

U W

E C

**Ukraine War
Environmental
Consequences
Work Group**

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Dear Friends!

*“The war is slowing down... All processes are becoming more complicated and slower,” Ukrainian President **Volodymyr Zelensky** recently [said](#). But this does not mean that the danger for people and nature has grown any less. In fact, the likelihood of a disaster is as high as ever, and has not receded since the destruction of the [dam](#) at the **Kakhovka hydropower plant**. For example, the IAEA is [currently reporting](#) on an increase in military activity near the **Zaporizhzhia nuclear power plant**. Unfortunately, the war goes on, and it is as important as ever to understand what is happening, to speak about it, and to find solutions and ways out which will allow us to restore both the cities and nature that have suffered from the conflict.*

*The restoration of Ukraine was the main subject of discussion at the URC23 conference which took place in London in June. While the conference can hardly be labeled “shameful” – as [was the case](#) with last year’s meeting in Lugano – no ambitious solutions were presented during the event. Ukrainian environmental journalist **Viktoria Hubareva** has prepared an exclusive overview for UWEC Work Group of what happened in London at the end of June.*

- [**URC23 Review: Ukraine offers investment opportunities**](#)

*In order to develop a recovery plan for Ukraine, it is also necessary to understand the consequences of the full-scale invasion. As we have already noted on several occasions, many consequences are of a transnational character. The war is now increasingly spreading beyond the borders of Ukraine and Russia. Military drones have twice been recorded falling onto [Romanian soil](#) in recent days, and the serious impact of military activity on transborder territories such as the Black Sea are clear. You can read about the negative effects of the full-scale invasion on the waters of one of the region’s most important seas in the article by Sofya Sadohurska, an expert from the Ukrainian environmental organization **Ecodia**.*

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

Another example of cross-border influence is the militarization of borders. This is felt especially strongly in Poland, Lithuania and Latvia. These countries are not only Ukraine’s most active supporters, but have a more comprehensive view of the war. Following the [migrant crisis](#) on the border with Belarus in 2021, they took the decision to build and strengthen fences along their frontiers. Ukraine is also reinforcing its border with Belarus. A barrier like this is seen as one of the ways of demilitarizing the border with Russia after the end of the war. However, these decisions, driven by security policies, have an extremely negative impact on the



environment. Read about the impact of fences and enclosures on wild animal populations in **Vadim Kirilyuk's** article:

- **[Beasts and Barriers: Obstacles along international borders and their impact on land-based vertebrates](#)**

*As we have previously reported, the war also has consequences in regions far from the combat zone, where nature is also suffering as a result of the invasion. The imposition of sanctions and the refusal to finance the war through the purchase of carbon-based fuels in Russia has seen the aggressor begin to seek other sales markets. The most prospective of these is China, to which Moscow now plans to redirect its gas supplies. This, however, will require the building of new infrastructure, which will potentially pass through the unique natural landscapes of Altai or Tunka. Unfortunately, today there is almost nobody left to protect them, and stopping the construction of a pipeline, like several years ago, will be impossible – largely thanks to the designation of NGOs such as the **Altai Project** as “undesirable.” You can read about the possible consequences and how Altai may suffer from Russia's invasion of Ukraine in our article:*

- **[Gas intrigues: Pipelines, nature preserves, NGOs and the war](#)**

You can also learn about the increasingly intense persecution of environmental activists in Russia and Belarus since the beginning of the full-scale invasion by watching recordings from our webinar, organized in collaboration with RSF Sweden and Soeva Green Foundation.

- **[Webinar #4. Persecution of environmental activists in Russia and Belarus before and after the start of Russia's military invasion of Ukraine](#)**

The destruction of nature as a result of Russia's invasion of Ukraine is increasingly frequently being described as ecocide. But while this term has a long history – discussions of what constitutes ecocide have been ongoing since the 1970s – it remains not only unrecognized in international practice, but there is no established definition at national level. What do we understand by ecocide? To what degree are Ukraine and Russia willing to integrate ecocide into their legal system? Which other countries recognize ecocide? How is data on ecocide being gathered in Ukraine? We have tried to answer these and other questions in our introductory article on the subject:

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

We continue to follow the environmental consequences of the invasion on our [website](#), on [Twitter](#) (X) and on [Facebook](#). We wish you strength and peace!

Wishing you strength and peace!

Aleksei Ovchinnikov

Editor, UWEC Work Group



URC23 Review: Ukraine offers investment opportunities

*by Victoria Hubareva
Translated by Alastair Gill*

We analyze the main outcomes and critique opportunities presented by Kyiv at the recent Ukraine Recovery Conference in London, which appeared to have discarded the ambitious plans laid out at last year's event in Lugano.

Held in London on 21-22 June 2023, this year's Ukraine Recovery Conference (URC) was devoted to mobilizing international support for the economic and social stabilization of Ukraine, as well as the process of repairing the

damage caused by Russia's invasion. Emergency assistance for urgent needs was also addressed at the event, as was the financial participation of the private sector in the rebuilding process.

More than 40 countries and roughly 20 international organizations took part in last year's conference in Lugano, which resulted in a declaration of support for Ukraine in the form of a \$750 billion "Marshall Plan" to help the country along the road to recovery



over the next decade. However, the recovery program presented by Ukraine [caused](#) widespread indignation among Ukrainian conservationists.

The intention was that this year's conference would be used to unveil the Ukraine Recovery **Plan for Environmental Security**, which the Ministry of Environmental Protection and Natural Resources of Ukraine [announced](#) back in February. The intention was to discuss financing and further assistance.

However, the plan was never presented – even after the conference. When the UWEC Work Group requested clarification, the Ministry replied that the document was still under development.

Ukraine Business Compact 2023 and \$60 billion in recovery aid

On the whole, this year's Ukraine Recovery Conference focused on private businesses and international financial institutions, and more specifically on attracting international investment for rebuilding Ukraine in three main sectors: subsoil resources, forests, and energy. The main results can be summarized quite briefly:

- Almost 500 businesses from 42 countries have signed on to the Ukraine Business Compact 2023
- Partners have [promised](#) Ukraine over \$60 billion, of which 50 billion

euros is to come from the EU in the next four years through a new financial mechanism.

We asked environmental experts who closely followed the conference or attended it to share their analysis of happenings at URC23.

No environmental agenda, but it was still 'better than Lugano'

According to Konstantin Krynitsky, head of the energy department at the NGO Ecoaction (Ecodia), who attended the conference, there was no “environmental” agenda as such. For instance, the Ukrainian Minister of Environmental Protection and Natural Resources Ruslan Strilets did not speak at the main conference. This was surprising, since according to Anna Ackerman, a board member of the Ecodia Center for Environmental Initiatives, a Ministry of Environmental Protection and Natural Resources working group on restoration convened just a week before the conference, with the understanding that the minister would be in London to present certain strategic projects and focus areas to the event's international audience.

Krynitsky remarked that this year's event avoided what he called the “Lugano shame” of 2022:

“On the whole it went better than last year in Lugano. And it's remarkable that this



year nobody mentioned the Recovery Plan that was presented then, but in any case that was not about sustainable development," he said.

Energy Strategy 2050: 'There were a lot of figures. Ambition is a good thing, but it scares off investors'

As Krynitsky noted, Energy Strategy 2050 "was essentially not presented as such, only as a general vision."

Maksim Babayev, an expert on renewable energy, fully concurred with Krynitsky's assessment.

"The leitmotif of the London conference was the involvement of private business," he explained. "That's where most of the resources will be coming from. And it's here that there are certain disagreements: on how private businesses assess their prospects and on how we announced this."

According to Babayev, the Ukrainian energy sector has no real vision or strategy. "There's Energy Strategy 2050, which is classified as 'secret'. It has never been discussed publicly, either before the meeting in London or at the conference." Accordingly, what was presented at the URC for systemic investors working at a very high level in terms of analytics and planning was insufficient, and amounted to little more than an extravagant set of "wish lists" and big, ambitious goals.

"For example, forecasting the development of the energy sector assumes that there will

be a certain energy balance, there will be a certain growth in energy consumption and production over time. But these goals were not part of the presentation, though there were a lot of other figures. Ambition is a good thing, but if it is unfounded, it often scares off investors," he said.

Babayev also noted that there has been much talk of financial instruments in order to make it easier for businesses to invest and cover risks, the cost of loans, and so on – but this talk remains on paper.

What about subsoil resources?

The presentation by German Galushchenko, Ukraine's Minister of Energy, mentioned the possibility of producing carbon-neutral electricity, as well as the creation of an "EU hydrogen hub" in Ukraine (aimed not only at local consumption, but also for export), certified gas storage facilities, and the production of energy equipment. Ukraine also confirmed that it plans to phase out coal by 2035.

According to Galushchenko, "green" steel, hydrogen, green ammonia, green electricity, biomethane and natural gas will be the principal areas of focus for the development of Ukraine's energy sector.

However, Krynitsky noted that everything described above by the Ukrainian side as "green" involves producing or mining for export, with the focus on "making money."



“The government presented important potential areas of focus for the development of industry and the manufacture in Ukraine of products with high added value. For example, batteries, electric cars, and energy equipment. However, in one of the discussions they said ‘let’s start with mining, and then we’ll talk about the full production cycle’,” added Anna Ackerman.

Of course, such ambitious plans for the use of subsoil resources in Ukraine give rise to fears that the country may become a commodity exporter, which will involve environmental risks.

“However, if we’re talking about mining [resources] for the European Union, it’s unlikely that we’ll be able to develop such production without the implementation of the new EU standards,” said Ackerman.

It is also encouraging that the recently signed [Ukraine Business Compact 2023](#) sets out that environmental criteria must be met, with a subsequent transition to sustainable development.

Pivoting smoothly toward rebuilding communities

Alexandra Azarkhina, Deputy Minister for the Development of Communities, Territories and Infrastructure of Ukraine, noted the importance of setting up a fund to repair damage sustained as a result of Russian military aggression and talked about developing a methodology for prioritizing projects.

Crucially, the new [DREAM](#) portal (Digital Restoration EcoSystem for Accountable Management) was presented as a means for communities to manage projects and engage in direct dialogue with international financial organizations. Experts see future prospects in the development of communities and restoration “on the ground”.

“Communities should be the leaders of the recovery, we need to support the weak,” explained Azarkhina.

What next: Expectations and the central theme for URC24 – recovery in communities

The next stage will be the 2024 recovery conference in Berlin, where leaders will focus on decentralized projects and community support for recovery.

As Ackerman [noted](#), inclusivity should play a key role. We must listen to the opinions of vulnerable communities recovering after the trauma of war, as well as the voice of public organizations ready to offer support in any form.


Krynitsky concurred. *“We hope that it will have a focus on communities, and will necessarily include questions of damage to the environment and what to do about it. Because no private investors will do this, and we are talking about tens of billions of dollars,”* he summarized.



Recovery Plan 2.0 is still under development

In response to our request, the Ministry of Environmental Protection and Natural Resources of Ukraine reported that “at present, the body

is working on the ‘Environmental Safety’ part of the draft Action Plan for post-war restoration and development of Ukraine,” but this will only be possible to view once it has been finalized.



