy for Sustainability Research
Freiburg Institute for Advanced Studies of the University of Freiburg
79098, 39 Friedrichstrasse, Freiburg, Germany
http://orcid.org/0000-0001-6268-7723

Abstract. As the preserved territories of Ukraine are highly vulnerable and unique, pollution of these areas due to military aggression can have extremely negative consequences not only for Ukraine but also for the entire world, particularly for the international economy. The aim of the article is to explore the phenomenon of the genocide of preserved territories associated with military aggression as a distinct form of genocide and the connection between the negative impact on the environment and adverse fluctuations in the national market. The study employs methods of comprehensive literature analysis and expert assessments, involving a comparison of legal and Ukrainian scientific approaches. The legislative approach to defining "genocide of preserved territories" is analysed, and a monitoring of statistical data on the level of negative impact on the territories and objects of Ukraine's natural reserve fund is conducted. The method of scientific generalization and graphical representation is used to visualize the results of the research. For evaluating the secondary results of shelling on regions with a high level of protection, specifically preserved territories and objects, a quantitative literature review, including meta-analysis, is conducted. Calculations reflecting the extent of destruction from bombing are performed, allowing observation of the most damaged areas and assessing the needs for their restoration. Immediate consequences (first level) and hidden long-term economic consequences on the market oriented towards ecology after the war are identified. The concept of the genocide of preserved territories is introduced, which not only helps highlight the negative consequences and the extent of damage to these unique territories and objects but can also be used as a tool for legally highlighting the impact on the entire country from the level of damage to preserved territories and objects. This concept can contribute to determining the violated rights of preserved territories and encourage increased investment in this sector. Additionally, the research can assist in assessing the connection between the level of environmental destruction and the suitability of these regions for environmentally focused business projects

Keywords: nature reserved territories; ecocide; postwar period; genocide; consequences of war; level of the damage

Introduction

The unwarranted Russian invasion of Ukraine has resulted in numerous adverse consequences, particularly significant environmental damage. The destruction of protected areas, notably in the Mykolaiv, Kherson, Zaporizhia, Donetsk, and Luhansk regions, is leading towards an ecological catastrophe. Ecosystems recognize no borders, so the negative side effects will manifest across all countries.

The military aggression has brought about unpredictable environmental impacts, affecting not only the health of Ukrainian citizens but also the entire national economy. In Southern and Eastern Ukraine, many Ukrainian people lose their lives daily due to the continuous shelling of civil infrastructure. Yet, there are also concealed consequences of bombing, particularly environmental effects that result in economic repercussions. The long-term influence on national market from military destruction could be very high due to the low level of environment capability. The process of post-war transformation will necessitate substantial investment, which cannot be entirely provided by the state. Therefore, cooperation between public authorities and entrepreneurs is essential. It is crucial to consider the specific characteristics of economic activity and the area in which it will be implemented.

G. Detweiler (2019) conducted an analysis of how various enterprises and organizations interact with financial institutions. Her findings highlighted that the inflexible stances taken by these banking institutions necessitate a reevaluation and broadening of the scope of activities. This means considering expanding the cooperation between sectors of the national economy that are currently not part of these economic interactions.

A well-balanced collaboration between the management of environmentally protected areas and financial institutions can be mutually beneficial, extending beyond financial gains. These partnerships hold the potential to make substantial contributions to environmental, ecological, economic, and social progress within society. They can foster the creation of innovative economic and organizational frameworks,

Suggested Citation

Article's History: Received: 01.10.2023 Revised: 09.12.2023 Accepted: 23.12.2023

Nikolaychuk, T. (2023). Protected area genocide in Ukraine: An aspect of genocide. *Social & Legal Studios*, 6(4), 132-144. doi: 10.32518/sals4.2023.132.

*Corresponding author

paving the way for new approaches to economic activities in the realm of reserve management. This includes fostering inclusive entrepreneurial endeavours with an ecological and economic focus (Andryeyeva *et al.*, 2019).

According to A. Fournier (2018), the military conflict between Russia and Ukraine has remained in a state of prolonged aggression. This enduring conflict is exacerbated by the contrasting psychological attitudes of Ukrainians, representing a young nation with distinct values, in contrast to the Soviet sentiments of Russian citizens. The author emphasizes that the market can potentially undergo significant changes depending on the attitude of a specific nation towards various aspects of life. The way a nation treats its protected areas and natural resources is a reflection of the extent of market-driven transformations. Even in countries and regions affected by conflict and war, society should consider the significance of these territories and their potential contributions to the well-being of the community.

C. Wanner (2021) underscores the critical importance of empathic support in the postwar period. She emphasizes the necessity of addressing both personal and collective social deviations that have arisen during and after the conflict. Economic behaviour during times of military aggression often provides a glimpse into the business perspectives that shape post-war markets. However, without corresponding changes in societal behaviour and attitudes, it becomes challenging to transform the national economy. Striking a balance between the tools necessary for winning a war and ensuring environmental safety is crucial during periods of military aggression.

E. Edenborg (2017) highlights the need for strategies to combat psychological fatigue and depressive episodes resulting from the ongoing military invasion. Additionally, he emphasizes the importance of challenging prevailing political narratives and fostering artistic development in individuals affected by the conflict. The damage to protected areas becomes a significant problem during military conflicts. It is crucial to raise awareness about this issue and emphasize that post-war reconstruction should begin with comprehensive economic and ecological packages. Economic development relies on the sustainable use of resources, and therefore, policymaking should prioritize sustainable development over short-term investment programs. This approach ensures long-term environmental and economic stability.

The primary research aim revolves around understanding the role and impact of damaged protected areas (PAs) in their assessment as regional assets, particularly within local communities. The application of the proposed evaluation method is expected to yield several important outcomes, including:

- evaluating the correlation between the extent of damage in different regions of Ukraine and the subsequent assessment of PAs after the conflict;
- encouraging businesses to not only invest in specific infrastructure projects but also in more extensive civil infrastructure developments, which can enhance the overall value of the entire region,
- developing tools to maximize the positive external effects of the new synergy between infrastructure development and protected areas in post-war Ukraine, while effectively managing any negative consequences;
- attracting "new" financial and investment participants to the field of protected areas within the national economy, such as credit unions and insurance companies;
- increasing the appeal of investment opportunities for business groups interested in offering eco-services;
- establishing effective ecological and economic regional inclusion systems, which are contingent upon the level of infrastructure restoration and the degree of pollution in PAs;
- identifying the most reliable approaches for restoring or relocating social infrastructure networks and ensuring the availability of essential public services in the research areas.

The post-war reconstruction system should prioritize eco-friendly approaches. Therefore, it is crucial currently to monitor the relationship between the level of damage and the ability of protected areas to regenerate themselves. The term "Protected Areas Genocide (PAsCide)," as both a distinct legislative concept and a social phenomenon, seeks to investigate the extent of harm inflicted upon vital areas such as nature reserves and territories designated for conservation.

Materials and methods

The theoretical and methodological foundation for researching the development of the correlation between the potential of preserved territories and the level of their pollution due to military aggression from the Russian Federation is based on the scientific works of Ukrainian and foreign researchers. It also draws upon the conceptual principles of the theory of management optimization for preserved territories. The information-legal basis of the study includes laws of Ukraine, resolutions of the Verkhovna Rada of Ukraine and the Cabinet of Ministers of Ukraine, orders of the Ministry of Environmental Protection and Natural Resources of Ukraine, the Ministry of Culture and Information Policy, the Ministry of Community and Territory Development of Ukraine, the Ministry of Defence of Ukraine, and other subordinate regulatory acts that regulate social relations aimed at expanding the vectors of activity of objects of the natural reserve fund of Ukraine. Additionally, it involves mechanisms for regulating nature use during the implementation of economic-environmental vectors of entrepreneurial activity.

