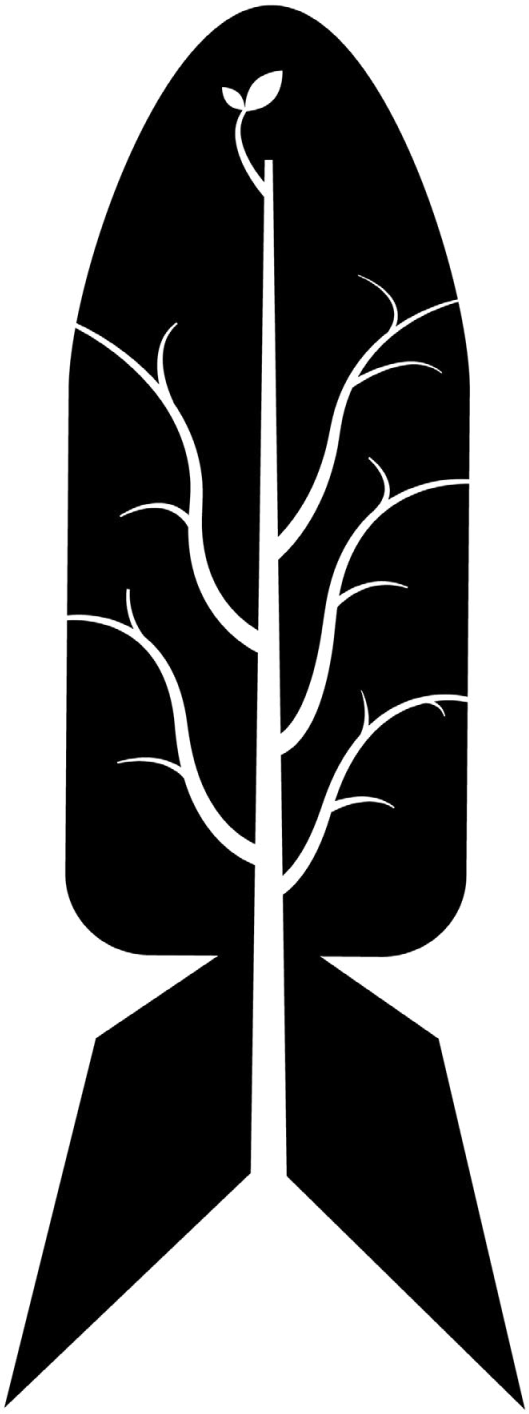

UWEC

Ukraine War Environmental Consequences Work Group

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Dear Friends!

Two years have passed since the start of Russia's full-scale invasion of Ukraine. The war and occupation of Donbas and Crimea, however, began a decade earlier.

Naturally, such a protracted conflict negatively affects not only ecosystem protections, but also the development of civil society in the region. These last two years have been the most difficult, and an "East-West" confrontation may yet develop. Global human society has not known such a degree of tension since, perhaps, the Cold War. In reckoning with the full-scale invasion, the UWEC Work Group editorial team and our experts review the most significant, in their assessment, environmental consequences of the war:

- **Two years of the full scale invasion. Reflections on environmental consequences**

War has a devastating impact on civil society and community initiatives. While civil society activists have demonstrated a high level of solidarity and the volunteer movement is strong during this full-scale invasion, the fighting is a distraction from important projects and initiatives, including environmental issues. In totalitarian and authoritarian countries such as Russia and Belarus, civic activism is persecuted. And if in Belarus these repressions began in 2020 even before the war, then in Russia repression may still be gaining momentum. Read about the persecution of environmental activists in Russia in 2023 in our analysis of an Ecological Crisis Group report:

- **Environmental activism under attack: Persecution of the environmental movement in Russia**

One potentially significant consequence of the full-scale invasion could lead to a global energy crisis. Growing divisions of the world into "West" and "East" is leading toward a new colonialist race for influence in developing countries. On the one hand, Russia, the European Union, and the United States seek to protect themselves in the context of this growing energy crisis, while on the other, they also want to preserve and develop their regional interests. Investments in large-scale projects are often the result, including, for example, the case of the Rogun hydropower plant in Tajikistan. Read hydropower expert Eugene Simonov's assessment of the latest developments related to construction of one of the most harmful projects in Central Asia, both in terms of environmental harm and socio-political stability:

- **'A la guerre comme à la guerre': Military geopolitics see return of controversial megaprojects**

One of UWEC's most important areas of work is identifying "green" recovery solutions. Our experts have repeatedly spoken out against the restoration of the Kakhovka dam's reservoir. Despite that coverage, we have not written much about alternative solutions for the two biggest challenges – energy and agriculture. In a new article, UWEC Work Group experts share their assessment that modernized irrigation planning and development of a more efficient energy generation system makes it possible to avoid rebuilding the morally- and structurally- obsolete Soviet-era Kakhovka hydropower plant.

- **Rebuilding the Kakhovka Dam is a mistake, but what should be done instead?**

UWEC Work Group publishes a monthly review of events, projects, and news related to the environmental consequences of Russia's invasion of Ukraine. In the latest release, you can learn about several analytical and visualization tools, including Ukrainian Nature Conservation Group's Biodiversity Viewer. We have also summarized the highlights of an expert discussion broadcast by Ukraine's Dim TV network on the state of nature reserves and national parks in Ukraine including Viktor Shapoval, director of Askania-Nova Nature Reserve, currently under Russian occupation. Lastly, we also track government and inter-governmental projects focusing on the war's environmental consequences, such as the "Environmental Pact for Ukraine," including assessing the degree to which experts and community organization representatives are able to participate. Read more in this issue:

- **Environmental consequences of the war in Ukraine: February review**

As always, we monitor the environmental consequences of the invasion on our website, as well as on Twitter (X), Facebook and on Telegram.

We wish you strength and peace!

Alexej Ovchinnikov, editor of UWEC Work Group

Two years of the full-scale invasion. Reflections on environmental consequences

Oleksiy Vasyliuk
Translated by Jennifer Castner

On the second anniversary of the start of Russia's full-scale invasion, we asked our editorial team members to comment on the war's most important environmental consequences and the issues they believe merit our readers' attention. The war in Ukraine has been going on for ten years, but the last two have been the most catastrophic for both the country and the whole world.

Aleksei Ovchinnikov, UWEC Work Group editor

I consider using the war to reduce climate ambitions one of the most important topics, whether the excuse be issues of energy security, food security, or militarization in anticipation of the "beginning of a third world war." There is a clear trend today in lowering climate ambitions in many countries, from the European Union to Russia. War and political (economic) security are seen as the greatest priorities. I think this is misleading. Today, climate change poses the greatest danger to global

human society (not nature). With each passing year, we see the consequences, and the likelihood of intense abnormal weather events only grows. February's broken temperature records are one confirmation. To end this war, we must not lose focus on climate change adaptation and mitigation and we must take meaningful actions, not fictions. Otherwise, war, forced migration, and political instability will become a permanent backdrop in today's world.

I'd also draw readers' attention to something that often remains below the surface: war generates mountains of garbage. This waste consists not only of destroyed houses and roads and burned military equipment, but also mountains of single-use packaging, bottles, boxes, etc. Today, almost all of eastern Ukraine, including many protected areas there, is a massive landfill. Given the density of minefields, it will take decades to address that waste. We must begin to identify solutions for processing this waste today, for example, recycling it for use in Ukraine's reconstruction.

Eugene Simonov, UWEC Work Group expert

The main difference between the first anniversary and this one is the understanding that this war, and the daily environmental damage it inflicts, will apparently be with us for a long time. A year ago we seriously hoped that we would solve the war's accumulating problems after a quick victory. Today, when I read bright-eyed remarks at the end of articles noting that accumulated damage or a tricky issue can be dealt with "when this all ends," I resist internally. It is very likely that the war will continue for a very long time, and environmental problems will have to be addressed without waiting for victory. Furthermore, solutions must be based on the limited information, resources, and capabilities we currently have available.

This conflict is clearly visible in the example of the draining of Kakhovka reservoir – an act that has finally shifted the concept of "ecocide" from theory to applied jurisprudence. We can and will argue with officials and hydropower engineers at length about whether the reservoir must be restored, but both sides understand that a practical solution to this issue will likely be postponed until hostilities end. At the same time though, people living on the shores of the former reservoir have immediately faced a full range of severe socio-ecological consequences: lack of water, localized climate changes, catastrophic transformation of their home landscapes, and the disappearance of recreation and fishing areas. We need to help people find effective ways to adapt and learn from each other now, and not delay until "after victory", … at least in territories controlled by Ukraine. For example, new efficient water supply

systems, unconnected to a reservoir, must be created now, and not after a hypothetical "restoration of Kakhovka hydroelectric station." Life along the lower Dnipro River should continue, rather than freeze in anticipation of a rebuilt Soviet-era dam 10-15 years down the road.