МІНІСТЕРСТВО ЗАХИСТУ ДОВКІЛЛЯ ТА ПРИРОДНИХ РЕСУРСІВ УКРАЇНИ
(МІНДОВКІЛЛЯ)

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На № 494/ЗПП-23 від 26.06.2023

Про надання інформації

Міністерство захисту довкілля та природних ресурсів України розглянуло в межах компетенції запит на отримання публічної інформації Губаревої Вікторії Романівни щодо надання документу «Національний плану відновлення України у сфері екобезпеки 2.0» та повідомляє.

21 квітня 2022 року Указом Президента України № 266/2022 утворено Національну раду з відновлення України від наслідків війни.

30 грудня 2022 року Кабінетом Міністрів України прийнято розпорядження № 1219, яким затверджено План дій органів виконавчої влади з відновлення деокупованих територій територіальних громад, що визначає комплекс необхідних заходів для відновлення функціонування деокупованих територій.


На даний час, Міндовкілля працює над розділом «Екологічна безпека» проекту Плану заходів з післявоєнного відновлення та розвитку України.

Ознайомитися з Планом заходів з післявоєнного відновлення та розвитку України буде можливо після його доопрацювання.

Перший заступник Міністра

Андрій Мартишев 206-31-46

Олександр КРАСНОЛУЦЬКИЙ



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At present only a [draft plan](#) - the first, unadapted version - has been published on the Ukrainian government portal.

The most recent discussions of the Plan were held in January this year at the initiative of the public organization [Agency for Recovery and Development](#) which called for the talks as part of the

“Voice of Civil Society” project. It is unclear whether any public discussions are planned in the near future. The likelihood is that this issue that is vital for protecting the Ukrainian environment is on hold for now, in anticipation of more active public action. •

Main image source: [ONOVA. Ukraine's Renovation League](#)



Impact of Russia's invasion of Ukraine on the Black Sea and the Sea of Azov

*by Sofia Sadogurska
Translated by Alastair Gill*

Russia has been waging war on Ukraine for more than nine years, almost 18 months in the form of a full-scale invasion. The war is having a significant effect on the environment, and in particular on the Black Sea and Sea of Azov. The blockading of ports and mining of waters has made them almost inaccessible not only for fishermen or tourists, but also for scientists, who had studied the changes in the marine ecosystems for decades. But, despite the impossibility of taking samples from the sea right now, available data and facts give us an understanding of the impact military activity and occupation is having upon

the marine environment. This article is an overview of what we currently know about the effects of Russia's war against Ukraine on the Black Sea and the Sea of Azov.

War begins – 2014 and occupation

The Black Sea and Sea of Azov have several unique characteristics, in particular their low salinity and isolation, making them natural treasures with rich biodiversity and rare biotopes.

Throughout the 20th century these seas faced numerous problems as a result of the powerful influence of



human activity: overfishing, pollution from ports and rivers, the intrusion of invasive (i.e. non-local) species. The situation has been exacerbated by the increasingly powerful influence of climate change, which has led to the disappearance of some species and changes to local ecosystems.

And although Ukraine's seas were in a state of ecological crisis, in recent years researchers have also [seen](#) positive signs, indicating the gradual recovery of some ecosystems as the consequence of a reduction in the level of organic pollution, or eutrophication.

For example, in the northwest part of the Black Sea scientists have [observed](#) a trend toward the recovery of sea floor vegetation – groups of *Cystoseira* and *Phyllophora* macroalgae. On the whole, scientists [characterize](#) eutrophication patterns in the northwest part of the

Black Sea over the last two decades as a “sustained de-eutrophication trend”, underlining the recovery processes of the ecosystems under observation.

The war that began in 2014 threw the recovery of Ukraine's seas into jeopardy and led to the deterioration of marine ecosystems, primarily in the areas that came under occupation: Crimea and the Azov coast in the Donetsk region.

The Sea of Azov first suffered from the impact of military action back in 2014–2015, when half of the Meotida National Park came under occupation. The park contains protected steppe sectors, as well as the sandy Azov spits, including the unique Kryva Kosa, where rare bird species such as Dalmatian pelicans and terns had previously nested. The country's largest colony of black-headed gulls, which are listed in the Red Book of Ukraine, was also found



Fig 1. This Dalmatian pelican colony lived on Kryva Kosa prior to Russian occupation. Photo: Aleksandr Bronskov (Source: suspilne.media)



Fig 2. The wreck of the Ochakov at the entrance to Lake Donuzlav (Source: topwar.ru)

there. After taking control of the spit in 2015, the Russians made a show of conducting military exercises on it and used the area for military and economic purposes, which led to a sharp reduction in [rare bird species](#). It is likely that some species have disappeared completely, but as long as the occupation continues, it is impossible to assess the situation.

In the Black Sea, the first potential cases of the harmful impact of military activity were also recorded back in 2014. For instance, almost immediately after the beginning of the occupation, Russian forces blew up and sank four ships at the entrance to Lake Donuzlav, closing off access to the sea for Ukrainian vessels. Already then Ukraine's Ministry of the Environment and Natural Resources expressed its concern over the environmental consequences of such

thoughtless actions, since the largest of the sunken ships, the submarine chaser Ochakov, lay on the seabed for quite some time and was raised only half a year later.

Following the seizure of these territories, marine ecosystems have systematically experienced negative impacts throughout the period of occupation, particularly as a result of infrastructure construction, extraction of building materials, conducting military exercises, and changes in the status of protected natural areas.

The most vivid example is the Crimean Bridge. Not only were the unique ecosystems and lake on Tuzla Island [destroyed](#) as a result of the bridge's construction, but the migration routes of fish and cetaceans in the Kerch Strait were also cut off.



Fig 3. Tuzla Island in the Kerch Strait. On the left are the lakes and natural ecosystems essentially destroyed after construction of the bridge. On the right is the Crimean Bridge, which was built right across the island (Source: ecoaction.org.ua)

The protected Bakalska spit, which is located in the Black Sea's Karkinitsky Bay, was also severely affected. Here sand was industrially extracted during the occupation, resulting in the destruction of the central part of the spit and a negative impact on the natural habitats located here, which are formed by coastal salt lakes. Analysis of satellite

photographs has shown that by 2019 the spit had already turned into an island, and may vanish completely in the future as a result.

Read this UWEC Work Group article to learn more:

[The Crimean Bridge: Environmental impact of Russia's 'project of the century'](#)



Fig 4. A thermobaric bomb explodes during Russia's Kavkaz 2016 military exercises at the Opuk training ground (Source: BlackSeaNews)



In another part of the Crimean Peninsula, the Russian occupiers [turned](#) Opuksky Nature Reserve into a military training ground, destroying formerly protected marine and coastal ecosystems as well as areas of virgin steppeland.

A number of large-scale military exercises have been held around the capes of Chauda and Opuk, including drills to practice the destruction of naval targets using air missiles, thermobaric bombs, and other weapons. This could have had a catastrophic impact on the marine environment as a consequence of chemical pollution, as well as the effect of blast waves.

Read more about the impact of the invasion on Crimea's environment in this article:

[Nine years after Crimea's annexation: militarization's environmental consequences](#)

The first consequences of full-scale war – mass dolphin deaths

Since the start of the full-scale invasion, the negative impact on the seas has increased significantly. From the very first days, it became clear that fighting, missile attacks on coastal cities, blockading of ports, and pollution of sea waters with oil and other substances have long-term consequences for the marine environment.

In the spring of 2022, Russian warships were a constant presence in the northwestern Black Sea as they blockaded Ukraine's ports. Apart from the direct military threat (and these ships were used to shell Ukrainian cities), this situation contained hidden dangers. The discharge of ballast water by warships is not monitored, and both pollutants and potentially invasive species from other sea basins can also enter the marine environment this way.

Then another disaster unfolded: cetaceans began dying en masse. The bodies of dolphins and porpoises started washing up for the first time in large numbers on Turkish beaches near the Bosphorus at the very beginning of the full-scale war, almost immediately after Russian warships entered the Black Sea. The largest numbers of bodies were found on Black Sea beaches during May-June 2022, when the region witnessed the most intense fighting, including on Snake Island.

From January to October 2022, experts from Ukraine, Romania, Bulgaria, Turkey, and Greece [recorded](#) around 1,000 cases of dead Black Sea cetaceans, two-three times greater than in 2019-2021. And since these figures only concern cases when the death of cetaceans was officially documented, the real number may be many times greater.

Also extraordinarily high was the number of cases in which sea creatures



Fig 5. A porpoise washed up on the shore in Odesa, May 2022 (Source: [Дельфины Азовского и Черного морей – Dolphins of the Azov and Black Seas](#))

washed up alive on the shore. In Ukraine most of these cases occur in Crimea, particularly in Sevastopol, where several Russian military bases are located.

In response to the deaths of large numbers of dolphins in the Black Sea, potentially as a result of Russian armed aggression, the Odesa regional prosecutor's office has [opened](#) a criminal case into ecocide. Scientists have taken a large number of samples in order to determine whether the animals show signs of acoustic trauma. The acoustic effect of the action of warship and submarine radars poses the greatest threat to dolphins, because cetaceans perceive sounds at the same frequencies at which radars operate. This damages the cetaceans' hearing apparatus and can affect their echolocation – and consequently, their ability to navigate,

hunt, and communicate. Underwater explosions, which can cause both acoustic injuries and direct injuries from explosions, represent an additional threat.

And although in 2023 dolphin mortality was lower (which may be due to a decrease in the intensity of fighting in the northwestern Black Sea after the liberation of Snake Island), dead porpoises and dolphins continue to be found on its shores. Scientists say that the deaths of a dozen dolphins near Cyprus in March 2023 were caused by [acoustic](#) trauma, which they could have received as a result of military drills by Russian warships, so the threat remains active.

