

ECONOMIC AND ADMINISTRATIVE METHODS OF RESTORATION BY LOCAL GOVERNMENTS OF THE ENVIRONMENT OF UKRAINE DESTROYED AS A RESULT OF MILITARY OPERATIONS

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Abstract. The consequences of the armed conflict in eastern Ukraine, in addition to human losses, include significant damage to environmental systems and natural resources. As a result of the Russian attack, 20% of Ukraine's protected areas totaling about one million hectares were affected. Currently, 8 nature reserves and 10 national parks remain under occupation, and due to the hostilities, the protected areas protection services are unable to perform their functions and ensure the conservation of rare species, while some reserves and national parks are on the verge of a humanitarian crisis. The hostilities lead to environmental pollution with heavy metals (titanium, vanadium, strontium) as a result of artillery shelling, poisoning of drinking water and radioactively contaminated waters of the Azov and Black Seas and rivers: Dnipro and Siverskyi Donets as a result of flooding of mines, destruction of vegetation and wildlife. Numerous cases of air pollution and potentially serious contamination of groundwater, surface water, and soil have already been reported. Due to forest fires, the burning of oil products and industrial facilities, air emissions have already exceeded 67 million tons, so the long-term effects of the war could be even more harmful not only to public health and safety, but also to ecosystems and biodiversity. These problems require an immediate response from the state and authorities. At the same time, local governments are the most prompt and differentiated responders to all problems arising in certain territories. It is they who, using a system of economic and administrative methods, eliminate existing problems and troubles. Today, these bodies need immediate financial assistance from the state to implement projects to restore nature reserves, restore forests and territories, etc. There is a need to develop and implement a program for the restoration and revitalization of territories, which should include "guides" for local governments on how to raise funds and other resources to restore destroyed infrastructure. A mechanism for bringing the Russian Federation as an aggressor state to justice for the damage caused to the environment of Ukraine needs to be developed immediately. The author argues that it is necessary to develop a methodology for documenting and assessing environmental damage caused by military operations. It is determined that the problem of environmental restoration is complex, and therefore requires coordination of efforts of all subjects of the hromada and their active participation in this important matter. That is why this study focuses on the problems of bringing to justice those responsible for committing environmental crimes caused by military actions and mechanisms of compensation for the damage caused.

Key words: economic methods, administrative methods, restoration, military actions, environment, local councils, hromadas, clean water, air, animals, infrastructure, legal liability.

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1. Introduction

Environmental protection is the main task of any state. Accordingly, environmental policy is an integral part of ensuring national security.

In the context of Russia's military aggression, the issue of environmental protection in Ukraine is an acute concern for all public authorities. Of all human activities, war has the worst impact on the environment. It should be noted that since the beginning of Russia's large-scale invasion of Ukraine, more than 230 crimes against the environment have been officially recorded, which poses a threat both to the areas where the fighting is taking place and to the entire world. The chemical toxins of phosphorus bombs, when released into the soil, form salts that increase the migration of phosphorus compounds from the affected area to areas free of hostilities. Natural forest fires caused by rocket attacks are destroying large forest areas, especially in enemy-controlled territory. Since the beginning of 2022, fires have been recorded in the forests of Ukraine on a total area of 5,500 hectares. This figure is 96 times higher than last year. According to environmentalists, burning oil at a multi-tank base releases about as much pollution into the atmosphere as all Kyiv's transportation in a month. When liquid fuels (fuel oils) are burned, sulfur dioxide, carbon monoxide, nitrogen oxides, gaseous and solid products of incomplete combustion, vanadium compounds, sodium salts, etc. are released into the air along with flue gases. The combustion of petroleum products is also accompanied by emissions of sulfur oxide, which causes acid rain. Shells hitting chemical plants, such as those in Rubizhne in Luhansk Oblast or Sumy, have led to nitrogen and ammonia leaks. Biodiversity is being destroyed by enemy equipment. These are thousands of plant species listed in the Red Book of Ukraine and protected by law. Military operations lead to the death of wild animals. That is why the development of Ukraine's environmental policy is of particular importance today, as it is the state strategy in the postwar period in this area that will ensure the quality of the environment and the life of the population, the national and cultural revival of the nation, and the resource and intellectual potential.