Similar issues arise and are addressed in other war-torn areas, primarily related to minefields in natural and agricultural landscapes, as well as against the backdrop of the frequent fires that occur during shelling.

At the same time, we are gradually accumulating experience in solving environmental issues in wartime. Looking ahead, UWEC Work Group's mission will be to seek and promote those solutions and adaptation tools that help people and nature to at least partially overcome this ongoing horror.

Oleksiy Vasyliuk,
UWEC Work Group expert

The prolonged war, long-term inaccessibility of temporarily-occupied territories, and incredible saturation of lands with explosive munitions (both unexploded shells and deliberate minefields) all eliminate the chances for a straightforward restoration of natural and agricultural territories after the war and occupation end.

The land area of Ukraine requiring de-mining already exceeds an area the size of Austria and Switzerland combined. De-mining will require a minimum of 70 years. Consequently, it is quite possible that some more contaminated and damaged areas would be more appropriately set aside forever (or for a very long time) in an exclusion zone. Unlike the bed of the former Kakhovka Reservoir (where nature is returning), these territories are overgrown with drought-resistant invasive plant species originating on other continents that pose a danger to local ecosystems and may result in radical transformation of entire landscapes in affected areas.

Regardless of the speed of de-occupation, Russia has de facto already deprived Ukrainians of part of their country, rendering some lands objectively unsuitable for habitation and use. Prior to the invasion, these areas were home to at least 7 million people.

It should also be noted that delay in assisting Ukraine with the de-occupation process will result in institutional degradation of the environmental conservation sector. Environmentalists and conservation workers are leaving the country or dying as soldiers in Ukraine's Defense Forces. There is a colossal crisis in the availability of specialists capable of planning for Ukraine's restoration and monitoring its "green" status.

Looking back at these two years, I would like to state first that this is a period of enormous losses: land, ecosystems, heritage, and people. It should also be noted that Ukraine's demographic losses in

the 20th century are also linked to Russia's imperial aspirations: forced deployment of Ukrainians in its war against Finland, collectivization, resettlement, repression, and the Holodomor. All have radically shrunken the number of Ukrainian intelligentsia and specialists across all disciplines and sciences.

Over these two years, spiraling history is again taking away the best people. Today, the most conscientious people are dying: those who were the first to voluntarily defend Ukraine. This fact is a significant threat to the quality of Ukraine's post-war restoration.

Finally, in the first months of the war in 2022, news media predicted that this war would become the most documented in history. Today, we know this to be true. It is quite possible that humanity will use the outcomes of Russia's war in Ukraine to reflect on the losses suffered by nature as a result of other past wars. •

Environmental activism under attack: Persecution of the environmental movement in Russia

Fyodor Severyanin
Translated by Jennifer Castner

Last year, Russia declared "illegal" its largest international environmental organizations, groups that had worked in the country for over 30 years. Pressure continues unabated on remaining environmental activists, in part due to their anti-war views.

Environmental activists and organizations advocating for nature conservation in Russia have become another target in the country, swept into the government's fight against anti-war and opposition views. The Environmental Crisis Group published a fresh overview of environmental activism in Russia in 2023, from which it is clear that the past year saw dramatically increased repression of environmental organizations and activists. All major international environmental NGOs have been deemed "undesirable",

resulting in the closure of their offices. In addition, Russian citizens are subject to criminal prosecution for collaborating with or even posting links to these organizations' materials. Many organizations, initiatives, and even mass media have been recognized as "foreign agents". Overall, this resulted in restrictions on activities, widespread closures of organizations, jobs losses, and persecution of many people. Publicly available sources alone documented over 200 cases of pressure on environmental activists and organizations in 2023, including searches, arrests, administrative fines, and other enforcement measures.

Lessons on the persecution of eco-activists

Over the course of 2023, Russian Social-Ecological Union (RSEU) experts recorded government pressure against 174 environmental activists and 29 environmental associations (15 organizations and 14 initiative groups). 43 cases in Moscow, Krasnodar Krai (15), Bashkortostan (12), and Kemerovo (11), Ivanovo (7), Leningrad (7) regions "led" the clampdown on environmental activists in 2023.

The most alarming incidents involved physical attacks injuring 32 activists, who received injuries of varying severity. For example, environmentalists believe that men thought to have been hired by StroyStandard LLC attacked passersby who commented on the illegality of work underway in Moscow's Bitsevsky Forest. According to activists, guards beat women, children, and elderly people.

Another high-profile incident occurred over the summer in Krasnodar, where an unknown person beat environmental activist Roman Taganov. The man visited the activist's office, demanding that he "shut up" and stop writing on the Internet. Then he forced the man out of the office to an area without CCTV cameras, saying he was "taking him to kill him." After that, the attacker grabbed him by the neck, striking him in the face. Taganov was taken to city Hospital No. 3 with a suspected concussion; doctors also recorded a hematoma on his arm. Taganov filed a complaint with the police about the attack, but he was denied the opportunity to initiate criminal proceedings.

Not only have activists been physically attacked, but their property has been vandalized as well. At least six people suffered damage to their property as a result of crackdowns. In May, a house burned down belonging to residents of Polyot-2 Chelyabinsk Gardening Partnership. They had been campaigning against the Novosmolinsky Quarry and had won an inspection of the site. According to the building's owner, firefighters told him that both the grass on the property and the house's interior had been set on fire, but official reports

by the Ministry of Emergency Situations only noted "careless handling of fire."

Activists were also subjected to administrative harassment, resulting in at least 78 citations for administrative violations. Most often, these were related to organizing events, such as citations for "violation of established procedures for organizing a meeting, rally, demonstration, procession, or picketing" and "failing to obey the lawful order of a police officer." Administrative fines imposed on activists totaled a minimum of 338,300 rubles. Six people were subjected to administrative arrests for a total duration of 54 days.

In 2023, political motivation grew to pressure environmental activists. These activists are seen as opponents of the regime and are subject to politically motivated articles and measures.

Ten new criminal cases were filed citing "use of violence against a government official," "public calls for terrorist activities," and others. For example, Article 280 of Russia's Criminal Code ("Public calls for extremism") was used against activist Mikhail Ivanov. Five activists were sentenced, including one fine and four suspended sentences.

One high-profile case was the 12 October detention in Ufa, Bashkortostan of environmental activist Fail Alsynov, a defender of the proposed UNESCO Natural Heritage site Kushtau who had spoken out against environmentally-damaging gold mining. The activist was charged with "inciting hatred or enmity" (Article 282, Part 2 in Russia's Criminal Code) during a speech on 28 April in front of a gathering during which gold mining near the village was protested. The immediate justification for Alsynov's arrest was his uttering the phrase "kara halyk," during the rally against the gold mining company. In the Bashkir language a literal translation refers to "black people," a derogatory and racist term in Russian for people from the Caucasus and Central Asia. Alsynov claims that his words were incorrectly translated. In a media interview, the activist associated his detention with his statement that "while our guys are fighting in Ukraine, here in Bashkortostan their lands are being seized" during the speech. "Of course, I said that I admit no guilt. There is nothing criminal in my statements. If necessary, I will order an independent evaluation. It is clear that the case against me is fabricated. They [the security forces] have spent the last year sniffing around me, trying to find something illegal, but everyone knows that I didn't do anything like that. I was busy with work, home, raising children," added Alsynov. In March 2023, FSB officers searched his home and he was charged with "discrediting" the Russian army. Alsynov described the war in Ukraine

a "genocide" of the Bashkir people, pointing to the large number of Bashkirs conscripted into the Russian army.

In January 2024, Alsynov was sentenced to four years in prison. More than a thousand people attended in support of Alsynov on the day of his sentencing. The police used tear gas and stun grenades and beat demonstrators with batons. Roughly twenty protesters sought medical help. At least ten participants were placed under administrative arrest, cited for failing to obey police demands or violating the rules for holding rallies. At present, rally participants are being prosecuted in criminal cases opened for their participation in mass riots.