Read about how military hostilities in the Black Sea have caused mass



Вилив нафти в Чорному морі ідентифіковано за допомогою радіолокаційних та оптичних супутникових зображень

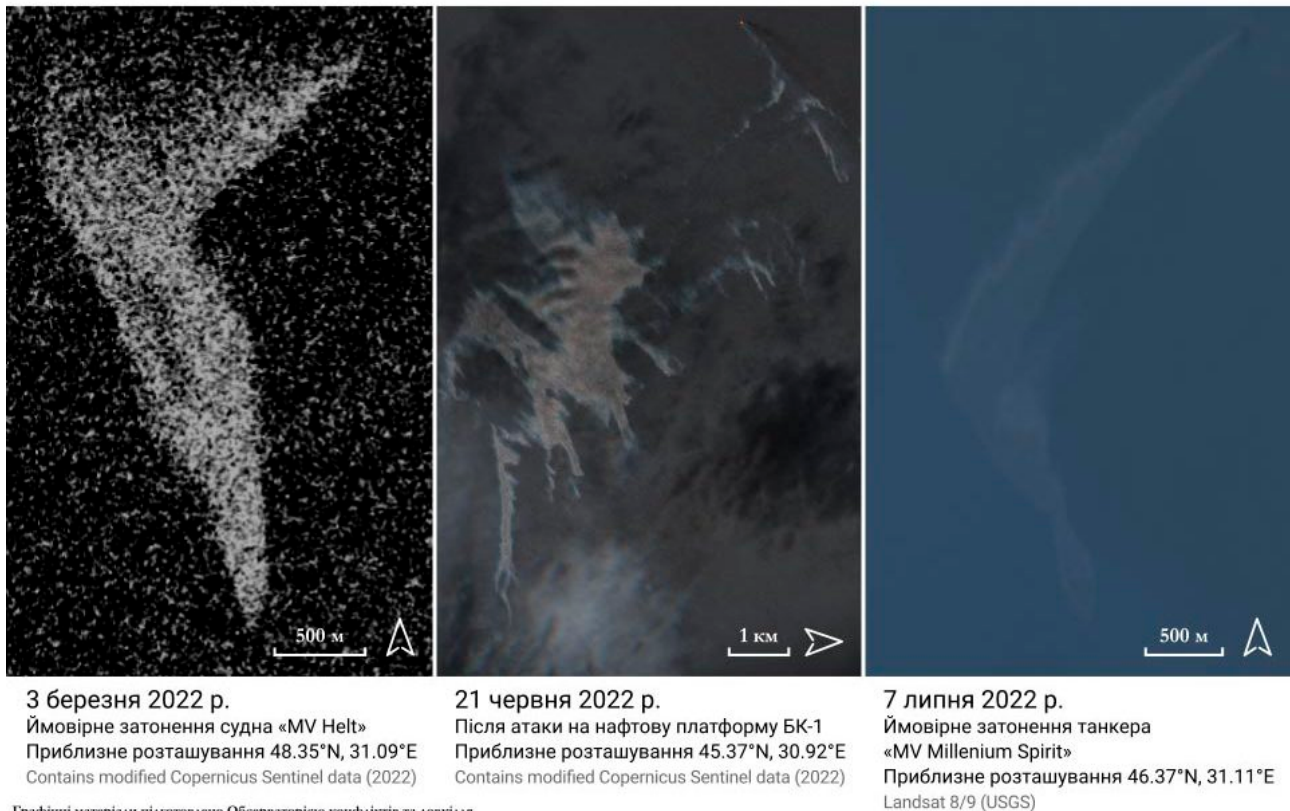


Fig 6. Oil spills captured by radar and optical satellite images in a study by CEOBS (Conflict and Environment Observatory) and the Zoï Environment Network (Source: [CEOBS](#))

dolphin deaths in this article by the UWEC Work Group:

[Mass dolphin mortality in the Black Sea: a military perspective](#)

Pollution

Russian warships create problems not only by moving around the sea, launching missiles, or using radar. Sunken military hardware also poses another threat – fuel spills that create an impenetrable film on the surface of the sea, preventing the passage of oxygen. In addition, spills are toxic to marine life, especially to neuston, microscopic organisms that live in the thin surface

film of the sea. This surface layer of water plays the role of an “incubator” for many young aquatic organisms. Its destruction can lead to significant changes in food chains and disruption of the entire balance in ecosystems.

Oil spills are clearly visible in satellite photographs, which show that the film of oil formed as a result of the sinking of vessels has covered tens of thousands of square kilometers of protected marine waters in Ukraine, including the Snake Island National Zoological Reserve, the Zernov Phyllophora Field National Botanical Reserve, and the Black Sea Biosphere Reserve, among others.

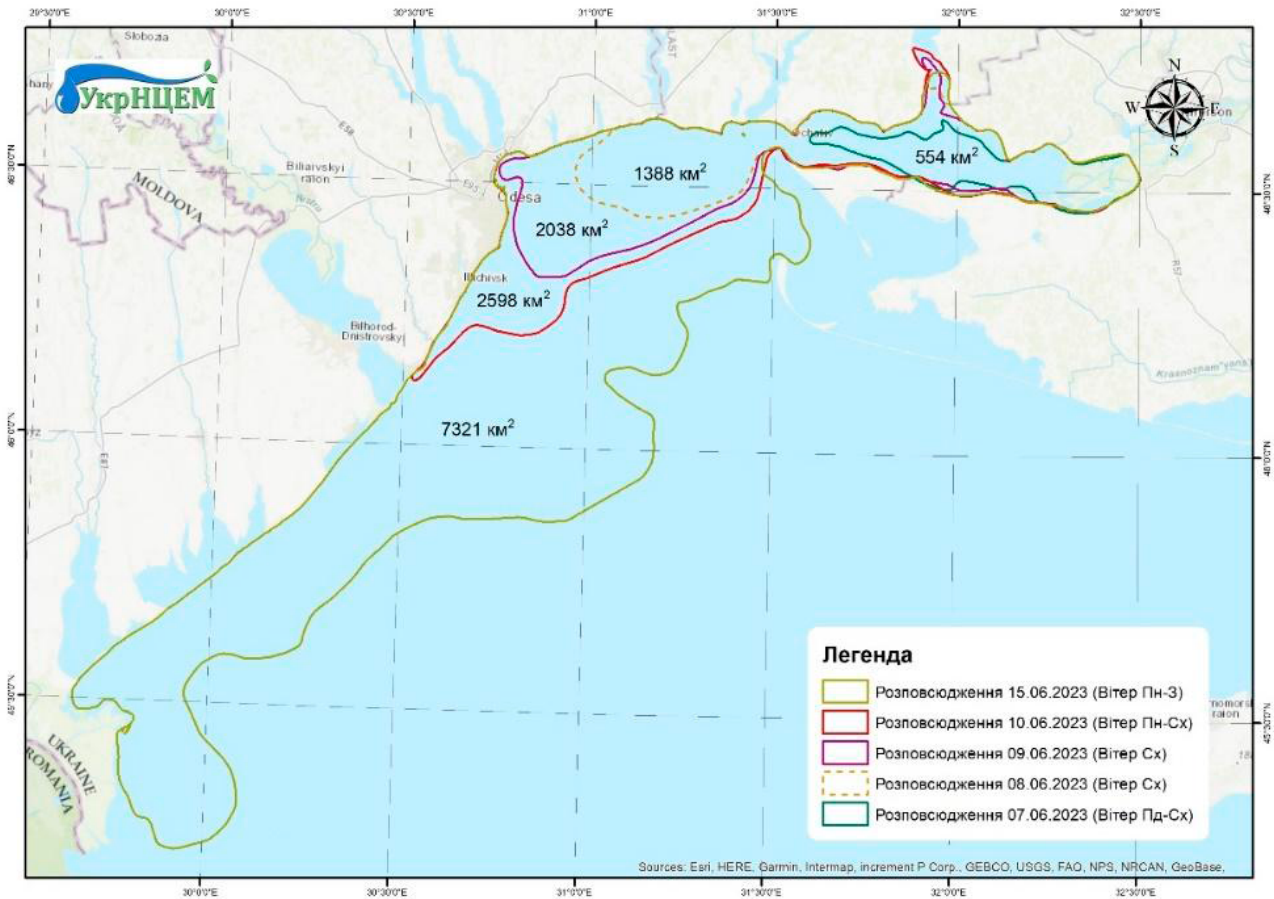


Fig 7. Diagram showing the spread of polluted river waters after the blowing of the Kakhovka Dam in accordance with satellite photographs (Source: [УкрНЦЕМ](#))

Unfortunately, this is not the only problem. The Russian army is attacking coastal cities, infrastructure, and ports. The coastal zone contains oil depots, warehouses, waste landfills, factories, and treatment facilities, which, when damaged, pollute the water with chemical compounds.

For example, several ships, an aluminum refinery, storage tanks for fuel, caustic soda, and warehouses where ammonium nitrate was probably stored were damaged as a result of repeated attacks on the port of Mykolaiv, near the mouth of the Bug River estuary. In addition, the [leak](#) into the sea of

1,000 metric tons of sunflower oil from reservoirs destroyed by a Russian drone attack in October 2022 caused an environmental catastrophe.

The oil has polymerized in the sea water, causing mass bird deaths. The discharge of sewage from the Galitsinovska treatment plant, [documented](#) in satellite images, may also have had a negative effect on the ecological state of the estuary. Untreated wastewater can result in chemical compounds (drugs, fertilizers, household chemicals) entering the estuary's ecosystems, causing an increase in the level of eutrophication and, as a result, algal blooms.



The destruction by Russian forces of the Kakhovka Dam in June 2023 was a catastrophe for this region and the whole of southern Ukraine. Several protected areas were in the flood zone. The existence of certain species and ecosystems was [jeopardized](#), and vast volumes of freshwater entered the Black Sea, polluted with fuels, lubricants, fertilizers, and wastewater from flooded settlements and fields.

Within the first few days of the dam's destruction, a rapid desalination of sea water and a drop in salinity from 14 to 4 ppm were recorded off the coast of Odesa, leading to the death of some hydrobionts in shallow waters. In some coastal sectors scientists documented [acute toxicity](#) in the sea water, with an ultra-high [nitrogen](#) concentration at certain times, which may indicate direct pollution from sewage. The sudden arrival of a large number of organic and mineral substances in the marine ecosystem triggered the mass development of phytoplankton and, as a result, led to water bloom, which at its peak [covered](#) more than 70% of the northwestern part of the Black Sea.

According to satellite [data](#), after the destruction of the Kakhovka Dam polluted river waters were borne a great distance by currents and even reached the Danube River, covering more than 7,300 km² of the Black Sea in total.

Read about the environmental consequences of the destruction of the Kakhovka Dam in this article by the UWEC Work Group:

[Explosion of the Kakhovka Hydropower Plant: What are the environmental consequences?](#)

According to satellite [data](#), after the destruction of the Kakhovka Dam polluted river waters were borne a great distance by currents and even reached the Danube River, covering more than 7,300 km² of the Black Sea in total.

Nature destroyed: the impact on protected areas

There are a large number of nature conservation sites in Ukraine's coastal waters: nature reserves, national nature parks and Emerald Network preserves. Avian migration routes cross the region, the coast is home to rare endemic animal and plant species, and the waters teem with marine life. These areas have suffered as a result of oil pollution, the sinking of ships, military occupation, and some of them have felt the direct impact of military action.

Warships not only pollute the environment, but can pose a threat even when they end up on the bottom of the sea after being sunk. The Russian cruiser Moskva [sank](#) in the northwest part of the Black Sea, where several protected areas and rare biotopes are located.



Fig 8. The results of fires (marked in red) around the Kinburn Spit as a result of military actions during the Russian-Ukrainian war, as shown by remote sensing. The nature reserve's boundaries are marked in green, the Emerald Network sites in yellow. (Source: [ArcGIS – Мониторинг пожаров в результате боевых действий](#))

The area is home to the Zernov Phyllophora Botanical Reserve, created to protect a colony of the red alga Phyllophora. This ecosystem is sometimes compared to the Sargasso Sea, which is also an accumulation of loose macroscopic algae, but this Ukrainian “sea” of algae is located on the seabed, making it unique in the world. A large number of rare species are found here, including those included in the Red Book of Ukraine. One can only imagine the damage a sunken cruiser could cause to these vulnerable ecosystems. Scientists [have said](#) it will be necessary to study the site of the wreck and the

substances contained in its weaponry to understand whether there were radioactive elements present, how much fuel was on board, and whether bottom biocenoses were harmed.

In nature everything is connected, so the destruction of coastal colonies can also affect the situation in marine ecosystems.

