

# SUB MER GED

The Destruction of the  
Kakhovka Dam During Russia's  
Full-Scale Invasion in Ukraine

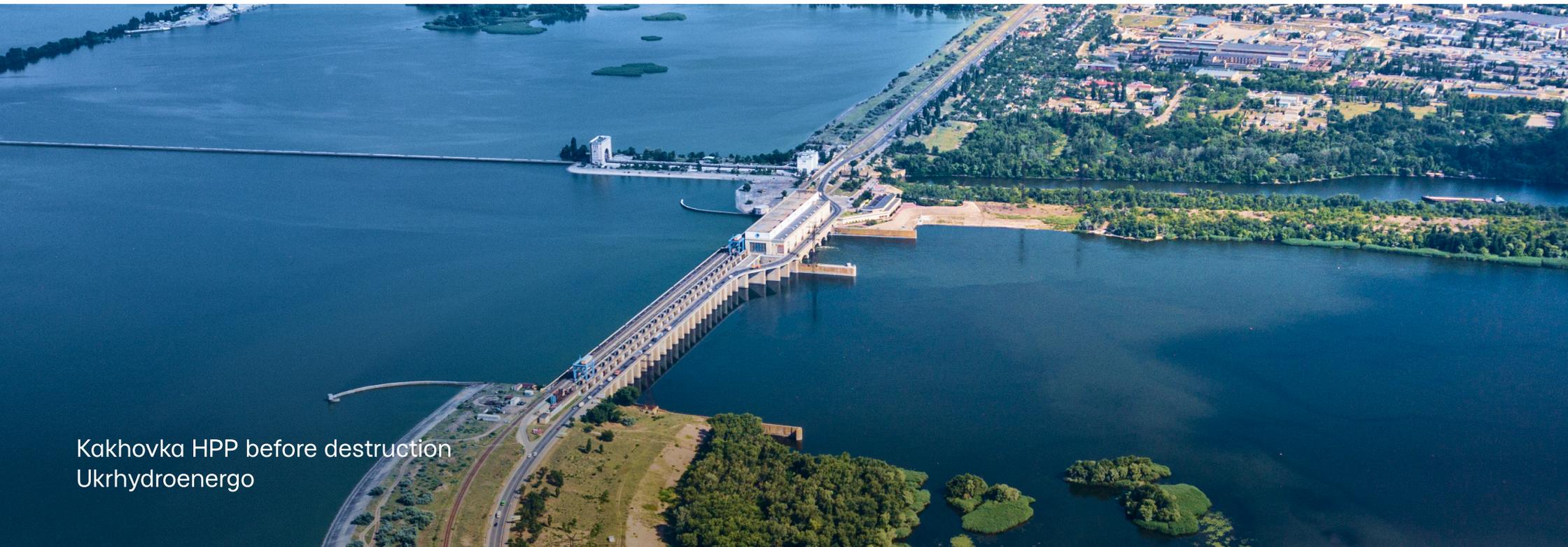
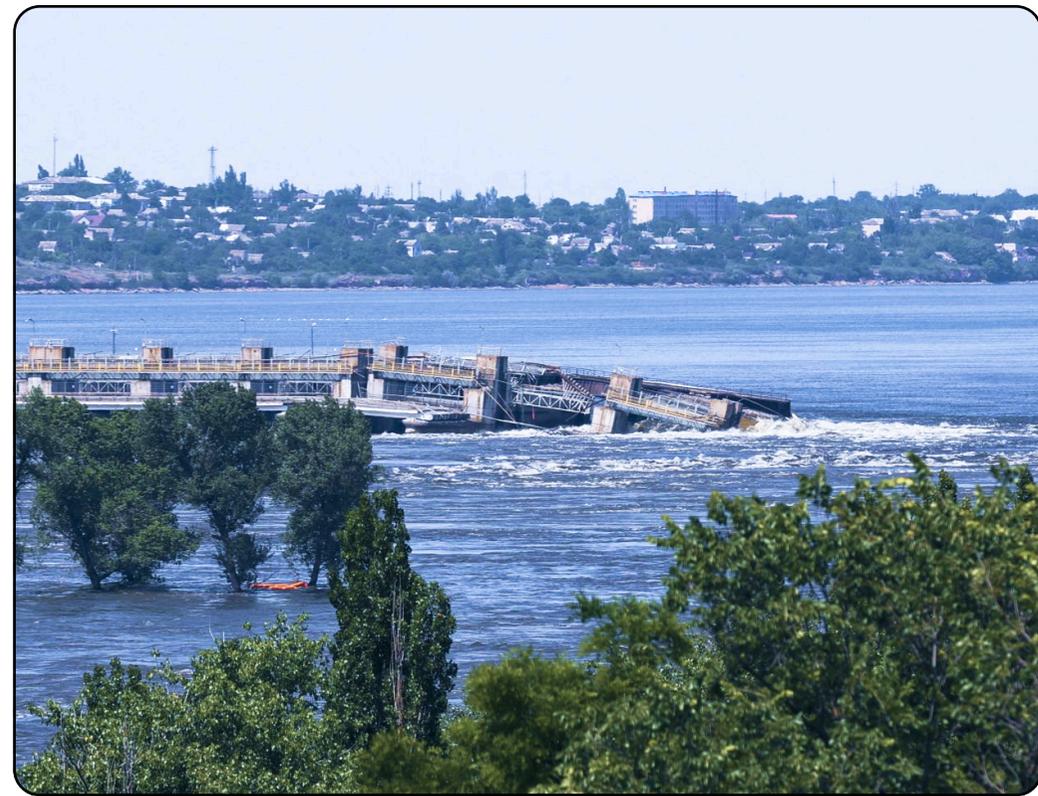
## ABOUT THE PICTURE