During the formulation of conclusions and the prospect of further research, the method of scientific abstraction was employed, allowing for the identification of the main vectors of development of the economic-environmental potential of preserved territories and the correlation between the level of damage and their economic-environmental potential, considering the peculiarities of economic-environmental processes in the national economy.

The graphical-figurative technique ensured the visually clear formation of the results of the author's proposed scientific research, including the duality of the regulatory-legal status of the genocide of preserved territories as a socio-ecological phenomenon and a military occurrence. By employing the method of scientific generalization, a consistent approach was established for defining the fundamental nature and function of elements within the natural reserve fund within the framework of economic and ecological dynamics. The acts of genocide against protected areas were examined as distinct forms of violence and war crimes, accompanied by both overt and hidden externalities. Through statistical analysis, indicators of destruction and pollution of preserved territories during military aggression were identified, enabling the determination of the overall level of degradation of ecological systems.

Formulas were also proposed to calculate the volumes of reduction in the economic-environmental potential of

preserved territories depending on the level of pollution, destruction of infrastructure around objects of the natural reserve fund of Ukraine, as well as the potential for future environmentally oriented economic activities and the attraction of investment programs in the region based on the distance from the pollution epicentre.

This research integrates multiple data collection and analysis techniques to comprehensively investigate the impact of conflict on protected areas, local communities, and the post-war environmentally oriented market in Ukraine. A quantitative literature review was carried out to explore the complex relationship between the damage to protected areas, the extent of adverse environmental consequences, and the latent economic impacts on the national market. Special attention was given to mitigating disparities across various studies. To achieve this, a comparative approach was employed to outline the primary strategies for rejuvenating the post-war environmentally oriented market, attracting investments, and customizing these approaches to align with the unique economic landscape of Ukraine. A comprehensive literature review will be conducted to explore sustainable development and socioeconomic changes within protected areas (PAs), with a specific focus on the aspects of the damage level of protected areas, researching and monitoring various elements that have the potential to increase the worth of PAs, such as the development of industrial and civil infrastructure, analysing the role and position of PAs as genocide object.

This analysis should provide a comprehensive view of the socioeconomic side effects resulting from the environmental impact of bombings in the research region. It can serve as a basis for developing strategies and policies to address these consequences and support affected communities:

$$Q = \int(R), \tag{1}$$

where: Q – affected surface; dQ – the distance from epicentre to reserve, zone 2 (Eq. 1); the affected area of reserve (Eq. 2):

$$5 = \int(x; y; z). \tag{2}$$

According to this formula, the environmental influence of the bomb will be equal in three checkpoints x; y; z. So the environmental influence will spread evenly to all reserve surfaces. Thus, the level of destruction will be as great as the potential for Eco-business development decreases. But, in case the different impact in checkpoints, it is necessary to calculate the common effect on the whole surface of reserve due to the next formula (Eq. 3):

$$\iint(\tfrac{x}{5} + \tfrac{y}{5} + \tfrac{z}{5})\sqrt{170}. \tag{3}$$

If 2 checkpoints are analysed, e.g. the nearest checkpoint A and the most distant checkpoint B, then the effect will have the next formula (Eq. 4):

$$\int_B^A f\,(x)d(x)\sqrt{S}, \tag{4}$$

where: d – the conditional distance, S – area of reserve.

So, the difference between the nearest checkpoint ant the most distant one will be next (Eq. 5):

$$\int_B^A f\,(x)d\sqrt{S} = |F\,(x)\backslash_B^A = F\,(B) - F\,(A). \tag{5}$$

There is a connection between the environmental effect of the bomb and the Eco-business potential (Table 1).

Table 1. Connection between the zone of destruction and level of environmental negative effect

Area (Zone)	(1)	(2)	(3)	(4)	(5)	(6)
Distance, m	90	170	300	440	1120	2290
hectare	0.009	0.017	0.03	0.044	0.112	0.229
Relation coefficient	555.6	294.12	166.67	113.64	44.64	21.83

Source: author's development, based on the Order of the Ministry of Environmental Protection No. 111 (2020)

This relation coefficient is analysed according to the next formula:

$$\frac{k}{x} = y, \tag{6}$$

where: x – the distance from the shelling epicentre, k – the area of study reserve (Eq. 6).

So, the environmental impact factor (Ev) could be calculated by the next formula (Eq. 7):

$$\mathrm{Ev} = \sum \frac{\mathrm{M}/\,(\mathrm{Kh}+\mathrm{Kb}+\mathrm{Ks}+\ldots\ldots\ldots)}{\mathrm{d}}, \tag{7}$$

where: Ev – the negative environmental impact (on the calculating date), Kh – coefficient of health effect due to negative environmental impact, Ks – coefficient of the level of social services providing on the research territory, Kb – coefficient of Eco-business development, M – the measure of permissible pollution standard on this territory (according to area characteristics, e.g. protected area or not).

The environmental impact factor (Ev) can vary due to the term between bombing and research, that's why it is necessary to consider the time factor (t). Furthermore, it is possible to analyse the so-called "degradation line" according to the next formula (Eq. 8):

$$\mathrm{L}_1 = \mathrm{Evt}, \tag{8}$$

$$\mathrm{L}_2 = \mathrm{Evt}_2, \tag{9}$$

where: L_1 is the orange line of degradation, because it is faceted the nowadays level of destruction and consequences. The time factor (t) is equal to zero, because the monitor of pollution degree measured after shelling. But due to this track off it is impossible to research long-term consequences; L_2 is the red line of degradation, because the negative environmental effect could be estimated in 2-3 years after (e.g., a change in the migration paths of animals that led to the disappearance of certain plant species. Raw materials for Eco-cosmetics were made from plants) (Eq. 9).

Results and discussion

Exploring the synergy:
Ecosystem damage and eco-business prospects

According to the Ukrainian legislative system, the damage to protected areas is not categorized based on the level of negative impact it may have on society or the market. This approach is established in the Law of Ukraine "On the Nature Reserve Fund of Ukraine" (1992). In other words, the legislation does not distinguish between different levels of harm or assess the extent of their consequences on society or the economy. Certain severe offences against nature may be subject to evaluation under criminal law, but even these categories of damage cannot be directly compared to the current level of damage to protected areas (Criminal Code of Ukraine, 2001). In essence, the legal system recognizes that the damage to protected areas goes beyond the scope of traditional criminal offences related to the environment. To consider genocide of protected areas, as a crime according to the traditional legislative system in Ukraine, it is necessary to prepare countless legislative amendments, connected with the international law system (Constitution of Ukraine, 1996). There is no unified approach among domestic and foreign scientists to interpret the category "protected area," as well as to define the key characteristics of this definition. Because according to the legislative system of Ukraine it is considered as a Nature Reserve Fund Territory (Law of Ukraine No. 2456-XII…, 1992).

Due to the decentralization and deconcentration of power reform, changes were introduced to the administrative-territorial division of the country. In accordance with the requirements of the Resolution of the Cabinet of Ministers of Ukraine "On the Formation and Liquidation of Districts" (2020), several districts were established with administrative centres and territorial communities. Territorial communities were tasked with conducting an inventory and registering all natural resources and assets within their territory, as coastal areas could be within the boundaries of two or more districts and, consequently, territorial communities. The passports of territorial communities should identify coastal areas as natural assets or resources. However, the mandatory provision of passports was initially prescribed for united territorial communities, regulated by the Methodology for the Formation of Capable Territorial Communities (Resolution of the Cabinet of Ministers of Ukraine No. 214…, 2015). As of today, territorial communities use passport requirements as a tool for enhancing the community's image without considering the real socio-economic, investment, financial, and other mechanisms of this document. In addition, many territorial communities make changes and additions to passports due to the lack of standardized requirements.