Fires have inflicted irretrievable damage on the protected Kinburn Spit, where various marine and coastal colonies are under protection. Fires in 2022, caused by exploding arms, shelling, and other factors, were the most extensive for decades. A total of



131 fires were recorded on the Kinburn peninsula in the first year of Russia's full-scale invasion, devastating more than 5,000 hectares of the park. The nesting places of about 100 species of birds were destroyed by fire, and the steppe and coastal areas were affected as well, which could even lead to extinction of endemic species.

The Dnieper floodplains, located in the lower reaches of the Dnieper River before it enters the Dnieper-Bug estuary and the Black Sea, have also suffered from military activity and shelling from Russian armed forces.

According to park staff, analysis of satellite data shows that over 5,000 hectares of the Lower Dnieper National Park were [destroyed](#) as a result of fires in 2022. Frequent fires in the floodplains caused by shelling cause irreparable harm to the environment and have resulted in the loss of a large number of animals and plants in the park. This national park is one of those that has suffered most from the destruction of the Kakhovka Dam by the Russians in June 2023.

Another national park that has suffered as a result of the Russian invasion is Dzharylhach. In spring 2023 Ukraine's Ministry of the Environment and Natural Resources [reported](#) that occupying forces had backfilled the narrow strait near Lazurne separating the island from the mainland. According to the ministry, this was done in order

to use the protected island for military purposes.

This strait is extremely important for water exchange between the shallow Dzharylhats'ka Gulf and the open sea, the waters of which saturate the bay with oxygen. Blocking the strait may [lead](#) to the silting up and degradation of the ecosystem of the entire Dzharylhats'ka Gulf, a waterbody which contains rare seaweed and seagrass ecosystems. This bay is home to the highest density of porpoises, as well as unique coastal groups of common dolphins and bottlenose dolphins. The degradation of the ecosystem [threatens](#) the existence of the bay's cetaceans.

Is there hope for the recovery of the Black and Azov seas?

To understand how to restore the seas, it is important that experts know the consequences and scale of the impact of war upon marine ecosystems. The Sea of Azov is currently inaccessible due to the military occupation, and it is impossible for now to assess this impact. In the Black Sea experts are extremely limited in their ability to take samples in coastal waters and in estuaries. But initial observations say – that there is hope.

Due to the mining of coastal waters, the beaches in the northwestern Black Sea are closed to tourists, meaning a reduction in anthropogenic load – that



is, pressure on ecosystems as a result of human activity.

The Black Sea has essentially become the subject of a sad but unique experiment, in which we can see the local effect of the absence of fishing, a large number of commercial vessels and tourist load upon marine and coastal ecosystems.

For example, on beaches in Odesa scientists have [observed](#) the mollusk *Donacilla cornea*, which in recent decades has become extremely rare not only in Ukraine, but along the whole of the Black Sea coast. This species, which lives in the sand along the tidal line, has become extremely common on many of Odesa's beaches in the last year due to the lack of large numbers of tourists. Favorable weather conditions (low water levels in the rivers, relatively low temperatures) have also led to a recorded local [improvement](#) in the environmental condition of the sea – at least, in the vicinity of the Gulf of Odesa.

At the same time, such changes, unfortunately, may be short-lived. With the return of tourists and large numbers of ships, in unfavorable climatic conditions, and also given all the negative consequences of the impact

of the war, the situation in general may be rather difficult.

At this stage it is already clear that the recovery of the sea will require, first of all, detailed studies of the consequences of the war with the involvement of a wide range of experts. Once victory is secured, it will be necessary to record all sites where ships were sunk, all sources of pollution, and all damaged ecosystems. It will be important to determine which sectors have suffered particularly badly, which sectors have remained relatively untouched, and which new zones of water, coastal areas, and wetlands will need to be added to the network of protected areas in order to help nature to recover. Severely affected areas will require the development of recovery strategies and the creation of management plans for these sites, as well as special measures for the restoration of ecosystems. Examples could include creation of artificial reefs, introduction of representatives of species captured in adjacent unharmed areas, elimination of invasive species, or the use of other techniques already [being](#) used to restore degraded marine ecosystems. •

Main image credit: [EPA-EFE/SERGEI ILNITSKY](#)



Beasts and Barriers: Obstacles along international borders and their impact on land-based vertebrates

by Vadim Kirilyuk
Translated by Alastair Gill

*W*ithin the next few years, 4,000 kilometers of impenetrable border barriers and defense fortifications will be built along European borders as a result of Russia's invasion of Ukraine and tensions between the EU, Moscow, and Minsk. Many of these fortifications will threaten local populations of land-based vertebrates – including bears, wolves, deer, and bison

– with extinction, as old migratory routes are disrupted and animals are killed or injured when they encounter minefields, barbed-wire fences, and ditches. In this article, we examine the main threats to wildlife caused by human-made defensive barriers, and how they can be minimized through a sensitive and nature-friendly approach.



First kilometers of reinforced concrete wall appear along the Ukraine-Belarus border in 2022. This artificial barrier cannot be penetrated by small land-based animals. Source: Kirill Timoshenko / Telegram.

The author's opinions do not necessarily represent the opinion of UWEC Work Group.

This article contains images of dead animals.

Russia's invasion of Ukraine and [illegal migration](#) (which peaked in 2020) from Belarus across the border into Poland have prompted several neighboring countries to build defensive structures along their borders. Some states have already announced the completion of border fences: Poland and Lithuania have erected barriers along their borders with Belarus; Lithuania, Estonia, and Latvia have done the same on the Russian frontier.

Elsewhere, Latvia and Ukraine are fortifying their borders with Belarus, Finland is reinforcing its border with Russia, and Poland has announced plans to begin constructing a fence along its border with Russia's Baltic exclave of Kaliningrad.

Kyiv is also widening its [border strip](#) with Russia and Belarus to 2 kilometers and plans to create a whole network of fortifications, including minefields. Construction work has already begun on a concrete wall on the Belarusian frontier, lined by a moat and an earthen rampart.

All such barriers present a serious and sometimes deadly hazard to wildlife, as local animal populations find their



movements restricted and their lives endangered.

Biological need to move freely

Land-based vertebrates typically limit their movements to an individual or group habitat. Migrations across longer distances are largely associated with the dispersal of juveniles instinctively seeking new territory. Small vertebrates – amphibians, reptiles, rodents or insectivores – have modest individual territories whose size depends on the species' characteristics, whether the habitat is suitable all year round, and the availability of a stable food supply.

Rodents that live in burrows are tied to their homes and roam across areas of less than a hectare. Hedgehogs and squirrels, which do not use a single permanent shelter, require several dozen to several hundred hectares. Larger mammals with more complex behavior, primarily carnivores and ungulates, have much greater individual ranges. An elk needs from 20 to 200 square kilometers, and a wolf living in a pack needs an area from 100 to over 1,000 square kilometers in size. Just as with smaller animals, the size of their territory depends on their metabolic needs, the energy required to cover or defend the area, and the availability of food. If the animal leads a sedentary lifestyle, then an artificial barrier appearing in its territory will quickly become the territory's new

boundary, altering its configuration and reducing its size.

Why do animals try to evade obstacles?

Dispersal occurs in all possible directions and usually there is no acute need to overcome an obstacle that has appeared in the way. Most juvenile animals spread into neighboring areas, but there are numerous examples of highly risky long-distance dispersals into the unknown by solitary animals. A good example is the arctic hare, which [surprised](#) researchers in one study by covering 388 kilometers in 49 days.

In cases where there is no longer sufficient food or water in an animal's home territory, or it is under unusually deep snow cover, or threatened by an approaching wildfire, then most animals are faced with the need to move to a new area. Among mammals, only burrowing animals can hide underground when threatened – they have evolved to survive this way. All other flightless creatures flee from danger – and for them the presence of barriers in the case of mortal danger reduces their chance of survival.

The need for dispersal or roaming, seasonal or spontaneous migration, is found in various animal species, but among large land mammals, intensive movements are most characteristic of ungulates. In the past, when ungulate populations were far larger, most



Mongolian gazelles massing by a border fence on the Russian-Mongolian border, May 2008. The presence of several rows of fencing increases the risk of injury. Source: Anna Barashkova.

species migrated seasonally. The more heterogeneous the habitats and the more pronounced the seasonal differences in living conditions, the more intensively they roamed. Such movements were usually made in large herds, which can still be seen in the example of reindeer, the saiga antelope and wildebeest. In open habitats - tundra, forest-tundra, wooded steppe, steppe, savannah and desert - ungulates would roam or migrate seasonally for hundreds of kilometers. In mountainous regions, they still make seasonal vertical migrations of over tens of kilometers. In summer, the herds climb to alpine meadow uplands, where there are fewer blood-sucking insects. In winter they descend to valleys and

floodplains or to the southern slopes of mountains, where there is less snow and food is more available.

On the move - whether as part of a regular seasonal migration or when spontaneously fleeing a perceived mortal threat - ungulates persistently strive to go in the direction they need, and during mass migrations, these movements are made with even greater urgency. The appearance of an obstacle in their path forces ungulates to look for ways past, causing them to run back and forth along the obstacle and attempt to jump over or break through the barrier. Such behavior, combined with an increase in the concentration of individuals in a small area, absence



of watering holes and the trampling of grass and undergrowth, leads not only to the depletion of food supply, increased stress, and a large number of injured animals, but frequently ends in mass deaths.

As a population grows in size, the need to disperse increases, but when a population shrinks, so does the necessity to wander. Each new impenetrable obstacle further reduces the size of a species' habitat, leading to an additional decrease in numbers. Many populations of large animals, with the exception of those that have adapted to human presence, are close to disappearing.

We may be seeing fewer incidences of mass animal dieoffs, but only because there are few large animals remaining. Animals are becoming more alert, quieter, and moving about less. In areas densely populated by humans, they are restricted to limited habitats and have a higher than normal mortality rate.

In such areas, small islands of suitable habitat protected from additional mortality factors (such as hunting and pollution from agricultural pesticides) can provide short-term sustainability for small groups of large animals. Their long-term survival, however, depends upon the interchange of individuals with similar groups in the vicinity. These

“islands of life” must be connected by wildlife-corridors, free of impenetrable and deadly obstacles.

As the climate changes, the pronounced physical fragmentation of individual animals in an area renders it impossible to make the movements they need in order to adapt. The ability to migrate in critical periods not only helps large groups to survive, but entire populations and even species with a very narrow range.

Roads and highways

Before examining the influence of border structures, let's look at the [barrier effect](#) of major roads, whose deleterious influence on wildlife is widely underestimated. Busy [roads](#) and railroads have a deterrent effect, hindering the dispersal of some species, facilitating the dispersal of other species that use human-made routes, and altering the structure of animal communities. Most importantly, they are an additional cause of death, and constant encounters with vehicles can even lead to the complete disappearance of small vertebrates in the strip bordering a highway.

The direct deadly impacts of roads can be reduced by lining them with additional concrete or metal fencing. Such barriers reduce the frequency of deadly encounters with traffic for animals of all sizes – while they are not insurmountable, they do obstruct movement. As road



High-speed railway line through Tianyang County in China's Guangxi Zhuang Autonomous Region. Source: [Wei Wanzhong / Xinhua / Globallookpress.com](http://www.globallookpress.com).

networks become ever denser and impenetrable barriers appear one after another, species' ranges and population groups become fragmented, leading to the gradual extinction of an increasing number of isolated groups.

