

SUBMERGED: Study of the Destruction of the Kakhovka Dam and Its Impacts on Ecosystems, Agrarians, Other Civilians, and International Justice

A Comprehensive Report by Truth Hounds and Project Expedite Justice



Draft cover page of the report (work in progress)

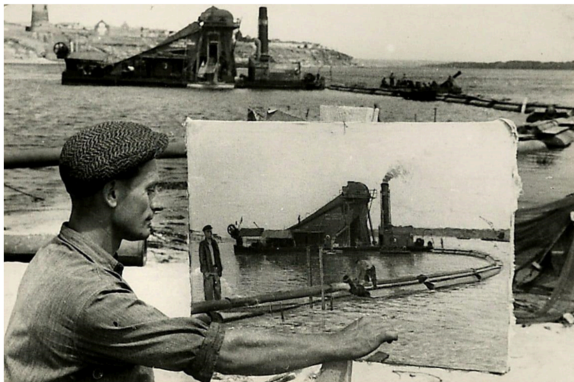
Kyiv, Ukraine – (June 6, 2024) – A year after the destruction of the Kakhovka Hydroelectric Power Plant (HPP), Project Expedite Justice (PEJ) and Truth Hounds (TH) have compiled a comprehensive report detailing the event, its causes, and its aftermath.

“SUBMERGED: Study of the Destruction of the Kakhovka Dam and Its Impacts on Ecosystems, Agrarians, Other Civilians, and International Justice” explores various aspects of the Dam's destruction. It shares:

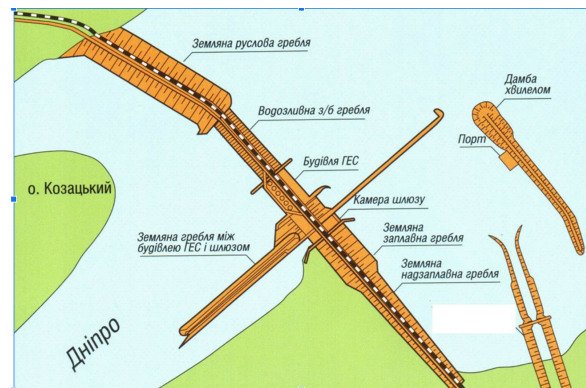
- **Evidence-based findings** on the potential war crimes committed in light of the disproportionality of the damage in comparison with the vague and minor military objectives pursued;
 - **Legal analyses** examining the possibility of holding perpetrators accountable;
 - **The consequences on the region's economy and agricultural resources** after the Dam's destruction;
 - **The environmental impact** on water resources, biodiversity, and soil health; and
 - **The human cost** of the disaster, including loss of life, displacement, and health risks.
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I. Background

The Kakhovka HPP Dam and Reservoir have played a vital role in southern Ukraine since they were built during the 1950s. The Dam provided electricity, irrigation for agriculture, and drinking water for many settlements. Additionally, the reservoir supported a rich ecosystem and was a UNESCO World Network of Biosphere Reserves site.



Ukrainian artist Albin Havdzynskyi working on one of his paintings dedicated to the construction of the Kakhovka HPP. Source: Istorychna Pravda



Kakhovka hydroelectric complex scheme.

II. Khakova Dam Destruction: Versions

The report investigates the destruction of the Kakhovka Dam in Ukraine on June 6, 2023. This unleashed a deluge that left widespread flooding and damage in its wake, both downstream and upstream. We conclude there is at least a reasonable basis to believe that the explosion was caused by the Russian Armed Forces. Evidence, including seismic data, eyewitness accounts, and satellite imagery, strongly supports the controlled explosion scenario that implicates Russia. The presence of Russian troops, prior Dam mining, and strategic water level elevation just before the Dam's destruction further corroborate this conclusion. The report attributes the Dam's immediate destruction to the 205th Separate Motor Rifle Brigade of the Russian Armed Forces. This Brigade did not act alone; we outline Russia's military chain of command and note the near-certain involvement of higher-ranking Russian officials.



