

U W

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**Ukraine War
Environmental
Consequences
Work Group**

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Dear Friends!

Russia's full-scale invasion of Ukraine has been going on for four years. It began on February 24, 2022, and continues to this day. The war in Ukraine has been going on even longer, and its starting point can be traced back to the events on Kyiv's Maidan Square in 2013-2014, when Ukrainians stood up for European values, including environmental values. For four years, the UWEC Work Group has been analyzing the impact of Russian hostilities on the environment, seeking solutions for green recovery, and reporting on the consequences of the war for the entire region. A brief overview of the years in a text dedicated to the anniversary of the full-scale invasion:

- **[Four years of full-scale war in Ukraine: the environmental perspective](#)**

The war in Ukraine continues to cause new types of pollution. After another round of shelling of Odesa in January 2026, large amounts of sunflower oil spilled into the Black Sea. Today, that oil is drifting along the coast, leaving ecological disaster wherever it goes. Recent reports track clumps of oil as far as Tuzlovsy Liman National Park. Activists claim that thousands of birds have been affected.

UWEC Work Group experts Eugene Simonov and Oleksiy Vasyliuk describe how, in the short term, non-petroleum oil pollution can be just as dangerous as pollution from petroleum products. Although vegetable oil dissolves more quickly and is absorbed by the same bacteria, it nevertheless poses a serious threat to birds and other marine animals. Nations must develop rapid and clear response plans to prevent vegetable oil spills and reduce the impacts of spills on ecosystems.

- **[Russian attacks on vegetable oil facilities open a new front in its war on Ukraine](#)**

A new pollution source is fiber optic threads, which are used as secure guidance for many first-person-view drones. Scientists are just beginning to study the impacts of large quantities of fiber optics on soil, water and ecosystems. The greatest danger may come from the decomposition byproducts of polymers. Videos of Ukrainian fields covered with fiber optic threads like giant spider webs have already spread across the internet. Although there have been numerous reports of birds getting caught in these nets, other birds are incorporating them in nests. Contributor Inha Paoliy examines the consequences of fiber optic pollution and how it affects the environment:

- **[Fiber-optic web: How the use of drones on the frontlines impacts the environment](#)**

The extensive destruction, pollution and losses that Ukraine has faced during the years of full-scale Russian invasion raise questions about the need for an environmental security program. In many countries that experience ongoing conflict – such as Israel, Lebanon, or Palestine – environmental security is a cornerstone of national policy. The situation in Ukraine is different for now, but it is



necessary to develop a strategy. Expert Polina Tsybalyuk explores how environmental security can be integrated with Ukraine's national plan:

- **Environmental security: a key element of Ukraine's national policy**

One project that addresses both environmental and national security concerns is wetlands restoration. Such work has already proven effective in the first months of the full-scale invasion. At that time, flooding and wetland restoration along the Irpin River helped to halt the 2022 advance on Kyiv. Today, many European countries are considering the defensive role of wetlands. Environmental expert Oleh Listopad (National Interest Defense Network) explains how wetlands can not only defend against tanks but also the effects of climate change:

- **Swamps vs tanks: How wetlands defend in wartime**

We also continue our series on how climate and environmental activists struggle on despite the ongoing war. In the latest piece in the series, we will talk about Ukrainian activists. Despite the war, loss of friends and family, the need to defend their country, ongoing shelling and often horrific conditions – frequently living without heating or electricity – they continue to advocate for Ukraine's environment and climate:

- **Environmental and Climate Activism in the time of invasion: Ukraine**



We wish you strength, peace and good news!
Alexej Ovchinnikov, editor in chief, UWEC Work Group



Four years of full-scale war in Ukraine: the environmental perspective

Alexej Ovchinnikov

*R*ussia's full-scale invasion of Ukraine has entered its fifth year – the war that began in 2014 has now continued for over ten years in one form or another. It is becoming clear that the environmental and climatic consequences are only expanding and taking on new forms.

In Ukraine, people and nature alike are today concerned less with the end of the war than with how to adapt to it. This is no easy task: destruction is taking on ever newer forms. Whether it is fields covered with webs of optic fibers or frozen

apartments in Kyiv, what we are seeing today would have been impossible to imagine in the first years of the invasion.

One thing is obvious: the consequences of the war will remain with Ukraine for decades to come. Mined fields, burned forests, polluted soils and waters—just like climate change, these consequences are unavoidable. Organizations, activists and experts will need to find ways of adapting to these, having done all they can to ensure that the future of Ukraine



and the entire region is both sustainable and green.

But it will only be possible to truly adapt when the war ends—or at least, once its active phase is over. For now, we can only monitor the changes and continue to shout as loudly as possible that the consequences of the Russian invasion are not limited solely to Ukraine—they are spreading around the world. Now, when international support for Ukrainian society and nature is beginning to wane, this alarm should be sounded even more loudly.

The consequences of the war have moved beyond Ukraine and Russia

The high-profile environmental disasters caused by the war are having increasingly international consequences. The 2024 petroleum oil spill in the Kerch Strait was one of the worst Black Sea disasters in history. It occurred because Russia, eager to quickly load its “shadow fleet” with oil, violated all standards and permitted river vessels to sail out into the open sea during a storm.

As old and uninsured shadow fleet vessels continue to sail around the world, an accident could potentially occur at any moment, triggering a new disaster.

Read more:

- [International reaction to the Kerch Strait oil spill](#)
- [Military oil spill: How the Kerch Strait tanker disaster is linked to Russia’s ‘shadow fleet’ oil exports](#)
- [Military oil spill \(2\): Scale and consequences of the catastrophe for flora and fauna and the region’s ecosystems](#)

International institutions and organizations no longer have any real influence over Russia. Moscow is simply withdrawing from international agreements, as its exit from the Ramsar Convention on Wetlands demonstrated so clearly. All of this leads to the erosion of international institutions and their influence. For the sake of fairness, we should note that Russia is not alone here: the United States is also devaluing international agreements, threatening humanity’s struggle to adapt to climate change.

Read more:

- [Between war and nature conservation: Who wins when aggressor countries withdraw from environmental agreements?](#)
- [The Ramsar split—was it inevitable, and what should be done next?](#)

The politicization of the environmental and climate agenda is also a factor. One of the reasons for Russia’s withdrawal from the Ramsar Convention was what the Kremlin



described as the excessive political bias of the convention committee. However, Russia itself is not above political terrorism when it comes to ecology, environmental protection and climate change. A good example is the [detention](#) of the Ukrainian biologist Leonid Pshenichnov shortly before a session of the Commission for the Conservation of Antarctic Marine Living Resources. The arrest was clearly politically motivated – Russia was attempting to protect its ambitions in Antarctica, related, among other things, to krill fishing and the development of hydrocarbon resources on the Antarctic shelf.

Another example is the creation of nature reserves in occupied territory. In attempting to achieve international recognition of Ukrainian conservation areas as Russian – as it is doing in the Donetsk region – Moscow is trying to essentially formalize political annexation.

Read more:

[Occupation disguised as conservation: Russia's 'new' nature reserve in the Donbas](#)

The politicization of the environmental and climate movement is growing in Eastern Europe, the Caucasus and Central Asia. Activists are increasingly facing persecution, and their activity is being stigmatized under

the label of “foreign agents.” Political persecution of the environmental movement reached unprecedented levels in Belarus in 2020–2021. Persecution of “undesirables” continues in Russia, while repression against environmental activists is gathering momentum in Georgia.

Read more:

- [Environmental and Climate Activism in the time of invasion: Georgia](#)
- [Environmental and Climate Activism in the time of Invasion: Belarus](#)
- [Environmental and Climate Activism in the time of invasion: Ukraine](#)

New forms of environmental pollution

Military technologies continue to develop, a process that is inevitably accompanied by the appearance of new forms of pollution. Currently, the most discussed example is the pollution of frontline areas with optic fiber from FPV (first-person-view) drones. FPV drones are controlled via multi-kilometer fine fiber optic cables, making them resistant to radiation and electronic warfare systems. These threads have already covered almost the entire frontline with tangled webs of fibers. Yet, this is such a new form of pollution that experts are as yet unable to fully predict its consequences.



Read more:

- [Fiber-optic web: How the use of drones on the frontlines impacts the environment](#)

Ukraine faced unbelievably intense missile attacks this winter, evidently the result of a Russian policy of trying to force Kyiv into a peace deal. This also led to new forms of pollution. For example, to significant spills of sunflower oil into the Black Sea. Although these types of incidents have occurred in wartime in the past, the scale of the recent spills stands out, raising questions about the need to develop standards for cleanups of non-petroleum oil.

Read more:

- [Russia's attacks on vegetable oil facilities open a new front in its war on Ukraine](#)

Nature is also adapting to the war, using the environmental consequences in its own interests. However, this adaptation is often dangerous for people. In summer 2025, the south of Ukraine was hit by an invasion of locusts. The insects took advantage of the new conditions created by the war and the new spaces for mass reproduction that appeared as a result of the destruction of the Kakhovka dam, as well as the suspension of agricultural activity. Climate change, which the war is only intensifying, has also played a significant role.

Read more:

- [Invaders from the steppes: Locusts and the war in Ukraine](#)

Conducting environmental analysis is becoming harder

At the very least, this is because the war is not ending. Conducting full-fledged studies in a combat zone or in occupied territory is impossible. Even the Kakhovka Reservoir, despite the expeditions organized there by Ukrainian scientists, remains terra incognita—at least, its left bank.

Read more:

- [Two years after the Kakhovka Hydropower Plant's destruction: environmental consequences and the need for strategic decisions](#)

In occupied territory, it is very difficult to know what is taking place. The indirect evidence indicates that protected areas there are under threat of degradation and plunder. This means that Ukraine is continuing to lose unique biotopes and ecosystems. An investigation by journalists from URSA.MEDIA has shown that the Askania-Nova reserve's unique animal collection is basically being sold off. There are increasingly frequent [reports](#) that previously intact forests, primarily in the Donbas steppe, are being felled and sold. As for Crimea, there is virtually no reliable information about what is happening to the peninsula's



nature, as public environmental oversight is also impossible there.

Read more:

- [Russia selling off rare animals from Ukraine's Askania-Nova nature reserve](#)

In spite of this, scientists are continuing to try and calculate the damage caused by the war and gain some understanding of which species, ecosystems and biotopes we have lost forever. For now this is limited to depressing observations, with the minimal hope that when the war ends, de-mining begins and scientists gain access to these territories, they will be pleasantly surprised to discover that some species have been able to survive this war.

Read more:

- [Fighting for life: How Russia's war in Ukraine threatens to wipe out rare species](#)

Monitoring the environmental and climatic impact of the war is more important today than ever. The international media focus is gradually shifting from Ukraine to other "hot" issues, which is allowing certain actors to actively conceal and exploit the country's environmental problems for selfish interests.

Here at Ukraine War Environmental Consequences Work Group, we continue to tackle this daunting task despite serious financial difficulties. Our editorial team and experts are often forced to work on a volunteer basis. Unfortunately, this does not allow us to work on new projects, such as deeper open-source intelligence (OSINT) analysis, expeditions or disseminating information more effectively. Please, if you are able, we ask you to support us by making a monthly subscription or a one-time donation. •

Translator Alastair Gill

Main image source: [Evgeniy Maloletka/AP](#)



Russia's attacks on vegetable oil facilities open a new front in its war on Ukraine

Oleksii Vasyliuk, Eugene Simonov

In December 2025, Russia once again began to attack sunflower oil storage facilities, with Odesa the prime target. Some of this oil has ended up leaking into coastal waters. What are the environmental consequences of vegetable oil spills and how do cleanup methods differ from those used for crude oil?

On December 20–24, 2025, Russia carried out a series of destructive bombardments of Odesa and the surrounding region, [damaging Ukraine's largest](#) sunflower oil terminal in the port of Pivdennyi.

[Thousands of tons](#) of sunflower oil leaked from tanks owned by the company Allseeds into the Small Adzhalyk Estuary, where the port is located.

On Christmas Eve, the terminal at the Illichivsk Oil and Fat Plant in Chornomorsk was struck and [damaged](#) by drones and missiles. Two weeks later, on January 5, a factory belonging to the US company Bunge in the city of Dnipro was attacked. Three hundred tons of sunflower oil spilled onto the banks of



A palm oil spill in the Bay of Taganga, Colombia, 2008. Source: LAFM News

the Dnipro River, and hundreds of tons of sand had to be [dumped](#) onto the puddles of oil to prevent it from entering the river.