Protected areas have traditionally been designated for the conservation of natural resources. As of the beginning of 2022, in pre-war Ukraine, there were 8,633 territories and objects in the nature reserve fund, encompassing 6.8% of the country's total area. This included 5 biosphere reserves, 19 nature reserves, and 53 national natural parks (Official website of Nature Reserve Fund of Ukraine, n.d.).

However, due to the Russian war against Ukraine, approximately 900 protected areas covering an area of 1.2 million hectares, roughly one-third of all protected areas in Ukraine, have been affected. This impact has put 14 Ramsar sites covering 397.7 thousand hectares, around 200 territories in the Emerald Network covering 2.9 million hectares, and biosphere reserves at risk of destruction in Ukraine (Official website of Nature Reserve Fund of Ukraine, n.d.) (Table 2).

Table 2. Objects of the Nature Reserve Fund of Ukraine Affected by the Russian Federation's Invasion on Ukrainian Territory (May 2022)

No.	Name of the protected area facility and legal status	Area and location (region, territorial community)
1	Askania-Nova named after F.E. Falz-Feina (reserve)	Kherson region, 33,307.6 hectares, of which 11,054 hectares are "completely protected"
2	Azov-Syvash National Natural Park	52,154 hectares, Kherson region, includes Lake Syvash, spit of Byruchy Island
3	Dzharylgach National Natural Park	Skadovsky district, Kherson region, 10,000 hectares
4	Nature Reserve "Yelanets Steppe"	town Yelanets, Mykolaiv region, (IUCN category – Ia (strict regime reserve), 1,675.7 hectares
5	"Feldman Ecopark"	Lisne village, Dergachiv district, Kharkiv region, 140.5 hectares
6	Mykolaiv Zoo	Mykolaiv region, Mykolaiv, 18, area 0.48 hectares
7	Kharkiv Zoo	Kharkiv, st. Sumskaya, 35, area 22 hectares
8	Oransky is a landscape reserve of local importance	Ivankiv district, Kyiv region, 100 hectares

Source: Department of the Nature Reserve Fund (2021), Official website of Nature Reserve Fund of Ukraine (n.d.)

The ongoing conflict initiated by Russia against Ukraine has taken a toll on the country's protected areas. Approximately 900 protected areas, covering an area of 1.2 million hectares, have been impacted. This amounts to approximately one-third of the total area of all protected areas in Ukraine. This includes 14 Ramsar sites, spanning 397.7 thousand hectares, around 200 territories affiliated with the Emerald Network, covering 2.9 million hectares, and biosphere reserves, all of which are currently at risk of destruction in Ukraine (Official website of Nature Reserve…, n.d.) (Table 3).

Table 3. Dynamics of protected areas (PAs) 2019-2021 (Analysis of the areas of the nature reserve fund of Ukraine by administrative-territorial units, 2019, 2020, 2021)

Administratively territorial unit (regions)	2021 PAs area	PAs area vs Anti-terrorist operation zone 2021, %	Anti-terrorist operation zone 2021, ha	Rating 2020	2020 PAs area	PAs area vs Anti-terrorist operation zone, 2020	2019 PAs area	PAs area vs Anti-terrorist operation zone, 2019	Rating
Vinnytsia	60189.4437	2.27	2649.29	27	60189.4437	2.27	60106.444	2.27	27
Volyn	220231.5	10.93	2014.47	8	220231.5	10.93	219465.4	10.89	8
Dnipro	99757.0931	3.12	3192.3	24	99757.0931	3.12	99623.493	3.12	24
Donetsk	100359.8316	3.78	2651.7	21	100359.8316	3.78	99996.692	3.77	21
Zhytomyr	138258.1304	4.64	2982.7	18	138258.1304	4.64	137646.33	4.61	19
Zakarpatttia	138258.1304	15.16	1275.3	5	193319.1769	15.16	192438.88	15.09	5
Zaporizhia	193319.1769	5.08	2718.3	16	138183.4433	5.08	138183.44	5.08	16
Ivano-Frankivsk	138183.4433	15.97	1392.7	3	222382.5145	15.97	218881.98	15.72	3
Kyiv region	222382.5145	10.40	2812.1	9	292439.6739	10.40	292208.63	10.39	9
Kropivnitskyi	292439.6739	4.08	2458.8	20	100318.8426	4.08	100318.84	4.08	20
Crimea	100318.8426	8.41	2608.1	12	219319.36	8.41	219319.36	8.41	12
Luhansk	219319.36	3.49	2668.3	22	93219.2911	3.49	93194.751	3.49	22
Lviv	93219.2911	8.15	2183.1	13	177944.2027	8.15	168864.13	7.74	14
Mykolaiv	177944.2027	3.14	2458.5	23	77238.17	3.14	77238.17	3.14	23
Odesa	77238.17	4.63	3331.3	19	154389.7469	4.63	154389.75	4.63	18
Poltava	154389.7469	4.97	2875	17	142789.7547	4.97	142550.19	4.96	17
Rivne	142789.7547	9.95	2005.1	10	199545.0296	9.95	199477.73	9.95	10
Sumy	199545.0296	7.49	2383.2	15	178589.3562	7.49	178589.36	7.49	15
Ternopil	178589.3562	8.92	1382.4	11	123349.0732	8.92	124185.58	8.98	11
Kharkiv	123349.0732	2.38	3141.8	26	74843.5995	2.38	74843.6	2.38	26
Kherson	74843.5995	11.22	2846.1	7	319315.9841	11.22	318695.14	11.20	7
Khmelnytskyi	319315.9841	15.18	2062.9	4	313084.3963	15.18	312579.33	15.15	4
Cherkasy	64746.0785	3.10	2 091 600	25	64746.0785	3.10	64595.961	3.09	25
Chernivtsi	313084.3963	12.80	809 600	6	103598.45	12.80	103598.45	12.80	6
Chernihiv	64746.0785	7.86	3 190 300	14	250720.2944	7.86	250537.35	7.85	13
Kyiv	103598.45	25.30	83600	2	21148.79	25.30	18092.36	21.64	2
Sevastopol	26241.02	30.37	86400	1	26241.02	30.37	26241.02	30.37	1
Total	4105522.247	6.80	60354.96		4105522.247	6.80	4085862.37	6.77	

Source: I. Verner (2021)

Some national parks are in the zone of humanitarian crisis. Other PAs are deprived of the opportunity to receive funding. For example, the PAs, where there is a large population of wild animals, in particular the Biosphere Reserve Askania-Nova (various animal species are collected and live freely here, some are in very limited quantities on a global scale, unique for all the world), national natural parks Azov-Syvasp, Dzharylhach, nature reserve Yelanets Steppe, as well as Mykolaiv, Kyiv, and Kharkiv zoos cannot buy feed for animals (Official website of Nature Reserve…, n.d.)

According to the calculations, PAsCide war phenomena is very danger because it has two types of consequences:

- the immediate impact – it is consequences that can be seen after shelling or bombing and evaluated as negative environmental influence (e.g. the pollution or destruction level).
- the long-term impact – it is consequences that cannot be evaluated after shelling. But this influence is a very aggressive one, because it is caused a lot of latent health problems, and unpredictable business restrictions and bans.

PAsCide is really dangerous war phenomena in Ukraine, because Ukraine is an agrarian land, and has plenty of unique ecosystems, that are ruined by the Russian troops. And now, it is impossible to evaluate the long-term consequences, which will have a gigantic influence on the health of Ukrainian people and business (as second level – affect).