2023 was also an unprecedented year for the destruction of environmental organizations. Three organizations involved in environmental activities were listed as foreign agents, a move accompanied by significant restrictions on their work. Five additional organizations were recognized as "undesirable in the Russian Federation," in particular, the country's two largest – World Wide Fund for Nature (WWF Russia) and Greenpeace International. Undesirable status means that continuation of the organization's work, use of its symbols, distribution of its publications, and the sharing of links to publications in the public domain are subject to criminal prosecution in the Russian Federation, even if the actions occurred several years earlier.

Read more:

- Greenpeace. Instead of an epilogue
- Bellona: Undesirable openness and the sanctions war

One method of persecution is blocking access to social media. The Russian Prosecutor General's Office blocked the environmental activism group "We Live in Omsk" on VKontakte. The group wrote about cutting down trees, hunting, and shooting stray animals. Activists cleared garbage and planted trees in and around Omsk.

Law enforcement practices

In 2023, the Russian government used a range of laws, both administrative and criminal, to pressure environmental activists in Russia.

Article 20.2 of Russia's Code of Administrative Offenses (Violation of the established procedure for organizing or holding a meeting, rally, demonstration, procession or picketing): This article was used the most frequently and was the basis of 24 administrative citations.

Part 1 of Article 19.3 of Russia's Code of Administrative Offenses (Disobeying a lawful order issued by a police officer): This article was applied 18 times and was used in cases where activists refused to obey the order of police officers.

Article 5.26 of Russia's Code of Administrative Offenses (Violation of laws on freedom of conscience, freedom of religion, and religious associations): 11 administrative citations were drawn up under this article, and all of them concerned a single activist – Yuri Koretskikh.

Article 20.1 of Russia's Code of Administrative Offenses (Petty hooliganism): Ten administrative citations were issued using this article in relation to activists who participated in protests.

Article 20.2.2 of Russia's Code of Administrative Offenses (Organization of mass simultaneous presence and (or) movement of citizens in public spaces resulting in a violation of public order): Five administrative citations were drawn up under this article in cases where activists organized mass events.

Article 280 of Russia's Criminal Code (public calls for extremism): One criminal case has been opened under this article in connection with comments made on the VKontakte platform.

Adapting to new conditions

Environmental non-profits and activists have been forced to adapt their work in response to changes in legislation and increased pressure. As a rule, they refuse foreign funding and are revising their work strategies, reducing the number of projects, carefully choosing partners, and limiting their activities to avoid conflicts.

In 2023, environmental activism in Russia was closely linked to the general political environment and military activities, leading to significant changes in the activities and perceptions of environmental activists. Many of these activists have participated in anti-war actions or expressed their position against the war, resulting in additional government pressure.

Over 40 cases of pressure on activists for their anti-war position have been documented, including detentions, beatings, and threats. Russia's law that prohibits calling a war a war has forced many activists and organizations to remove their public anti-war statements or face persecution for keeping them.

During this period, labeling Russian activists and environmental organizations as "foreign agents" also continued, including the Omsk Civil Association, which organized public campaigns opposing wide-scale logging, captive hunting, and shooting homeless strays; conducted environmental cleanups and tree-planting in Omsk, and shared news with the public about ecology and urban planning. At the end of the year, online publication Kedr.Media was labeled a foreign agent in response to articles openly describing the war in Ukraine as a war and the environmental consequences of military actions.

Despite these difficulties, the environmental movement in Russia continues to develop, seeking ways to circumvent repressive legislation and evade intensifying persecution. Activists adapt to new conditions, opening new environmental organizations and media initiatives, inventing coded "Aesopian" language to avoid the government's slippery slope, and continuing the fight for environmental values and rights, despite the increasing pressure. These adaptations highlight the importance of civic activism and the need to protect environmental and civil rights even in challenging times.

Human rights activities

Human rights defenders in Russia also play an important role in providing legal support to ensure the protection of environmental activists rights. In 2023, 19 administrative violation cases against defenders of Moscow's Troitsky and Bitsevsky forests were closed. In addition, a court decision resulted in fines in the case of the beating of a Bitsevsky Forest activist. Moscow environmental activists also secured the conviction of a police officer who falsified reports of administrative violations. Shies's lawyer partially won two cases against the colony administration.

Human rights activists are actively working at the international level as well, drawing the attention of the world community to the rights of environmental activists in Russia. In addition, the European Court of Human Rights (ECtHR) has ruled on several compensation cases affecting 58 environmental activists. The amount of compensation totaled €232,800, although this concerned cases that occurred in 2018, 2019, and 2020.

Looking ahead

Recent developments demonstrate the serious challenges that environmental activists in Russia continue to face. Political pressure, harder line legislation, and restrictions on activities create unfavorable conditions for environmental conservation work. Despite these difficulties, the environmental movement persists inside Russia. Prospects for the future are uncertain, but environmental issues remain relevant in civil society, and the environmental movement and its initiatives have not disappeared. Today, environmental conservation and the fight for environmental justice continue to be important components for the development (and survival) of civil society in Russia. •

‘A la guerre comme à la guerre’: Military geopolitics see return of controversial megaprojects

Eugene Simonov
Translated by Alastair Gill

The war in Ukraine and rising global tensions have seen renewed interest among European politicians in supporting dubious gigantic infrastructural projects as a way of buying the loyalty of countries who would otherwise turn to Russia and China for help. In this article, UWEC Work Group expert and river conservation specialist Eugene Simonov examines this alarming trend through the example of one of the most controversial unfinished projects of the Soviet era – the Rogun Dam in Tajikistan. No matter how acute the geopolitical challenges, they should not outweigh the principles of social and environmental responsibility and commitment to sustainable development that form the basis of international financial institution policies.

The authors' opinions as expressed are solely those of the authors and do not reflect the opinions and beliefs of UWEC Work Group.

Megaproject geopolitics

When Russia invaded Ukraine in 2022, the European Union quickly realized it was painfully dependent on Moscow for its energy needs. While the bloc has since managed to find various ways of reducing this dependency, containing Russia's international influence remains an important challenge for the "collective West". European politicians have made it a goal to help ex-Soviet republics rid themselves of energy and other forms of dependence on Russia. This is relevant in terms of developing long-term ties with promising sources of raw materials for "green development", as well as establishing better control over the export of military goods to Russia via third-party countries, primarily the Central Asian states.

In a region where autocratic tendencies continue to strengthen and civil society movements are harshly suppressed, the dependence of economies on external support from their neighbors – Russia, Iran, China – is growing. It is this influence that Europe is seeking to challenge.

The European Union has put together a new cooperation strategy with Central Asia and is preparing to provide multi-million euro support for the creation of large-scale infrastructure in the region via its new Global Gateway program. In Central Asia this initiative primarily concerns support for transport and energy.

On 29-30 January, Brussels hosted a Global Gateway transport forum for investors, at which the EU and all Central Asian countries discussed the creation of a Trans-Caspian transport corridor from China to Europe, circumventing Russia. The EU is ready to invest 10 billion euros in the project. However, analysts are extremely skeptical about the economic and environmental efficiency of a shipping route that would involve three or four transfers of cargo from train to ship and back. China's attempts to create a slightly less awkward "Silk Road" route via Kazakhstan, Russia, and Belarus drew healthy skepticism from economic analysts. But today the war in Ukraine makes even more dubious projects politically attractive.

The Rogun saga, from Brezhnev to Borrell

A prime example of a dubious megaproject is the "immortal" Rogun Dam in Tajikistan. Comparable in scale and hubris to the Egyptian pyramids, the project has become something of an obsession for the country's president.

Construction of this hydroelectric power station, with a capacity of

3600 megawatts, began in 1976, when Tajikistan was part of the USSR. At 335 meters, the structure promised to become the highest dam in the world, though it stood on a seismically dangerous geological fault and an unreliable foundation of salt layers. In Soviet times several kilometers of tunnels and machine halls were bored, the first temporary dam was set up on the Vakhsh River, and the first temporary turbines and generators, manufactured by Kharkiv enterprises Turboatom and Elektrotyazhmash, were even shipped from Ukraine.

But, having already invested one and a half billion dollars in the project, the USSR then fell apart, and construction was halted in 1991. Two years later, floods washed away the temporary dam and flooded the machine rooms. It seemed that the issue had been settled and independent Tajikistan could search for more modern and flexible ways to solve its energy problems. But in the early 2000s, after Emomali Rakhmon emerged victorious in a bloody civil war and became president, Dushanbe decided to complete the dam and hydroelectric plant, investing $3 billion in the project.