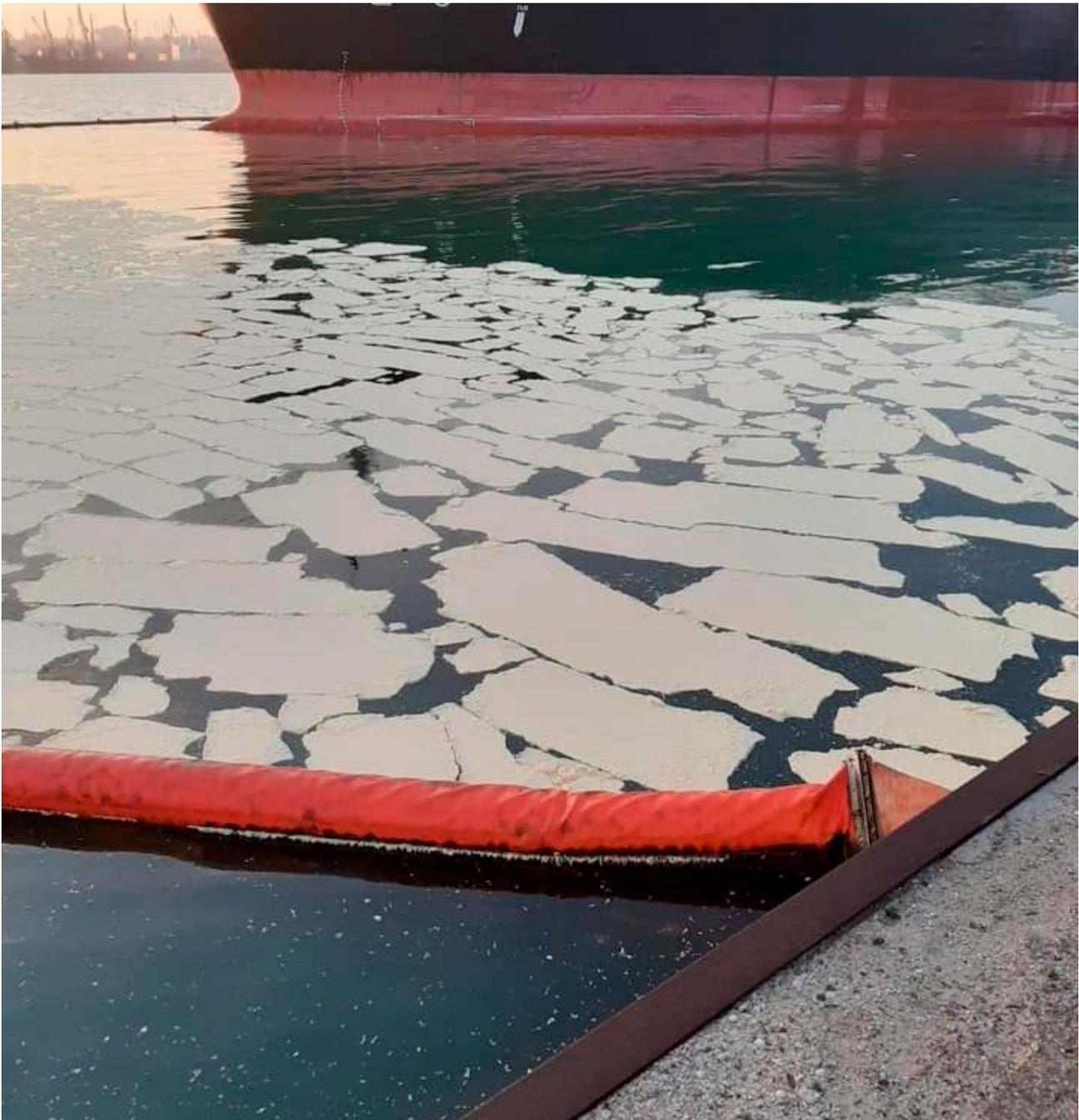
It is no accident that Russia is targeting oil terminals and factories: Ukraine is the world's biggest exporter of sunflower oil. In recent years Kyiv has exported 5–6 million tons of sunflower oil annually, making up 10–14% of Ukrainian exports (worth over \$5 billion). Since the full-scale invasion, Russian forces have deliberately and purposefully bombed oil storage tanks in Ukrainian ports on numerous occasions in an attempt to undermine Ukraine's economy.

While media headlines have traditionally been dominated by crude oil spills, environmentalists are increasingly sounding the alarm about so-called non-petroleum oils: palm oil, soybean oil, rapeseed oil, etc..

Previous large-scale vegetable oil spills in peacetime

Large spills of vegetable oil occur far less frequently than crude oil spills, but still happen regularly. The best-documented cases include the following:

- The spill of 10,000 tons of palm and coconut oil from the cargo ship *Lindenbank*, which ran aground on a coral reef off Fanning Island in the Pacific (Kiribati) in 1975. The subsequent mass die-off of fish and other organisms led to a long-term restructuring of the ecosystem.
- Several rapeseed oil spills (from 1 to 50 tons) in waters near Vancouver (Canada) in 1975–2018. Despite the moderate scale of these spills, they resulted in the death of a disproportionately large number of



Palm stearin in the water in the port of Pivodennyi, Odesa region, April 2020. Source: Latifundist.com

seabirds in comparison with crude oil spills in the same waters.

- In 1991, 1,500 tons of sunflower oil leaked from the vessel MV Kimya into the sea off the Welsh coast. Studies revealed the mass die-off of mussels and retarded reproduction.
- In April 2008, a palm-oil spill at a plant on the Colombian coast [created](#)

[a serious local environmental threat.](#)

Ten tons of oil leaked from the Terlica oil plant into the waters at Taganga, on the outskirts of the city of Santa Marta, leaving the bay covered with an alarming yellow-and-red slick. Local authorities rushed to reassure residents that “oil is a natural product and is not a pollutant.”



- In August 2017, a collision between ships in the Pearl River Estuary (Hong Kong) resulted in up to 9,000 tons of [palm stearin](#) (the hard fraction of palm oil) spilling into local waters. The oil formed white lumps resembling snow or polymeric foam, affecting 13 of Hong Kong's popular beaches.
- In April 2020, [8.5 tons of palm oil](#) (stearin) leaked from the ship Stavanger as a result of an accident in the Odesa region's Pivdennyi seaport. Ukraine's environmental inspectorate reported that the consequences were quickly neutralized, and a criminal case was opened against those held responsible.
- Since vegetable oil spills are relatively rare, for a long time they were considered a minor problem in comparison to crude oil spills. It was only after 2000 that separate plans for the prevention and neutralization of vegetable oil spills started to be developed in the US (and later in Europe). But even these plans were not designed for spills resulting from military action and terrorist attacks. These authors were unable to find any previous case in which a single large vegetable oil spill was caused by military activity or other international conflicts. The deliberate bombing of oil terminals, causing large-scale pollution of

water and soil, is unquestionably a Russian military "innovation."

Oil wars

The list of attacks on vegetable oil storage facilities in Ukraine is extensive, with both the Odesa and Mykolaiv regions suffering from repeated assaults.

- On October 16, 2022, storage tanks belonging to the company Every in Mykolaiv were [struck and damaged](#) by fragments from a kamikaze drone. Oil leaked from the tanks onto the street and into the waters of the Buh estuary via storm drains. In total, 676 cubic meters of pollutants were removed from the surface of the water.

- On December 28, 2024, a tank containing 1,800 tons of oil [was hit](#) by a missile and at least 25 tons ended up in the backwaters of the Southern Buh River estuary. Rescue services and employees of the affected enterprise spent three months dealing with the aftermath. Special floating booms were used to prevent the oil from spreading downstream and into the Black Sea. In total, over 120 tons of oil-water emulsion was collected. On March 21, 2025, the city council [reported](#) that it had used the sorbent Econadinl to absorb part of the oil. The rest had partly settled to the bottom and onto the banks of the estuary, or decomposed naturally.

- On April 19, 2024, a [strike](#) on a Singaporean agro-industrial enterprise in the port of Pivdennyi destroyed 10 tanks containing 10,000 tons of oil. Analysis



of water samples in the Small Adzhalyk Estuary, where the port is located, showed the presence of fats and oils in a concentration of 136 mg/dm³.

- On October 9, 2024, after a missile attack in the port of Chornomorsk, port infrastructure facilities suffered severe damage, which resulted in over 125 tons of sunflower oil [leaking](#) into the Sukhyi Estuary.

- On October 9, 2025, Russian air attacks once again led to damage to the same facilities. As a result, large amounts of oil [once again spilled](#) into the Sukhyi Estuary.

In terms of volume and potential consequences, these spills are comparable with those that happened in the past elsewhere, but they had never occurred with such frequency in the same bodies of water. In addition, most previous large oil spills leaked from ships, rather than from coastal storage tanks.

As this shows, during this war capacities for the processing and export of vegetable oils have become a source of heightened environmental risk. This illustrates the need to develop a comprehensive response plan, primarily to prevent mass oil spills into water bodies and the spread of oil slicks across large areas of water.

How dangerous are vegetable oil spills?

An [academic study of the consequences of spills](#) in marine and freshwater bodies carried out in 2022 by Malaysian and

Canadian scientists analyzes data on the effects of vegetable oil in aquatic environments, with an emphasis on oil biodegradation and toxic effects. In the majority of cases, these spills lead to the death of a number of organisms, as well as to changes in the dynamics of populations and the survival of more resistant organisms, which gain an advantage.

The consequences of vegetable oil spills are relatively short-term, since bacteria that decompose fatty acids quickly break down the spilled oil. Environmental conditions and the response measures used can limit the adverse impact of spills.

The lack of detailed research on vegetable oil spills and response methods creates a serious knowledge gap that the authors believe could be partially addressed through comparison with better-studied crude oil spills.

According to data from the US government agency [NOAA](#) (National Oceanic and Atmospheric Administration), vegetable oils [behave differently](#) from petroleum products. While they do not evaporate, disperse (break up into small droplets) or dissolve like petroleum oils, the consequences for biota can be comparable in severity. On shorelines, they can polymerize, effectively enveloping objects.

Unlike petroleum products, vegetable oil is considered to be of low toxicity and does not cause instant chemical burns or long-term consequences such as cancer. Nonetheless, some intermediate



products of oil breakdown are still toxic for marine life, and the practice of washing cargo ship holds at sea also threatens animals—in the UK, [dogs have died](#) after eating chunks of palm oil washed up on beaches. On January 1, 2021, this practice was [banned](#) when amendments to Annex II of MARPOL (the International Convention for the Prevention of Pollution from Ships) for Northwest Europe came into force, requiring tanks and holds to be pre-washed in port and waste disposal to be carried out on shore rather than at sea.

As the [2024 fuel oil spill in the Kerch Strait](#) showed, different types of petroleum products behave differently in water. Heavy fuel oil like mazut sticks together in patches and clumps, often sinking, while light fractions of oil create thin films on the surface. Liquid vegetable oil (sunflower, soybean, rapeseed oil, etc.) spreads across the surface far faster than crude oil and is much thinner, covering vast areas. It reduces the surface tension of the water, which can be fatal for neuston, a type of plankton that stays near the surface.

However, vegetable oil is excellent food for bacteria, which process it far more quickly and completely than petroleum products. The rapid biodegradation of liquid oil was partly responsible for the optimistic 20th-century view of it as a safe, “natural” pollutant. However, enormous amounts of oxygen are required for oil to

degrade. This increase in BOD—biological oxygen demand—results in anoxia, a sharp drop in oxygen levels in the water, leading to the formation of localized oxygen starvation zones. When oil spills into bays, deltas and lagoons, it creates a film that blocks oxygen, killing fish even faster than crude oil spills. In vegetable oil spills, fish die not from toxins, but from suffocation and the physical clogging of their gills by the oil emulsion.

When oxidized, agitated and mixed with other substances and debris, oil can settle to the bottom. As it decomposes, it creates oxygen-free zones there, [enveloping and](#) killing bottom feeders. Mussels and other filter-feeding bivalve mollusks are one of the most vulnerable groups to these impacts. Environmentalists from Greenpeace Ukraine [estimate](#) that the potential negative effects from oil settling onto the seabed last up to six years.

Unlike petroleum spills, vegetable oil spills do not pose a serious threat to waterfowl (though there have been cases of birds pecking at solidified palm oil, resulting in diarrhea, dehydration and death). Just like petroleum products, vegetable oil kills birds physically by disrupting their thermoregulation. For a bird landing on water, there is little difference between fuel oil and sunflower oil: both substances disrupt feather structure and lead to death from cold. In addition, vegetable oil is extremely difficult to remove from



feathers (unlike petroleum, which can be removed with solvents).

Read more:

- [Military oil spill \(2\): Scale and consequences of the catastrophe for flora and fauna and the region's ecosystems](#)

Vegetable oil spills are therefore highly hazardous to biota and marine ecosystems in general, but their negative impact is shorter than that of crude oil spills; the oils are broken down more quickly by microorganisms. However, the intense oxygen consumption that takes place during oil degradation means the negative impact can be significantly greater, especially in relatively enclosed bodies of water (lakes, bays and estuaries), where anoxic zones easily form.