The study highlights that PAsCide is a novel yet alarming wartime phenomenon in Ukraine. Given Ukraine's abundant green landscapes and unique ecosystems, the Russian invasion has inflicted significant damage, particularly in the southern regions. PAsCide could be regarded as a form of genocide with the objective of causing long-term harm to the Ukrainian nation. However, this phenomenon lacks adequate legislative, social, or political recognition and support.

So, analysing the budgetary dynamics of funding for PAs, it can be considered that the state without tools for economic and ecological growth and cooperation with representatives of the private sector of the economy, PAs will not have a sufficient number of resources that will meet today's needs. The number of expenditures for the preservation of the PAs (KFKV 0520) from the State Budget of Ukraine from the 2016 to 2020 period increased by UAH 275.736.8 which is 63.5%, however, considering the annual

official rate of inflation for this period, the amount of funding was increased by only 59.8%, each year due to inflationary movements in Ukraine, about 1.2% of financing volumes are levelled (Table 4).

Table 4. Analysis of the expenditures' degree from the State Budget of Ukraine for the preservation of PAs from 2016 to 2022 with a correlation to the inflation index

Year	The number of expenses for the preservation of PAs (CFKV 0520) (thousand hryvnias)	The coefficient of the inflation index for the year in % value	Amount of funds that are levelled due to inflation in the state in % value	Dynamics of the area of PAs (million hectares)	Costs per 1 ha of PAs (thousand hryvnias)	Costs per 1 ha of PAs (equivalent in USA dollars)
2016	142704.7	112.4	0.89%	3.985	35810.46	1338.58
2017	257649.2	113.7	0.88%	3.991	64557.55	2413.14
2018	292949.9	109.8	0.91%	3.985	73513.15	2747.90
2019	391009.5	100,8 (January 2019)	0.99%	4.085	95718.36	3577.92
2020	418441.5	105.0	1.23%	4.105	101934.59	3810,28
2021	530 599.9	110.0	1.05%	4.485	118305.44	4422.22
First part of 2022	646 677.6	104.5	1.04%	4.712	137 240.6	4732.4
After 24.02.2022	526677.6	113.9		1.24 (military invasion or occupied territories)		3612.2

Source: author's development, based on Laws of Ukraine "On the State Budget of Ukraine for 2016" (2015), "On the State Budget of Ukraine for 2017" (2016), "On the State Budget of Ukraine for 2018" (2017), "On the State Budget of Ukraine for 2019" (2018), "On the State Budget of Ukraine for 2020" (2019), "On the State Budget of Ukraine for 2021" (2020), "On the State Budget of Ukraine for 2022" (2021)

Due to the Russian invasion in Ukraine, the degree of funding decreased, so the PAs are in a catastrophic state. Numerous bombs are still on the soil. Some examples should be analysed. Russia uses the Aviation Thermobaric Bomb of Increased Power (ATBIP), nicknamed Father of All Bombs (FOAB), which is a Russian-designed, bomber-delivered thermobaric weapon. The bombed area is estimated from 90 m collapse to 2290 m shock wave (Center for Arms Control and Non-Proliferation, 2022) (Table 5).

Table 5. Area requirements due to the theoretical calculation of affected areas (based on TNT equivalent)

Distance from the epicentre of the explosion, m	Effects
up to 90 (1)	Complete destruction of reinforced structures
up to 170 (2)	Almost complete destruction of highly reinforced concrete structures. Complete destruction of unreinforced structures (residential buildings)
up to 300 (3)	Almost complete destruction of unfortified structures. Partial destruction of reinforced structures
up to 440 (4)	Partial destruction of unreinforced structures
up to 1 120 (5)	Shock wave breaks glass structures
up to 2 290 (6)	The shock wave can knock a person off their feet

Source: author's development, based on Federal Emergency Management Agency (2004)

ATBIP is comparable in destructive power of the explosion to tactical nuclear weapons – for example, one of the least powerful nuclear devices of Davy Crockett had a TNT equivalent of about 10-20 tons (very close to the smallest yield for a nuclear bomb). The power of the ATBIP, however, is only about 0.3% of the power of the Kid bomb dropped on Hiroshima (Center for Arms Control and Non-Proliferation, 2022). So, it is possible to analyse the effects of this bomb on the particular example. And then it is necessary to research the economical side effects as result of environmental and social destruction.

Track off a single example: Mykolaiv region is one of the most bombed parts of Ukrainian territory 01.01.2021, PAs of the Mykolaiv region has 147 objects with an actual area of 75,450.27 hectares, of which 8 are objects of national importance, 139 are of local importance. The percentage of PAs of the Mykolaiv region is 3.14% (Department of the Nature Reserve Fund…, 2021) (Table 6).

Table 6. Categorized territories related to national and local PAs of Mykolaiv region

No.	PAs category (name)	Objects
1.	Biosphere reserve	1
2.	National Natural Park	2
3.	Regional landscape park	5
4.	Reserve	61
5.	Reserve tracts	13
6.	Sights of nature	43
7.	Zoological parks of national significance	1
8.	Nature reserves	1
9.	Parks-monuments of garden and park art	19
10.	Total	147

Source: author's development, based on Department of the Nature Reserve Fund… (2021)

National nature park Bug Gard is located in the north of the Mykolaiv region. In 2008, the territory of the park was included in the list of seven natural wonders of Ukraine. The park covers the canyons and valleys of the Southern Bug and Mertvovod rivers. The unique landscape of Bug Grad is caused by the fact that its territory is one of the oldest land areas in Eurasia. The special ecosystem of the park has preserved dozens of endemic and relict species of plants and animals. The length of the park is 6138,13 he (National Park "Bug Gard", n.d.) (Fig. 1).

As per the Regulations governing the Bug Gard National Nature Park, the park's territory encompasses the following locally significant Protected Areas (Table 7).

Figure 1. National nature park Bug Gard, Mykolaiv Region, Ukraine, 2022
Source: Photo by T. Nikolaychuk

Table 7. The local meaning PAs in the National nature park Bug Gard

PAs (local importance)	Area
Ichthyological reserve South Bug	40.0 ha
A botanical monument of nature The mouth of the Bashkala river	5.0 ha
A geological monument of nature Protychansk rock	0.03 ha
A geological monumentof nature Turkish table	0.01 ha
Reserve Labirint	247.0 ha
Reserve Vasilieva pasika	252.0 ha
Reserve Livoberejjiya	226.0 ha
Reserve Litniy khytir Skarjinskogo	105. 7 ha

Source: author's development, based on Order of the Ministry of Environmental Protection No. 111 (2020)

Considering the destructive impact of the Aviation Thermobaric Bomb of Increased Power on the areas, it is possible to anticipate the environmental consequences, and as a result of these environmental effects, there may be economic repercussions (externalities) (Fig. 2).

According to our data: the affected area is about 170 m, including the reserve: a botanical monument of nature (the mouth of the Bashkala river – 5 he).The results clearly indicate that as our checkpoint moves farther away, the negative environmental impact of the bombing diminishes, while the potential for eco-business development increases. The detrimental environmental impacts have resulted in negative socioeconomic repercussions, affecting the overall environmental well-being of the local community. Although eco-business is commonly associated with environmental friendliness and sustainability, its feasibility diminishes when the territory is contaminated.