According to data from the World Bank, Tajikistan is spending 80% of the state budget's infrastructure investment on completing the Rogun Dam, to the detriment of projects in education and healthcare. The impoverished population has even been forced to buy bonds in the Rogun project. Meanwhile, they suffer from rolling blackouts, since 95% of the country's energy is generated by hydroelectric power plants, and in winter a natural reduction in runoff from glaciers creates a shortage of water for hydroelectric generation. There is nothing left in the coffers to invest in diversifying energy sources – all money is spent on Rogun, which has become a national fetish.

Around 2008, neighboring Uzbekistan naturally saw the creation of the enormous Rogun reservoir as a threat to its agricultural production in the Amu Darya basin and declared a blockade of Tajikistan, halting gas supplies and severing rail connections between the two countries. It was only the arrival of a new Uzbek president, Shavkat Mirziyoyev, with his policy of "water diplomacy," that somewhat softened the long-running conflict.

Since 2006, Tajikistan has spent another $4 billion on finishing construction of the Rogun HPP, a site that is less than 25% complete, and the cost of bringing the project to its conclusion is estimated at over $6 billion in additional investment. The estimated full budget for the project grows by a steady 15% annually. By 2023 the full construction cost – for just one power station – had already exceeded $10 billion ($5 billion already spent by the USSR and Tajikistan, with

the additional $6.2 billion currently required to complete construction), an amount equivalent to the entirety of Tajikistan's current GDP. Construction will continue until at least 2035, and the reservoir will not be filled until 2040. If, of course, there is enough water.

In 2022, well aware of the project's background and ongoing problems, EU Foreign Minister Josep Borrell promised to support the construction of the Rogun HPP via Global Gateway, in order to reduce Tajikistan's dependence upon Russia and encourage Dushanbe to choose "the high-quality EU offer over the low-cost Chinese one." This was quite a stretch, since while Tajikistan imports electricity in winter, it is not dependent upon Russia in this regard. As for the import of Russian oil, it would have been logical for the European Union to have first resolved similar issues with Hungary and Slovakia.

However, Foreign Minister Josep Borrell stepped forward with a generous EU offer to pay 15% of the costs of completing the Rogun project. The funds will be supplied via the European Investment Bank as partial financing for the Rogun Hydropower Project, which is managed by the World Bank.

Apart from geopolitics, Borrell's real interest is in supporting "European quality". The main contractors involved in building the Rogun HPP are large European companies: WeBuild is building the main dam, Voith is supplying the generators and turbines, Afry is responsible for design, Tractebel is overseeing the engineering work, and so on. But these European companies need huge financing in order to complete the Rogun HPP.

Risks of a gigantic dam

Objectively, the creation of the Rogun reservoir, which will have a total capacity of 13 cubic kilometers, is capable of substantially aggravating water shortages in Central Asia. This project has already brought the countries in the region to the brink of war, as Uzbekistan's blockade of Tajikistan demonstrated.

According to the World Bank, for the 16 years it will take to fill the Rogun reservoir, the flow of the Amu Darya into the Aral Sea will be reduced by almost one cubic kilometer annually. Today this is about 20% of all water flowing into the Amu Darya Delta.

The biggest risk is that the vast reservoir may redistribute half of the flow of the Vakhsh River from the summer months, when water is needed by ecosystems and for agriculture, to the winter months, when the need for electricity is greatest. This is especially dangerous given the realities of climate change. The fact that Tajikistan has "promised not to do this" is a completely insufficient guarantee.

Uzbekistan's current leader may be better disposed toward Tajikistan than

his predecessor, but redistribution of water resources remains a mortal threat to Karakalpakstan and other agricultural areas in the lower reaches of the Amu Darya. Despite 10 years of urgent recommendations from the World Bank, there is still no system of reliable agreements guaranteeing risk reduction between the countries of Central Asia.

Environmental and social impacts

The Environmental and Social Impact Assessment (ESIA) of the Rogun hydroelectric power station, carried out in 2023 for the World Bank, does not answer the most burning questions: how the plant's different operating modes may affect water flow, how to ensure the safety of rare animal species and Tigrovaya Balka Nature Reserve, a UNESCO World Heritage site, and what specific bilateral response and mitigation plans are in place between Tajikistan and Uzbekistan in case of a breach of the dam, etc.

The World Bank itself has already publicly admitted that the ESIA does not meet its requirements and demanded a fresh assessment of the cumulative impact of the dam. A cumulative assessment is needed to take into account the total impact of water management projects in the region, including the Rogun Dam, but also the vast Qosh Tepa Canal, currently under construction in Afghanistan on the border with Tajikistan, which could potentially divert 20% of the Amu Darya's total water flow.

The enforced resettlement of 46,000 people in a country with extremely high levels of corruption and harsh suppression of dissent is a catastrophe that clearly involves multiple human rights violations. There is still no general resettlement policy, there are no project assessment documents in Tajik, the $250 million promised in the ESIA is hardly sufficient to ensure the welfare of such a huge number of displaced people, and the media is silent on the fate of the 7,000 Tajik citizens already resettled.

The European Union and the World Bank are presenting the completion of the Rogun hydroelectric power plant as an optimal solution to the problem of providing the countries of Central Asia with "green energy", but this is an extremely unconvincing argument. The ESIA shows that the reservoir will release more than 100 grams of CO2 equivalent per kilowatt hour of energy, an unusually high figure for a "green" hydroelectric power plant. And the constantly retreating completion dates for the project threaten to set back the energy decarbonization of Central Asia by 10-15 years. Faster and more effective alternatives to this "delayed decarbonization" option were not considered in the ESIA.

In January 2024, public organizations demanded that regional public hearings

be held on the contents of the ESIA for the Rogun HPP. In response, the state energy project management group overseeing the construction of the dam claimed that such an event had already taken place behind closed doors in Almaty in November 2023, but this was not publicly announced, and those who attended could not had time to familiarize themselves with the 500-page draft environmental impact assessment, published five days earlier.

How to build half a pyramid and take no responsibility

The most interesting thing about all this is that the World Bank and EU are investing nowhere near what is required to complete the construction of the Rogun hydroelectric station, allocating only $700 million of the more than $6 billion needed to complete construction. They are only promising to finance the "first phase" (of the third attempt to complete the Rogun Dam), which will allow half of the dam to be erected and a third of the turbines and generators to be installed by 2028. The World Bank documents are tactfully silent on what comes next. Essentially, international financial organizations are simply bribing the authoritarian regime, hoping that this will make it indebted to the "civilized world", meaning that it will cast fewer glances towards Russia and China.

But this money will substantially worsen Tajikistan's debt dependency. In addition, since Global Gateway and the World Bank have insufficient money even for the "first phase", banks under Russian (Eurasian Development Bank) and Chinese (Asian Infrastructure Investment Bank) control are now also involved in financing the hydroelectric power plant, rendering completely meaningless the geopolitical aims implicit in the EU's promise to finance the Rogun hydroelectric station.

Seeing no resistance to such projects from civil society in Central Asia, the World Bank recently announced the start of construction in Kyrgyzstan of another gigantic hydroelectric station, Kambarata-1 on the Syr Darya River, a project that will also be broken into "phases". Kyrgyzstan is even poorer than Tajikistan, and is even more reliant on Russia. It is possible that the EU plans to supplement the Global Gateway program with this project.

If the funding from Global Gateway results in increased environmental degradation and water scarcity, as well as massive human rights violations and long-term debt growth for Central Asian countries, who will be the ultimate beneficiaries? It seems likely that such ill-conceived "European aid" will only increase Central Asian countries' dependency on Russia and China, to whom they will turn when the projects supported by the European Union run into a dead end. •

Rebuilding the Kakhovka Dam is a mistake, but what should be done instead?

by Viktoria Hubareva using UWEC Work Group research materials
Translated by Alastair Gill and Jennifer Castner

The Kakhovka hydropower station was built in Ukraine from 1952-56. Its reservoir was the largest of the six reservoirs in the Dnipro cascade, covering an area of 2,155 square kilometers – almost a third of the area covered by all six reservoirs and around 40% of the total volume of all Ukraine's reservoirs. The gigantic facility had several functions: the production of electricity, increasing the depth of the shipping channel in the Dnipro along the Kakhovka-Zaporizhzhia section, supplying water to cities and villages, and irrigating crops.

On 6 June 2023 Russian troops blew up the dam and the hydroelectric infrastructure, destroying it, and the accumulated water in the reservoir was released.