Although in many respects vegetable oil spills are similar to crude oil spills, in developed countries there are special procedures for preventing them and cleaning them up when they do occur. For example, in 2000 the US adopted the Edible Oil Regulatory Reform Act, which separated approaches to petroleum oil and edible oils, but preserved the requirement to have a clean-up plan for spills. Companies that store large volumes of vegetable oil are obligated to develop a SPCC plan ([Spill Prevention,](#)

[Control and Countermeasure](#)) and their activity is regulated by Federal Law 112 and the [Facility Response Plan Rule](#). The SPCC requires that companies develop a three-tier system for protecting against spills. This includes operational procedures (instructions and automation) to prevent leaks from occurring, engineering controls (dams, double walls) that physically contain spilled liquid, and countermeasures (equipment and notification plans) that ensure rapid cleanup. These plans are developed at both enterprise and port complex level, with the primary objective of preventing significant volumes of oil from entering the water. This includes contracts with specialized services that can provide equipment and personnel trained to clean up oil spills.

Ukraine's law "On high-risk facilities" (Art. 11) prescribes the development of an ERC (Emergency Response Plan) to deal with the consequences of accidents, including vegetable oil spills. However, there are no detailed requirements like those applied to plans for crude oil spills. The State Environmental Inspectorate [reacts harshly](#) to spills of vegetable oil in ports (there are many precedents in Mykolaiv and Chornomorsk). In order to minimize fines, companies (such as Kernel, Bunge Ukraine, Cofco) develop in-house response protocols for addressing vegetable oil spills. The Administration of Ukrainian Sea Ports is responsible for cleaning up [oil spills in ports](#).



When time is of the essence

Although the spills in late December 2025 were far from the first attack to have targeted oil storage facilities, amid the repeated bombardments and confusion, Odesa's emergency services were nonetheless too late in closing off the mouth of the Small Adzhalyk Estuary and the oil spread along the coastline of the Odesa region.

[According](#) to Oleh Hrib, the director of the Ukrainian Scientific Center of Ecology of the Sea, by December 24 the slick already stretched 55 kilometers along the shores of the Odesa region and covered almost 130 square kilometres. From December 24 onward, city residents frequently observed oily foam and large numbers of birds coated in oil, and subsequently avian corpses on the city beaches.

Local activists say Russia's attack on the port of Pivdennyi bears the [characteristics of a war](#) crime and ecocide, as it violates the Geneva Conventions and the article on ecocide (Art. 441 of Ukraine's Criminal Code). It is also a crime according to the Rome Statute of the International Criminal Court. But the actions or inactions of officials of the Odesa regional administration may also be considered criminal, according to articles 236, 242 and 367 of Ukraine's Criminal Code.

Read more:

- [On the path to international recognition of ecocide](#)

Vladyslav Balinskyy, an expert from the environmental organization [Zelenyi List](#) (Green Leaf), says that in the first days after the attack (December 20-21) there was still a genuine possibility of localizing the pollution within the confines of the Small Adzhalyk Estuary, where the port of Pivdennyi is located. This could have been done by closing off the narrow neck of the estuary using effective floating booms, as well as by actively removing the oil with special equipment for removing pollutants from the surface of the water (e.g., skimmers) and using other measures for preventing the oil from escaping into the open sea. In Balinskyy's view, even if these measures were implemented, then this was done either too late or ineffectively.

"What started as a war crime by the enemy has, due to the incompetence of officials, transformed into a regional environmental catastrophe," Balinskyy later wrote in a post on [Facebook](#). He [bolsters](#) this argument with a series of radar images taken by the Sentinel-1 satellite, reflecting the gradual deterioration of the situation.

Unfortunately, it is harder to remove vegetable oils from the sea than petroleum products. Liquid vegetable oil is more difficult to collect using oil skimmers, since it is less viscous than mazut and slips through the skimmer. For the same reason, floating booms also work less well with vegetable



oils. And dispersant chemicals are not recommended for vegetable oil spills, since [many experts believe](#) they can be more harmful to the ecosystem than the oil itself. This means that if a spill is not contained at the very outset, the chances of successfully neutralizing it are limited.

Balinsky and other activists cite numerous facts that show the authorities' inability to deal with the consequences of spills. This may indicate that no effective plan for the cleanup of oil spills in the port of Pivdennyi, the Small Adzhalyk Estuary and the Gulf of Odesa was developed in advance, or that it only existed in a formal sense, as a box-ticking exercise.

Read more:

- [Military oil spill: How the Kerch Strait tanker disaster is linked to Russia's 'shadow fleet' oil exports](#)

When the oil reached Odesa, carried along the coastline by the sea current, it was necessary to immediately prevent oil pollution from coastal waters from penetrating into other estuaries where seawater flows, such as the Kuyalnik Estuary, a closed ecosystem where pollution of this kind could have had catastrophic and practically irreversible consequences. So on December 23, 2025, the Kuyalnik National Park [sent a letter](#) to the management of Obltransstroj, the operator of the region's drainage

facilities, with a request to immediately cut off seawater from entering the estuary if sunflower oil was found in it. It appears that the estuary's pollution was averted.

Sea birds in distress

When Odesans saw masses of oil-coated, freezing birds on the beaches on December 24, the question was naturally how to help them. Igor Belyakov, the director of Odesa Zoo, took to social networks and media outlets to [call](#) for people to gather up affected birds, place them carefully in boxes and bring them to the zoo. He warned that it would not be possible to warm up and clean the majority of these birds independently at home. For its part, the zoo had already made the necessary preparations and trained volunteers to wash the birds of oil, dry them and feed them during their stay.

Over the next two-three days, concerned citizens brought over 300 birds to the zoo, most of which were highly specialized fish-eating species: great, little and black-necked grebes, which do not tolerate captivity well.

On one hand, these birds have a slightly greater chance of survival than those that became stranded in the [mazut slicks](#) in the Kerch Strait a year earlier, since liquid oil is far less toxic, meaning mortality from poisoning will be far lower. But on the other hand, it is more difficult to wash sunflower



oil from feathers than petroleum oil, as surface-active agents (shampoos) are less effective with it than with hydrocarbons. Caring for birds that feed only on small fish, which need access to water (ponds, pools, rivers) and are completely unaccustomed to people, is naturally the most challenging part of the task of [rehabilitation](#).

After just three days, the zoo's staff realized that they would not be able to cope on their own. Giving first aid and partially cleaning the birds was still within their capabilities, but the zoo did not have the capacity to keep and feed the birds for an indeterminate period – it lacked both the space and personnel. Once again, Belyakov turned to the concerned public for help, calling on them to take in rescued and washed birds for further care.

Most of the birds brought to the zoo by citizens for rehabilitation were distributed in large groups between specialists and educational institutions, such as the biology faculty of the I. I. Mechnikov National University, the Agrarian University and the veterinary clinic of Leonid Stoyanov. But there were also volunteers, who took in one or two birds. Belyakov [told the media](#) that the zoo is maintaining contact and providing consultations to all those who have accepted birds for care. At present it is unclear how many birds have survived.

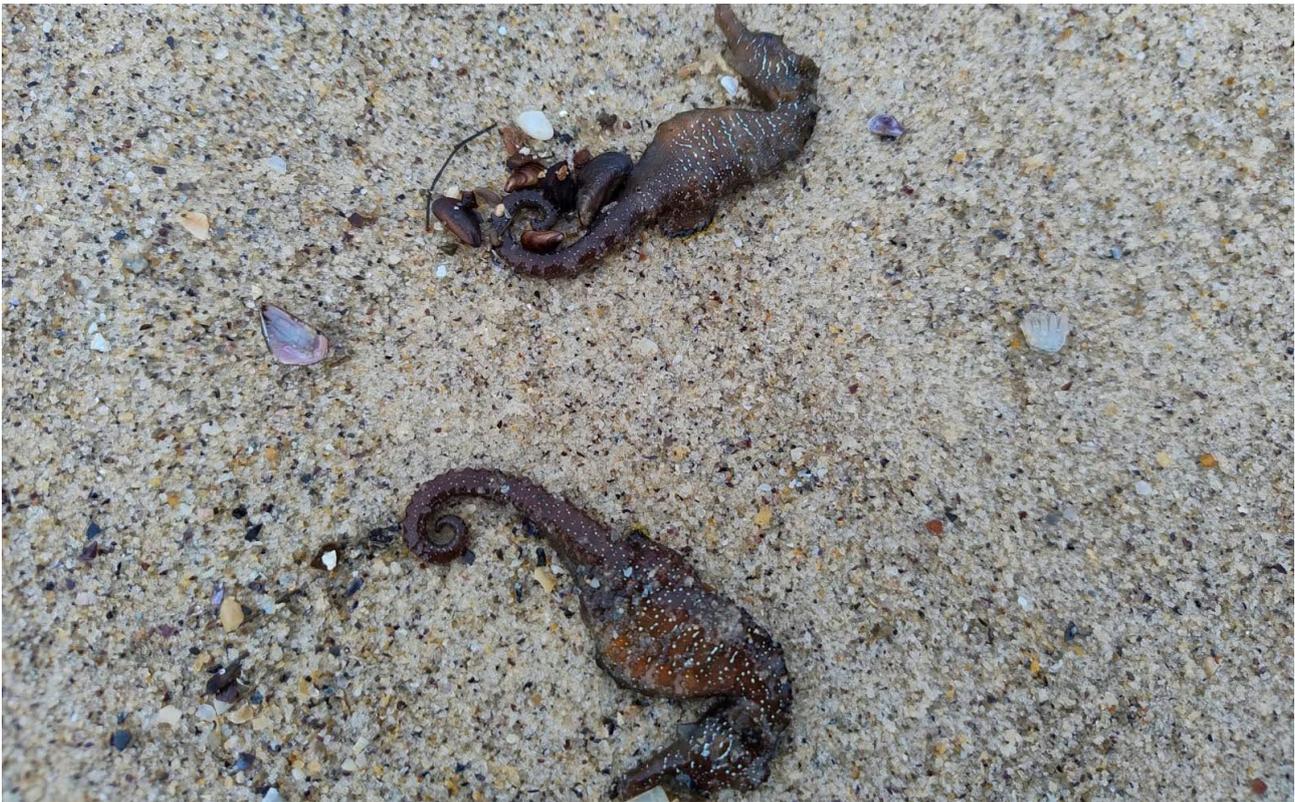
“The biggest problem is that apart from the zoo and people with an interest

in it, no one is addressing this situation [rescuing the birds],” explained **Yana Titarenko**, head of Golos Prirody (Voice of Nature), the public organization that supports the zoo, in an [interview](#) with Ukrainian Radio on December 27. *“There’s been zero response from the Odesa authorities and zero response from the regional authorities. We have two environmental departments – the Odesa City Council and the regional department within the regional council – but they’ve completely ignored this issue, pretending that nothing has happened. So the zoo is now being forced to rescue these birds on its own.”*

The situation in Odesa remains critical. The continuing intense Russian bombardment is causing periodic power and heating blackouts in buildings, including those where injured birds are being rehabilitated. At the same time, unprecedented freezing temperatures and snowfall on the coast make wintering extremely difficult for waterfowl, which need open water to survive. In some places this water is still covered with an oily film. Small numbers of volunteers continue in [their efforts](#) to save freezing birds, while the zoo's specialists provide [advice](#) on how to support birds that are wintering near water in this harsh winter.

Read more:

[Safe haven: How Ukraine's zoos are saving animals in spite of war](#)



Dead seahorses on a beach in Odesa. Source: [State Environmental Inspectorate](#)

On January 27, clumps of vegetable oil and dead birds were found on a bar in the Tuzly Lagoons National Nature Park (Odesa region), 150 kilometers from the site of the spill, during a survey of the site. The same day, local residents discovered large numbers of Black Sea seahorses—a species listed in the Red Book of Ukraine—washed up on the Odesa coast following a storm. “In different sectors I counted up to 35 individuals in one square meter of coastline,” reports Vladyslav Balinsky, who believes that one of the most likely causes is that some of the oil settled onto the seabed, forming viscous polymer films. The die-off may also be the result of poisoning from industrial waste, a powerful storm or even anomalous cooling. Specialists from the Institute of Marine Biology at the National Academy

of Sciences of Ukraine did not find typical pollutants in water tests. The seahorse is a marker of the general health of the ecosystem, and this event may be evidence of a comprehensive deterioration in the ecological situation in the Gulf of Odesa as the war goes on.

What can be done to reduce the negative impact of spills?

Since the full-scale invasion, the Black Sea has become an arena for environmental disasters and crimes. The consequences of most of them are hard to assess amid ongoing military action.

Read more:

- [Impact of Russia’s invasion of Ukraine on the Black Sea and the Sea of Azov](#)



Some impacts are unprecedented and thus virtually impossible to predict. For example, the artificial freshwater flood unleashed by the destruction of the Kakhovka Hydropower Plant covered and clouded many thousands of square kilometers of surface water with sediment. The catastrophic fuel oil spill resulting from the sinking of two tankers in the Kerch Strait was slightly less unexpected, but also unique in its own way.

Read more:

- [How restoration of Ukraine's ecosystems is being discussed at European conferences](#)

Other impacts, such as the consequences of the explosion of ammunition and the sinking of ships, today look entirely foreseeable. Oil spills from bombed-out terminals have also become almost routine.