The white dove is the art of Polina Raïko from Oleshky, Kherson Oblast. Her house, a folk art masterpiece decorated with her paintings inside and out, was flooded and largely destroyed as a result of the Kakhovka Dam explosion.

# On June 6, 2023

**THE RUSSIAN MILITARY DESTROYED THE KAKHOVKA HPP DAM, CAUSING A MASSIVE FLOOD AND ENVIRONMENTAL DISASTER.**

It was one of the largest hydraulic structures in Europe and its reservoir was the largest in Ukraine. The Kakhovka HPP supplied water and irrigated agricultural land, and its destruction caused huge losses.

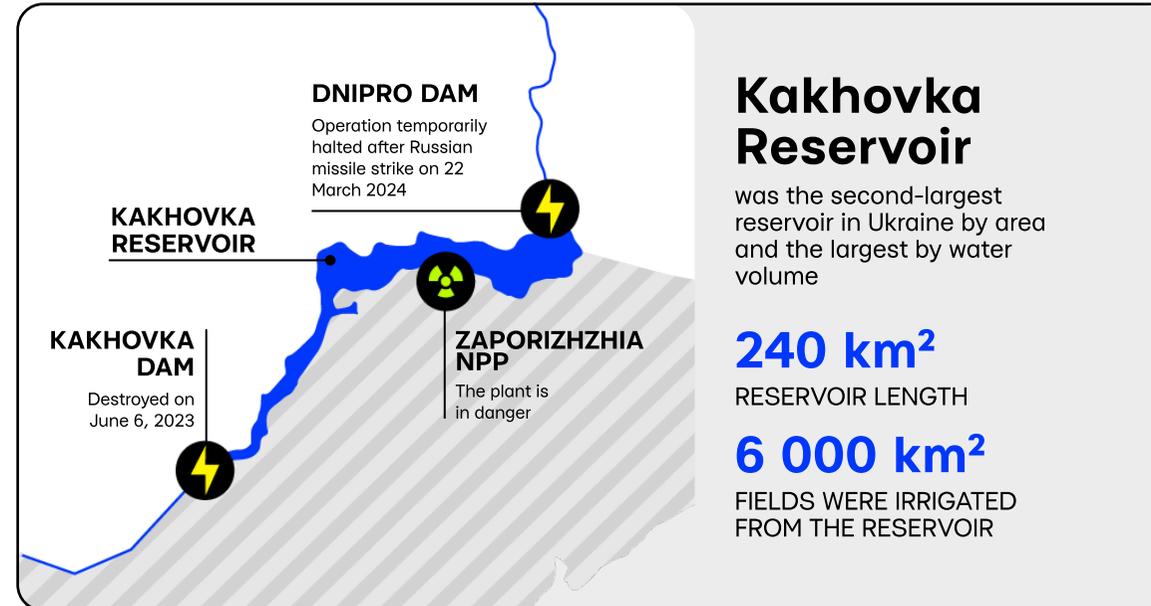


Kakhovka HPP before destruction  
Ukrhydroenergo

# Importance of the Kakhovka Dam & Reservoir

The Kakhovka Dam and Reservoir were critical to southern Ukraine for generation electricity, providing water supply, and irrigating agricultural lands. They played a key role in supporting the region's economy, agricultural sector and energy stability. The destruction of the dam caused an environmental disaster, widespread flooding and a water supply crisis.

The Kakhovka Dam held **18 km<sup>3</sup>** of water, equivalent to:



The reservoir supplied water to the cooling pool at Europe's largest nuclear power plant, the **Zaporizhzhia NPP**



A satellite image showing the Kakhovka Dam in Ukraine, which has collapsed. The image captures a large, turbulent flow of muddy water cascading down a steep, rocky embankment. The dam structure is visible as a long, narrow