Arguments in the media for the restoration of the Kakhovka Dam show that supporters of restoration – primarily state bodies

and the state-run hydropower enterprise Ukrhydrenergo – intend to try and preserve the agricultural system. That is, they are seeking to restore the reservoir and dam to its previous Soviet scale.

Rebuilding the hydroelectric station means restoring infrastructure that is wasteful by modern standards. Yet it appears that the decision to rebuild the Kakhovka Dam has already been made – far too hastily..

Climate change and the inefficient use of power

Three large canals for water supply and irrigation flow out of the Kakhovka reservoir: the Dnipro-Kryvyi Rih Canal, the North Crimean Canal and the Kakhovka Canal. Most of the land that was irrigated in the past now lies in occupied territory. Only the smallest of the three canals remains undamaged and within Ukrainian-controlled territory: the Dnipro-Kryviy Rih Canal.

Before the beginning of the full-scale war, these canals diverted more than half of the Dnipro's water (roughly 940 of 1670 cubic meters) and irrigated 5,800 sq km of farmland. In turn, the pumps used 20% of all power generated by the Kakhovka station, and in the hottest and driest season they required the hydroelectric plant to function at full capacity. Essentially, the station worked to maintain the irrigation system.

At the same time, water use efficiency was low in nearby agricultural areas, a situation which was only worsening as global climate change accelerated. The Kakhovka Dam is located at the heart of Ukraine's steppe zone, a highly arid territory where the large proportion of plowed land has sparked rapid desertification processes.

In 2013 the North Crimea Canal lost 45% of its water as a result of evaporation and filtration. The latter is a result of water simply dispersing into the soil through the canal bed, built without proper waterproofing in the Soviet period. Furthermore, the fields were irrigated using rainwater capture installations, which led to large losses due to evaporation.

Prior to the destruction of the dam, 1.8 cubic kilometers of water evaporated from the surface of Kakhovka reservoir every year. Given global warming and climate change, this figure can only be expected to grow over time. Ultimately, following the past approach will lead to increased water deficits and reduced discharge in the Dnipro, Bug, and Ingul rivers, as well as to increased salinity, both in the soil and in the Dnipro-Bug estuary. After all, the more water evaporates, the more minerals will be left in the reservoir.

The economic system created around the Kakhovka reservoir largely reflected the technological level of the USSR in the mid-20th century. That is, it was

developed before significant climate change and the resulting challenges to environmental standards.

Water can be saved by switching to drip irrigation technology

The service life of a hydropower complex is approximately 100 years. So if the hydropower plant and irrigation systems are restored, Ukraine will lock itself into an outdated mode of energy economy and water use until the late 21st century, thereby depriving itself of an opportunity for progress.

Resurrecting a water-hungry agricultural system hardly aligns with the principles and goals of sustainable development, and a decision to restore the reservoir will leave Ukraine on an old path for another century, at a time when most of the world is already going in a new direction.

In addition, we should not forget that the region's soils, irrigated for many decades with water from the Kakhovka reservoir, are highly affected by anthropogenic salinization. The region's steppe rivers (with their high mineral content), which feed indirectly into the Kakhovka reservoir, contributed significantly to accelerating soil salinization, as well as mineralization as a result of pollution from industrial cities. In Soviet times, no real effort was made to offset these processes – and as a result, the entire area that was formerly irrigated with water from Kakhovka reservoir is rapidly becoming unsuitable for cultivation. Any discussion of resuming irrigation must also examine this issue.

Traditional agricultural systems or a fresh approach?

There has been almost no agribusiness for two years now in the temporarily occupied territories formerly irrigated by the Kakhovka reservoir or on the frontline. Most of the tenant farmers have left these areas and irrigation equipment has been either destroyed or stolen. Restoring agriculture in the region will require almost the same investment as establishing it from scratch, not to mention the costs of demining and executing soil safety assessments in the wake of military action. It makes more sense to create a new management system with greater potential.

Options worthy of consideration include changing the composition of the crops grown, introducing drip irrigation technologies, and increasing the share of pasture livestock farming.

In Ukraine, these practices are rather poorly developed, and the country has focused on growing grain crops and exporting products at low prices to countries using Ukrainian grain to successfully develop their dairy and meat sectors. As a result, the cost of livestock production is increasing

globally. By using water more efficiently and expanding domestic meat and dairy farming and reorienting it toward pasture grazing, Ukraine may be able to make its rural economy more sustainable.

No longer submerged, the land formerly covered by the Kakhovka reservoir can now be used for grazing. This is exactly what it was used for in the past, when the area was predominantly occupied by pastures and open woodland. Drought years aside, this floodplain region will always have high soil moisture and offer favorable conditions for the natural vegetation typical of grassland areas.

Agroholdings vs. rural communities

During the war, small family farms have turned out to be more stable and adaptable than agribusinesses, and they also play a more important role in supporting local communities.

The role and flexibility of rural communities and small-scale farming during war offers an important avenue for addressing environmental issues. However, the Ukrainian government remains inclined to rely on agricultural holdings as an element of post-war reconstruction, especially on liberated territory. European Union policy, particularly the European Green Deal, will also favor small agricultural enterprises as more environmentally friendly and adaptive.

For this reason, local rural communities on the shores of the former Kakhovka "sea" need to be provided with maximum support now. This could include the opportunity to use areas of the exposed bed for sustainable types of agriculture – haymaking, for example. At the same time, local residents should be allowed to use parts of the reservoir bed (as long as no construction or plowing is involved), but should avoid developing areas important for the restoration of biodiversity and ecosystem services. The best solution may be a transition to labor-intensive types of management, which create a higher added value per unit area than the practices previously in use around the Kakhovka reservoir.

A recently registered government draft bill that proposes a 15-year moratorium on any agricultural use for the former reservoir contradicts the sustainable development needs of rural communities along the lower Dnipro.

To build or not to rebuild: Soviet-era dam or watershed ecosystem restoration?

Soon after the Russians destroyed the Kakhovka Dam, the Ukrainian government approved a resolution on rebuilding the huge infrastructure facility. The main customer will be the state-owned enterprise Ukrhydroenergo.

The company wants to build a new hydroelectric power plant with an output of 550-600 megawatts – a significant increase on the maximum 335 megawatts produced by the destroyed Kakhovka HPP. Yet this will produce little increase in electricity generation – no more than 5%. There is not enough water in the Dnipro for more. Ukrhydroenergo wants the new hydroelectric station to function at maximum output, which means the water level in the lower pool (downstream of the dam) will fluctuate several times a day, with waves of floodwater reaching the Black Sea. This is unacceptable due to the great vulnerability of the lower Dnipro floodplain, especially considering its environmental status. Over 100,000 hectares of European Emerald Network protected areas lie downstream of the Kakhovka Dam, as well as the floodplains of the Black Sea Biosphere Reserve and two national parks. Constant fluctuations in water levels are therefore unacceptable, since they are incompatible with the natural dynamics of these natural areas.

However, filling the Kakhovka reservoir will be possible only after the shores have been cleared and the Dnipro bed trawled to remove land mines. Otherwise, abandoned mines will float into water intakes and damage them. The dense forest that is already growing on the exposed bed of the reservoir will need to be clear cut, which will also be possible only after demining is complete.

One option for replacing the total average annual production of 1.4 billion kW/h of electricity generated by the Kakhovska HPP (or the 550-600 MW capacity plant planned to replace it) is to build solar power plants with a total capacity of 1,200 megawatts, for which an area of 2000-2500 hectares (just 1% of the Kakhovka reservoir) is sufficient.

Rebuilding the Kakhovka Dam is not only a technical issue, but also an environmental one

As studies in 2023 showed, almost immediately after the reservoir was drained, the natural floodplain forest that was characteristic of this area before the HPP's construction began to grow back. Within just six months, young trees had begun to spring up on a large area of the reservoir bed.

Restoring degraded natural ecosystems forms the basis of sustainable development in EU countries and one of the key objectives of the European "Green Deal". In recent years, European states have increasingly taken forward-looking decisions aimed at mitigating global climate change and guaranteeing a secure future for the entire continent. Back in May 2020, the European Commission presented perhaps the most ambitious environmental document in European history, the EU Biodiversity

Strategy 2030 – Bringing Nature Back into Our Lives. The return of natural vegetation on the site of the Kakhovka Reservoir will make it possible to restore up to 1,800 square kilometers of natural ecosystems (of which at least 1,000 sq km will be climate-resilient forests) and make about 250 km of the Dnipro free-flowing, the largest environmental project of all time. Restoring such a vast ecosystem would be a decisive Ukrainian contribution to the European Union's proposals to revive ecosystems by restoring the natural flow of 25,000 km of rivers by 2030.