These authors believe that oil spills resulting from targeted missile attacks have predictable consequences and

therefore require improvements aimed at prevention and an early and comprehensive response system for environmental threats caused by such attacks. The experience we have already accumulated in Ukraine's southern ports should allow us to draw conclusions as to which engineering control measures will be most effective in preventing oil from entering waterways, and what technical means and trained personnel are needed to ensure the rapid cleanup/localization of a spill in a given waterway if it does happen. These plans should be comprehensive and include targeted measures to protect local natural ecosystems and species.

The response to the 2024 fuel oil spill in the Kerch Strait demonstrated the urgent need for coastal cities to maintain veterinary clinics capable of receiving, cleaning, and caring for large numbers of birds injured by spills for several weeks. The recent experience of Odesa confirms this. •

Translator Alastair Gill

Main image source: ukrinform



Fiber-optic web: How the use of drones on the frontlines impacts the environment

Inha Pavlyi

Relatively recently, a new technology for unmanned aerial vehicles (UAVs) appeared on the frontlines in Russia's war in Ukraine: fiber-optic linked guidance. When a drone is launched forward into the air a thin fiber-optic thread unspools behind it, settling onto the ground. As a result, enormous webs of these threads remain, covering trees and ending up in the soil. Despite its effectiveness on the battlefield, the impact of this optical fiber on the environment is poorly understood to date.

Russia's full-scale invasion of Ukraine is sometimes referred to as the "drone war". Both sides actively use UAVs with various ranges and capabilities to destroy enemy positions. Thanks to drones, military forces can strike the enemy remotely without needing complex or expensive equipment. It also conserves human resources.

Optical fiber is a dielectric waveguide operating at optical frequencies. The



Fiber-optic cable on a spool. Source: bezpeka-shop.com

waveguide transmits data, voice, and images by passing light through thin, transparent fibers. First-generation optical fiber came into use in the telecommunications industry in the 1970s. The technology has since become an integral part of computer technology, the Internet, and new generation mobile communications (4G, 5G).

As for fiber-optic drones (first-person-view or FPV drones), they have only been used on the frontlines for the last two years. These UAVs are connected

to fiber-optics, which allows them to transmit a clearer image to the operator and operate longer. Most importantly, fiber-optic drones are immune to electronic warfare and jamming, making them more difficult to detect and destroy.

The technology is promising and is developing rapidly. Until recently, however, fiber-optics have mainly been imported. New [laws](#) passed by the Verkhovna Rada in June 2025 supporting tax and customs incentives for domestic manufacturers of fiber-optic drones



A field in a combat area in Ukraine covered with fiber-optic threads. Source: Video frame from a video posted by Serhiy Flesh.

should make the production of such systems in Ukraine cheaper and easier.

Fiber-optics and their impacts on the environment: What are the threats?

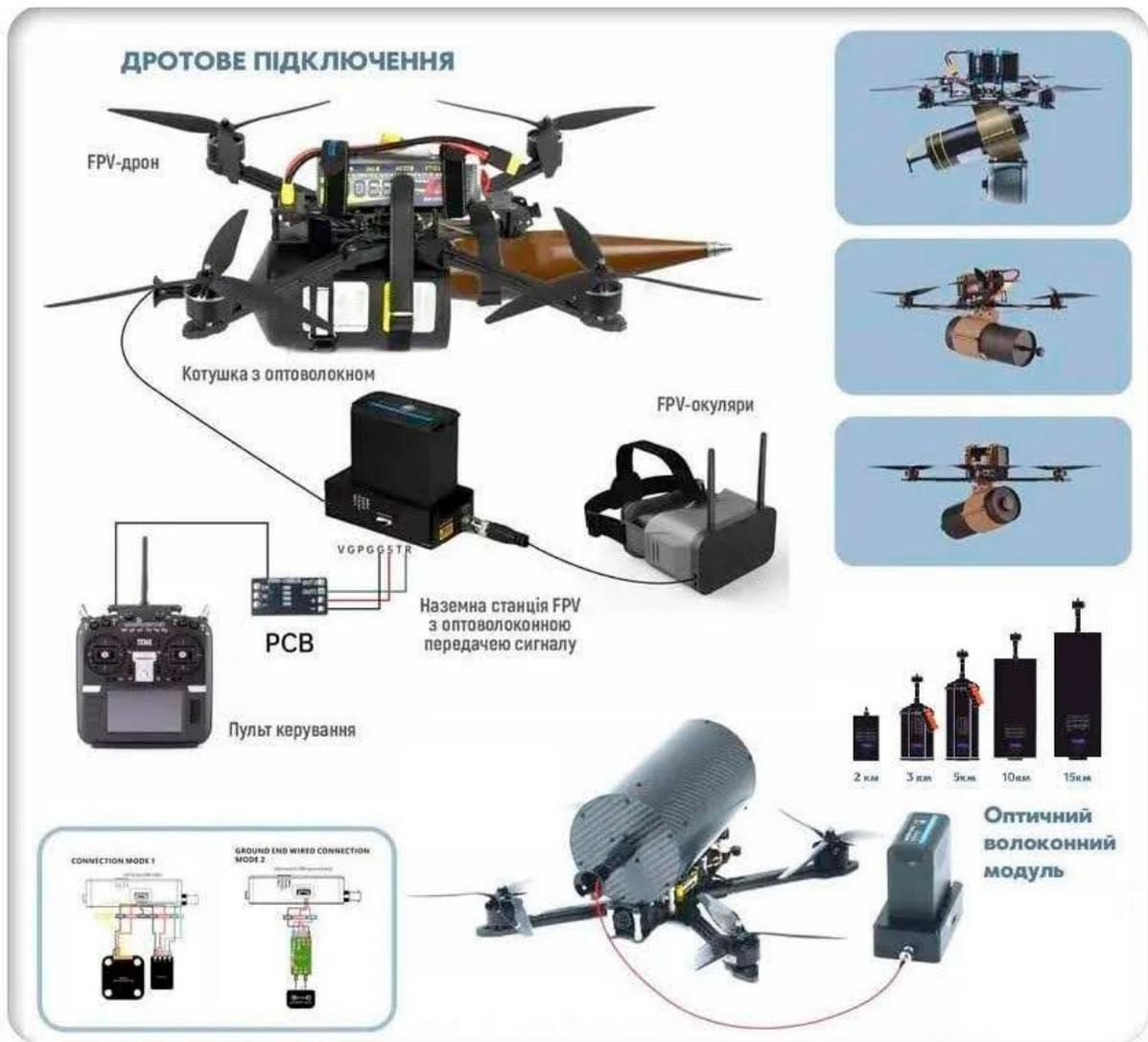
As they move toward their target, FPV drones leave behind trails of fiber-optic threads. As a result, fields in frontline areas are covered with white threads that are clearly visible in the sun. This undoubtedly has an impact on the environment.

Today, research into the environmental impact of fiber-optics operated drones is only just beginning. Maxim Soroka, an expert on environmental safety and science director of Dovkol Laboratory explained to UWEC, that this topic began to be studied in earnest only a year ago. Long-term research is needed

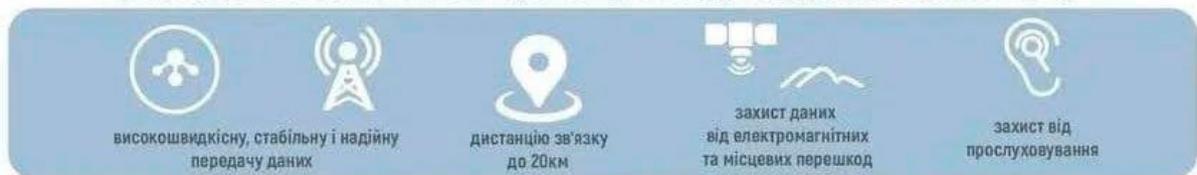
to understand the effects of fiber-optics on soil, plants and animals. For now, we can only use our understanding of polymers (plastics) to speculate about the consequences.

The impact of plastic pollution from drones is being examined in foreign studies. In particular, this topic was discussed in an [article](#) entitled “Plastic pollution from fibre-optic drones may threaten wildlife for years” by the **Conflict and Environmental Observatory (CEOBS)**. The publication notes that fiber-optic cable does indeed pose a great threat to animals, as it can entangle them, leading to the loss of limbs, suffocation, or starvation. Machines and people can become entangled as well.

The CEOBS article explains that the primary material used in cables is POF-PMMA – plastic optical fibers (POF) made



ОПТИЧНЕ ВОЛОКНО ЯК СЕРЕДОВИЩЕ ПЕРЕДАЧІ ДАНИХ ЗАБЕЗПЕЧУЄ:



ПРИНЦИП РОБОТИ



ОСНОВНІ ЕЛЕМЕНТИ ТА КОМПОНЕНТИ FPV ДРОНА З ОПТОВОЛОКНОМ

Diagram showing fiber-optic drone connections. Source: bezpeka-shop.com

from polymethylmethacrylate (PMMA)) which is quite stable. However, like most polymers, it degrades over time and can

break down into nanoplastics. The author suggests that such degradation occurs more rapidly in active combat areas.



Fields covered in fiber-optic threads. Source : @dronbomber on Telegram

Micro- and nanoscale PMMA particles can inhibit the growth of certain marine algae and agricultural crops. When burned, they release harmful gases, in particular carbon and nitrogen oxides.

Research by German ecologists has shown that microplastics can have the same negative consequences as drought on soils, a process described in an article in the *Journal of Applied Ecology*. Another study published in *Environmental Science & Technology* showed that microplastic pollution of soil not only harms microbial ecosystems and reduces crop yields, but

also contributes to climate change by increasing emissions of the dangerous greenhouse gas nitrogen oxide.

According to other Ukrainian experts contacted by the author, fiber-optics are quite resistant to atmospheric phenomena—they do not corrode or disintegrate. In other words, they can lie in fields for decades until removed or recycled. This gives hope for the possibility of avoiding these specific long-term consequences in places where active work (e.g., agricultural) will not resume immediately.



Bird nest with fiber-optic threads found near Toretsk. Source: Azov Brigade Telegram channel

Maxim Soroka notes that when fields are plowed, the soil containing fiber-optics will be churned, breaking the threads into small particles, which, he believes will not harm the environment or crops. But there is still a threat, namely the formation of microplastics. Soroka asserts that this will not be a significant problem for agricultural production either.

European environmentalists often accuse agricultural products from Ukraine of being “contaminated” due to the war. Optical fiber may become a future cause for complaint. Soroka nevertheless

believes that even if microplastics are formed and pollute the soil, the impact on agricultural products will be minimal, especially for produce harvested above ground.

Alexander Vinyukov, Doctor of Agricultural Sciences, Professor of Agronomy, Director of the Donetsk State Agricultural Experimental Station, and Deputy Chairman of the Eastern Ukrainian Agricultural Advisory Service”, agrees.

Vinyukov says that he sees greater harm to the environment in the lithium



batteries that power today's drones. Few people talk about the lithium residues these drones leave in Ukrainian fields today, or about the volume of fiber-optics, but this is precisely what could become a problem.

"From the point of view of crop and vegetable production, the impact of microplastics will be minimal because plants do not use them. Plants consume various elements, both beneficial and harmful, through their root systems," he says.

Such varied assessments by experts neatly illustrate that much remains to be learned about fiber-optics pollution in agriculture and in nature.

Fiber-optic nests

There are also documented cases of birds using these threads to build nests. It is reasonable to assume that other animals may also use it for this purpose.

In addition to this questionable "utility", fiber-optics can pose a threat to wildlife. When it settles on trees en masse, it creates traps. There have already been cases where animals, often birds, get stuck and cannot free themselves. Some of them are rescued by Ukrainian military forces. One video circulates the Internet showing soldiers cutting threads to free birds.

Anti-drone nets pose a similar threat, and birds are regularly caught up in them. Armed forces sometimes must [free](#) them as well.

"Indeed, there have been cases where birds have built nests out of fiber-optic threads. Birds tend to use anything they can find to build their homes, which is quite logical from their point of view. fiber-optic cable is a fairly durable and inert material that does not rot or get damaged by insects, and a nest made of fiber-optic cable will serve as a home for a long time," says Soroka. *"There have also been cases where this "web" of fiber-optics have been found wrapped around the deer antlers, another physical risk for wildlife."*

He notes that these fiber-optic threads are thin and light. Animals, even birds, can bite through it. An adult wolf, deer, or hare that gets tangled in a few strands has a chance of freeing itself. But if there is a large accumulation of the threads, animals may not be able to release themselves and could become exhausted and die.

Nataliia Hozak, director of Greenpeace Ukraine, shares this opinion. She says that only time will show the true impact of these fiber-optic materials on the environment. In a few years, the fiber's behavior in ecosystems will be clearer: will it decompose in sunlight, sink into the forest floor, etc.

"This is a question for years, perhaps decades, to come," Hozak notes. *"We need to understand how the material behaves in the long term, including in changing weather conditions. Yes, there is a risk that animals will become entangled. But the main thing today is to figure out how to study the impacts of fiber-optics on large animals. The consequences may be*



Bird nest with fiber-optic threads found near Toretsk. Source: Azov Brigade Telegram channel

negative, but we don't know that yet. For now, we need to observe the consequences as much as possible and think about how to eliminate this unusual type of pollution in the future."