2. Methodological features of the study of the powers of local hromadas in eliminating the consequences of the war that affected the state of the environment

Today, the issue of scientific substantiation of the elimination of the consequences of military actions that have affected the state of the environment by local governments is a new, poorly understood problem. Since military consequences have unpredictable content and scale, external and

hidden internal nature, which affects the possibility of recovery and development. At the same time, the issues of environmental research were studied by such scientists as: V.I. Andriytssev, G.I. Balyuk, A.G. Bobkova, S.M. Kravchenko, M.V. Krasnova, N.R. Malysheva, P.A. Muzychenko, V.L. Muntyan, V.K. Popov, V.A. Prylypko, Y.I. Sayenko, R.G. Rozovsky, Y.M. Todiko, M.V. Shulga, etc.

The legal status of local self-government bodies was of interest to I. Butko, V. Golovchenko, P. Gural, V. Campo, V. Kiselychnyk, O. Korpan, M. Krasnov, V. Kuybida, V. Chirkin and others.

It is worth noting that under martial law, local authorities must have a deep understanding of the dynamics and flexibility in decision-making, possess the necessary knowledge and information to effectively influence the situation and take a high-quality approach to environmental restoration. Today, local hromadas cannot wait for decisions from above, but must solve environmental issues on their own in their jurisdictions. Undoubtedly, these bodies should immediately be granted broader powers to respond quickly to certain events. These ideas are now being voiced in comprehensive reports by the World Bank and the European Commission, which indicate that it is impossible to study the problem in full today because of the ongoing conflict, the existing occupied territories, and significant destruction. At the same time, the war is ongoing, and its social and economic consequences will continue to intensify and grow. However, reconstruction and recovery must begin now, wherever it is safe and feasible.

3. Theoretical and legal foundations of the role of local hromadas in eliminating the consequences of war that affected the environment

Studying this problem, it should be noted that the Ukrainian legislation has a wide range of normative acts that regulate the treatment of environmental objects, their protection and rational use, these are the Laws of Ukraine "On Environmental Protection" of June 25, 1991, "On Air Protection" of October 16, 1992, "On the Nature Reserve Fund of Ukraine" of June 16, 1992, "On Wildlife" of March 3, 1993, "On Plant Quarantine" of June 30, 1993, etc. The use and protection of the environment is regulated by codes (land, water, forest, and subsoil). This legislation protects the following: the environment as a set of natural and natural-social conditions and processes; natural resources, both those involved in economic turnover and those not used in the national economy at a given period (land, subsoil, water, air, forest and other vegetation, wildlife), landscapes and other natural complexes (all natural goods that

serve to satisfy human needs); natural territories and objects subject to special protection (territories and objects of the nature reserve fund, health, recreational, water protection purposes, other territories and objects defined in accordance with the legislation of Ukraine); human health and life. The legislator has introduced complex mechanisms for the protection of these facilities and their rational use in peacetime, but the legal norms of these acts are not designed for the military operations that are taking place in Ukraine, causing damage or destruction of infrastructure, buildings and all living things. For example, the damage and destruction of chemical plants creates the risk of a number of diseases, ranging from shortness of breath to lung, stomach, reproductive and other cancers. The environmental threats created in Ukraine by Russia's full-scale invasion are exacerbated by the destruction of the country's industry. One of the most dangerous threats is tailings ponds, which store liquid industrial waste. There are 465 of them in the country, holding more than 6 billion tonnes of waste. And 200 of them are in eastern Ukraine, the region hardest hit by the war. The hostilities themselves pose no less of a threat: spilled fuel, destroyed equipment and spent weapons, exploded rockets – all of which contaminate soil and groundwater with chemicals and heavy metals. Russian troops are not only creating man-made and environmental disasters, they are also destroying natural areas that are home to rare species and endangered habitats. According to the Ukrainian Nature Conservation Group, 44% of the most valuable areas of the Nature Reserve Fund are in the war zone, under the temporary control of the Russian invaders or inaccessible to Ukraine. These examples show that today there is an urgent need to update legislation in this area, which could quickly respond to the needs of eliminating the consequences of war, restoring the natural environment and cleaning up the ecosystem. Development of legal liability mechanisms for environmental damage as an administrative tool of public administration.