Incidentally, many smaller animals are killed on rarely used roads. Located in areas little disturbed by human activity, where natural habitats are filled with biota, these roads do not present a barrier effect and deplete populations relatively slowly, but nonetheless kill a significant proportion of individuals from year to year.

On busy highways, fences are erected along the roadway to reduce

the incidence of anthropogenic mortality, only reinforcing the role of roads as barriers. The problem can be alleviated by the creation of tunnels or bridges for wild animals. The most effective of these are wide bridges – ecoducts – over a recessed highway or viaducts on high pillars. The introduction of methods for mitigating the deadly impact of highways and disruption to the movement of land-based vertebrates is becoming common practice in different parts of the world, and this is often reflected in changes to national building standards. However, there is still a long way to go.



Up to 2,000 Mongolian gazelles die each year in barbed-wire fences along the Russian-Mongolian border during migration periods until the creation of special wildlife passages in 2020. Source: Vadim Kiryliuk.



Remains of an argali sheep in a barbed-wire fence on the Tajik-Afghan border. Source: [Aziz Ali](#).



A dead elk caught in a barbed-wire fence on the Poland-Belarus border. The use of such fencing is inexcusable in peacetime. Source: [Border Committee of Belarus](#).

Barbed wire presents the greatest risk to ungulates. The sparse, slender wires give the illusion that they can be pushed apart like branches of a tree. When an ungulate tries to slip through on the run or crawl slowly between individual strands, the animal receives multiple cuts and wounds. In some cases they may end up getting caught on the barbed wire and eventually starve, unable to detach themselves.

An additional restraining effect is caused by concertina wire, which is deployed on the ground along fences or walls. The thin, soft wire clings to the legs and drags after the animal even when detached from the main coil, ultimately resulting in its complete exhaustion. Multiple rows of linear barriers can be a fatal trap for ungulates,

with each successive fright leading to fresh injuries and ultimately death.

War builds barriers

In Ukraine's Volyn region, work recently began on a concrete and metal barrier fence along the border with Belarus. Such barrier carries no threat of injury to wild animals, but gaps need to be left for numerous small vertebrates to pass through. These can range from reptiles and amphibians to hedgehogs and hares, requiring gaps of at least 8-10 cm. Looking into the future, Kyiv has announced plans to create a no-man's land two kilometers wide along the frontier, featuring trenches, earthen ramparts, and minefields. Fortifications are also under construction on the other side of the border in Russia and Belarus.



Trench fortification in Belgorod Oblast on the Ukraine-Russia border, November 2022. When a vertically-walled trench like this one fills with water, it becomes a deathtrap for mammals.

Source: [V. Gladkov](#).

Barrier mitigation during the design stage

If a fence has small openings at ground level, then most terrestrial vertebrates will easily pass through the obstacle. For medium-sized and large mammals, however, such barriers can be insurmountable, separating the borderlands of the Ukrainian forests and forested steppes from the vast forest zone of the Eurasian continent beyond.

With thoughtful planning and implementation it is possible to reduce the negative impacts of barriers for wildlife. By placing barbed wire only along the top of a barrier and avoiding the use of barbed wire or concertina wire

below a height of two and a half meters, one can eliminate many of the injurious threats to animals. Additional strategies can reduce wildlife mortality, including avoiding the use of water-filled moats, impermeable vertical walls, hazardous electrified fencing, installing perches for birds along the top of fences above any barbed wire, and cordoning off minefields using a harmless additional barrier to block entry for large animals. Other remaining threats – for example, from high-speed roads along the border – are manageable.

Using the above strategies and combining them with additional well-thought-out measures, a natural belt of



forest or meadow, stretching for 2,000 kilometers and bounded from the north by a barrier, would be created.

Brushland and steppe wildlife communities will form in areas where trees must unfortunately be removed to improve visibility for enforcement purposes. On the other hand, introducing haymaking and or the regular clearing of undergrowth can be a fertile ground for the introduction of many introduced species.

In other words, it is possible for Ukraine to design and to build border fortifications according to wildlife-friendly principles, reducing the potential for harm to the equivalent of a major road lacking adequate protective infrastructure.

Long-term negative effects of border barriers

Despite mitigating measures, border barriers absolutely do negatively impact the free movement of land-based animals, short and long-term. Impacts include harm to the genetic diversity of a species, lost access to food sources, and landscape damage. Local populations of elk, red deer, wild boar, European roe deer, wolves, and several other large species of mammals will no longer be replenished from the north. It is important to prevent further fragmentation of the Ukrainian populations of these species as well as their habitats and to monitor the threat

of a decrease in genetic diversity. If minimal conservation requirements are ignored when construction begins, a line of Ukrainian border fences and fortifications could inflict serious ecological damage on the country's – and the continent's – wildlife. In the future, there would be an inevitable need for high-cost infrastructure reconstruction and compensatory measures.

On the positive side, such a border zone could be used to create the planet's longest nature reserve. It could have limited nature management requirements and a conservation status as a reserve or refuge, with extended areas with intact natural habitats – river basins, lakes, individual areas of woodland, etc. A border zone protected area could become a zone of increased biodiversity with a high reproduction rate, despite the barrier effect for some species.

Russia's war in Ukraine and the rise in tensions that preceded it have resulted in the creation of a barrier bisecting Eastern Europe. The need to rapidly fulfill defensive tasks means that these boundaries are often built without attention to environmental requirements and are currently inflicting enormous damage on nature. The more continuous and multi-layered these border structures become in the future and the longer this linear infrastructure exists, the greater the threats to nature.



As the conflict decreases in intensity, border structures should be created or rebuilt to account for the needs of wild animals and natural habitats in general. Most importantly, the aim should be to ensure that living organisms do not perish en masse as a result of contact with man-made infrastructure.

This planet and humans have a wealth of experience in overcoming challenges of this sort and even in turning them to good use. One way of doing this is to create an additional chain of artificial, natural habitats, shielded from people, supporting the biodiversity and functionality of adjacent ecosystems. •

Vadim Kirilyuk is a zoologist, specialist in mammal preservation and wildlife conservation.

Main image source: [Tampa Bay Times](#)

More articles on this subject:

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

[Can the Iron Curtain Be Green? Europe's nature is being divided](#) by fences and fortifications by Oleksii Vasyliuk and Vadim Kiriliuk



Gas intrigues: Pipelines, nature reserves, NGOs and the war

*by Eugene Simonov, Jennifer Castner
Translated by Alastair Gill*

Over the last several decades, Russia has sought to expand its customer base for natural gas exports, efforts which necessitate the construction of pipelines from fossil fuel deposits in Russia's north to Europe and China. At the same time, fossil fuel exports are a valuable tool for Russia's geopolitical influence. Since the start of the war in Ukraine in 2014 and the full-scale invasion in 2022, the economic and

political stakes have skyrocketed. Russia's national and regional green movements have played a vital role in decision-making about pipeline routes and negotiations in parallel. In the last few years, however, their activity has attracted increasingly harsh scrutiny from the Russian government, which has seen a growing number of organizations branded "[undesirable](#)" or declared "foreign agents."



Reducing gas dependency

Since the mid-1970s, the economic prosperity of the USSR and then Russia has been based on the export of oil and gas to the West. After Vladimir Putin came to power, Russia acquired the status of an “energy superpower,” and Moscow began to actively use energy exports as a lever of pressure to achieve its geopolitical goals.

Perhaps no country has suffered as much from Russia’s gas export ambitions as Ukraine. Several pipelines to Europe ran across the country, which frequently led to blackmail and mutual threats between Kyiv and Moscow over transit conditions. Seeking to circumvent its stubborn neighbor, Russia laid several new gas pipelines across the Black Sea and the Baltic, encouraged by NATO countries that had an interest in Russian gas and its resale potential. Neither mantras about climate obligations, nor the annexation of Crimea, nor transparent attempts at applying political pressure to consumers succeeded in convincing Turkey, Germany, and even Ukraine itself to abandon Russian gas.

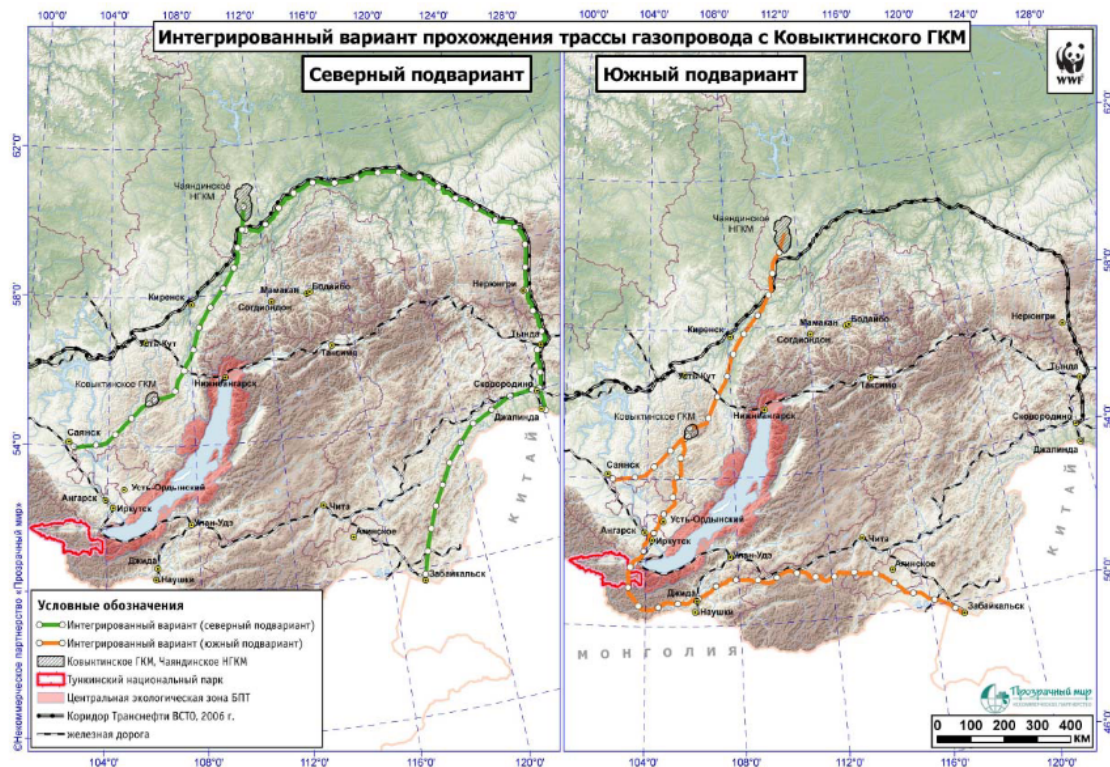
The full-scale invasion was a sobering moment for Europe, which decided to rid itself of this dependency and has largely succeeded. [Imports](#) of pipeline gas from Russia to the European Union in January–June 2023 were just a quarter of the previous year, at 11.7 billion cubic meters.

In comparison with the pre-war period in 2021, in 2023 natural gas deliveries from Russia to Europe have [fallen](#) by 85%, and Gazprom has been forced to [reduce](#) gas extraction by almost [a quarter](#). Budget revenues from taxes and export duties on gas have [almost halved](#), to 710 billion rubles in January – May 2023.