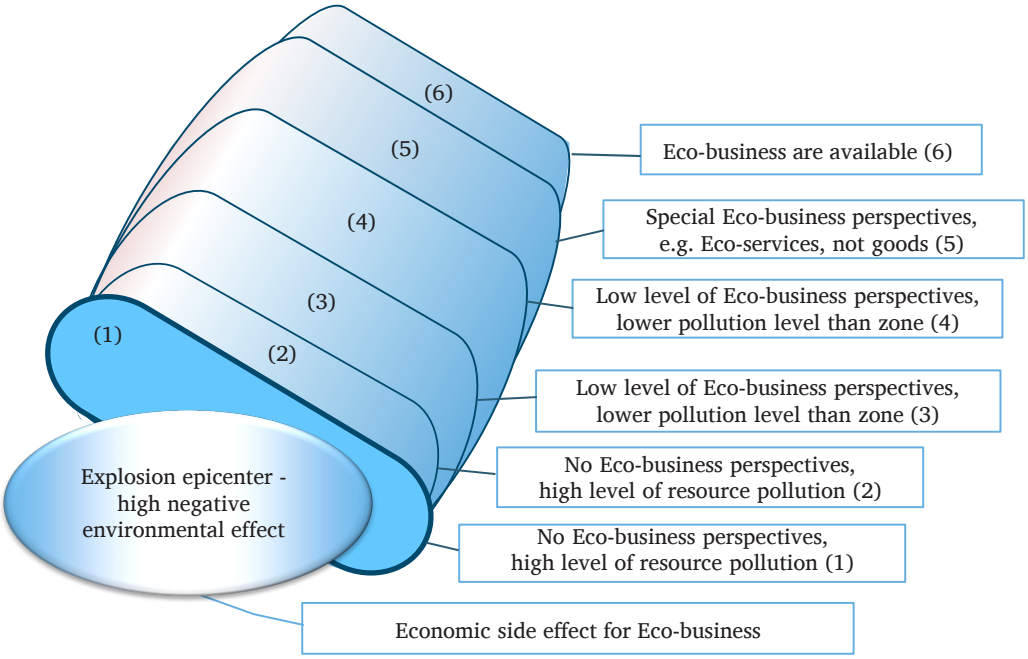

Figure 2. Connection between the environmental effect of shelling and economic side effects
Source: author's development

When examining the role of the Russian invasion in the global ecological crisis, it becomes apparent that the intentional targeting of protected areas, crucial components of the world's ecosystem, leads to what can be termed as PAs-Cide. This phenomenon parallels genocide, which involves the deliberate destruction of a people – often defined by ethnicity, nationality, race, or religious affiliation–in whole or in part. The term was coined by R. Lemkin (2008) in 1944, combining the Greek word γένος (genos, "race, people") with the Latin suffix – caedo ("act of killing") (Center for Arms Control and Non-Proliferation, 2022). But PAs destruction is more harmful as for Ukrainian, so for the whole EU-family. That is why it is necessary to separate the term PAsCide as war society phenomena which will lead to negative side effects in the whole society life.

According to the Law of Ukraine "On the Nature Reserve Fund of Ukraine" (1992) law on the nature reserve fund of Ukraine, Protected Areas (PAs) are defined as inhabited areas of land and water space, natural complexes, and objects that possess special environmental, scientific, aesthetic, recreational, and other values. These areas stand out for their role in preserving the natural diversity of landscapes, the gene pool of animal and plant life, and the maintenance of the overall ecological balance. Additionally, they contribute to background monitoring of the natural environment. So the Russian invasion leads to the negative transformations in all spheres of Ukrainian being, but the negative environmental impact could be very dangerous by itself. It couldn't be estimated at the collapse time, but it has long-term consequences.

Diverse socio-economic perspectives on protected areas

The protected areas in Ukraine harbour numerous resources with the potential to serve as focal points for the economic and ecological development of regions, particularly local communities. The investment appeal of the Nature Reserve Fund in the post-war period is closely tied to the resource potential these areas offer (Nikolaychuk, 2022).

Attracting investments to the sector of protected areas is currently a pressing challenge, given that assets within Ukraine's nature reserve system hold considerable economic and environmental potential, fostering innovative approaches to economic activities. When examining the ecological aspect of the protected area category, it is advisable to concentrate on its primary geographical characteristics. This involves delineating the morphological features of the area and closely monitoring the boundaries of the protected region. When analysing the "protected area" category from a legal standpoint, it's crucial to differentiate between the legal term and its definition.

From a socio-economic perspective, a protected area represents both an economic category and a socio-economic phenomenon. An example of a socio-economic approach is viewing protected areas as integral to environmental

management to meet the resource, conservation, and reproduction needs of the population and various sectors of the national economy.

Simultaneously, the existence of protected objects and territories in a region significantly enhances the investment appeal of both the overall region and local communities, as emphasized by T. Nikolaychuk (2022). The selling and destruction of Protected Areas (PAs) contribute to a decline in the collective levels of environmental, health, and social safety throughout Europe.

In the field of Genocide Studies, the obliteration of nonhuman beings and nature is often considered a distinct yet interconnected phenomenon known as ecocide – a term denoting the deliberate destruction of nonhuman nature (Eichler, 2020). As highlighted by P. Higgins *et al.* (2013), ecocide should be recognized internationally as a crime. Regrettably, for an extended period, the concept of ecocide lacked a precise legal definition. Even though it hasn't been legally articulated, its fundamental meaning is widely recognized. It refers to various actions and activities leading to severe devastation and destruction.

T. Lindgren (2017) views ecocide as a structurally recurring phenomenon that contributes to a severe disequilibrium in the Earth-system, impacting all planetary life. The author also suggests that ecocide could potentially serve as a method of genocide if it fragments or destroys crucial socioecological and cultural relationships between humans and nature. Practices leading to ecocide are often accountable for the destruction of ecological and social life-systems facing challenges due to worsening ecological conditions. C. Cullinan (2011) advocates for the establishment of a Manifesto for Earth Justice and the initiation of the evolution of earth jurisprudence. C.D. Stone (2012) raises the question whether the expansion of protection and rights, traditionally given to the previously disempowered, should also be extended to natural entities such as trees and other forms of biodiversity.

The modern society needs to require a legal framework that recognizes and protects the legal rights of not only the human population but also the geological and biological elements of the Earth community. A legal system that exclusively focuses on humans is impractical or sustainable in the long run. S. Mehta and S. Merz (2015) admit that the so-called war between people and the planet, as an attack on peaceful enjoyment of habitats of all species. K. Eman *et al.* (2009) assert that the increasing occurrence of environmental crimes is resulting in the disappearance of natural habitats, leading to the extinction of rare plant and animal species. Additionally, they note a rise in adverse health effects, such as abortions, births of handicapped babies, skin damage, allergies, headaches, and an increased incidence of cancer-based illnesses. These health issues are confirmed outcomes of environmental pollution, primarily caused by environmental crimes. The authors highlight the challenge of achieving a universally agreed definition for the term "environmental crime," as it originates from various legislative concepts, including environmental criminality, criminality of environmental protection, criminality of the environment, green crimes, crimes against the environment, and ecocide.

PAsCide, referring to crimes against the environment in protected areas, is a distinct category where the object of the crime is high-level protected territories. This phenomenon becomes particularly evident during military aggression, where the level of impact is substantial. Even during peacetime, this phenomenon persists. It is reasonable to suggest that the pollution of nature and the environment, which results in the devaluation of our surroundings, can also be labelled as "ecocide". This term pertains to the intentional destruction of the natural environment.