The system of public administrative bodies in the environmental field also needs to be improved and new approaches adopted, with the hromadas, regional, district and village councils, which make up the system of local self-government, taking the lead. In this study, the focus will be on them, since the functions of these bodies to ensure environmental protection are provided by Article 19 of the Law of Ukraine "On Environmental Protection" and the Law of Ukraine "On Local Self-Government in Ukraine", in particular, paragraphs 34-38 of Article 26, Article 33. At the same time, it should be noted that in accordance with the Order of the Cabinet of Ministers of Ukraine dated 01 April 2014 № 333-p

"On Approval of the Concept of Reform of Local Self-Government and Territorial Organisation of Power in Ukraine", their role and responsibility for environmental protection has been significantly expanded and strengthened.

Accordingly, it is established that it is the local self-government bodies at the regional level that are empowered to ensure environmental protection. Accordingly, village, settlement and city councils approve targeted local environmental programmes, local budgets, make amendments to them, in particular for environmental protection measures; establish local taxes and fees, including environmental ones, and their rates in accordance with the Tax Code of Ukraine; create trust funds, including environmental ones, and approve regulations on them; make decisions on granting local loans, privileges in accordance with the current legislation; approve land tax rates in accordance with the Tax Code of Ukraine; approve the amount of payment for the use of natural resources owned by the respective hromadas; decide, in accordance with the law, on granting permission for special use of natural resources of local significance, as well as on cancellation of such permission; decide on the organization of territories and objects of the nature reserve fund of local significance and other territories subject to cultural or scientific value, monuments of nature, history or culture protected by law, making decisions on the announcement of a "season of silence" in places of mass reproduction and rearing of offspring by wild animals with restrictions on economic activity and the extraction of wildlife, making proposals to the relevant state bodies on the announcement of natural and other objects that have ecological, historical, cultural or scientific value, monuments of nature, history or culture protected by law; provide in accordance with the current regulations covers the relevant territory.

It should be noted that the legislator also regulates the form of decision-making on environmental protection by district and regional councils – plenary sessions, which may deal with the following issues: regulation of land relations; granting of permits for special use of natural resources of district or regional significance, as well as revocation of such permits; establishing rules for the use of water intake facilities intended to meet the drinking, domestic and other needs of the population, sanitary protection zones for water supply sources, limiting or prohibiting the use of drinking water by enterprises for industrial purposes; to take decisions on the organisation of the territories and objects of the nature protection fund of local importance and of other areas that are subject to special protection; submitting proposals to the relevant state authorities to declare natural and other objects of ecological, historical, cultural or

scientific value as monuments of history or culture protected by law, making decisions on declaring a "season of silence" in places of mass breeding and rearing of offspring by wild animals with restrictions on economic activity and harvesting of wildlife. In addition, such powers include: approval of programs for the socio-economic development of the district and region, which should also take into account the environmental interests of the respective territories, targeted programs for environmental protection and other issues, and hearing reports on their implementation; distribution of funds transferred from the state budget in the form of grants, subsidies, etc. to the district budgets of towns of regional importance, villages, settlements, towns of district importance, which can also be used in the interests of environmental protection, ecological safety and reproduction of natural resources.

4. Creation of new mechanisms for local hromadas to deal with the consequences of war on the state of the natural environment

The Law of Ukraine "On Environmental Protection" stipulates that local councils are responsible for the state of the environment on their territory and within their competence: ensure the implementation of Ukraine's environmental policy and the environmental rights of citizens; give consent to the location of enterprises, institutions and organizations on their territory in accordance with the procedure established by law; approves, taking into account environmental requirements, planning and development projects for settlements, their master plans and schemes of industrial hubs; issues (reissues, issues duplicates, revokes) permits for special use of natural resources of local importance in cases provided for by law; establish local environmental programs; organize environmental studies; create and define the status of the nature reserve fund, including currency, funds to finance programs and other environmental protection measures; ensure informing the public about the state of the environment, the functioning of local environmental automated information and analytical systems; organize work on eliminating the environmental consequences of accidents, involve enterprises, institutions and organizations regardless of their subordination and form of ownership, as well as citizens in this work; make decisions on the organization of territories and objects of the nature reserve fund of local importance and other territories subject to special protection; monitor compliance with environmental legislation.