Today alternative [sales markets](#) for hydrocarbons are more important than ever for the survival of the Russian economy, but such markets require large volumes to be pumped through pipelines that have not yet been built.

The export of hydrocarbons has been a fundamental “cornerstone of the state” since the late Soviet era, and under Putin this dependence has only increased. One of the interesting features of the Russian environmental movement during the Putin era is its failure to wage campaigns aimed overtly at demolishing the state’s oil and gas export model.

Those who campaigned against the development of deposits in vulnerable areas, such as the Arctic shelf, often encountered the “repressive talents” of the Russian state. The [persecution](#) of environmentalists shifted into a new gear with the punishment of all those who in 2013 expressed support for the



ис. 1.2.3. Интегрированный вариант прохождения трассы газопровода с Ковыктинского газоконденсатного месторождения

Fig. 1. Proposed northern and southern routes for the Eastern Siberia-Pacific Ocean pipeline in 2007. The red area southwest of Lake Baikal indicates Tunkinsky National Park. Source: Transparent World.

Pipes of victory

The first double victory to unite the environmental movement in Russia, from Moscow to Perevoznaya Bay in the Russian Far East, was won at Lake Baikal in 2001-2006. [Buryat](#) environmentalists initially [resisted](#) pressure from the YUKOS oil company, which was eager to build the [Angarsk-Datsin](#) oil pipeline to China via [Tunkinsky](#) National Park (which partly overlaps with Baikal Nature Territory). A feasibility study for the project was rejected by a state [environmental](#) review.

To the great relief of local environmentalists, the privately-

grotesque) from Vladimir Putin himself, who at a conference in Tomsk [sketched](#) an alternative route bypassing Baikal 500 kilometers to the north.

The new route allowed the pipeline to also carry oil from the rich deposits of Yakutia, thereby boosting the project's profitability, but the environmentalists received no thanks for this.

This episode forced big business and government agencies to start establishing dialogue with environmentalists early in the planning process. In 2006 the company TNK-BP began working on a plan for an export gas pipeline from



the Kovykta field to China, with one of the proposed routes passing through the same Tunkinsky National Park. But the company agreed on a procedure to work jointly with leading environmental organizations to evaluate alternative routes for a gas pipeline to China. Although TNK-BP abandoned the project as a result, the report probably helped to choose a route for the future Power of Siberia gas pipeline that caused the least environmental harm, essentially tracking the already built ESPO oil pipeline.

Unfortunately, there is little reliable information in the public sphere regarding Beijing's preferences on the location of pipelines, but they were undoubtedly of great importance when choosing any of the export routes to China.

Altai – 'Power of Siberia 2' pipeline

The next pipeline scheme to require action from a coalition of environmental organizations was not long in coming. Russia's central idea as an "energy superpower" was the creation of a gas transportation system that would allow gas to be supplied to both Europe and to China from the same fields. Fed up after the wrangles in Ukraine, Gazprom decided to avoid using transit states by running a pipeline directly to China, via the high-altitude Kanas pass in the Altai Mountains.

In early 2006, Russia and China jointly announced plans for a natural gas pipeline stretching from Russia's Yamal Peninsula in the Arctic south through Siberia to the Altai Republic, a remote tourism hotspot in southern Siberia, before crossing directly into China just west of Mongolia. There, the pipeline was to cross the Ukok Plateau, part of the Golden Mountains of Altai UNESCO World Heritage Site and a [sacred place](#) for several Indigenous peoples in the larger region, before entering China's remote Xinjiang-Uygur Autonomous Region, far from Chinese population and industrial centers. Both countries were motivated to eliminate intermediaries (such as Mongolia or Kazakhstan), but Russia had much more riding on potential profits and replacing lost European demand. China, for its part, had not yet agreed on a price tag, and at the regional level, [rumors persisted](#) that China instead preferred to build a road or rail network and thus gain direct overland access to markets in Western Siberia and European Russia. On the other hand, it seems clear that China considered a number of different risks when considering its options, including civil unrest in the Xinjiang-Uygur Autonomous Region (which the pipeline would cross) and its concern that such an international corridor could make the border more permeable for "extremists."

Despite Gazprom's efforts to present a "shovel-ready" project to China, the



environmental movement in Russia launched an effective and coordinated “Save Ukok” campaign, calling for consideration of alternative routes less fraught with the potential for environmental and cultural damage while also skewering Gazprom’s misleading marketing of the project’s supposed benefits to communities along the proposed route. The broad-based coalition included diverse stakeholders: local leaders and NGOs, environmentalists, scientists, WWF, Greenpeace, UNESCO, and other international organizations.

Negotiations continued fruitlessly until Russia’s 2014 seizure of Crimea, when the need to redirect gas exports away from Europe into China [dramatically increased](#). Not long after in spring 2015, [the media](#) reported that the Altai gas pipeline would be built earlier than the more valuable Power of Siberia pipeline, but bearing a new name: Power of Siberia 2. In 2016, Gazprom moved the route further east (out of Altai), meaning that the Power of Siberia 2 would pass through Mongolia before reaching China.

The rebranding of Power of Siberia 2 and the attempt to change the route of the pipeline were closely linked to China’s new [Belt and Road](#) foreign policy initiative, which aims to connect China to its neighbors through a network of “economic corridors”.

To maximize the benefits of the Chinese initiative, in 2014 the Mongolian

government [launched](#) the Steppe Route program, which involved the laying of linear communications from Russia to China across Mongolian territory. Russia was also looking for a formula to match up its political and economic ambitions with the Chinese initiative. As a result, the three parties announced the creation of a “Chinese-Mongolian-Russian Economic Corridor” which would also take potential pipeline routes through Mongolia into consideration. Although the idea remained largely on paper, Putin took the plunge and ordered a still-doubtful Gazprom to study a route through Mongolia.

Foreign agents come to nature’s rescue

The annexation of Crimea coincided with intensified suspicion and repression against non-governmental environmental organizations in Russia – especially those who questioned the feasibility of increasing the extraction and export of natural resources. From 2014 to late July 2023, around 40 non-governmental organizations engaged in environmental activity were [declared](#) “foreign agents.”

Interestingly, 20% of those “environmental foreign agents” happen to be precisely those organizations that opposed the laying of a pipeline across the Ukok plateau and were engaged in protecting ecosystems and environmental education in tiny



Altai Republic. Admittedly, the Altai Mountains are one of the most important biodiversity hotspots in Russia, and therefore environmental NGO activity in the region was much higher than the Russian average, but this only partly explains such a high percentage.

[According](#) to the Eco-Crisis Group, seven Altai regional organizations have ceased their activities since 2015 as a result of being declared “foreign agents.” The first international environmental organization to be [declared](#) “undesirable” was Pacific Environment in 2018. The group had also been an active defender of Ukok, which meant a full ban on its activity in Russia. In 2023 other key defenders of the Altai were declared “undesirable” by the Russian prosecutor general: WWF, Greenpeace and [The Altai Project](#) – an American NGO run by Jennifer Castner, UWEC co-founder and editor (and also one of the co-authors of this text).

The longstanding successes of the Save Ukok campaign in the 2010s to reroute the pipeline seem to continue to irritate Russian officialdom. Today, the route through Altai is a sort of Cheshire Cat – winking in and out of sight as Russia’s priorities change. More was to come.

Gas, China and the war

The potential [rerouting](#) of the pipeline through Mongolia is a clear victory for its diplomacy. Nevertheless, Mongolian

NGOs are [extremely skeptical](#) about the project, known in Mongolia as the Soyuz-Vostok pipeline.

“I do not think it wise for Mongolia to acquire another \$4-8 billion of foreign debt to add dependence on Russian gas to existing painful dependence on energy and petroleum products,” says Sukhgerel Dugersuren, director of the eco-rights NGO Rivers without Boundaries Mongolia. “Environmental and social costs are likely to be huge with plans to build pipelines as close to key consumers and/or shortest possible distance through densely populated areas.”

Mongolia does not really need Russian gas, since it can easily provide itself with solar and wind energy, and it has plenty of its own gas in coal seams. As for the political risks, Mongolia is carefully watching the fate of Ukraine (and Belarus), knowing full well that a common pipeline could create an irresistible desire among its two great neighbors to establish tight political control over the transit country.

For Russia, the new pipeline is steadily growing in importance. By launching its full-scale invasion of Ukraine in 2022, the “gas superpower” has lost European markets, making it imperative to complete Power of Siberia 2 in order to export the resulting gas surplus to China.

The trouble is that it appears China is afraid to invest in this project and is



unwilling to determine the parameters of the deal. Beijing has [little](#) desire to increase its dependence on Russia while Moscow is bogged down in a war. [According](#) to Bloomberg, at a meeting in Moscow in March 2023, Xi Jinping refused to commit to increasing Russian gas imports, despite Vladimir Putin's proclaimed intention to quadruple gas exports to China to 98 billion cubic meters per year by 2030. Since the war began, the only project Russia has agreed to with China was the creation of a small new gas pipeline from the Far East with a capacity of up to 10 billion cubic meters per year. There is a risk that this pipeline will violate valuable conservation zones, such as a specially protected natural area in the Ussuri River floodplain.

Instead of deepening cooperation with Russia and Mongolia, China has begun to show renewed interest in completing the fourth line of the Central Asian gas pipeline from Turkmenistan, where the weak economy urgently requires injections of external capital. It is highly likely that by placing the two countries in a situation where they are in fierce competition for the right to build an export pipeline, President Xi will win concessions from both sides. Russia's opportunities to reduce the price are limited by the war and sanctions, as well as by the already prohibitively low price of supplies through the Power of Siberia pipeline, the cheapest gas currently

imported by China. Beijing is in no rush now, as its post-COVID economy is growing at a very modest pace and there are many options for meeting the slow growth in gas consumption.