How to deal with the consequences of fiber-optic pollution

It is quite logical to suppose that when the hostilities end, attention will be focused primarily on demining rather than clearing fiber-optic cables. Will fiber-optic cables interfere with the clearance of munitions? So far, the State Emergency Service of Ukraine in Donetsk

region has reported that no fiber-optic cables have been found in areas surveyed by ordnance units. Thus, the question of the impacts of fiber-optics on demining remains open for further study.

In summary then, the impacts of fiber-optics on the environment requires further study. Interest in the topic has grown significantly over the past year, as researchers consider the consequences of such widespread use. For now, a few conclusions can be drawn.

- Experts do not agree about the impact of fiber-optics on soils.



So far, the most attention is being dedicated to the issue of microplastics formation and consequences for agricultural production.

- Large and small animals can become entangled in webs of fiber-optic threads, a situation which could lead to exhaustion and death. If the cluster of fibers is small, a large animal may be able to free itself.
- The further impact of fiber-optics on the environment requires detailed study and observation. Particular attention should be paid to issues related to its chemical components, decomposition mechanisms, and transport pathways in food chains and the ecosystem as a whole.

In today's high-tech world, optical fiber plays an important role in many areas of our lives—from telecommunications to medicine, art to industry, including the military. During the last two years of full-scale war in Ukraine, fiber-optic drones have also become an integral part of combat operations and continue to gain momentum—their specifications are constantly improving and supply rates to the combat zone are increasing. This represents a new potential threat of environmental pollution, although fiber-optic waste is not currently the biggest wartime problem for the Ukrainian environment. There are examples of far more catastrophic impacts, ranging from munitions to landmines, but it is clear that use of fiber-optics needs further observation and study. •

Translated by Jennifer Castner
Main image source: euro-sd.com



Environmental security: a key element of Ukraine's national policy

Polina Tsybulska

As war and climate change inflict damage on Ukraine's environment, from polluting rivers and soils to destroying ecosystems, how could these threats be transformed into tools for resilience, diplomacy and recovery? And what could Ukraine learn from countries that have faced armed conflict, resource scarcity and extreme weather for decades? .

Imagine the clean air we breathe every day, the water in the rivers where our children swim, and the fertile soils that feed generations. Now imagine all

of this suddenly becoming toxic as a result of pollution, floods or fires, caused not only by climate change but also by human activity.

Environmental security is not some abstract theory lifted from scientific journals; it is our armor. It protects us from invisible enemies: the toxins in our water, the smog over our cities, the erosion of our land, and the disasters that are becoming increasingly severe as a result of climate change. At a time



when Ukraine is fighting for its survival and freedom, this armor is becoming part of the country's national security – because without a healthy environment, there is no healthy nation.

According to Ukrainian legislation ([see the law “On the Protection of the Natural Environment,” Section XI, Article 50](#)), environmental security is defined as a state of the natural environment in which deteriorating environmental conditions and the emergence of hazards to human health are prevented. In simple terms, it means that the state, businesses and citizens regulate their impact on nature to avoid a future in which they have to deal with toxic clouds or barren fields. So what are the dangers? They are very real and painful – air pollution from factory emissions; smoke from fires; chemical toxins from industrial accidents; and the destruction of ecosystems, particularly the drying up of rivers or death of forests. This is not simply a case of “the weather getting worse,” but a direct threat to our future. And if we factor in the significant impact of military action, the situation is only deteriorating.

Why has the war turned environmental security into a national defense frontline?

War is not just missiles and trenches; it's also an invisible battle for land. Russia's full-scale invasion of Ukraine has exacerbated environmental problems

to the point where they have become a full-fledged threat to national security. First, the range of threats has grown significantly – explosions, fires and shelling have substantially increased and types of pollution become more varied. Second, new types of risk have emerged – from the mining of fields to the blowing up of dams over which control has been lost following the occupation of territory. And third, it affects the health of both military personnel and civilians, as well as food security. Many of the consequences have a cross-border character.

International law has long [recognized](#) the direct prohibition of warfare methods that inflict serious, wide-ranging and long-term damage to the natural environment. Article 35(3) of Additional Protocol I to the 1977 Geneva Conventions clearly outlaws the use of methods or means of warfare that are intended or likely to cause long-term damage to the natural environment. Article 55(1) underscores the obligation to protect the environment from such damage, since it can endanger population health or survival. Article 55(2) further prohibits attacks on the environment as a form of retaliatory action.

At the same time, Article 56 protects installations containing “dangerous forces” such as dams, levees and nuclear power plants from attack, if there is a risk this could result in catastrophic consequences (e.g., flooding or the



spread of radiation) and severe casualties among the civilian population.

Certain international treaties, such as the [1972 Biological Weapons Convention](#) and the 1993 Convention on Chemical Weapons, are even more stringent regarding the use of prohibited weapons of mass destruction. They outlaw all types of weapons that poison the environment for generations to come—from toxic gases to persistent soil pollutants. These rules form the basis of the International Criminal Court (ICC) in The Hague, which has been investigating crimes related to Russia's invasion of Ukraine since 2014, with a particular focus on war crimes committed after 2022.

The ICC has already included environmental crimes in its investigation into the situation in Ukraine, in particular the destruction of the Kakhovka Hydropower Plant. However, as of December 2025 not a single indictment for ecocide had yet been filed; the collection and analysis of evidence is ongoing.

Although the ICC has not yet issued an arrest warrant specifically for environmental crimes, its jurisdiction (under the Rome Statute, Article 8(2)(b)(iv)) covers “widespread, long-term, and severe damage to the natural environment.” ICC Chief Prosecutor Karim Khan [announced](#) in 2024 his intention to pursue such cases more vigorously. Meanwhile, Ukrainian agencies such as the general prosecutor's office had [registered](#) 246 cases of

environmental war crimes (403 incidents) as of December 2024, 11 of which were qualified as ecocide (the mass destruction of flora, fauna or poisoning of water/air) under Article 441 of the Criminal Code of Ukraine. These national investigations could form the basis for establishing precedent-based accountability at the ICC.

The scale of the environmental consequences of the Russian invasion is illustrated by specific examples: the [destruction](#) of the Kakhovka Dam in June 2023 and the subsequent flooding [released](#) over 600 tons of oil products, chemicals and municipal waste, pushing heavy metal levels in the Dnipro River to 100 times higher than normal and killing marine life in the Black Sea. A UNEP assessment has identified it as a costly catastrophe with potentially irreversible consequences. The economic damage is estimated at over 57 billion euros (\$62.1 billion).

Another example is the numerous attacks (more than 70) carried out in 2022 on the Kharkiv Institute of Physics and Technology, where nuclear materials are stored. This could have resulted in a release of radiation, and three Russian commanders have been [charged in absentia](#) with ecocide.

There are other cases, too: the pollution of the Seim and Desna rivers with chemical waste since 2022 has led to massive die-offs of fish, including protected species, while fires and land



mines [destroyed](#) 92,000 hectares of forest in 2024, threatening biodiversity and the health of local residents.

From toxic “time bombs” in the soil to shortages of drinking water for millions, these incidents not only destroy nature but also threaten its survival. Ukraine, having [ratified](#) the Rome Statute in October 2024 (it entered force in January 2025), is now setting a global precedent to ensure that environmental damage is not merely considered an “unfortunate consequence” of war, but is fairly compensated, including financially.

Read more:

- [On the path to international recognition of ecocide](#)
- [Interview with Olena Kravchenko of NGO ‘Environment-People-Law’](#)

The scale of military ecocide: from Kakhovka to transboundary poison

Since 2022, over 9,000 cases (as of July 2025) of environmental damage from military action have been [recorded](#) in Ukraine. These range from fires that have devastated over 800,000 hectares of land to greenhouse gas emissions and CO₂-equivalent [toxins](#). The total cost of environmental damage from the war already amounts to €108 billion. These consequences also create long-term health risks: toxic substances such as lead, mercury and arsenic enter the food

chain, threatening the ecosystems of the Black Sea and the Sea of Azov.

But this is not solely a problem for Ukraine: the long-term consequences have an impact well beyond its borders. These include the pollution of the Black Sea, which has already reached the shores of Romania and Turkey, air pollution, and contamination of groundwater. Dust from fires in Kherson settles in Moldova, while toxins from the destroyed Kakhovka reservoir settle in the Danube Delta and even on the beaches of the Sea of Marmara, and are also carried further into Europe via the food chain.

How Ukraine protects nature during war: progress and gaps

Key Ukrainian laws and initiatives, such as legislation on environmental protection and the Environmental Security and Climate Adaptation Strategy through 2030, integrate the environment into national security, emphasizing the importance of environmental monitoring and restoration. The National Security and Defense Council of Ukraine (NSDC) plays a key role in this. On March 23, 2021 it [explicitly identified](#) environmental threats as part of national security, emphasizing the importance of protecting the environment from anthropogenic risks and of priority measures – from



strengthening monitoring to international assistance. Another [resolution](#) from 2022 focuses on forests—a strategic resource for security.

But there are also gaps. Chief among them is the absence of a clear mechanism for assessing damage during war. In many cases, peacetime methods are still used, ignoring explosions or occupation, leading to an underestimation of losses (over [\\$56 billion](#) as of 2023 alone; the current figure has almost [doubled](#)). This complicates obtaining reconstruction aid from international donors (such as the EU or the World Bank) and prosecuting those responsible at the ICC in The Hague, where since 2025 Ukraine has had the right to demand reparations from the aggressor for environmental war crimes.

Israel, Palestine and Lebanon: lessons in environmental security from the Middle East

For an example of a modern approach to environmental security, one can look to Israel, a country that has been walking a tightrope between armed conflict and severe climate challenges (drought, water shortages and increasing extreme weather conditions) for decades. Environmental security is deeply embedded in Tel Aviv's national security strategy. Back in 2019, the country's National Security Council (NSC) [set up](#) a dedicated department for climate change, which it saw as a threat multiplier—from the risk to water and

food security to the potential escalation of border conflicts due to mass migration or competition for resources.

Israel's 2025 [National Adaptation Plan for Climate Change](#) integrates environmental risks into defense policy. For example, it conducts assessments of the vulnerability of military infrastructure to floods and fires. The budget for sustainable solutions amounts to 650 million shekels (~\$199 million or ~173 million euros), and climate threats are included in annual security reports. Powerful environmental monitoring plays a key role—from satellite systems and sensor networks for real-time tracking of pollution, pests and fires (with a budget of 250 million shekels, equivalent to approximately \$76.5 million or 66.5 million euros) for agriculture to mobile technologies such as portable sensors for assessing air and water pollution during shelling or in conflict zones, allowing government to respond quickly in crisis situations.

Water technologies are Israel's real success story. Seawater desalination [provides](#) around 85% of the country's drinking water, while wastewater [recycling](#) reaches 90%, with plans to invest billions of dollars in highway renovation and river restoration in order to combat drought.

And diplomacy is turning the environment into a tool for peace. Through initiatives such as the N7 [conference](#) (a platform for discussion between Israel and Arab states), Tel



Aviv is [sharing](#) water and agricultural technologies to reduce regional tensions over resources. Israel is an excellent example of how environmental security can become part of a national strategy in the context of persistent conflict and drought.

Neighboring countries such as Palestine and Lebanon face similar challenges as a result of Israeli military action, which has transformed nature into a “hidden front,” threatening not only ecosystems but also the stability of these states due to resource scarcity, declining public health and a food crisis.

In Palestine, the Israeli military offensive in Gaza has [led](#) to 97% of water supplies being contaminated with heavy metals, posing a threat to human health and food security. Five of six [wastewater treatment plants](#) have been damaged or destroyed, resulting in sewage discharges into the Mediterranean and soil being contaminated with pathogens, microplastics and heavy metals from munitions. Damaged solar panels, asbestos and medical waste also pose a threat.

In Lebanon, meanwhile, fires, toxic oil spills and asbestos contamination have [destroyed](#) thousands of hectares of forests. At least 195 cases of white phosphorus use in Israeli attacks have been [identified](#), burning approximately 5 square kilometers of olive farms and meadows, generating toxic waste emissions and contaminating soils with phosphoric acid.

While environmental safety is a fundamental part of Palestinian and Lebanese law, Israel’s system is more structured. The Palestinian Basic Law ([The Basic Law 2002, Article 33](#)) defines environmental protection as a national duty to preserve public health and resources, linking environmental risks to public safety, while [Environmental Law No. 7 \(1999\)](#) regulates pollution as a threat to stability.

The Lebanese [constitution](#) contains no direct provisions on environmental safety or protection, focusing instead on the general principles of sovereignty and social justice. However, these norms are interpreted as the basis for environmental regulation in specific laws, such as [Environmental Protection Law No. 444](#) (2002), which recognizes environmental pollution as a threat to public safety.

On the whole, environmental security in these countries is largely declarative, but it does offer a lesson for Ukraine: legislation can serve as a foundation for recovery if combined with international instruments.