Powerhouse of the Kakhovka Hydroelectric Power Plant. Photo: Nova Kakhovka Society for Protecting Cultural Heritage. Source: Bird in Flight

III. The Report's Focus

The destruction of the Kakhovka Dam serves as a stark reminder of the war's devastating consequences. It is yet another demonstration of the Russian State policy of inflicting intentional harm on civilian infrastructure, with no consideration for the possibly devastating impact on Ukraine's civilian population. The Dam's explosion caused extensive damage to the environment, and there is no evidence that those behind it took into consideration the reality of the military advantages pursued. This makes the Dam's destruction a clear violation of the principles of international humanitarian law.



Screenshot from a video uploaded to YouTube on February 24, 2022, showing evidence of Russian troops at the Kakhovka HPP since the first day of the full-scale invasion.
Source: @flackelf via Youtube

"The report's findings are crucial for understanding the incident and holding those responsible accountable. The true scope of the disaster extends far beyond the initial flooding: over 600 square kilometers [were] submerged, displacing thousands across more than 80 settlements. Homes, infrastructure, and agriculture have suffered immense damage," explains Truth Hounds Legal Counsel Volodymyr Hryshko. "The environmental consequences are equally concerning. Cultural sites in the region have also suffered. That is why the Report comprehensively examines the situation and will delve into the potential classification of the Dam's destruction as a war crime under the Rome Statute. It examines if the potential environmental damage was "excessive" compared to the military advantage expected."

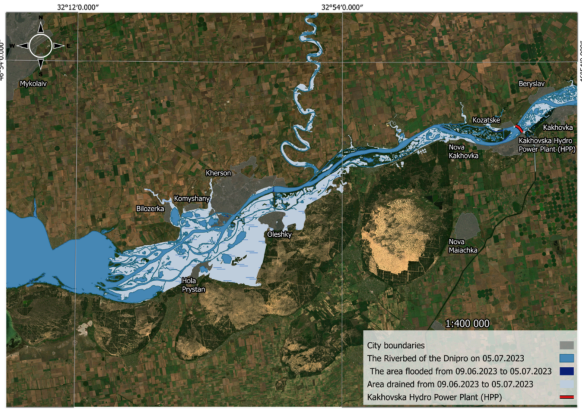
Environmental Devastation

The report details the devastating and widespread impact on the environment, including:

- Water resources: Decreased groundwater levels, contamination from debris and pollutants, and potential long-term impacts on drinking and agricultural water supplies.
- Biodiversity loss: Loss of aquatic habitats, widespread death of plant and animal life, potential destruction of protected areas, and long-term consequences for the region's ecosystems.
- Soil health: Increased wind erosion, potential salinization of downstream soils, and acute risks to agricultural productivity and human health from soil contamination.

Agricultural Consequences

The destruction of the Kakhovka Dam in Ukraine has had a severe impact on agriculture, particularly in the southern regions that rely heavily on irrigation from the Dam's reservoir. The initial flooding inundated and destroyed crops on 5,000 hectares of land, resulting in immediate losses of USD \$5.427 million. The long-term consequences are far more significant, with the disruption of irrigation systems potentially costing \$367.9 million annually for the foreseeable future. The report analyzed historical data on crop yields and irrigation use to estimate future losses.



Difference in water mask for the downstream zone (geographical scope of water movement analysis) based on the satellite image from July 5, 2023



Difference in water mask for the upstream zone (geographical scope of water movement analysis) based on the satellite image from July 5, 2023

Energy Security

The power plant played a crucial role in balancing the grid during peak hours, and its loss has significantly reduced Ukraine's renewable energy potential. This disruption threatens Ukraine's energy security and its progress towards a sustainable energy future.

In addition, the analysis commissioned by Greenpeace Central and Eastern Europe (Greenpeace CEE) and included in the report highlights how the destruction of the Dam and the consequent drainage of the Reservoir increased safety risks at the Zaporizhzhia Nuclear Power Plant (ZNPP). Greenpeace CEE also strongly condemns Rosatom, Russia's nuclear energy company, and the Russian government for their plans to restart ZNPP reactors.