An analysis of these powers suggests that local councils have a significant amount of authority over public environmental management. In times of war, their role in restoring Ukraine's ecosystem is dominant.

Consider this statement on the examples of modern reality, what is happening, and the conditions of Russian military aggression.

Thus, according to the World Bank and the European Commission, the forestry sector, which is managed by local hromadas within their territories, has been significantly affected by the hostilities. As of today, almost 4% of forest plantations have been destroyed, and 38% are inaccessible due to mining. The damage caused to forest plantations and the infrastructure that serves this type of natural environment amounts to almost USD 2.5 billion. The cost of lost ecosystem services due to mining, which makes forests inaccessible, is estimated at USD 739 million. The industry's rehabilitation and reconstruction needs, including institutional capacity building, equipment improvements, and nursery productivity, are estimated at USD 1.2 billion. Along with the destruction or damage to the forest network, nearly 200,000 jobs have been lost as a result, as the area is dangerous and usable equipment cannot be removed due to mined areas. Hromadas are gradually eliminating the consequences of the war at the expense of their own budgets. This spring, Kyiv foresters have already planted 122,200 pine seedlings in authorized areas of the forest. Large saplings of willow, oak, sycamore, mountain ash, robinia pseudoacacia, thuja and shrubs were also planted. In addition, 250 diseased trees were treated with the help of specialists. Since the beginning of the year, more than 2,800 trees, almost 22,300 bushes and more than 5 million flowers have been planted in the capital's parks and squares, in an ongoing attempt to repair the damage caused by the military operations.

The United Nations, which monitors the aftermath of war, says there are about 360 critical sites in the war zone. Among the industrial facilities that pose a serious risk of pollution are the following: Zaporizhzhia and Chernobyl nuclear power plants, Avdiyiv coke-chemical plant, Torezhsky surfacing hard alloy plant, Mariupol metallurgical plant, as well as all ports, oil storage facilities and coal mines. Forest fires in the Chernobyl Exclusion Zone are destroying forests and fallow land that have accumulated significant amounts of radionuclides following the 1986 accident. During the occupation of the exclusion zone, fires have already been recorded in natural complexes and abandoned villages over an area of approximately 10,287 hectares, in particular on 28 March 2022, when, after two days without fires, new fires were discovered that covered another 176 hectares of natural ecosystems. Oil depot fires release nitrogen oxides, ammonia, sulphur dioxide, benzopyrene, carbon monoxide, hydrogen cyanide vapour, formaldehyde, metals, toxic organic substances and their compounds into the air. These substances also cause oxidation of soil, wood, turf

and metal structures such as bridges. While carbon dioxide and water vapour are non-toxic and only harmful to the climate (both are greenhouse gases), sulphur and nitrogen oxides can cause acid rain, change soil pH, burn vegetation and cause respiratory problems in mammals and birds. After fires/explosions, sulfur settles on the ground, which turns into sulfuric acid after rain. As a result of the hostilities on the territory of Ukraine, the aggressor country systematically uses the Iskander, Tochka-U, X101, Kalibr and Kinzhal missile defence systems, which contain toxic substances in their fuel components – decilin, ammonium perchlorate, oxirane, propene, butyl, propylene nitrite, etc., as well as their structural components, which, if they remain in the ground for a long time, form dangerous chemical compounds that pose a threat to human life and health, as well as the components of their construction, if they get into the soil, they form dangerous chemical compounds which, if they remain in the soil for a long time, pose a threat to human life and health, create risks of pathogenic changes in the plant and animal world. At the same time, Ukraine is currently unable to study the problem systematically because there is still no unified system of state monitoring of air quality. Individual subjects of state monitoring collect and use data independently or even restrict access to it. As a result, investigative bodies are unable to quickly use data collected by data owners, such as subjects of state monitoring or economic entities. This complicates and prolongs the process of gathering evidence on which to base charges for further reparations by the aggressor country. The creation of a unified system for rapid monitoring and analysis of air quality in Ukraine during the war is also a task of civil security, taking into account the risks and threats to the country from the consequences of hostilities or the use of chemical weapons by the enemy.