All these examples highlight that if environmental security is not integrated into defense and diplomacy, war destroys not only buildings but also the foundations for survival—water, air, soil and biodiversity. For Ukraine, this is another lesson: it must set up an environmental monitoring system and make use of international instruments.



Israeli environmental security models, such as precision farming for sustainable harvests or integrating climate-related challenges into defense assessments, could serve as a model for Ukraine. They demonstrate how to turn environmental challenges into a strategic advantage, even amid the chaos of conflict, with an emphasis on international cooperation and the use of modern environmental monitoring technologies.

How to make the environment a national security shield

For nature to become a powerful shield for Ukrainian national security, all parties—from the government to ordinary citizens—must act together, taking war and climate issues into account. There are some simple steps to help achieve this.

First, environmental issues should be integrated with national security issues. For example, Ukraine's National Security Strategy and the Environmental Security and Climate Adaptation Strategy through 2030 should be updated to ensure that pollution from shelling or drought is assigned the same threat profile as military attacks. Creating special groups within Ukraine's National Security and Defense Council, where environmentalists, military personnel and specialists work together would facilitate a more rapid response to toxic spills or radiation, as well as the

development of a clear plan for both the front and rear. Citizens can also help by documenting damage in their regions, as many volunteers already do.

Second, damage monitoring methods need to be updated to ensure they are also suitable for wartime situations. Existing approaches are “peacetime methods”—they don't take mines or explosions into account, so such damage remains unassessed. This requires the introduction of modern tools: drones equipped with cameras for detecting pollution, satellites (like the European Union's Copernicus system) for monitoring forests and rivers, or AI for analyzing toxin data.

In the wake of the destruction of the Kakhovka Hydropower Plant, for example, satellites showed turbidity covering 35,000 square kilometers of the Black Sea, but Ukraine lacks its own research capacities of this kind. To increase publicity and make information more accessible, Kyiv should engage civil society organizations (such as [Ecoaction](#) or [Environment People Law](#)) and international experts. An open-source damage database (available to everyone, from citizens to judges in The Hague) would facilitate the transparency of the entire process.

Third, it is crucial not only to document the damage caused by the war but also to hold the aggressor accountable by making active use of international instruments. However, certain circumstances



complicate the matter. In July 2023, for example, Russia [pulled out](#) of the Ramsar Convention on Wetlands of International Importance—a withdrawal from its obligations that demonstrates why relying on one agreement alone is inappropriate.

Read more:

- [Between war and nature conservation: Who wins when aggressor countries withdraw from environmental agreements?](#)

Fortunately, solid instruments already exist and are in effect, removing the need for new ratifications. The most important is the [Rome Statute](#) of the International Criminal Court (Article 8(2)(b)(iv)), which recognizes “widespread, long-term, and severe” environmental damage as a war crime if it exceeds what is perceived to be reasonable military necessity.

Another is [Additional Protocol I to the Geneva Conventions](#) (Articles 35(3) and 55), which prohibits methods of warfare that cause serious and widespread damage to nature and requires signatories to protect the environment from damage that threatens public health.

These norms are part of customary international law, so Russia cannot withdraw from them, and they can be used in the ICC.

But to achieve full force, a further step is needed—ecocide must be [recognized](#) as a distinct, fifth crime against peace in the Rome Statute, alongside genocide,

crimes of aggression, crimes against humanity and war crimes. This would make punishment more targeted and allow for culprits to be prosecuted for the mass destruction of ecosystems. A corresponding campaign has been ongoing since 2021 ([Stop Ecocide International](#)) and Ukraine actively supports it. Ukrainian diplomats and experts have promoted the idea of recognizing ecocide at international conferences such as the [United Justice](#) event in Lviv in March 2023 and at the [22nd Assembly of States Parties of the ICC](#) in December of the same year. [Recognizing ecocide](#) will allow international lawyers to place additional pressure on companies that put short-term interests above the Earth’s interests, and Ukraine can become a leader in this movement by offering its own evidence.

Ukraine has already taken several important steps toward integrating environmental security into its national strategy, chiefly by [adopting](#) the Strategy for Environmental Security and Adaptation to Climate Change through 2030. In February 2025, it [approved](#) an operational plan for the strategy’s implementation for 2025-2027, taking into account military challenges and climate-related threats. This creates a solid documentary foundation where environmental risks are recognized as part of the country’s overall security. •

Translated by Alastair Gill

Main image source: Razom for Ukraine



Nature's tank traps: How wetlands form a natural shield against military aggression

Oleh Listopad

As Russia's failed advance on Kyiv in 2022 showed, swamps can be a critical part of a country's security infrastructure. But while EU and NATO countries are already integrating wetland restoration into their defense strategies, Ukraine still views swamps as a land reclamation resource rather than a biodiverse natural shield.

On February 25, 2022, as Russian forces advanced on Kyiv, the Ukrainians took action so as to avert

an enemy breakthrough. They blew up bridges over the Irpin River in the cities of Hostomel and Demydiv, on the main road into Kyiv from the northwest, as well as a dam near the village of Kozarovychi. Water quickly flooded the fields and roads, and Russian tanks speeding toward the capital were halted at the approaches to the city. Some got bogged down in the soggy soil.



But it was not only the floodplain of the Irpin that helped the Ukrainians to defend themselves, but the entire wetland complex of Ukrainian Polissia. In the course of their advance in the Kyiv, Chernihiv, Sumy and Zhytomir regions in February–March 2022 Russian armored columns were forced to move only along asphalt highways, giving them little opportunity for maneuver. Even when the Ukrainian army demonstrated the vulnerability of this type of combat formation by repeatedly ambushing these columns, the enemy were unable to change their tactics. They were forced to continue advancing in columns of heavy equipment along a single narrow road, from which it was impossible to turn off.

Wetlands are incredibly valuable natural systems, guardians of the climate, talismans of biodiversity, guarantors of water supply and a sponge during floods. Environmentalists regularly plead with the authorities for the preservation and restoration of these ecosystems.

In some countries, like the [Czech Republic](#), environmentalists find a sympathetic ear and are allowed to save, restore and protect swamps and peatlands. Others, like [Denmark](#), are only just beginning to restore wetland systems, although strict plans have already been drawn up and funding provided. In many other places, swamp-loving environmentalists are still regarded as lunatics. Unfortunately,

Ukraine is one of these countries.

Recent research confirms that wetland ecosystems perform a multitude of environmental functions. In addition to serving as habitats for wildlife, especially migratory birds, the EU's Biodiversity Information System for Europe describes them as being of decisive importance for the provision of water-related ecosystem services. The UN's [Ramsar Convention on Wetlands](#) (1971) provides a framework for the conservation and sustainable use of wetlands.

“Wetlands are vital for human survival. They are among the world’s most productive environments; cradles of biological diversity that provide the water and productivity upon which countless species of plants and animals depend for survival. Wetlands are indispensable for the countless benefits or “ecosystem services” that they provide humanity, ranging from freshwater supply, food and building materials, and biodiversity, to flood control, groundwater recharge, and climate change mitigation.”

Ramsar Convention on Wetlands

The apparent—and perhaps even decisive—role played by swamps as obstacles to enemy advances in the early days of the full-scale Russian invasion has changed the way a number of countries view wetlands and peatlands.

“The National Armed Forces support the restoration of degraded historical peat



extraction sites into wetland ecosystems that can serve as natural barriers on the eastern border,” reads a statement posted on the website of the Latvian Ministry of Defense on September 22, 2025.

“This involves restoring wetlands, water resources, marshland crops, and forests in historically degraded peat extraction sites, thereby mitigating historical damage to natural resources. Restoring wetland ecosystems not only facilitates defense operations but also reduces logistical and personnel resources,” reads the statement.

These declarations are far from the first statements of their kind to issue from NATO/EU countries of their intentions to use natural ecosystems to enhance defense capabilities. Similar ideas have been voiced by officials in Poland, Finland and Estonia. Dozens of analytical articles on the subject have already been published by international media outlets, including [Politico](#), [Riffreporter](#), [Yale Environment 360](#) and [France24](#). Among these publications, an article on the Texty portal whose title translates as “Swamp Protection: How to Cover the Northern Border Affordably in the Long Term,” merits particular attention. Indeed, in Ukraine itself the idea of naturally enhancing defense capability through ecosystems has almost never been raised. In addition, October 9, 2025 marked the premiere of the documentary film *Pryrodnyy Kordon* (Natural Border).

Devoted to the unique ecosystem of the Polissia peat bogs and their importance for Ukraine’s security, the film was created by Ukraine’s public broadcaster Suspilne with the support of the Frankfurt Zoological Society and the [Michael Succow Foundation](#).

Read more:

- [Nature through the lens: Three films about the environmental impacts of the war in Ukraine](#)

While many European countries are increasingly declaring their intention to restore wetlands, Latvia has already taken action. A [statement](#) dated January 29, 2026 on the website of the Latvian Ministry of Defense elaborates:

“Joint revitalization plans for historical peat extraction sites are being developed within the framework of project No. 6.1.1.1/1/24/I/001 “Support for the revitalization of historical peat extraction sites” implemented by the Vidzeme planning region and its cooperation partners Latgale, Zemgale and Kurzeme planning regions.

(...)

For the restoration of historical peat extraction sites, municipalities plan to use European Union funds under the European Union Cohesion Policy Programme for 2021–2027, within Specific Objective 6.1.1 “Mitigate the economic, social and environmental consequences of the transition to climate neutrality in the most



A military column like this is an excellent target for a defending army, and it was precisely this that helped reduce the offensive potential of Russia's invading force in February 2022 and halt the advance on Kyiv. Source: Maxar/via REUTERS/Conservation Group

affected regions", Measure 6.1.1.1 "Phase away from the use of peat in energy"."

For some reason, however, the idea of making practical use of swamps for defense purposes – a move that Ukraine has essentially already pulled off during the war – is not being actively promoted.

What made the Irpin River special?

Almost all those who have written articles justifying the importance of swamps as defensive structures refer to the above example involving the river Irpin, which the Ukrainians turned into an impassable barrier for Russian troops as they advanced in February 2022.

Yet there are two things that are

rarely analyzed: Why did the dam suddenly have to be blown up and why did the river become an insurmountable obstacle after that? After all, the Russians had already proved capable of crossing other rivers (even a large river like the Prypiat).

The fact is that the Irpin has not fed into the Dnipro for a long time now. The level of the artificially created Kyiv Reservoir (filled in 1964–1966, after the completion of the Kyiv Hydropower Plant) exceeded the level of the mouth of the Irpin and several other rivers in the district. The mouths of the Irpin, Trubezh and other Dnipro tributaries have been blocked off since then by dams and their water has been pumped into the reservoir using pumps.



For a long time, both the Irpin River's environmental and defensive significance was ignored. Its channel was barbarically straightened, and the river itself was turned into a drainage ditch. The floodplains were drained and partially developed. In essence, the river was killed off. The authorities of the satellite city of Irpin actively promoted (and continued to do so as soon as the direct threat had receded) plans for the urban development of the Irpin River floodplain. For this reason, the dam had to be destroyed in order to allow water from the reservoir to fill the floodplain.

As a result, the area became practically impassable—the floodplain “remembered” that it was swampy and when Russian military vehicles found themselves in it, they got stuck and stopped. This also complicated the construction of crossings. Despite decades of reclamation, the soil remained unchanged, and the returning water restored the marshland.

Read more:

- [Plans to rebuild Ukraine shaped by solutions for Irpin](#)

Wetland reclamation: decades of misguided policy

In fact, the Polissia swamps could have played an even greater protective role during the Russian invasion, but Ukraine's wetlands have been subject to

a systematic destruction that goes back to the Soviet era.

Polissia, a land of lakes and marshes, spreads across the border regions of northeast Ukraine. For several decades, the Soviet government, and subsequently the government of independent Ukraine, destroyed these ecosystems by carrying out large-scale land reclamation programs. The original impetus for the draining of Polissia was a grand Stalinist plan for the transformation of nature. Adopted on Stalin's own initiative, the decree “On the Plan for Shelterbelt Afforestation, the Introduction of Grassland Crop Rotations and the Construction of Ponds and Reservoirs to Ensure High, Sustainable Harvests in Steppe and Forest-Steppe Regions” was implemented by the Council of Ministers of the USSR and the Central Committee of the All-Union Communist Party (Bolsheviks) on October 20, 1948. Even today, many even write about this plan with enthusiasm, since it led to the creation of numerous forest belts. But few people know that the same plan also called for the drainage of 1.9 million hectares of swamps in Ukraine.

In fact, large-scale drainage in the region began even before World War II and continued afterwards, as Vladimir **Boreiko**, author of the book *Istoriya okhrany prirody v Ukraine* (The History of Nature Conservation in Ukraine) explains. On October 18, 1947, the Communist Party and government of



the Ukrainian Soviet Socialist Republic demanded continued “development of the Irpin River floodplain and its tributaries,” and by the summer of 1948, large-scale drainage of the area had already begun. The regional party newspaper, *Kyivska Pravda*, even published a special supplement titled *Kyivska Pravda on the Irpin Floodplain*. A few years later, the floodplain was destroyed and the river channel was straightened.