Flooding in Tiahynka on the right bank of Kherson Oblast (location 7), Geosat image from June 6, 2023, resolution 0.75 m

International Precedent on Environmental War Crime

Causing severe environmental damage has a global impact. During the months prior to its actual destruction, the political and military leaders of the Russian Federation had consistently emphasized that the destruction of the Dam would lead to catastrophic consequences. They did not hide their clear understanding of the situation and of the vast devastation that its destruction would cause.

"As observed with other military operations of the Russian armed forces in Ukraine, this destruction was conducted in blatant disregard for the consequences not only on civilians and civilian infrastructure but also on the environment in general," PEJ Legal and Program Director Pascal Turlan stated. "The massive, strategic importance of the Dam and the potentially devastating consequences of its destruction were common knowledge. Yet, the Russian armed forces took the deliberate decision to attack it, without any consideration for the foreseeable disproportionate environmental damage, [and] agreed to let the catastrophe unfold."

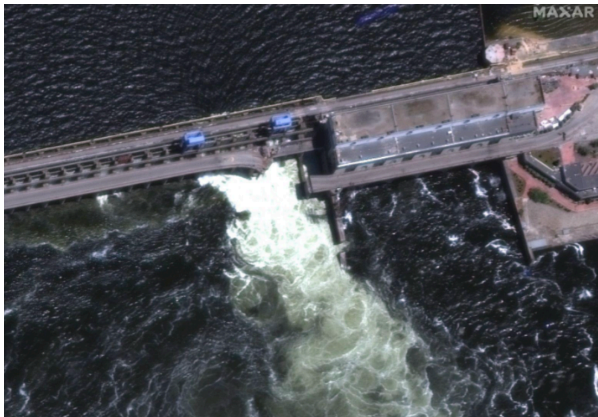
The authors of the Report have assessed all arguments for qualifying the destruction of the Kakhovka Dam as a war crime in light of the excessive damage to the environment it entailed. By examining this specific case, this research offers a foundation for the International Criminal Court's first use of **Article 8(2)(b)(iv) of the Rome Statute**. Significantly, it also contributes to the development of international practices for addressing environmental crimes through existing criminal law.

Article 8(2)(b)(iv) of the Rome Statute:

For the purpose of this Statute, “war crimes” means:

(...) Intentionally launching an attack in the knowledge that such attack will cause incidental loss of life or injury to civilians or damage to civilian objects or widespread, long-term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated.

“Overall, this comprehensive report will serve as a crucial resource for understanding the full scope of the Kakhovka Dam destruction by Russian troops and its lasting global impact,” **TH Legal Director and PEJ adviser Dmytro Koval** remarked. “The Kakhovka Dam case is a catalyst for revitalizing environmental law. It presents a pivotal opportunity to transform dormant international law norms into active deterrents against environmental crimes. Let’s collaborate to strengthen environmental law’s effectiveness, expanding its scope, enhancing enforcement, and promoting universal adherence.”



Kakhovka Dam on June 5, 2023. Source: @evanhill via X



Screenshots from a video recorded by a Russian soldier with a thermal imager. Source: @okspn via Telegram

Contributions

- **Truth Hounds** – authors, contributors, and field researchers
- **Project Expedite Justice** – authors, contributors, field researchers, and editing
- **Greenpeace CEE** – research and analysis of impacts on Zaporizhzhia Nuclear Power Plant
- **EOS Data Analytics (EOSDA)** – satellite imagery analysis and visualization, flooding report
- **Independent experts** – impacts on flora and fauna, water resources, agriculture, culture

Reference

Ukrainian non-governmental organization (NGO) Truth Hounds has been documenting and investigating war crimes and human rights abuses in Ukraine and other countries since 2014. Its mission is to find the truth, prosecute those responsible for war crimes, and share expertise in the field of international humanitarian law.

Project Expedite Justice is a non-profit organization based in the United States. Its core mission is to bring justice to conflict-affected communities, including those impacted by genocide, war crimes, and crimes against humanity. Since April 2022, PEJ has worked to ensure accountability for communities affected by the Russian invasion. We document international crimes and harms throughout Ukraine. Our efforts have included providing custom expert- and technical-based support, direct investigative activities, information collection, and preparation of legal analysis packages for judicial stakeholders.