Due to damage to water supply infrastructure, an estimated 1.4 million people in Ukraine currently have no access to safe water and a further 4.6 million people have limited access. The health damage caused by the lack of access to safe water (additional deaths from diarrhoea) is estimated at US \$138-257 million. It should be noted that the local authorities of various cities and regions are trying to rectify the situation, for example, during the nine months of the war only the brigades of emergency repair works of the Kharkiv Water Supply Complex of the KP Kharkivvodokanal repaired 814 damages to pipelines, but unfortunately these actions have a life-sustaining, not restorative content. In Ukraine today, water can also be used as a weapon, as it has been in other modern armed conflicts. The accumulation of large volumes of water in artificial reservoirs during hostilities is a rather dangerous

factor. A breach in the dams of Ukrainian reservoirs could flood land and cities far downstream. Such a danger for Ukraine exists for a significant number of territories, covering hundreds of settlements, in which hundreds of thousands of citizens live. For example, if to consider the main sources of hydrodynamic danger on the largest river, the Dnipro, the following should be noted. There are 3 reservoirs in the Dnipro economic district (Kamyanske, Karachunivske, Kremenchutske), the dams of which accidents will cause catastrophic consequences for the population of Dnipropetrovsk, Zaporizhzhia and Kirovohrad regions. When the dam of the Kamian reservoir breaks, a flood zone with a total area of 769 km² will be formed, which will include 5 cities (Kamyanske, Dnipro, Novomoskovsk, Marganets and Nikopol) and 43 rural settlements in 8 districts of the Dnipropetrovsk region. Also, part of the territory of the Zaporizhzhia region with a total area of 342 km², on which the city of Zaporizhzhia and 33 settlements are located, will also be flooded. It will be necessary to evacuate about 500,000 people from the zone of catastrophic flooding. In the Kirovohrad region, the reservoir of the Kremenchuk HPP (volume 13,500 million m³) poses a significant danger to the population. If its dam is destroyed, an area of 116 km² with settlements and a population of 28,000 people could be flooded within the region. That is why local hromadas need to develop an evacuation plan for people in case of a threat of reservoir explosions, and conduct a training system based on a coordinated system of actions by various services in the event of threats.

As a result of the war, about 20 per cent of the area of all state-protected territories in Ukraine is under threat. The threatened areas include 17 Ramsar sites (wetlands of international importance) with a total area of 627,300 m², some 160 areas of the Emerald Network with an area of 2.5 million hectares, and four biosphere reserves. This situation threatens the strategic objectives of biodiversity conservation, reduces the potential for absorbing greenhouse gases and accelerates the process of desertification. The disappearance of endemic plant and animal species will have significant consequences for biodiversity on a planetary scale. The scale of the potential damage is greater because the conflict began closer to spring, when the animals move in search of mates, food and to rear their young. It should be noted that as a result of hostilities there are many elements of damaged equipment and fuel and lubricants, used or unused small arms, aircraft, artillery ammunition, in particular cartridges, shells, grenades, rockets, mines, bombs, etc., which interact with components of the natural environment: atmospheric air, water, soil cover, which can lead to a man-made emergency if these elements of the

man-made load are left on the ground. In the long term, if urgent action is not taken to eliminate the consequences of the hostilities, the agrobiocenosis will be irreparably damaged and the use of polluted and/or disturbed land for economic activity will become impossible, requiring long-term revitalisation or complete withdrawal. All these problems fall on the shoulders of the local councils, which are obliged to eliminate these consequences from their territories for the livelihood of their hromadas. The use of a system of economic and administrative resources by these bodies will make it possible to restore the natural environment damaged by the war. At the same time, in order to obtain a high quality result, it is necessary to create a counter department for the natural environment in the executive committees of local councils and to give it the authority to carry out geospatial analysis using GEOINT methods on the basis of remote sensing data of the Earth, which are available both in public and commercial access of such web resources as Google Earth, Planet Labs, Satellogic, Earthdata, Earth Explorer, Maxar Technologies, the national geoportal of the DZZ, etc. by individual areas of interest (AOI). All the information gathered through this mechanism should provide a reliable basis for the subsequent production of digital thematic maps, which will provide a reliable and objective representation of the amount of damage caused to the ground cover during the armed conflict, with a clear differentiation of the impact factors and an approximate assessment of the damage in monetary terms.