In 1954, several government decrees on drainage were signed simultaneously in the Ukrainian SSR. These concerned the floodplains of the Trubizh, Nedra and Stsviha rivers, also located in the vicinity of Kyiv in northern Ukraine.

In November 1959, the Soviet government adopted a comprehensive resolution to drain approximately 5 million hectares of Ukrainian Polissia and straighten 600 km of the Prypiat River. This was accomplished through the use of explosives, destroying beaver colonies and rich fishing holes.

In July 1966, the Central Committee of the Communist Party of Ukraine and the Council of Ministers of the Ukrainian SSR signed a resolution “On the Extensive Development of Land Reclamation,” proposing the drainage of around 1 million hectares of land in the Ukrainian SSR between 1971 and 1975. All the way up to the 1970s, the Communist Party kept track of the socialist competition to drain swamps, compiling an annual

“prize ranking” for the destruction of nature.

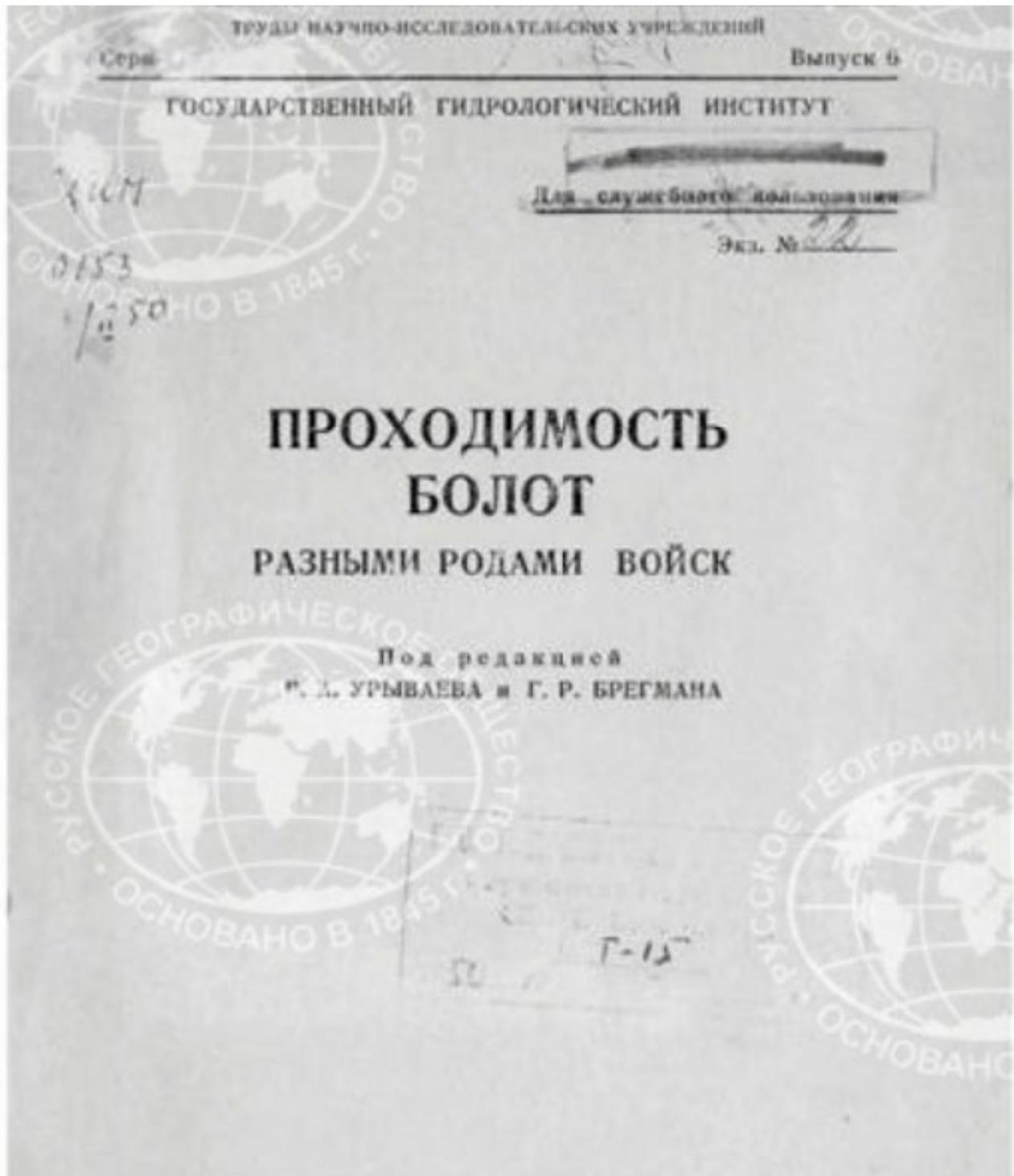
According to **Olga Denyshchyk**, a wetland expert at the Michael Succow Foundation, as of 1959 in Ukraine 1,446,000 hectares of land were covered by peat bogs. Of these, 800,000 hectares were drained (official data), though the most frequently cited figure is 1.2 million hectares. Another 52,085 hectares burned in the period from 2001 to 2013 as a result of forest fires.

Ironically, this destruction of valuable wetlands occurred despite keen interest from military specialists from the USSR—and later, Belarus and Russia—in the problem of transporting troops through swamps and their development of methods for assessing their passability. Despite these vast losses, however, there was still enough swampland remaining to hinder the movement of Russian troops in 2022.

Swamp strategies for Soviet soldiers

The defensive properties of swamps were of great interest to the Soviet military. In 1943, military hydrologists carried out a study that produced a [book](#) titled *Prokhdimost bolot raznymi rodami voisk* (Passability of Swamps by Different Types of Armed Forces), which for a long time was available only for use by the armed forces.

The authors of the book investigated in detail the possibility of crossing



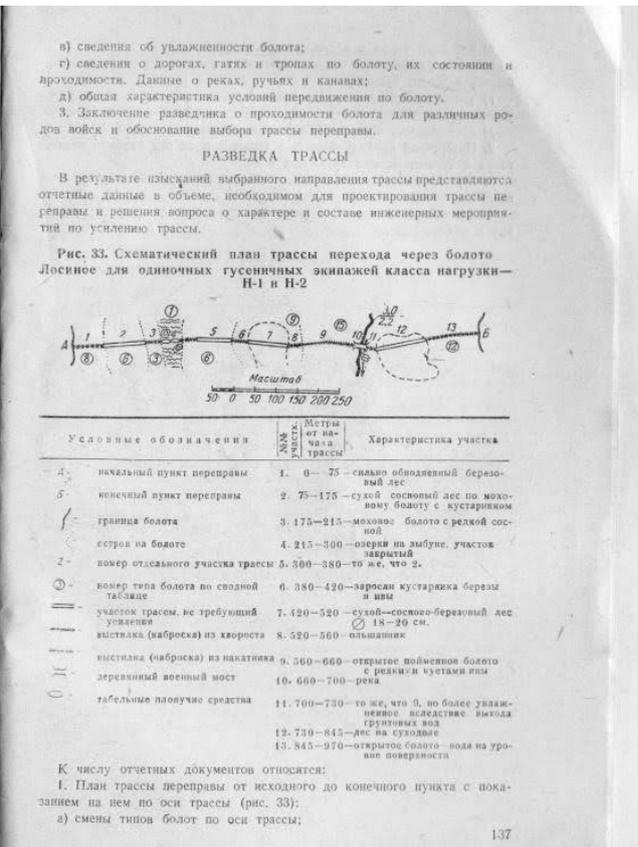
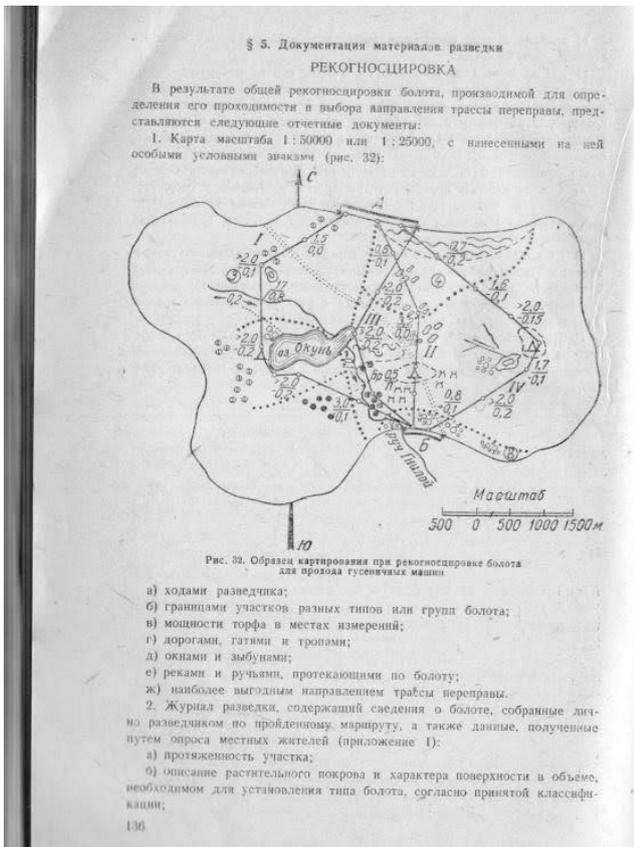
Title page of the book 'Passability of Swamps by Different Types of Armed Forces.' Source: [Geoportal of the Russian Geographical Society](#)

different types of swamps with infantry, artillery, armor and horse-drawn transport. The book also analyzes ways to enable or simplify such crossings.

The authors clearly demonstrate that the swamps are on the side of those

holding the line. This is what they write about test-drives of tanks:

On a research route approximately 1 km long, a KV tank [a heavy Soviet tank] twice sank into a layer of dried peat to a depth of up to 1.5 m. No less typical was



An example of reconnaissance mapping of a swamp for the passage of tracked vehicles. Source: 'Passability of Swamps by Different Types of Armed Forces'

the case of the "movement" of a T-60 light tank across a mossy swamp: after passing a 300-meter section in seven minutes, on the return journey the same tank, along the same section, got stuck for three hours, and needed assistance 12 times to be pulled out.

Therefore, any talk of tanks "moving" independently through swamps (without special reinforcement of the surface) should be done with great caution. Moving tracked vehicles through swamps should be seen as an operation requiring special training, technical supervision and associated with clear risk.

Experimenters were able to move artillery of various calibers by mounting it on homemade skis made from entire tree trunks. These guns "on skis"

were pulled by either horses or men. However, moving through swamps is also challenging for humans, as described separately in a section titled "Crossing Swamps with Infantry":

Crossing swamps requires the expenditure of a great deal of energy and is especially hard on infantry soldiers, making it one of the most difficult types of crossings, requiring careful preparation and a clear understanding of how to conquer swamps,"

During World War II, the USSR not only issued many different [recommendations on how to cross swamps](#) with army units, but also put this knowledge into practice on a large scale, which allowed the Red Army to deal several unexpected blows to Nazi



troops. The most popular of these was the successful Operation Bagration in 1944, in which tank divisions crossed the marshes of Polissia. As a result, enemy troops were ejected from Belarusian territory.

On the whole, the events of World War II confirmed that many types of wetlands represent a significant obstacle for advancing troops, and crossing them requires special equipment and the construction of complex and fairly extensive engineering structures.

Modern Russian military engineering textbooks are apparently classified out of habit; it was not possible to find any in the public domain. This author did, however, find another [contemporary study of the topic](#) online. There is a corresponding section called “Metodika Inzhenerykh Raschyotov” (“Methodology of Engineering Calculations”) in a teaching aid for the discipline titled Voenno-Inzhenernaya Podgotovka (Military Engineering Training), published in Minsk in 2018. Belarusian military specialists assign great significance to the passability of swamps, both for defense purposes and to ensure the safe movement of Belarusian troops during an offensive. In this relatively short manual on general issues related to military engineering calculations, the term “swamp” was used over 40 times. The authors rank different types of wetland in terms of how challenging an obstacle they represent

for tanks, tractors and people. Some types of forest swamps, for instance, are designated as “impassable” or “difficult to pass” for tanks.

Read more:

- [Protected areas and border zones in Ukraine: How to harmonize them?](#)

Ukraine’s wetlands today: a story of pain and hope

Environmentalists and conservationists understand the importance of preserving and restoring wetlands as biodiversity-rich natural ecosystems, “water banks” and carbon repositories.

[According](#) to the International Union for Conservation of Nature, peatlands in their natural state (over 3 million square kilometers) absorb 0.37 gigatons of CO₂ per year worldwide. Peat soils contain over 600 gigatons of carbon, representing up to 44% of all carbon in soils and exceeding the amount of carbon stored in all types of vegetation, including the world’s forests.