concrete barrier, with a significant section having failed, creating a breach. The surrounding terrain is rugged and appears to be a mix of natural rock formations and some man-made structures. The water's color is a dark, murky brown, indicating a high concentration of sediment.

**\$11 billion dollars\***

IN LOSSES FROM THE DESTRUCTION  
OF THE KAKHOVKA DAM

A satellite image shows the collapsed dam on Tuesday, June 6  
Handout/Planet Labs PBC/Reuters

\* According to the Government of Ukraine and United Nations  
Needs Assessment Report on the Kakhovka Dam Disaster.

# Total area of flooding

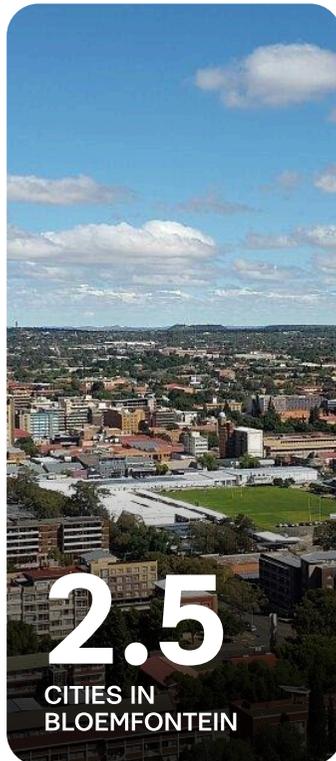
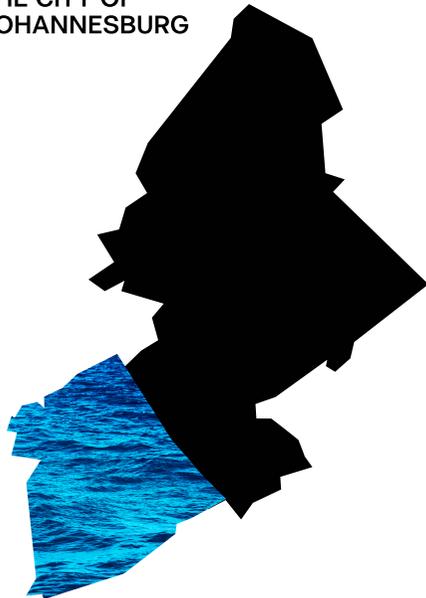
The destruction of the Kakhovka Dam caused significant human losses on both banks of the Dnipro River. The disaster completely changed the lives of the victims and their families. The large number of missing persons is a constant reminder of how difficult it is to fully assess the extent of this tragic event.

On 9 June 2023, **600 km<sup>2</sup> of land** was flooded due to the destruction of the Kakhovka Dam.

This is equivalent to:

## 36.5%

OF THE AREA OF  
THE CITY OF  
JOHANNESBURG



2.5  
CITIES IN  
BLOEMFONTEIN

## 139%

OF THE AREA OF THE  
CITY OF GQEBERHA



The contamination of flood waters and wells with pathogens, dead bodies, landfill waste, and sewage, combined with massive fish kills, increased the risk of food poisoning and outbreaks of enteric and infectious diseases.