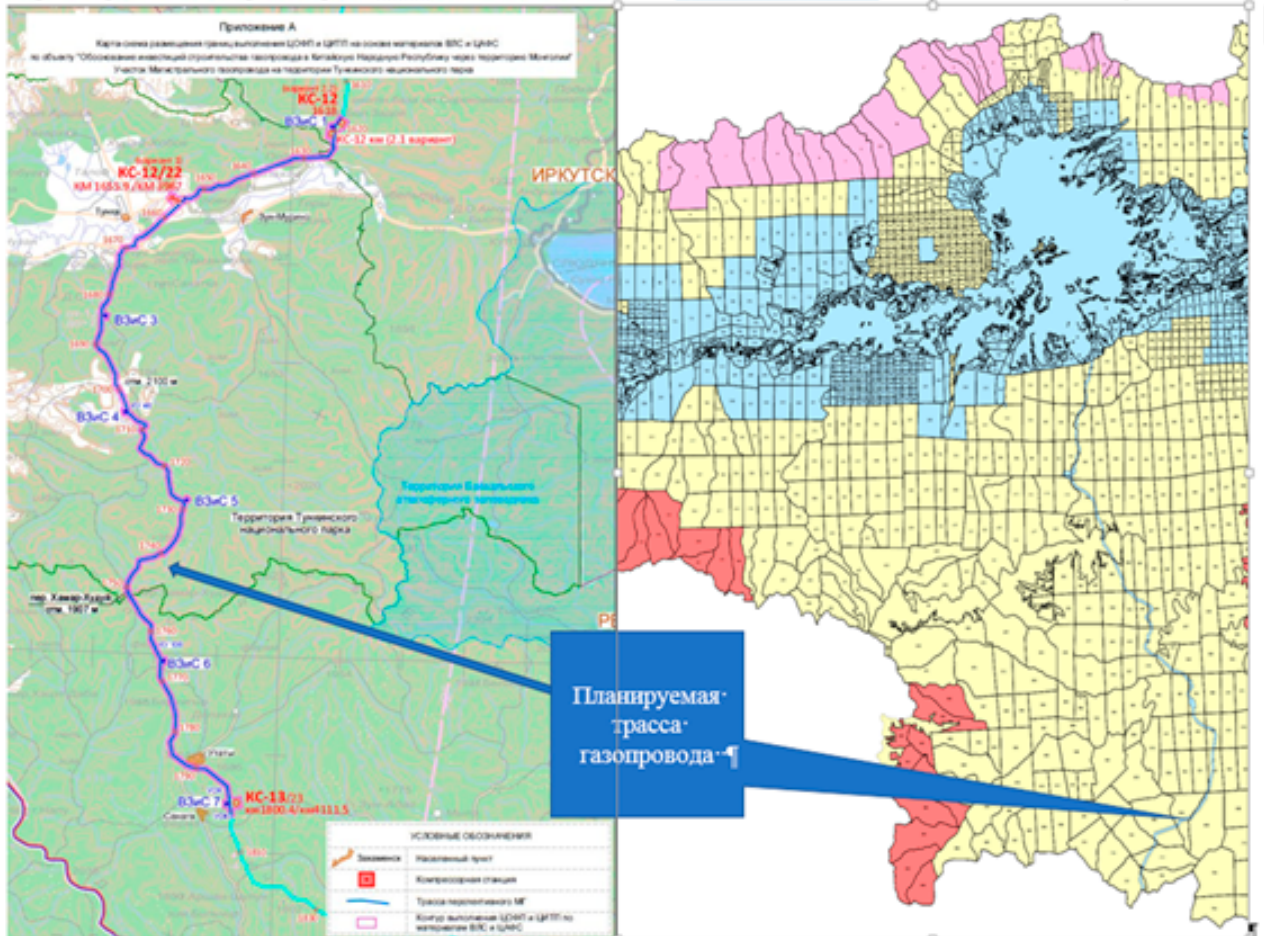
Worried about China's position, Russia is also [trying](#) to diversify gas export routes. Gazprom had [planned](#) by July 2023 to complete a preliminary feasibility study into supplying gas to the northern and eastern regions of Kazakhstan. According to Kazakh energy minister Almasadam Satkaliyev, the project will cost more than \$4 billion and have a projected annual capacity of 40 billion cubic meters. Since no more than a quarter of this volume can be used in Kazakhstan itself, the parties are looking into the possibility of extending the gas pipeline to China. Whether Beijing sees this as an attractive option, however, is unclear.

Curse of the Tunka shamans

Despite the uncertainty, work is underway to prepare the route of the Power of Siberia 2 gas pipeline. In 2023, despite protests from Greenpeace and other NGOs, a maintenance corridor for a pipeline to Mongolia was [projected to cross](#) Tunkinsky National Park as part of a new zoning policy. In one of the last responses sent to Greenpeace Russia before it was [declared](#) undesirable, Irina Makanova, Director of the Department of State Policy and Regulation in the



МПР РФ хочет ввести газопровод Сила Сибири 2 (Союз-восток) в зонирование национального парка. Справа: трасса из тендера Газпром* 2021. Слева: проект зонирования в Положении о ГППН Тункинский 2023



Right: Map accompanying the updated Status of the Tunkinsky National Park in the Republic of Buryatia. Source: [Russian Ministry of Natural Resources](#). Left: “Justification of investments in the construction of a gas pipeline to the People’s Republic of China through the territory of Mongolia” – a document detailing planned engineering surveys of the site. A section of the main gas pipeline passes through Tunkinsky National Park. Source: [Russia’s Unified Information System for Procurement](#)

Development of Specially Protected Natural Areas, wrote:

“Please note that the national park is located within the administrative boundaries of the Tunkinsky district of the Republic of Buryatia, which includes 35 settlements. Supplying them with gas does not contradict the special protection regime governing national parks.”

Yet it is clear that the corridor bisects uninhabited virgin lands and is not

needed to supply gas to any settlements. The government agencies concerned told exactly the same lies about looking after the local population’s interests ten years ago when developing a route through the Altai for a gas pipeline.

Like Altai, Tunka is a remote highland area in Buryatia, where untouched mountain areas are dotted with traditional places of worship



that are considered sacred by the local Indigenous population.

This is the third or fourth attempt to bisect Tunkinsky National Park with a pipeline. Everyone who has previously tried, starting with Yukos CEO Mikhail Khodorkovsky, failed, and their companies were either taken apart or forced out of Russia. With little experience in politics, local residents associate this with a curse [placed](#) by a gathering of powerful Tunka shamans on anyone who attempts to dismember or desecrate their sacred lands. Other sources [claim](#) that Yukos then changed its mind and altered the route of the pipeline, bypassing the sacred places.

As we know, there were clearly other reasons for the failures of previous attempts to route a pipeline through the national park, such as persistent efforts by NGOs to propose alternative routes. Now, however, the experiment is pure – of all the protective amulets, only the shamans' spell remains.

At the same time, today it is absolutely clear that the route through Tunka is not the only possible one. In 2014, Mongolian officials proposed, as part of the Steppe Route program, a more westerly corridor through Tuva that would combine a new railroad, gas pipeline, and high-voltage power line. As in the case of the gas pipeline through the Altai, Gazprom did not bother to open the choice of a new route to public discussion.

In July 2023, UNESCO [published](#) a draft decision on the Golden Mountains of Altai World Heritage Site, where it noted with regret that Russia has not officially responded to requests from the World Heritage Center to clarify what alternative route it has chosen for the Power of Siberia gas pipeline in place of the route across the Ukok plateau. It is possible that Gazprom does not want to rule out any of the potential options at present because of the high overall uncertainty with the sales market.

The idea of running a pipeline through Altai is clearly still alive, as evidenced by the inclusion of this particular gas pipeline across the Ukok plateau in the relevant section of Russia's Federal Transport Spatial Planning Scheme, last updated in August 2022. Tellingly, the promising route through Mongolia is not even mentioned in this scheme.

NGOs under fire

Assuming that the intelligence agencies that run Russia are driven by rational interests, the recent purge of Greenpeace, WWF, and Altai Project can partly be explained by the fact that they have all previously helped Russian NGOs protect particularly vulnerable natural areas from being used for pipeline export routes. This hypothesis is confirmed by the fact that the Russian NGOs that persistently advised Putin not to build a pipeline through a World Heritage site were declared foreign



agents and forced to shut down in 2015-16, right when, after the annexation of Crimea, the Russian government saw the urgent creation of an alternative to Europe-bound gas pipelines as an acute priority.

Perhaps now, when the war has again made the creation of new export channels critical, environmentalists capable of influencing the choice of pipeline routes are especially undesirable for the Russian authorities. At this point, they have been completely excluded from any involvement in public affairs in Russia, making even communication with them a potential crime. In current conditions, the destruction of all NGOs that have ever participated in campaigns associated with gas pipelines is unlikely to accelerate the creation of new export channels (but will clearly reduce the safety of projects).

In any case, this pipeline saga, which has dragged on for 17 years, does not solve Russia's current problem with finding customers willing to buy its gas while it is waging an inhuman war. Even if the parties agree this year on the construction of the Power of Siberia 2 pipeline and find a mutually beneficial formula for financing the project, gas will start flowing to China no earlier than 2030.

The way events are unfolding, it seems likely that either China will supply its energy needs from different sources, or Europe will once again return to large-scale gas imports from a post-Putinist Russia, or some other development will occur to render the next "only possible gas pipeline route" worthless. •

Main image: An oil pipeline in Alaska
Main image credit: [BBC](#)



ЭКОЛОГИЧЕСКИЕ ПОСЛЕДСТВИЯ вторжения в Украину

СЕРИЯ ВЕБИНАРОВ ДЛЯ ЖУРНАЛИСТОВ

Фотографии: Украинская Правда, Екатерина Полянская, day.kyiv.ua, Unsplash

Webinar #4

Together with Reporters without Borders–Sweden and Svea Green Foundation, UWEC Work Group hosted the fourth in a series of webinars on the environmental and climate consequences of Russia’s invasion of Ukraine.

The latest webinar in the series “Environmental Consequences of Russia’s Invasion in Ukraine” took place on 9 September.

The purpose of the webinars is to discuss the most important environmental and climate issues related to the military invasion, highlight aspects of the full-scale war’s impacts on the environment, provide recommendations for verifying information about the environmental

damage resulting from military combat, and highlight the tools necessary for good analysis.

Speakers this round were Marina Dubina, an expert from the Belarusian NGO Ecodom, and Vitaly Servetnik, a representative of the Environmental Crisis Group (which, among other things, monitors violations of rights and pressure on environmental activists in Russia), who spoke about the persecution of environmental activists in Belarus and Russia – up to and after the start of the full-scale war in Ukraine.

Presentation of experts are available in Russian and in English:

[Download presentation](#)

Video recording of the webinar in [Russian](#) and [English](#).



On the path to international recognition of ecocide

*by Alexej Ovcinnikov
Translated by Jennifer Castner*

Russia's full-scale invasion of Ukraine has once again highlighted the fact that crimes against nature have no legal recognition at the international level. In response to environmental destruction stemming from military aggression, environmental NGOs are today intensifying their call for ecocide to fall within the International Criminal Court's jurisdiction. [According](#) to activists and experts, this would not only benefit Ukraine, but also the global movement fighting for the rights of nature.

At present, the [Rome Statute](#), which governs the activities of the International Criminal Court (ICC) allows the ICC to review four types of crimes: genocide, war, crimes against humanity, and crimes of aggression. Ecocide is not included in the statute, although large-scale crimes against nature may be considered under the headings of war crimes or crimes of aggression. However, as written, the statute does not place crimes related to environmental pollution, deforestation, depletion of natural ecosystems, and



others under the jurisdiction of the ICC. From another perspective these are actions that specifically result in climate change impacts.

What is ecocide?

Although a definition of ecocide has not yet been consolidated in international legal practice, environmental lawyers have proposed several definitions.

For example, in June 2021 the Stop Ecocide International legal group proposed the following [definition](#): “unlawful or wanton acts committed with knowledge that there is a substantial likelihood of severe and either widespread or long-term damage to the environment being caused by those acts.”

Article 8 ter Ecocide 1. For the purpose of this Statute, “ecocide” means unlawful or wanton acts committed with knowledge that there is a substantial likelihood of severe and either widespread or long-term damage to the environment being caused by those acts. 2. For the purpose of paragraph 1: a. “Wanton” means with reckless disregard for damage which would be clearly excessive in relation to the social and economic benefits anticipated; b. “Severe” means damage which involves very serious adverse changes, disruption or harm to any element of the environment, including grave impacts on human life or natural,

cultural or economic resources; c. “Widespread” means damage which extends beyond a limited geographic area, crosses state boundaries, or is suffered by an entire ecosystem or species or a large number of human beings; d. “Long-term” means damage which is irreversible or which cannot be redressed through natural recovery within a reasonable period of time; e. “Environment” means the earth, its biosphere, cryosphere, lithosphere, hydrosphere and atmosphere, as well as outer space.