The deterioration of ecological well-being is intensifying due to factors such as the increase in the human population, economic growth, consumption patterns, and the impact of reckless technologies on the global environment. Additionally, there is a concerning decline in ecological awareness (Crist, 2013). Over an extended period, the relationship between tourism and the era of capitalism highlights that tourism/capitalism is not merely an economic system but also functions to exploit inexpensive natural resources, bodies, and ways of life to facilitate surplus extraction. This exploitation occurs through various forms of tourism and the acceptance of the externalities resulting from tourism activities (Hall, 2022). A. García Ruiz *et al.* (2022) observe a growing trend in eco-crimes, particularly in organized crime offences and the legal and illegal over-exploitation of marine resources.

Many researchers argue that ecocide can be viewed as a potential method of genocide, especially when environmental destruction leads to life conditions that fundamentally threaten the cultural, ethical, and/or physical existence of a social group (Crook & Short, 2014). Ecological crimes have trans-boundary implications and influence due to the global transfer of harms. Consequently, addressing issues of global environmental harm is a complex and multifaceted task for all countries (White, 2011). G. Wright (2011) points out that many scholars have focused on individual aspects of environmental crime, neglecting a broader theoretical impact. National and international institutions have prioritized other aspects of organized crime, often failing to adequately analyse the nuanced nature of transnational environmental crime and how countermeasures should be reflected in legislative processes and other initiatives.

Unfortunately, transnational environmental crime has received insufficient attention within the discourse of transnational organized crime and global law enforcement. "PAsCide" represents not only an environmentally hazardous phenomenon but also a market disruptor. This is because protected areas and other crucial territories could serve as the foundation for a new national market system in Ukraine. The nature-safe business, especially in the PAs territories, is implied not only as completely environmental neutral economic activity, but also as free impact on the costumers' health. In case the territory is polluted, the Eco-business couldn't be considered as costumers – safe service or products.

Furthermore, innovative start-up concepts related to Protected Areas (PAs) face challenges due to the impossibility of conducting economic activities under a PA brand (logo, trademark). Entrepreneurs seeking additional guarantees for nature-neutral development find limitations in this aspect. However, PAs could potentially benefit from constant investment flows. Currently, private legal investment tools are crucial for fostering new vectors of entrepreneurial activity, including inclusive economic endeavours within PAs. J. Hellman (2014) underscores the seriousness of environmental crimes as a growing international concern, causing significant harm to the environment and human health. Proposing environmental offences as international crimes could be a way to eliminate impunity, making it challenging for countries, companies, and individuals to

escape international criminal justice. Since environmental offences do not fall under crimes against humanity, J. Hellman suggests introducing a new core crime, ecocide, into the Rome Statute of the International Criminal Court.

While some researchers tend to view crimes against nature as a single category, it's essential to recognize that nature crimes, similar to social crimes, vary in their level of danger and impact on various areas, including the national economy, innovation, public health, and more. S. Bricknell (2010) highlights that environmental crime relies on individual states to implement national legislation and actively enforce against environmentally criminal behaviour within their borders.

J.G. Stewart (2010) draws attention to the social phenomenon of theft during wars, known as pillage. Despite the prohibition against pillage dating back to antiquity, it is considered a modern war crime enforceable before international and domestic criminal courts. While convictions occurred after World War II for businessmen involved in the pillage of natural resources, modern commercial actors are seldom held accountable for their role in the illegal exploitation of natural resources from contemporary conflict zones, even though pillage is routinely prosecuted in other contexts.

During the Russian invasion of Ukraine, pillage took place in all occupied territories of Ukraine, especially in PAs. One of the most harmful regions in this lens are the Mykolaiv and Kherson regions (Russian soldiers are destroying…, 2022). The Russian costs of the war against Ukraine has already amounted to more than 80 billion dollars, which is a quarter of the country's budget (Forbes: Russia spent…, 2022). But during the Russian invasion period, there was no monitoring of the pollution level of Ukrainian territories because of regular shelling and the degree the consumes scarce and non-renewable resources in occupied territories, and its impact on the national market.

V. Joksimovich (2000) argues that throughout world history, there have been numerous instances of incidental damage to the environment caused by war. The dropping of atomic bombs on Japan to conclude World War II stands out as the most obvious example. In fact, wartime environmental damage dates back to ancient times, with examples even found in the Bible.

However, the post-war landscape is experiencing changes due to psychological and social transformations in society. The development of ethical and normative rules for inspection and supervision is playing a crucial role. Deviant behaviour, viewed as a social phenomenon, can have negative impacts not only on the individual but also on others and even the economic well-being of the region (Nikolaychuk, 2022).

Roborgh and others express the opinion that Russia's invasion of Ukraine in February 2022 seems poised to create another humanitarian disaster in the 21st century, joining the protracted conflicts in Syria, Iraq, Yemen, Libya, Afghanistan, and Darfur, Sudan (Roborgh, 2021).

Many researchers claim to pay particular attention to the environmental crimes, but now the legislative system of Ukraine, the Law "On the Nature Reserve Fund of Ukraine" (1992), has no pieces dedicated to the crimes on these territories, as special types of crimes against Nature. The legislative recognition of social phenomena as PAsCide provides the opportunity to find additional tools to protect these important territories and to attract attention to the most damaged territories, establish renovation programs.The economic development of ecological systems is intricately linked to the mechanisms for implementing and utilizing financial services.

Analysing the socioeconomic side effects resulting from the environmental impact of bombings is an important aspect of understanding the broader consequences of conflict. Here's a simplified framework for such analysis (Table 8).

Table 8. Socioeconomic side effects from environmental damage

Impact area	Impact tools
1. Environmental Impact Assessment	To identify the locations and types of environmental damage caused by bombings, including damage to protected areas, infrastructure, and natural resources
	To assess the extent of the damage, considering factors like the size of the affected area, the severity of destruction, and contamination
2.Socioeconomic Impact Assessment	To analyse the socioeconomic consequences of the environmental damage, such as the disruption of local ecosystems, water sources, and agriculture
	To evaluate the direct and indirect effects on local communities, including displacement, loss of livelihoods, and reduced access to essential resources
3.Economic Analysis	To quantify the economic losses associated with the environmental damage, including infrastructure repair costs, reduced agricultural yields, and increased healthcare expenses
	To assess the impact on local businesses, employment opportunities, and overall economic productivity
4.Social and Public Health Impact	To examine the social consequences, such as increased stress and mental health issues within affected communities
	To investigate public health issues arising from environmental damage, including air and water pollution
5. Policy Implications	To identify potential policy responses to mitigate the socioeconomic side effects, such as restoration efforts, compensation mechanisms, and support for affected communities
	To consider the role of international assistance and cooperation in addressing these impacts
6. Long-Term Consequences	To assess the long-term socioeconomic repercussions, including the ability of communities to recover and rebuild
	To consider how the environmental and socioeconomic effects may persist over time

Source: author's development

A holistic approach to socio-economic development in protected areas, considering the extent of damage due to bombings in these regions and their potential for attracting investors, is currently lacking. In post-war Ukraine, the evaluation of PAs should consider factors such as the level of nearby infrastructure reconstruction and the degree of pollution. Key indicators for this assessment could encompass:tax revenues in local community budgets; economic activities in the region, including the presence of eco-startups, traditional businesses, and innovative business ventures; dynamics of labour and social migration within the local community; positive externalities generated by the PAs; socioeconomic stability in the region, including the sustainability of long-term projects; indicators related to business presence and territorial development.