### 148 000 tons

OF WATER BROUGHT TO THE  
AFFECTED AREA



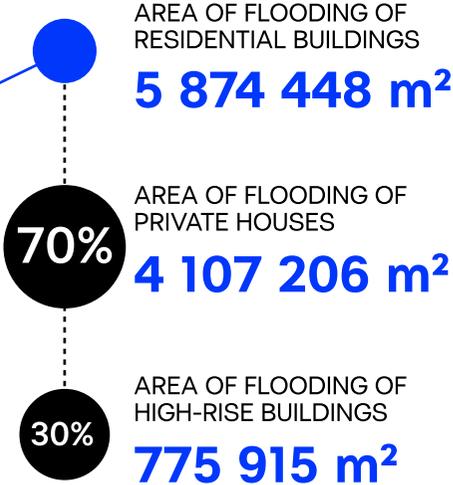
### 237 000 tablets

USED TO DISINFECT DRINKING WATER  
WERE DISTRIBUTED TO LOCAL RESIDENTS

# The area of flooded buildings

The destruction of the Kakhovka Dam caused a flash flood that destroyed and endangered the lives of nearby communities. The consequences for people are not limited to death and disease, but also to the destruction of tens of thousands of homes that were the life's work of many residents.

An estimated **60 509 buildings** were flooded with a total flooded area **8 588 175 m<sup>2</sup>**



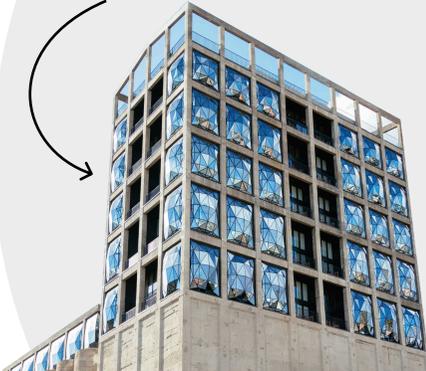
**133 928 m<sup>2</sup>**  
TERRITORIES OF EDUCATIONAL INSTITUTIONS WERE FLOODED, INCLUDING 44 SCHOOLS



**45 302 m<sup>2</sup>**  
TERRITORIES OF MEDICAL INSTITUTIONS WERE FLOODED

The water released after the destruction of the dam flooded an area comparable to

- 114** CARLTON CENTER BUILDINGS, OR
- 1 431** ZEITZ MUSEUM OF CONTEMPORARY ART BUILDINGS



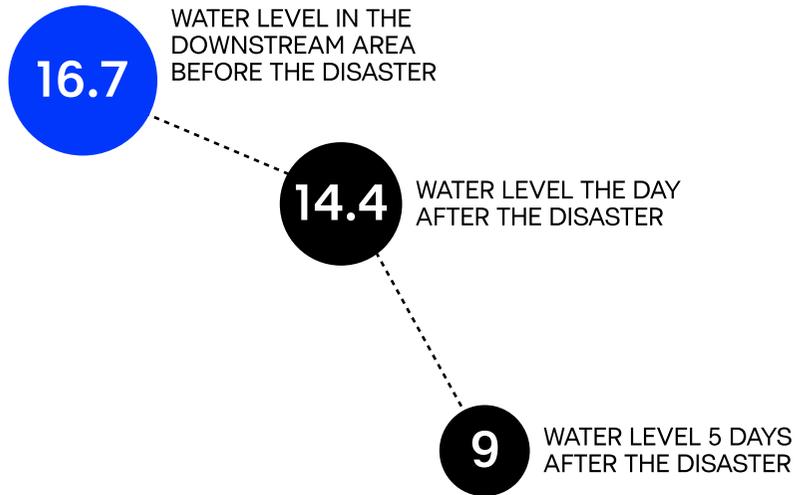
**\$1,101 million**  
DAMAGE TO THE RESIDENTIAL SECTOR