If, however, the Kakhovka reservoir restoration project goes ahead, it will be necessary to destroy all of these 1,800 square kilometers of natural ecosystems that have already begun to form. And most of these ecosystems will be forests, the destruction of which is completely anathema to the principles of sustainable development and directly contradicts Ukraine's goals to increase forest cover.

There is, however, an alternative – making a bold transition to new renewable energy, energy which will be effective in the face of climate change and the increased water shortages that are bound to accompany it.

Solar arrays and gas digesters instead of hydropower

On average, the Kakhovka hydropower plant's annual output totaled 1.42 billion kilowatt-hours. Just 20-25 sq km of solar panels are required to generate the equivalent amount of electricity. The surface area of Kakhovka reservoir is a hundred times larger yet – 2,155 sq km. In other words, solar energy requires one-tenth the amount of land required by the Kakhovka HPP.

The Kakhovka HPP requires more electricity in summer months to pump water for irrigation and to power tourism and air conditioners. Moreover, these demands consume many times more electricity than that which is needed for lighting.

Most productive in southern Ukraine, solar power is well-positioned to replace Kakhovka's lost generation output. There are a number of reasons for this.

Even with increased power, an updated Kakhovka HPP will not be able to operate in an environmentally safe way at peak demand.

As described above, operating a hydropower plant at peak demand will inflict tremendous environmental damage on the region downstream of Kakhovka. HPPs operating along the Dnipro River channel are the best choice for operation at peak demand, but definitely not the proposed new prototype HPP at Kakhovka.

With its decentralized nature, solar energy is inherently more stable in wartime conditions and ongoing shelling and can be developed even now.

Fig. 1. Efficiency of land use by HPPs on the Dnipro River cascade. The best is the Dnipro HPP, with 90,000 kWh per year per hectare of reservoir surface area. Kakhovka HPP is last, with just 6,590 kWh/ha. Solar panels can produce the same amount of electricity using just 1/100th of the land area. Source: UWEC Work Group.

When it comes to shunting production capacity, developing gas digester capacity is also useful, given that electricity from biogas provides maneuverable generation in windless weather. Increasing the share of livestock farming and feeding a mixture of plant and animal residues into biogas digesters dramatically increases biogas yield (a synergy between livestock farming and energy production).

Modern energy storage technologies can also be put to work, including electrochemical batteries that balance electricity supply without creating hydropower capacity.

How to handle logistics?

One argument used by the proposed Kahkhovka HPP-2's supporters is transportation infrastructure. The Kakhovka reservoir served as a transport artery for shipping and road infrastructure was needed along the former reservoir's shores. There are also counterarguments to these claims as well.

The share of river navigation in transportation is steadily decreasing. In the late 1980s in the USSR, 90 million metric tons of cargo were transported each year on the Dnipro River. By 2013 that number had fallen to 10 million tons of cargo, in 2020 – 6.1 million tons, in 2021 – 8.25 million tons. Climate change-related decreases in the Dnipro's discharge will further limit the role of river shipping. This dynamic is not only relevant for Ukraine, but also for European rivers.

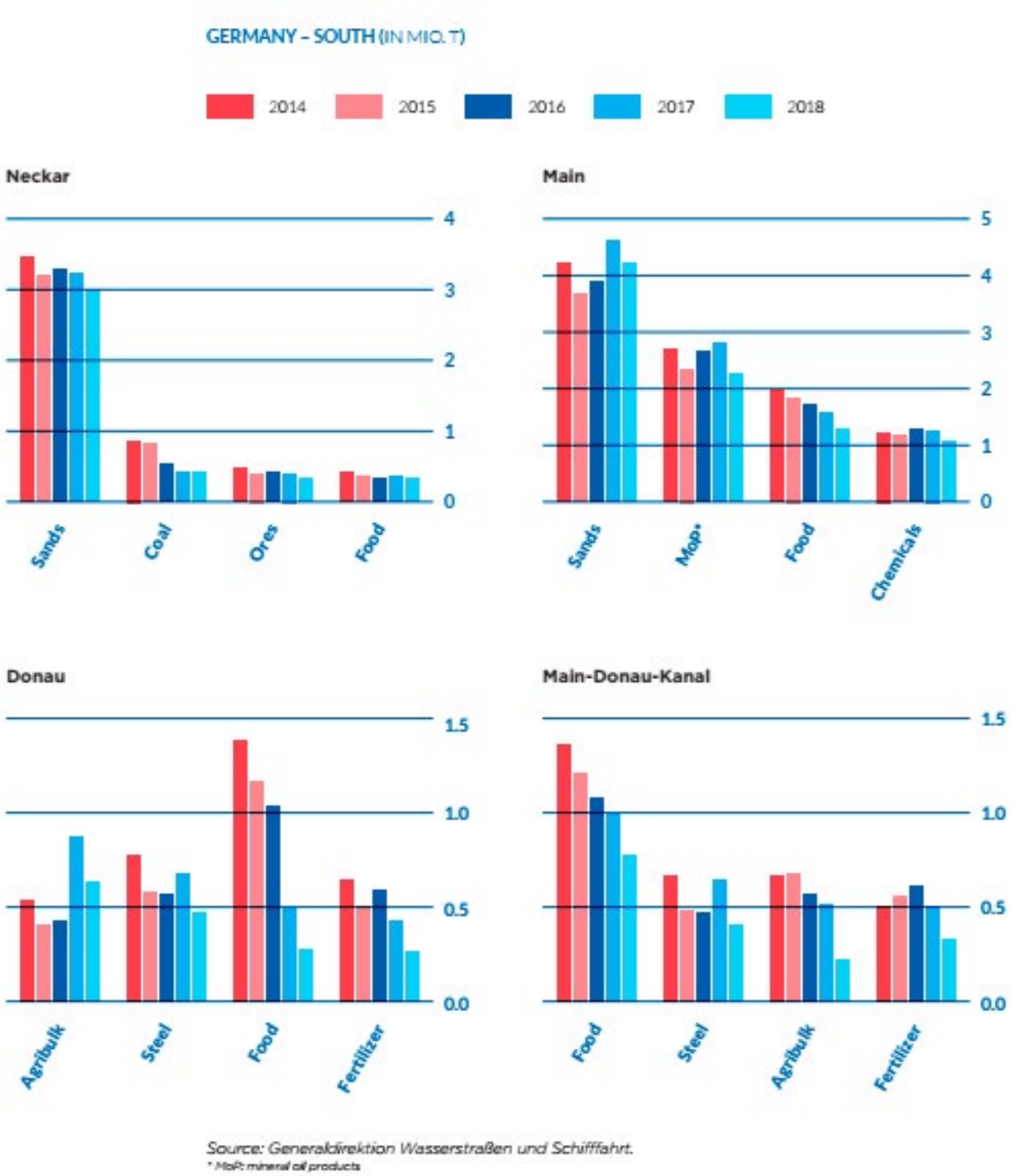

Fig. 2. Shipping volumes on other European rivers. Source: United Nations Economic Commission for Europe and Erasmus Center for Urban, Port, and Transport Economics

The river vessels used on the Dnipro are small in size, with an average displacement of less than 1,000 tons. Locks at Dnipro dams are small, 17 m wide, and do not permit passage for large ships. By weight, the main cargo is grain headed for export on sea vessels. Unregulated parts of the Dnipro River have depths sufficient for the passage of these small vessels.

In areas where the river is too shallow, the navigation channel can

periodically be dredged, a much cheaper and less environmentally destructive approach than restoring the dam reservoir. Such actions are already carried out annually in the navigation channel of reservoirs.

But in order to restore navigation in the Dnipro's lower reaches, a new river fleet must first be developed. The existing fleet has been almost entirely destroyed by the war. In all likelihood, the new fleet would largely be composed of small, unpiloted ships.

When it comes to land-based vehicle transportation, bridges can be rebuilt and ferry crossings restored across the Dnipro. If reconstruction of the dam is abandoned, a bridge could be erected **connecting Nikopol and Enerhodar** in addition to Antonovsky Bridge in Kherson and the bridge over the former dam in Novaya Kakhovka. Such a new bridge would improve connectivity between the river's left and right banks at Zaporizhzhia and Kherson, further contributing to the region's economic development.