The correlation between the damage to protected areas and the regional market's capacity is notably strong. Protected areas hold immense significance in every country, possessing substantial resource potential and the ability to regenerate even in challenging circumstances such as military aggression. It is evident that nature-based businesses can be established in areas affected by bombing and in their immediate vicinity. However, these territories have the capacity for self-restoration, and over time, they can be considered pristine once again. The duration required for these areas to self-cleanse should be subject to monitoring in further research endeavours. The proposed evaluation method aims to achieve the following outcomes: assessing the correlation between the level of destruction in different regions of Ukraine and the post-war assessment of PAs; encouraging businesses to create specialized infrastructure objects and invest in substantial civil infrastructure projects that enhance the overall value of the entire territory; establishing tools to strengthen the positive external effects of the new relationship between infrastructure development and PAs in post-war Ukraine, while also controlling negative effects; attracting "new" financial and investment players in the field of protected areas within the national economy, such as credit unions and insurance companies; increasing the investment appeal for business groups interested in offering eco-services; ensuring the effective development of ecological and economic regional inclusion systems, which will depend on the level of infrastructure reconstruction and the extent of pollution in PAs; identifying the most reliable approach to restoring or relocating social infrastructure networks and ensuring the availability of essential public services in the research areas.

Conclusions

The paper proposes new war phenomena description as a separate legislative definition with important environmental and social meaning, PAsCide. PAsCide is one of the most aggressive forms of war looses. PAsCide, like the war produced phenomena, could be heeled as genocide form, which is not possible to track off now because of the absence of legislative and social background. PAsCide is a form of PAs destruction, which causes immediate (first level) impact, e.g. pollution level or ecosystems destruction measure, and the hidden long – term impact, e.g. the negative side effect on Eco-business perspectives due to changes in regional ecosystems. Furthermore, it is currently challenging to assess the long-term repercussions, which are likely to exert a substantial impact on the well-being of the Ukrainian population and the business sector as a secondary consequence.

The devastation of protected areas during wartime can result in significant consequences, as most financial resources are allocated to strengthening the defence system or fulfilling the military's primary needs, rather than supporting renewable programs for protected areas. According to our research, the adverse effects on these protected areas may not become immediately apparent, given that many regions have access to self-renewable resources. Consequently, local authorities and the administrations of protected areas may not always be able to promptly identify and address negative consequences proactively.

The impact on regions can allow for the anticipation of environmental consequences, and these environmental effects, in turn, can lead to economic repercussions, often referred to as externalities. The relationship between the evident consequences and the concealed ones is contingent on the distance from the epicentre of the explosion. While it is possible to foresee and mitigate these externalities in the first three levels, the fourth level may necessitate monitoring and the subsequent implementation of long-term development projects that are closely tied to research efforts.

The scientific aim for further research it todiagnose the relationship between the assessment of protected areas (PAs) as assets within regions and the extent of destruction of industrial and civil infrastructure within local communities. The entails evaluating the impact of PAs' development as an additional socio-economic criterion, contributing to the growth and capabilities of a local community, as defined by the Ukrainian Methodology for forming capable local communities.

This diagnostic process will offer insights into the intricate interplay between the valuation of PAs, the condition of nearby infrastructure, and their collective influence on the investment attractiveness and capabilities of local communities and regions.

Acknowledgements

The author expresses sincere gratitude to the numerous individuals who have contributed to the completion of this manuscript. Special appreciation is extended to the Institute for Advanced Studies (FRIAS) at the University of Freiburg, particularly the Young Academy for Sustainability Research, for their generous support. The author also wishes to express gratitude to the Eva Mayr-Stihl Foundation for providing financial support for this research. The author is profoundly thankful for being awarded an Associated membership and the essential financial resources, as these contributions have played a pivotal role in facilitating the ongoing progress of the research project.

Conflict of interest

None.

References

[1] Andryeyeva, N., Khumarova, N., & Nikolaychuk, T. (2019). Aligning the social, environmental, and economic interests of "green growth" of the Ukrainian nature reserve fund objects. *Environmental Economics*, 10(1), 93-104. doi: 10.21511/ee.10(1).2019.07.

[2] Bricknell, S. (2010). *Environmental crime in Australia*. Canberra: Australian Institute of Criminology.

[3] Center for Arms Control and Non-Proliferation. (2022). *Fact sheet: Russia's use of thermobaric weapons in Ukraine*. Retrieved from https://armscontrolcenter.org/fact-sheet-russias-use-of-thermobaric-weapons-in-ukraine.
[4] Constitution of Ukraine. (1996, June). Retrieved from https://zakon.rada.gov.ua/laws/show/en/254к/96-вр#Text.
[5] Criminal Code of Ukraine. (2001, April). Retrieved from https://zakon.rada.gov.ua/laws/show/en/2341-14#Text.
[6] Crist, E. (2013). Ecocide and the extinction of animal minds. In M. Bekoff (Ed.), *Ignoring nature no more: The case for compassionate conservation* (pp. 45-62). Chicago: University of Chicago Press. doi: 10.7208/9780226925363-007.
[7] Crook, M., & Short, D. (2014). Marx, Lemkin and the genocide – ecocide nexus. *The International Journal of Human Rights*, 18(3), 298-319. doi: 10.1080/13642987.2014.914703.
[8] Cullinan, C. (2011). *Wild law: A manifesto for Earth justice* Chelsea: Chelsea Green Publishing.
[9] Department of the Nature Reserve Fund of the Ministry of Environment of Ukraine. (2021). *Analysis of the areas of the nature reserve fund of Ukraine by administrative-territorial units for 2020: Informational and analytical materials*. Retrieved from https://wownature.in.ua/wp-content/uploads/2021/05/Dovidka-PZF-2020-V3.0-.pdf.
[10] Detweiler, G. (2019). *How to build your business credit fast*. Retrieved from https://www.nav.com/resource/how-to-establish-business-credit.
[11] Edenborg, E. (2017). Creativity, geopolitics and ontological security: Satire in Russia and the war in Ukraine. *Postcolonial Studies*, 20(3), 294-316. doi: 10.1080/13688790.2017.1378086.
[12] Eichler, L.J. (2020). Ecocide is genocide: Decolonizing the definition of genocide. *Genocide Studies and Prevention*, 14(2), 104-121. doi: 10.5038/1911-9933.14.2.1720.
[13] Eman, K., Meško, G., & Fields, C. (2009). Crimes against the environment: Green criminology and research challenges in Slovenia. *Journal of Criminal Justice and Security*, 11(4), 574-592.
[14] Federal Emergency Management Agency. (2004). *Building design for homeland security*. Retrieved from https://www.fema.gov/pdf/plan/prevent/rms/155/e155ig_cvr-agenda.pdf.
[15] Forbes: Russia spent a quarter of the budget on the war with Ukraine. (2022). Retrieved from https://www.dw.com/ru/forbes-rossia-potratila-na-vojnu-s-ukrainoj-uze-cetvert-budzeta/a-63881459.
[16] Fournier, A. (2018). From frozen conflict to mobile boundary: Youth perception of territoriality in war-time Ukraine. *East European Politics and Societies and Culture*, 32(1), 23-55.
[17] García Ruiz, A., South, N., & Brisman, A. (2022). Eco-crimes and ecocide at sea: Toward a new blue criminology. *International Journal of Offender Therapy and Comparative Criminology*, 66(4), 407-429. doi: 10.1177/0306624X20967950.
[18] Hall, C.M. (2022). Tourism and the capitalocene: From green growth to ecocide. *Tourism Planning & Development*, 19(1), 61-74. doi: 10.1080/21568316.2021.2021474.
[19] Hellman, J. (2014). The fifth crime under international criminal law: Ecocide?. In D. Brodowski, M.E. de los Monteros de la Parra, K. Tiedemann & J. Vogel (Eds.), *Regulating corporate criminal liability* (pp. 273-280). Cham: Springer. doi: 10.1007/978-3-319-05993-8_22.
[20] Higgins, P., Short, D., & South, N. (2013), Protecting the planet: A proposal for a law of ecocide. *Crime, Law and Social Change*, 59, 251-266. doi: 10.1007/s10611-013-9413-6.
[21] Joksimovich, V. (2000). Militarism and ecology: NATO ecocide in Serbia. *Mediterranean Quarterly*, 11(4), 140-160.
[22] Law of Ukraine No. 1082-IX "On the State Budget of Ukraine for 2021". (2020, December). Retrieved from https://zakon.rada.gov.ua/laws/show/1082-20#Text.
[23] Law of Ukraine No. 1801-VIII "On the State Budget of Ukraine for 2017". (2016, December). Retrieved from https://zakon.rada.gov.ua/laws/show/1801-19#Text.
[24] Law of Ukraine No. 1928-IX "On the State Budget of Ukraine for 2022". (2021, December). Retrieved from https://zakon.rada.gov.ua/laws/show/1928-20#Text.
[25] Law of Ukraine No. 2246-VIII "On the State Budget of Ukraine for 2018". (2017, December). Retrieved from https://zakon.rada.gov.ua/laws/show/2246-19#Text.
[26] Law of Ukraine No. 2456-XII "On the Nature Reserve Fund of Ukraine". (1992, June). Retrieved from https://zakon.rada.gov.ua/laws/show/2456-12.
[27] Law of Ukraine No. 2629-VIII "On the State Budget of Ukraine for 2019". (2018, November). Retrieved from https://zakon.rada.gov.ua/laws/show/2629-19#Text.
[28] Law of Ukraine No. 294-IX "On the State Budget of Ukraine for 2020". (2019, November). Retrieved from https://zakon.rada.gov.ua/laws/show/294-20#Text.
[29] Law of Ukraine No. 928-VIII "On the State Budget of Ukraine for 2016". (2015, December). Retrieved from https://zakon.rada.gov.ua/laws/show/928-19#Text.
[30] Lemkin, R. (2008). *Axis rule in occupied Europe: Laws of occupation, analysis of government, proposals for redress*. Clark: The Lawbook Exchange.
[31] Lindgren, T. (2018). Ecocide, genocide and the disregard of alternative life-systems. *The International Journal of Human Rights*, 22(4), 525-549.
[32] Mehta, S., & Merz, S. (2015). Ecocide – a new crime against peace? *Environmental Law Review*, 17(1), 3-7. doi: 10.1177/1461452914564730.
[33] National Park "Buzkyi Gard". (n.d.). Retrieved from https://ua.igotoworld.com/ua/poi_object/66042_national-park-buzkyi-gard.htm.
[34] Nikolaychuk, T. (2022). The post-war rebuilding system by chess-business modeling: First steps and no answers. *International Journal of Economics and Business Administration*. 10(2), 78-100.