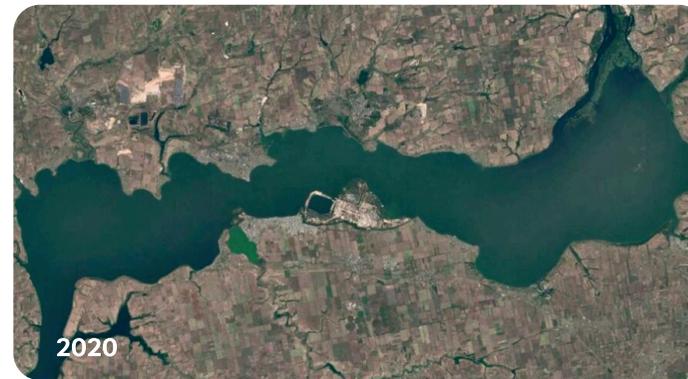
**\$66,6 million**  
LOSSES TO THE RESIDENTIAL SECTOR

# Draining of the Kakhovka Reservoir

By the end of June 2023, the Kakhovka reservoir had dried up, along with its network of distribution canals. As a result, the Kakhovka Reservoir lost its status as a reservoir, and the original Dnipro River network was restored in its place.



More than **1 700 km<sup>2</sup>** of the **2 155 km<sup>2</sup>** total reservoir area will have been drained



**81.6%**

OF THE WATER WAS LOST IN THE FIRST FOUR DAYS AFTER THE DAM WAS DAMAGED

**12.7%**

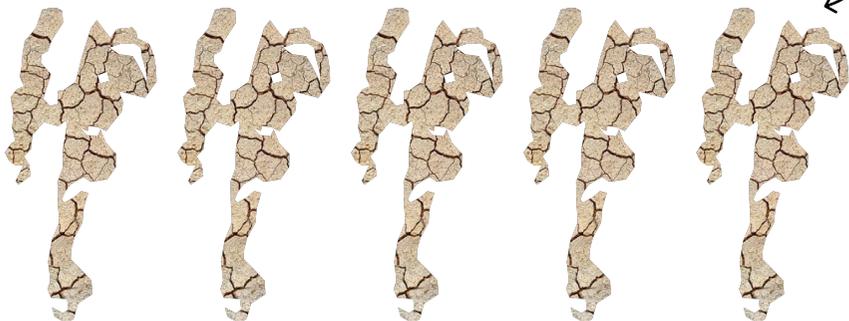
OF THE RESERVOIR'S ORIGINAL SURFACE AREA REMAINED UNDER WATER



**584 000 ha**

TOTAL AREA OF IRRIGATION SYSTEMS AND LIVESTOCK SECTOR SUPPLIED BY THE RESERVOIR

Drained area of the reservoir is comparable to **5 lakes of St. Lucia**, the largest lake in South Africa



**\$182 million annually**

INDIRECT INCOME LOSSES FOR CROP PRODUCTION



**\$25 million**

LOSSES FROM THE DESTRUCTION OF CROPS, LIVESTOCK AND FISH

An aerial photograph showing a residential neighborhood in Kherson, Ukraine, completely inundated with floodwater. The water is dark and murky, reaching the roofs of many houses. In the center, a small blue inflatable boat with several people inside is moving through the water, leaving a white wake. The houses are mostly two-story buildings with tiled roofs. Some trees and utility poles are visible above the water level. The overall scene depicts a severe flooding disaster.

**16 000 people**

**WERE IN THE DISASTER  
ZONE**

**80 settlements**

**WERE FLOODED**

**1 million people**

**LOST ACCESS TO  
DRINKING WATER**

Ukrainian servicemen ride by boat through a flooded neighborhood in Kherson on June 8  
Evgeniy Maloletka/AP

# Protected areas

The decades-long existence of the Kakhovka Dam has created a number of unique ecosystems in the region, including rare species. A significant part of the ecosystem has been destroyed, while another part will take decades to recover.