The lawyers’ group [proposes](#) to include this definition of ecocide in the ICC’s Rome Statute.

The definition focuses on intentional actions aimed at destroying ecosystems or polluting the environment. Accordingly, accidents at industrial sites or oil spills cannot be considered ecocide in a court of law if they can be proven to be emergencies or accidents. However, in the event that an enterprise carries out emissions while possessing information that such emissions can result in climate change and large-scale consequences for nature, then these actions can be classified as ecocide.

Today, a significant amount of industrial-scale production and resource extraction around the world meet this criterion. It may be that this legal loophole is the roadblock to preventing rapid adoption of the legal concept of



ecocide at the international level. In fact, many large corporations that have caused significant severe environmental damage in the past or continue to do so today could be sued if such a legal concept were agreed upon.

Recognition of “ecocide” at the international level: examples and suggestions

Evidence of ecocide in human history is easy to uncover. Its catastrophic consequences began to be noted during World Wars I and II. However, the first open discussions of ecocide in world practice began after the [use](#) of “Agent Orange” by the United States in Vietnam. From 1961 to 1971, U.S. troops made wide use of chemical herbicides and defoliants, chemicals that belong to the Rainbow Herbicides tactical herbicides group, in order to destroy the jungle in which Viet Cong guerrilla groups were hiding. Obviously, these were deliberate actions to destroy ecosystems – actions which led to the deaths of humans and wildlife, including long-term health consequences and birth defects – which resulted in large-scale and long-term consequences.

It was the use of Agent Orange that prompted Yale University Professor Dr. Arthur W. Galston, at the 1970 Conference on War and National Responsibility in Washington, D.C., not only to [use](#) the term ecocide for the first time, but also to call for the immediate

recognition of these crimes against nature.

The idea was actively supported around the world. In 1972, Swedish Prime Minister Olof Palme was the first to recognize the ecocide in Vietnam in political terms. In 1973 Princeton University law professor Richard Falk published an [article calling](#) for the adoption of an International Convention on Ecocide. Falk subsequently played an important role in the development of the concept of human rights including years of service to the United National Human Rights Council and Human Rights Watch while continuing to advance global advocacy regarding ecocide.

It is unsurprising that the first country to adopt a law on ecocide and include it in the country’s national criminal code was Vietnam (1990). However, it is interesting to note that many post-Soviet countries have characteristically recognized widespread and large-scale crimes against nature at the state level: Russia (1996), Kazakhstan (1997), Kyrgyzstan (1997), Tajikistan (1998), Georgia (1999), Belarus (1999), Ukraine (2001), Moldova (2002), and Armenia (2003). Aside from those nations, Ecuador (2008, 2014) has also recognized ecocide at the level of national law. France was the first country in the European Union to recognize ecocide in 2021. In June 2023, a proposal for national recognition of massive, large-scale crimes against



nature in Brazil was also put forward for consideration by its Congress.

Nevertheless, it would be inaccurate to say that other countries are unconcerned by the question of recognizing ecocide. An active struggle for the official inclusion of this crime in international legal practice has been underway since the 1990s. For example, in 1991, the International Law Commission [proposed](#) the inclusion of an article directly related to ecocide (Article 26) in the Draft Code of Crimes Against the Peace and Security of Mankind.

When ecocide still failed to be included in the Rome Statute in 2002, an international campaign began to recognize large-scale crimes against nature. It was most active in 2019-2020, facilitating the [formulation](#) of the proposal in June 2021 by the group of lawyers mentioned above. For example, in 2019, Pope Francis [advocated](#) for the recognition of ecocide as the fifth crime against humanity (and, correspondingly, for its inclusion in the Rome Statute). In December of that year, countries hit the hardest by climate change – island nations Vanuatu and the Maldives – also [called](#) for ecocide to be included in the statute. In 2020, the Belgian government actively [advocated](#) for the recognition of ecocide both nationally and internationally. In January 2021, the European Parliament [called on](#) EU member states to support recognition of ecocide, and today the European Law

Institute runs an [initiative](#) lobbying for the recognition of ecocide.

Since the beginning of Russia's full-scale invasion of Ukraine, ecocide has been discussed more often at the international level, creating an opportunity for already executed and existing initiatives to receive even greater support and recognition. These include such cases as the destruction of the Kakhovka hydroelectric power plant or the systematic destruction of ecosystems in eastern Ukraine, disasters that have become another example of deliberate, large-scale, and long-term environmental destruction.

Criminal practice recognizing ecocide in Russia and Ukraine

It is worth noting that ecocide is enshrined at the legislative level in both Russia and Ukraine. Article 358 of the Russian Federation's Criminal Code defines ecocide as "the mass destruction of flora and fauna, pollution of the atmosphere or water resources, as well as the commission of other actions that can cause ecological catastrophe." Prison sentences for individuals convicted of ecocide range from 12 to 20 years.

In researching this article, the author was unable to find any complete examples of legal proceedings under Article 358 in Russian criminal law. However, Article 358 in Russia's Criminal Code is essentially meaningless. According to the Russian [Judicial Statistics website](#), not a single person



has been convicted under the law since 2016. However, in 2021, the Russian Investigative Committee [opened a criminal case](#) against “unidentified persons located in Ukraine” under the article of ecocide for the “water blockade of Crimea”. At the same time, as far as is known, not a single criminal case for ecocide in Russia has been brought against actions aimed at environmental pollution. Although illegal logging, and, for example, construction of a landfill near the Shiyes railway station, a plan that [caused protests in](#) 2018-2020, could qualify as ecocide and considered as deliberate harm to the environment. However, the presence of both the article and the topic of ecocides in Russia’s legal field inspires restrained optimism that mass crimes against nature in the country could be considered in the future.

Ukraine’s Criminal Code’ article addressing “ecocide” (Article 441) has largely identical wording: “ mass destruction of flora or fauna, polluting the atmosphere or water resources, as well as the commission of other actions that may lead to an ecological catastrophe.”

As Olena Kravchenko of the NGO Environment People Law recently shared with UWEC Work Group, although the war has been going on in Ukraine since 2014, there have been no cases recognized as ecocide in the country’s entire legal practice. However,

after the start of the full-scale invasion, data collection related to ecocide began to be discussed at all levels – from non-governmental organizations to the Ministry of the Environment.

Today in Ukraine, the data collection is ongoing and legal proceedings have begun in a series of ecocide cases. A [statement](#) by Prosecutor General Andrei Kostin on 29 June 2023, noted 15 cases. However, in order to effectively demand compensation for these crimes against nature in Ukraine, ecocide must be recognized at the international level. That is the only possible route to obtain reparations from Russia.

Difficulties in recognition and initiation of criminal ecocide cases

Olena Kravchenko also [noted](#) that the main challenge lies in developing a “gold standard” for the process of documenting ecocide. This includes collecting data, interviewing witnesses, and assembling criteria for assessing damage.

Given that the war is ongoing and the necessary international institutions have not yet been established to facilitate the first ecocide proceedings, Ukraine is currently focused on collecting data about the war’s environmental consequences. One of the main platforms is the Ukrainian Ministry of Environment and Natural Resources’s [Ecozagroza](#) data portal. It not only



presents data collected by the Ministry, but is also an avenue for Ukrainian citizens to provide information about documented environmental crimes. Between the start of the full-scale invasion and 10 August, the site has amassed 2,477 submissions, 2,321 of which have been authenticated.

In addition to Ecozagroza, other tools in Ukraine exist to collect data regarding the environmental consequences of the invasion, for example, [SaveEcoBot](#). UWEC Work Group also maintains a [publicly-available library](#) of resources and organizations environmental impact data on our website:

A significant step toward the recognition of war crimes in Ukraine as ecocide was taken after the Kakhovka hydroelectric power plant's dam was destroyed. That event stands out as the most high-profile, targeted action since the full-scale invasion began in February 2022, one that produced significant long-term consequences, and, in turn, meets the criteria for a charge of ecocide. As a result, an International High-level Working Group on the Environmental Consequences of War was [created](#). This working group could facilitate a demand for reparations from Russia for crimes committed against nature. Its membership includes both experts and media personalities, including Greta Thunberg. There has been no further information about the group's actions since its first meeting on June 29.

It is of fundamental importance for Ukraine that the wide-ranging and long-term consequences of war crimes against nature be recognized at the international level. This recognition will allow payment of reparations to aid the country's recovery. Obviously, country-level recognition of ecocide will not result in compensation being paid by the aggressor.

Further, recognition of ecocide is important not just for Ukraine, but for the whole world. Today, ecocide is once again being discussed at the international level, which gives hope for the recognition of large-scale crimes against nature. Without establishing an international legal framework followed by the start of international legal proceedings, massive crimes against nature go unpunished.

The problem of large-scale and long-term crimes against nature exists all over the world. For example, the [EndEcocide initiative](#) [cites](#) deforestation in the Amazon, palm plantations in Indonesia, the disappearance of the Aral Sea in Central Asia, oil production in the Niger Delta, nuclear power, and even mining in northern Greece, Romania, and Finland as examples of ecocide. Recognition of ecocide as a crime will allow international lawyers to bring additional pressure to bear on companies that place their short-term interests ahead of the Earth's interests.

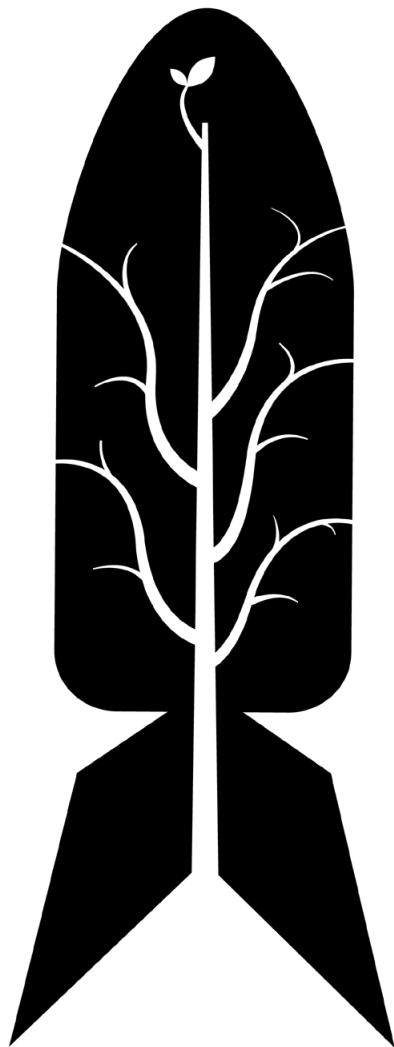


Today, everyone can join in calling for ecocide to be recognized at the international level by signing the following petitions:

- AVAAZ. [Make Ecocide a Crime](#)
- StopEcocide. [International petition](#)
- Change.org [Stop ecocide in Ukraine: punish Russia for the crimes against environment](#)

Another way to get involved is to share information on social media about the importance of recognizing ecocide: #StopEcocide #stopecocideukraine #ecocideukraine •

Main image source: [ABCNews](#)



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