At the same time, conduct effective environmental monitoring to assess overall environmental damage, take necessary measures to prevent further deterioration and restore ecosystems. Prepare and implement a system of environmental rehabilitation measures, in particular with regard to the collection, safe storage and disposal of large quantities of military and other waste. Promote the introduction of best practices to ensure the sustainability, revitalisation and development of regions and hromadas, systematically involving representatives of the research and expert community in the development of relevant programmes and projects. Post-war reconstruction must take into account: the potential impact of climate change and changes in agricultural management; the introduction of systems to ensure the preservation of groundwater, the reduction of siltation of reservoirs, the construction of modern wastewater treatment systems that allow their reuse; the integration of the results of public networks monitoring the state and quality of the environment into the mechanism of organisation and implementation of state monitoring in the field of atmospheric air protection. Development of general and technical

requirements for mechanisms of organisation and implementation of alternative public and scientific monitoring in the field of air protection. A special place in decision-making on environmental issues should be given to local self-government bodies, the purpose of which should be the development of strategic directions for sustainable development of hromadas with optimal use of natural resources in favourable environmental conditions, development of environmental policy concepts by the relevant councils.

It is also necessary to create opportunities for the development of ecological urban transport, to reduce the number of private cars in settlements and to create conditions for the use of individual ecological transport (electric mopeds, scooters, bicycles, etc.). It is also necessary to contribute to ensuring the stability of rural hromadas in Ukraine in the post-war period on the basis of the formation of complex portfolios of innovative projects in the agro-industrial sphere in accordance with the updated goals of local and regional development strategies. To use existing post-war crowdsourcing projects as innovative tools for ensuring public participation in public administration, as a platform for testing the feasibility of ideas set out in the Territorial Development Strategy.

In particular, it is necessary to emphasise the need to map the areas affected by military operations and, when determining the extent of environmental damage, to take into account mine contamination as a source of pollution, as well as the cost of demining the area.

In order to increase the flexibility of local budgets and the efficiency of decision-making, it is also necessary, first of all, to abolish for the period of martial law the restrictions on the implementation of expenditures due to the free balance of budget funds or the excess of the revenue part of the general fund of the local budget (Article 85 of the Budgetary Code of Ukraine); secondly, the right of local state, military, civil-military (if established) administrations, executive committees of village, settlement and city councils to transfer funds from the special fund of the local budget (except for own revenues of budgetary institutions and interbudgetary transfers) to the general fund of the local budget on the basis of the relevant resolution.

It is particularly important to adopt the laws "On Compensation for Damages Caused to Ukraine by the Aggression of the Russian Federation" and "On Criminal Punishment of Natural Persons for the Crime of Aggression, Crimes against Humanity and War Crimes Committed during the Aggression of the Russian Federation against Ukraine", which will establish the mechanisms for bringing to justice all military personnel and criminals who have caused grief and suffering to the Ukrainian people, the environment and the natural environment of Europe.

5. Conclusions

The war in Ukraine united the whole of Ukrainian society in a single desire for victory and the restoration of their own country. Today, divisions between social classes, political forces and even interest groups have virtually disappeared. At the same time, the patriotic impulse and emotional upsurge that drive Ukrainians to victory should not destroy the foundations of healthy rationalism, which is the key not only to the effective management of military logistics, but is also rightly considered one of the cornerstones of the future post-war reconstruction of Ukraine and the restoration of the natural environment, improvement of the health of the nation, all of which should be done against the background of the restoration of the state economy. An important aspect is the establishment of properly coordinated interaction between state authorities and local self-government, taking into account the principle of subsidiarity. This is particularly important under martial law conditions, when all links in the power hierarchy naturally gravitate

towards centralisation of management decisions. Therefore, today's unconditional priority is to determine the priority tasks to be entrusted to the local self-government bodies of regions and hromadas in order to ensure, on the one hand, their maximum efficiency in managing the resource potential of the respective territories, the restoration of territories and natural landscapes, the environment, with the aim of timely provision of urgent needs of the front and restoration of the economy.

Hromadas should use both tried and tested management tools and introduce new ones to effectively restore the natural environment destroyed by military operations. The mechanisms for compensating for Ukraine's losses during the war, including the restoration of the natural environment, deserve special attention. Russia is compensating everything at the expense of the state, the Central Bank of Russia and Russian oligarchs. The money will also come from Russia's confiscated companies and assets abroad, which will be auctioned off and then transferred to Ukraine.

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