**2 050 km<sup>2</sup>**

PROTECTED AREAS AFFECTED BY FLOODING

**23**

PROTECTED OBJECTS WERE DAMAGED



**\$0.65 million**

IN ENVIRONMENTAL DAMAGES

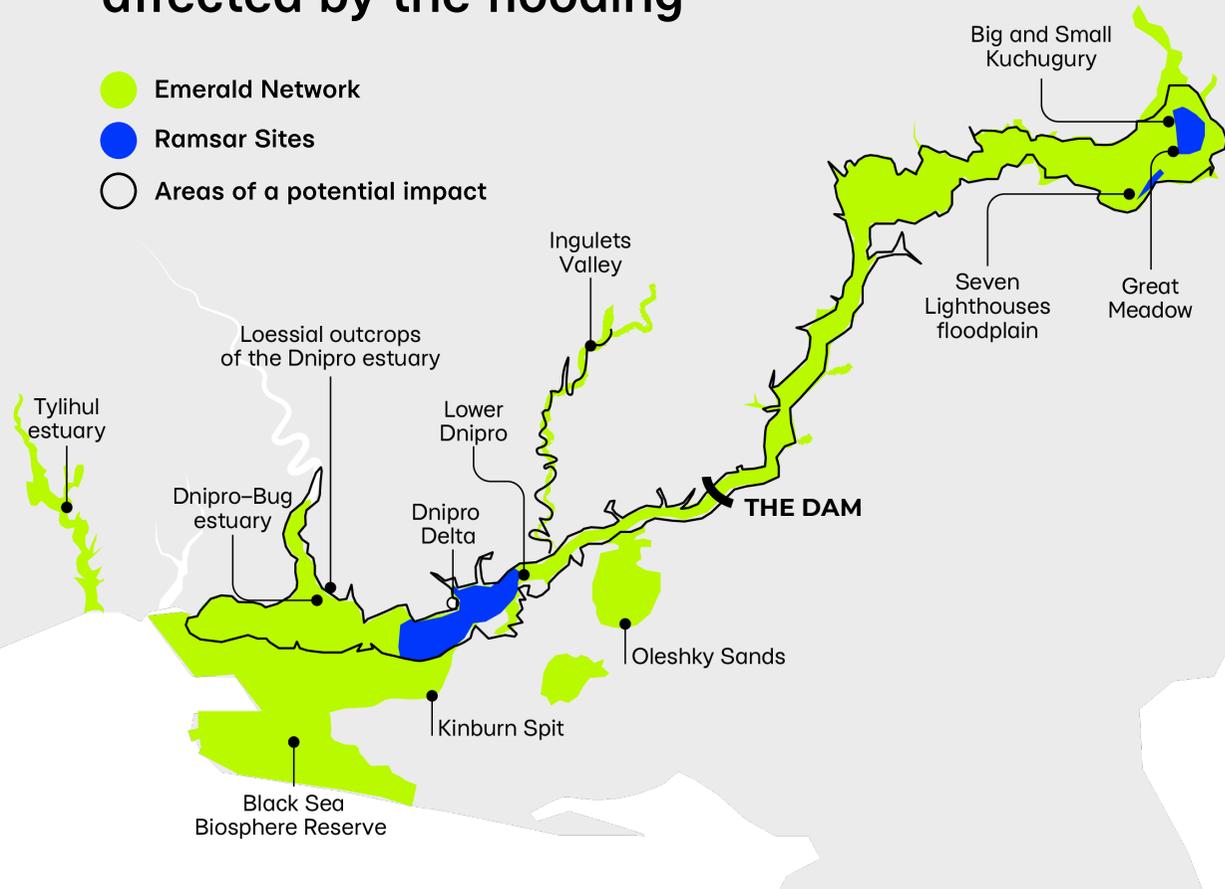


**\$6.4 million**

IN ENVIRONMENTAL LOSSES

## Some of the protected facilities affected by the flooding

- Emerald Network
- Ramsar Sites
- Areas of a potential impact



### Vipera Renardi

PROTECTED BY THE BERN CONVENTION



### Nordmann's Birch Mouse

70% OF THE GLOBAL POPULATION HAS GONE UNDERWATER



### Sea Pikeperch

THE ENDEMIC POPULATION, PROBABLY ALMOST ENTIRELY EXTINCT



**The Kakhovka Reservoir was an important part of the birds' migration route.** A sudden change in the landscape that had served as a landmark for the birds for half a century could lead to disorientation during their flights.





**11 388 tons  
of fish**

**DIED AFTER DRAINING THE  
KAKHOVKA RESERVOIR**

**50 species  
of birds**

**NESTED IN THE AFFECTED  
AREAS, MOST OF THEM WERE  
RARE**

Experts predict the possible extinction of several bird species in this area, including yellow heron, red heron, and great egret.