Time factor

At present, the Dnipro's left bank – the location of the former Kakhovka reservoir – is occupied by Russian forces. The frontline follows the river, and the lands around it (both on the reservoir's former banks and the newly exposed bottom) are heavily mined. As a result, rebuilding the HPP is not possible, nor is any other work on the territory of the former reservoir.

The destroyed dam's foundation must be studied in order to estimate the costs of any reconstruction. This is also not possible until Russian troops vacate the area. No one can say how long the war will continue or how long Kherson's left bank will remain occupied.

Efforts are already underway to adapt water supply to new conditions on the river's right bank, occupied by Ukrainian troops. Water supply through the Dnipro-Kryvyi Rih Canal resumed in 2023, and work on the construction of a new water main is nearing completion. This construction should fully meet the water needs of Kryvyi Rih and smaller right-bank cities, which depended on Kakhovka reservoir for water supply.

A contemporary project to restore the region's economy (without a hydroelectric power station) can be implemented in two stages. The first stage – creating a modern infrastructure network and modern agriculture on the northwestern right bank of the Dnipro – can be started as early as in 2024.

An energy and agricultural project on the Dnipro's eastern left bank and a transportation infrastructure initiative to establish roads, bridges, and ferries as well as navigation of the Dnipro River from Zaporizhzhia to the river's mouth can occur after the territory is liberated from Russian occupation and de-mined. Experience gained in implementing

similar work on the river's right bank can be put to work on the left.

It seems understandably much simpler and faster to estimate the cost of rebuilding the hydroelectric power plant and economic system that existed pre-war than understanding the cost of modernization. Government agencies and large semi-governmental enterprises are also often more interested in maintaining the status quo than making changes. As a result, efforts to lobby a morally and technologically outdated plan should not be underestimated.

Lastly, it is in Europe's interests to gain Ukraine as a strong, modern, post-war state with a modernized economy. It is only such a Ukraine that can clearly demonstrate the collapse of Putin's expansionist project. •

Main image source: Wikimedia

Environmental consequences of the war in Ukraine: February review

Alexej Ovchinnikov

Each month, the UWEC editorial team shares highlights of recent media coverage and analysis of the Ukraine war's environmental consequences with our readers. As always, we welcome reader feedback, which you can leave by commenting on texts, writing to us (editor@uwecworkgroup.info), or contacting us via social networks.

Environmental agreement for Ukraine needs reworking, say Ukrainian NGOs

The "United for Nature. Agenda for Ukraine" forum, which we wrote about in our previous review, was held on January 31. The event saw the presentation of recommendations by the High-Level Working Group on the Environmental Consequences of the War, led by Andrii Yermak, Head of the Office of the President of Ukraine, and the former Swedish foreign minister Margot Valstrem. The text is titled "An Environmental Compact for Ukraine.

A Green Future: Recommendations for Accountability and Recovery."

- Read the text in both English and Ukrainian.

The document spells out three main priorities for dealing with environmental consequences: monitoring damage and reducing risks; bringing the perpetrators to justice (through the International Criminal Court); and mobilizing the "green" reconstruction and recovery of the environment.

A total of 50 recommendations have been prioritized. Their implementation, according to representatives of the group, will not only make it possible to receive compensation for the damage caused, but will also contribute to the green recovery of Ukraine. According to experts from UWEC Work Group, the most useful of the recommendations are those related to ensuring the transparency and accessibility of environmental information, the involvement of civil society, the restoration of proper procedures for the participation of stakeholders in environmental impact assessments, etc.

As forum participants told the UWEC Work Group, the representatives of Ukrainian environmental and conservation organizations invited to the event pointed out that work on the document would have been more efficient if Ukrainian NGOs had been involved. The organizers therefore declared that they were prepared to insert amendments to some recommendations and consider more effective mechanisms for their implementation.

The first recommendation in the Environmental Compact for Ukraine is the creation of a high-level coordinating body that will collect and analyze evidence of the war's impact on the environment. If this body is open to the inclusion of civil society representatives such as Ukrainian environmental and conservation organizations, the group should be more open to adjusting and reworking both priorities and recommendations.

Visualizing the environmental consequences of Russia's war in Ukraine

It is still extremely important today to ensure that information about the environmental consequences of the war can be spread as widely and easily as possible. It tells the world that the war is not over, has not left their screens, and that its consequences will be catastrophic for the region – and possibly the whole world – for many years to come.

The most effective means of distributing information is visual media, such as infographics, time-lapse photography, etc. One such project was developed by the Polish national daily Gazeta Wyborcza in collaboration with marketing agency Top Lead.

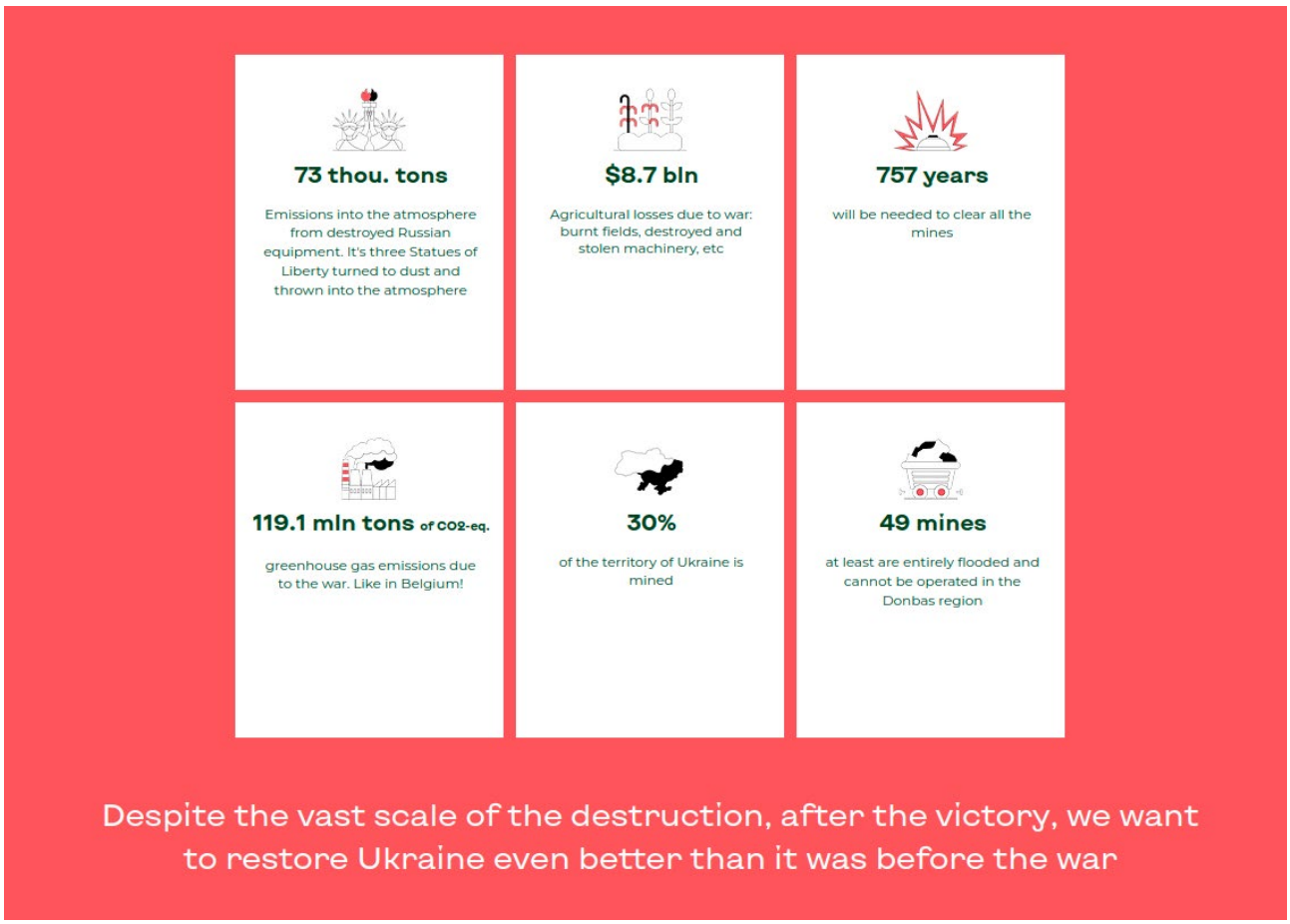

Image source: Top Lead Projects

The project is available in English and Ukrainian.