[35] Official website of Nature Reserve Fund of Ukraine. (n.d.). Retrieved from https://wownature.in.ua/oberihay mo/pryrodno-zapovidnyy-fond.
[36] Order of the Ministry of Environmental Protection and Natural Resources of Ukraine No. 111 "On Approval of the Regulation on the National Natural Park "Buzky Gard". (2020, August). Retrieved from https://mepr.gov.ua/nakaz-mindovkillya-111-vid-31-08-2020.
[37] Resolution of the Cabinet of Ministers of Ukraine No. 807-IX "On the Formation and Liquidation of Districts". (2020, July). Retrieved from https://zakon.rada.gov.ua/laws/show/807-20/sp:max100#Text.
[38] Resolution the Cabinet of Ministers of Ukraine No. 214 "On Methodology for the Formation of Capable Territorial Communities". (2015, April). Retrieved from https://zakon.rada.gov.ua/laws/show/214-2015-п#Text.
[39] Roborgh, S. (2021). Localisation in the balance: Syrian medical-humanitarian NGOs' strategic engagement with the local and international. *Disasters*, 47(2), 519-542. doi: 10.1111/disa.12504.
[40] Russian soldiers are destroying protected areas of the Kherson region, Denisova said. (2022). Retrieved from https://suspilne.media/239082-rosijski-vijskovi-znisuut-zapovidni-teritorii-hersonskoi-oblasti-denisova.
[41] Stewart, J.G. (2010). *Corporate war crimes: Prosecuting pillage of natural resources*. New York: Open Society Foundations.
[42] Stone, C.D. (2012). Should trees have standing? – Toward legal rights for natural objects. In S. Vanderheiden (Ed.), *Environmental right*. London: Routledge. doi: 10.4324/9781315094427.
[43] Verner, I. (Ed.). (2021). *Statistical Yearbook of Ukraine for 2020*. Kyiv: State Statistics Service of Ukraine.
[44] Wanner, C. (2021). Empathic care and healing the wounds of war in Ukraine. *Emotions and Society*, 3(1), 155-170. doi: 10.1332/263169021X16139626598365.
[45] White, R. (2011). *Transnational environmental crime: Toward an eco-global criminology*. New London: Willan. doi: 10.4324/9780203804001.
[46] Wright, G. (2011). Conceptualising and combating transnational environmental crime. *Trends in Organized Crime*, 14, 332-346. doi: 10.1007/s12117-011-9130-4.

Геноцид заповідних територій: основні аспекти

Тетяна Олексіївна Ніколайчук

Доктор філософії в галузі економіки, асоційований член Молодої академії досліджень сталого розвитку
Фрайбурзький інститут перспективних досліджень Фрайбурзького університету
79098, Фрідріх-штрасе, 39, м. Фрайбург, Німеччина
http://orcid.org/0000-0001-6268-7723

Анотація. Оскільки заповідні території України дуже вразливі та унікальні, забруднення цих територій внаслідок військової агресії може мати надвичайно негативні наслідки не тільки для України, а й для всього світу, зокрема й для міжнародної економіки. Мета статті – дослідити повязаний з військовою агресією феномен геноциду заповідних територій як окремої форми геноциду і зв'язок між негативним впливом на навколишнє середовище та негативними коливаннями національного ринку. У дослідженні використано методи комплексного аналізу літератури, метод експертинх оцінок, що передбачає порівняння закодонних та українських наукових шкіл. Проаналізовано законодавчий підхід до дефініції «геноцид заповідних територій», здійснено моніторинг статитичних даних щодо рівня негавного впливу на території та обєкти природно-заповідного фонду України. Завдяки методу наукового узагальнення та графічно-фігурному прийому забезпечено візуалізоване формування результатів наукового дослідження. Для оцінки вторинних результатів обстрілів на регіони з високим рівнем захисту, а саме заповідні території та об'єкти, відповідно до різних досліджень проведено кількісний огляд літератури, зокрема метааналіз. Проведено обчислення, яке відображає розмір зруйнувань від бомбардування, яке надає можливість спостерігати за найбільш пошкодженими територіями й оцінювати потреби в їх відновленні. Виявлено безпосередні наслідки (перший рівень) і приховані довгострокові економічні наслідки на ринок, орієнтований на екологію, після війни. Уведено поняття геноциду заповідних територій, яке не лише допоможе висвітлити негативні наслідки та розмір завданих пошкоджень цим унікальним територіям та об'єктам, але також може бути використано як інструмент для юридичного виділення впливу на всю країну від рівня пошкодження заповідних територій та об'єктів. Це поняття може сприяти визначенню порушених прав заповідних територій та спонукати до збільшення інвестицій у цей сектор. Також дослідження може сприяти оцінці зв'язку між рівнем зруйнування довкілля і придатністю цих регіонів для екологічно спрямованих бізнес-проєктів

Ключові слова: заповідні території; екокатастрофа; післявоєнний період; геноцид; наслідки війни; рівень пошкодження