Ukraine’s share of this “peat treasure chest” is not the largest, but it is significant all the same. Part of its swamps are protected as natural reserve areas, and part as [Emerald Network](#) areas (although the bill “On the Emerald Network” has lain unadopted for four years already in the Verkhovna Rada of Ukraine). But government agencies



in Kyiv view unprotected swamps and peatlands solely as a peat and amber resource. Correspondingly, permission for industrial use has either already been issued for these sectors, or can be issued at any moment. In addition, there have been a number of cases in which even licenses for the development of areas under state protection have been granted.

The situation is particularly grave with already reclaimed territories. Drained peat decomposes, releasing greenhouse gases, and are often the site of fires. This millennial carbon store is becoming one of the largest sources of its release into the atmosphere. Ukraine has no state program for the recovery (hydration) of peatlands. There are only a few interesting pilot projects, funded by international organizations, all of which are being implemented in nature reserves or national parks.

In February 2025 a number of public organizations appealed to the Ministry of Environmental Protection and Natural Resources of Ukraine with a request that a draft resolution “On the Specifics of the Legal Regime for the Use of Peatlands and Possible Types of their Intended Use” be drawn up and submitted for government approval.

As **Petro Testov**, an expert from the Ukrainian Nature Conservation Group, points out, the Cabinet of Ministers should have adopted a resolution like this five years ago. In 2020, amendments

were made to Part 3 of Article 150 of the Land Code under the law “On Amendments to Certain Legislative Acts of Ukraine on Land Use Planning.” “3. The specifics of the legal regime for the use of peatland and the possible types of its intended use are determined by the Cabinet of Ministers of Ukraine,” read the amendments.

This is clearly stated in a set of recommendations based on hearings in Ukraine’s parliamentary Committee on Environmental Policy on the subject: “Legal Foundations for the Functioning of an Effective System of Protected Areas and Sites as a Basis for the Conservation and Restoration of Biodiversity: Current Issues,” which were published on October 24, 2024.

In particular, the following recommendation was made to the Cabinet of Ministers of Ukraine: “2. To develop and approve the following regulatory legal acts: ... - on the specifics of the legal regime for the use of peatlands, in particular, in terms of prohibiting the drainage of peatlands ...”.

The Ministry of Environmental Protection and Natural Resources, the State Forestry Agency of Ukraine, the State Service of Ukraine for Geodesy, Cartography and Cadastre, and regional state (military) administrations are recommended to “2. Ensure the implementation of measures to restore drained peatlands, including within



the boundaries of nature reserve fund institutions and regular forest users.”

Unfortunately, on July 21, 2025, Ukraine’s new Cabinet of Ministers abolished the Ministry of Environmental Protection and Natural Resources, transferring its functions to the newly created Ministry of Economy, Environment and Agriculture. This was a new agency with new people, establishing new vectors of cooperation. All explanations of the importance of peatlands from an environmental and climate-related perspective therefore had to begin anew. The situation has only been exacerbated by the confusing reshuffle of the environmental agencies.

Read more:

[Merging ministries: Will changes in the structure of Ukraine’s government roll back the environmental agenda?](#)

So it is possible that at least an understanding of the role of wetlands as a defensive factor will encourage the Ukrainian authorities to engage seriously in protecting the country’s remaining wetlands and restoring those devastated by reclamation projects. The first step toward achieving this must be to halt the issue of permits for peat and amber

extraction, which are currently being sold off like hot cakes by the State Agency for Geology and Subsoil. A moratorium must be declared on any further land reclamation activity until the issue has been studied by the Ministry of Defense with the participation of ecologists and hydrologists. And a broad program must be adopted and implemented to restore the natural hydrological regime of drained peatlands, which will help to restore the ecological, climatic and defensive functions of wetlands across vast areas of northern Ukraine.

Oleh Listopad is an environmental expert and member of the National Interest Advocacy Network (ANTS)

Note: [The draft resolution of the Cabinet of Ministers of Ukraine “On the Specifics of the Legal Regime for the Use of Peatlands and Possible Types of their Intended Use,”](#) aimed at the [practical implementation](#) of European Union legislation on environmental protection, climate policy, and sustainable land use in relation to the protection and restoration of peatlands, was finally published for public review on January 5, 2026. •

Translated by Alastair Gill

Main image source: [unian](#)



Environmental and Climate Activism in the time of invasion: Ukraine

Alexej Ovchinnikov

In the third and final part of this series we look at the consequences of the Russian invasion for environmental activism in Ukraine. Ukrainian environmental and climate organizations and initiatives have been directly affected by the war, working under shelling and missile attacks, analyzing the environmental consequences of the invasion and lobbying for projects devoted to the country's green recovery.

As we have seen, domestic political crises and resulting repression have been the main challenge for environmental

activists in Belarus and Georgia in recent years. For Ukrainians, however, it has of course been the full-scale Russian invasion. Ukrainian activists say that they find it hard to imagine the difficulties faced by Georgian and Belarusian activists. Faced with an external enemy, Ukraine made common cause and gathered its strength. In addition, the Revolution of Values (Revolyutsiya hidnosti) of 2014 had provided civil society with sufficient resources and tools to influence the current government.



Instead of repression and pressure, however, Ukrainian environmental organizations and initiatives today face another catastrophe – war.

Domestic issues and problems have not gone away, however. Over three years of war, activists have continued to defend projects to preserve natural areas, whether in [Svydovets](#) in the Carpathians or [Osorkorky](#) in Kyiv, not allowing the war to be used as a pretext for construction and the destruction of natural areas. Activists from Belarus and Georgia can only envy the strength of Ukrainian civil society and the influence its representatives can exert on the government in Kyiv. However, this has been achieved at a very high price.

In interviews and private conversations, one often hears people say that “the war is taking the best.” And it is true that it is often the most active, responsible and dedicated who volunteer for the front, only to die there. Sad news arrives every month; this is a grievous loss for Ukraine’s environmental and climate movement.

Those who remain in the rear are motivated and ready to double their efforts to ensure that Ukraine emerges in better condition after the war, that its recovery makes it one of Europe’s leaders, and that its sacrifices have not been made in vain.

Here are the names of just a few of the environmental activists who have

been killed since Russia launched its full-scale invasion of Ukraine.

Roman Ratushniy (July 5, 1997 = June 9, 2022), a Kyiv-based activist (a reserve is now named after him)

Max Levin (July 7, 1981 = March 13 or 23, 2022), an environmental journalist

Semen Oblomey (June 13, 2000 = June 21, 2022), a tree defender and tree surgeon

Viktor Ruban (May 9, 1968 = June 2022), a defender of Kyiv’s suburban forests

Many of those employed by national parks and reserves have also lost their lives in the course of the invasion. For example, the director of the Karmeliukove Podillia National Park, Vitaliy Zlenko (April 14, 1966 = June 13, 2022), was killed while in another protected area, the Vysunsko-Inhuletskyi Regional Landscape Park in the Mykolaiv region.

A solidarity forged by war

Diana Popfalushi, head of the Ukrainian Climate Network, told UWEC Work Group how the full-scale invasion has affected the work of Ukrainian activists.

“At the very beginning of the full-scale invasion, in early 2022, I and many other climate activists essentially changed our spheres of activity. Almost nobody was



dealing with climate or environmental issues. We understood that there were other, more important tasks. So in the beginning, nobody was thinking about the climate and environmental agenda," she says.

"Later, however, in the middle of 2022, we began to understand. Okay, we'd done all that was necessary, provided our country with 'first aid.' It was time to get back to our work and deal with climate change issues. This has become a very pressing question though—how can we return people's attention to this meme? The war goes on. Very few people are thinking about environmental problems and climate change right now."

"The first year and a half of the full-scale invasion were particularly hard," she continues. "In the main we were doing small projects. For example, for installing solar panels. This was something that could be shown as important right here and now, like making a hospital or school energy independent from the constant power cuts caused by missile attacks. So we tried to combine climate and environmental projects with solutions to the issues caused by the war."

"We also had a project to build a community garden. You might think, who needs a community garden during a war? But the project turned out to be what people wanted. Many internally displaced migrants came to us, people who had been forced to leave combat zones. They made up around 80% of those who visited the community garden. For them it was a good opportunity to keep busy and stabilize ourselves psychologically.

And we saw that projects conceived before the full-scale invasion could also be relevant in wartime."

"Today, we're essentially working on the same issues and areas we were developing before the full-scale invasion," explains Popfalushi. "You could say that we've reformatted them. We've started to take a more comprehensive approach. For example, we're now trying to link our projects to Ukraine's green recovery. To make climate change relevant, we're trying to place it within the framework formed by the war."

Since the full-scale invasion, Ukrainian environmental and climate activists, organizations and initiatives have actively sought to place the consequences of the war in a climate-related context and demonstrate their global scope. For example, Russian aggression was [presented](#) as being based on the fossil fuel economy. Oil, gas, and coal sanctions were intended to weaken the aggressor. Ukrainian environmental organizations such as Razom We Stand were active in calling for these measures. Ukrainian climatologist Svetlana Krakovska [openly called](#) the invasion a war over fossil fuels.

As Popfalushi explains, this concept that the full-scale invasion is all about fossil fuel has been actively presented at international level and perhaps not so prominently in the Ukrainian context.

However, as she points out, working on the climate and environmental agenda in Ukraine is now more difficult: environmental issues and climate change



are not seen as priorities, and financial support is also being redirected to aid the army and restore infrastructure. While large organizations can cope more easily, smaller initiatives struggle in this environment. However, high-profile issues, such as the idea of “green recovery,” which attract good sources of funding, allow them to continue their work. Large NGOs are trying once again to include environmental and climate-related issues into their agenda, and are seeking support from activists. The process of restoring the agenda is unfolding slowly, but it is advancing. Initiatives and organizations themselves are trying to draw attention not only to military issues, but also to what is happening in unoccupied Ukraine, including various covert schemes. A good example of this is the development of the [Polonina Runa](#) mountain ridge in the Carpathians (in addition to the construction of large numbers of wind turbines in alpine meadows, the project also includes large-scale road construction through high-altitude virgin forests).

While Ukraine might appear to be a greater focus of international attention than Belarus and Georgia, and therefore enjoys higher levels of financial support for environmental and climate organizations, Popfalushi notes that this is not the case. Many initiatives and NGOs continue to work on short-term projects. This requires additional

spending of resources to seek funding and write reports. These are often short-term projects, lasting just a year or less. Ukrainian initiatives and organizations are also feeling the effects of reduced international funding. For this reason, there is no certainty that the project will be extended and that funds will continue to be available. As for fundraising within Ukraine, most donation campaigns are aimed at supplying the needs of the army. Environmental and climate projects are far from being a top priority.

When asked what gives her the strength and inspiration to work in such difficult conditions, Popfalushi replies: *“As an activist, I try to focus on what I can do, what I can change. Over the course of the full-scale invasion, we’ve lost all illusions, so in the course of our work we simply focus on action. Along with the problems, I learned to immediately see solutions. Now, in order to continue our work, we need to find a stable source of funds and resources. So I’m continuing to write letters and seek solutions. But I think this is a personal thing. Everyone finds their own strategy and impetus to carry on working. We have visionaries on our team. For me, it’s easier to work when I have a clear understanding of what needs to be done, and I do it.”*

When you talk to Ukrainian activists about the problems in Belarus and Georgia, they point out one significant difference. In Ukraine, the full-scale invasion, especially in the first year or two, united society and the government.



It also opened the door to significant international support, which supplied the necessary resources.

Ukraine's current path was shaped by the protests of 2014, also known as the Revolution of Values. Back then, the country made a choice in favor of civil society values, a choice for which it has paid a heavy price: war and invasion. Ukrainians also understand perfectly well what a political crisis is. However, Ukrainian citizens have always had the opportunity to fight for their climate and environmental rights, thanks to various initiatives and organizations. In Belarus, this opportunity disappeared in 2020. In Georgia, it has been under threat since 2024.

Environmental and climate activists are facing difficult times not only in Belarus, Georgia and Ukraine. In Russia, environmental organizations are also considered "undesirable," and activists are subject to persecution and repression. UWEC Work Group will report on the situation with environmental activism in Russia in a separate article. Pressure on environmental and climate activism is also growing in Central Asia. Even in Western Europe, the situation with climate and environmental activism has worsened in the years since the full-scale

invasion began, as Italian investigative journalist **Marta Abba** reported in her article "Under Pressure, European Environmentalists Seek New Ways to Fight" (in Italian).

All this is happening against the backdrop of accelerating climate change. Wildfires in Spain, heavy monsoon rains in India, drought in the UK. At a time like this, support for environmental and climate organizations needs to be dramatically increased. They are not only sounding the alarm, but also finding solutions for how we can best adapt to the shifting climate storm. Nonetheless, governments are cutting support programs while continuing to expand fossil fuel production. Maybe it is now up to us to step up and save the situation. •

Translated by Alastair Gill

This series was produced as part of the Thematic Networks of PULSE, a European initiative that supports transnational journalistic collaborations.

- [Environmental and Climate Activism in the time of invasion: Georgia](#)
- [Environmental and climate activism in the time of Invasion: Belarus](#)



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