"The purpose of our research was to explain that the war poses threats not only to Ukraine where the fighting is taking place, but also to other countries and continents," explained Top Lead CEO Stanislav Shum.

The study introduces Ukraine's nature and allows the reader to draw conclusions about the environmental consequences. For example, the use of time-lapse photography allows us to see the impact of the fires caused by the war upon nature reserves, national parks, and forests.

The project is the result of a joint collaboration with the Ukrainian Ministry of Environmental Protection and Natural Resources, Ukrainian and Polish think tanks and media. However, UWEC Work Group experts drew attention to the narrow circle of those participating in the project, including the obvious lack of representation by environmental and conservation Ukrainian community organizations.

As in the case of the Environmental Compact, communication between research groups is incomplete, possibly due to the lack of a single platform that would bring together all experts, activists, and journalists working on the topic of the war's environmental consequences.

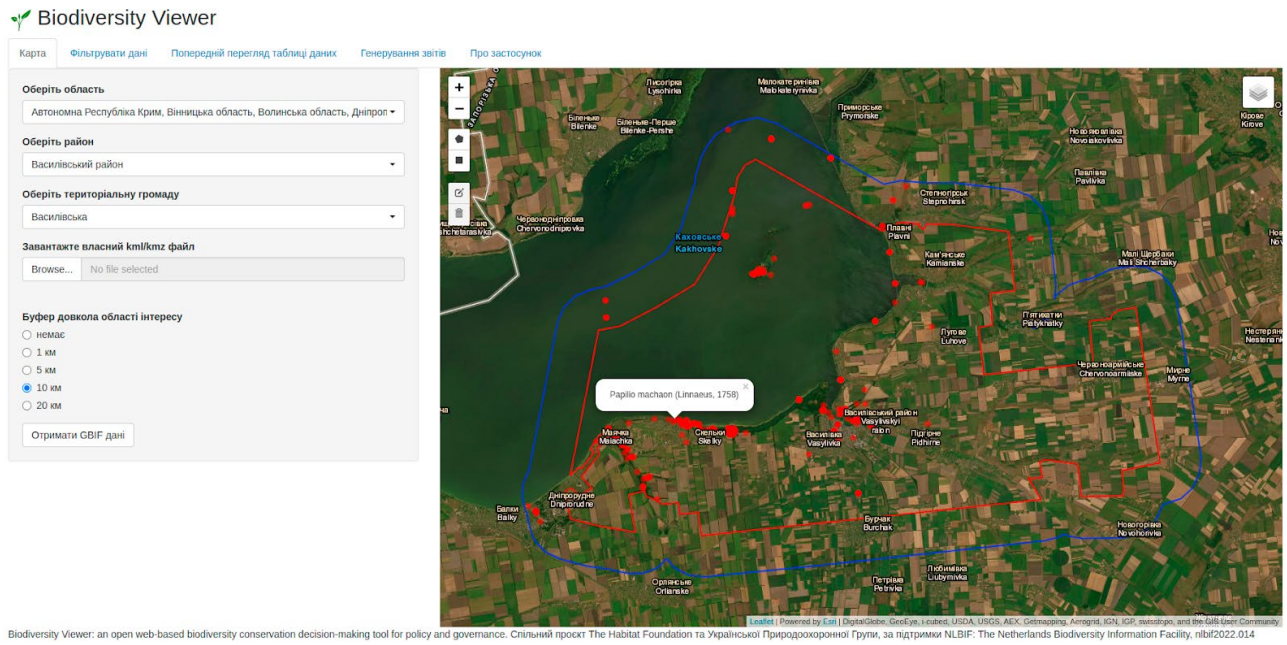

Image source: UNCG

Biodiversity Viewer: a new tool for guarding Ukraine's biodiversity

Ukrainian Nature Conservation Group has developed an app that aims to provide a wide audience with information about rare species. This will allow community participation in monitoring and observation, increasing public interest in nature and contributing to the study of biodiversity both now and during Ukraine's post-war reconstruction.

The user-friendly tool enables access to the GBIF international biodiversity database. Users will be able to obtain information about protected species in a certain area: where they have been observed; where their presence can be verified. The app will be of use to both those with a casual interest and specialists employed as staff in nature reserves and national parks. The project already contains about 2.5 million units of data.

The project was made possible with the help of Dutch partners The Habitat Foundation and the support of the Netherlands Biodiversity Information Facility (NLBIF).

You can read more about the application on the Ukrainian Nature Conservation Group's website (in Ukrainian). You can also try out the online Biodiversity Viewer.

How conservationists work in wartime: participants share their experience

Ukraine's Dim (Home) television channel recently broadcast a discussion featuring Ivan Moysiyenko, head of the botany department at Kherson State University and member of the board

of the Ukrainian Nature Conservation Group NGO, Oleksandr Khodosovtsev, a professor in the botany department at Kherson State University, and Viktor Shapoval, director of the Askania-Nova Biosphere Reserve. They explained what was happening in the reserves and protected areas under occupation or on the frontline.

For instance, Shapoval shared the details of how Askania-Nova was able to continue operating as a Ukrainian reserve for 13 months under occupation. It was only in March 2023, after the Russians created a new administration at Askania-Nova, that the director left the reserve. Even then, the reserve's technical personnel remained onsite to continue their work.

Read more about Askania-Nova:

- Askania-Nova Biosphere Reserve captured by invaders
- Fires in Askania-Nova: Consequences of military occupation of a reserve

The unique ecosystem, which includes over 2,000 plants and around 2,300 animal species, is a complex combination of natural and artificially created environments that require constant monitoring and care. The reserve is no stranger to hardship, having survived German occupation in 1941-1943 and then the loss of its leadership and best specialists during the repressions of the late Stalin era. Today the reserve is once again in danger and it will only be possible to preserve it only through the well-coordinated teamwork of a number of groups, from scientists to the military.

"Today Askania-Nova exists by inertia. The reserve's work continues thanks to the technical staff who are still in the occupied territories", said Shapoval.

Oleksandr Khodosovtsev used the example of the Kamianska Sich National Park to explain the impact of the frontline and occupation on nature reserves. Although researchers arrived in the park within three weeks of its liberation, it is not currently possible to conduct a full analysis of Kamianska Sich, since 80% of it is mined.

"The frontline passed through Kamianska Sich National Park twice – during the occupation and during the de-occupation. During the liberation, the frontline stopped right on the border of the park, which had an extremely negative impact on it," said Ivan Moysiyenko. "In addition to the construction of fortifications and mining, nature also suffered from fires resulting from exploding shells, and the movement of heavy equipment. In addition, whole mountains of garbage were left behind where Russian soldiers were billeted. Over 1,000 trees were also cut down."

Read more about the impact of fortifications on nature:

- Military fortifications in Ukraine – what comes next?

The destruction of the Kakhovka Dam also affected Kamianska Sich and other conservation areas. Soon after the explosion, an expedition was organized to analyze the consequences. However, as Oleksandr Khodosovtsev notes, most areas downstream of the dam were naturally prepared for flooding. The bed of the drained Kakhovka reservoir, where the ecosystem began to recover remarkably quickly, was therefore of particular interest.

"If in June 2023 the bed resembled a Martian landscape, then when we came in October, we saw willow thickets two to three meters high," says Ivan Moiseyenko.

According to Viktor Shapoval, rebuilding the reservoir on its former scale is not about the interest of the energy sector, but rather the issue of ensuring that sufficient water resources can be distributed to agricultural areas. However, even if the reservoir is resurrected, this does not mean that the problem will be resolved: the entire system of canals, which is rapidly deteriorating, needs restoring and upgrading. It is therefore necessary to look for another solution to the problem of supplying water to agricultural areas, one that does not involve rebuilding the Kakhovka hydroelectric station.

In addition, as Moiseyenko noted, the position on preserving the natural areas of Velykyi Luh, which were exposed after the draining of the reservoir, fully complies with the European program for the restoration of natural areas. It is quite possible that choosing not to resurrect the Kakhovka reservoir (if the agricultural issues are resolved) will allow Ukraine to move closer to achieving the European Union's climate goals.

Read more about the importance of restoring the ecosystems on the bed of the former Kakhovka reservoir:

- Is it time to restore Velykyi Luh? •

Main image: Outcrops of marl limestones near the village of Respublicanets (Kamianska Sich). Image credit: Klymenko Vitaliy

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