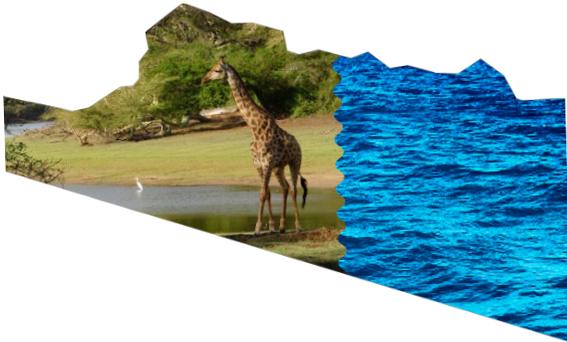
# Consequences of the destruction

Following the explosion of the Kakhovka Dam, a massive surge of water swept down the Dnipro River toward the Black Sea, flooding everything in its path and carrying hazardous materials from minefields, cemeteries, industrial facilities, and other sites.

The destruction of the Kakhovka Dam covered **50 km<sup>2</sup> of crop fields.**  
This is equivalent to:

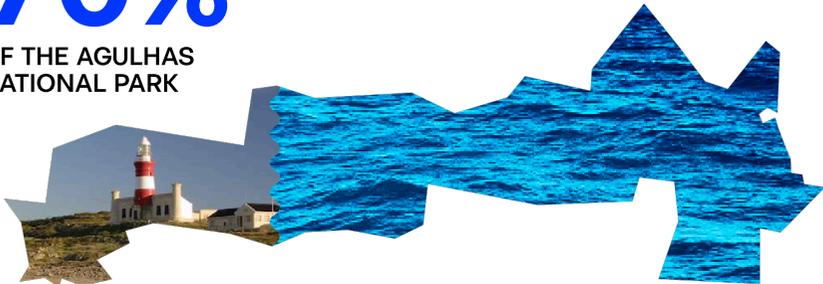
**50%**

OF THE NDUMO GAME RESERVE, OR



**70%**

OF THE AGULHAS NATIONAL PARK



**\$367 million annually**

LOSSES DUE TO DISRUPTION OF THE IRRIGATION SYSTEM



**\$5.4 million**

LOSSES FOR THE AGRICULTURAL SECTOR



Some consequences of contamination due to the Dam destruction



Flooded Oleshky Wastewater Treatment Station, Kherson Region

**6.6 times**

EXCEEDANCE FOR THE CONCENTRATION OF OIL PRODUCTS IN THE BLACK SEA

**2,9 mln m<sup>3</sup>**

ESTIMATED VOLUME OF FLUSHED WASTE

**54 facilities**

that could be sources of contamination were flooded (pharmaceutical & chemical industries, wastewater treatment plants, oil depots, etc.)



Oil slicks on the water in a flooded area of Kherson

**465 tons**

OF TRANSFORMER OIL FROM THE KAKHOVKA HPP SPILLED INTO THE WATER

**3 minefields**

IN THE MYKOLAIV REGION ARE FLOODED



**78 historical and archaeological sites,**

**AS WELL AS MONUMENTAL AND ARTISTIC STRUCTURES, WERE FLOODED**

**IN PARTICULAR, THE HOUSE-MUSEUM OF UKRAINIAN ARTIST POLINA RAIKO WAS SEVERELY DAMAGED**

Without any artistic training, at the age of 69, Polina Raiko began to paint her own house, gates and fences, depicting her life, family, animals and nature. The paintings on the walls of her house were her only artistic heritage, and they were destroyed by an artificial flood.

The information is based on the report by Truth Hounds and the Project Expedite Justice

# SUBMERGED

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



in English



in French



## **TRUTH HOUNDS**

A Ukrainian non-governmental organization that began working in 2014. Its team of human rights professionals documents and investigates international crimes and human rights violations. Truth Hounds' focus is Ukraine and other conflict-affected regions of Eastern Europe, the Caucasus, and Central Asia.

### **CORE MISSION**

Find the truth, prosecute those responsible for war crimes, and share expertise.

[info@truth-hounds.org](mailto:info@truth-hounds.org)

fb / inst / x / linkedin: truth hounds



An international non-profit organization based in the United States. First established in 2016, PEJ launched a program in Ukraine in April 2022 to provide justice for communities affected by the Russian invasion.

### **CORE MISSION**

Bring justice to conflict-affected communities, including those impacted by genocide, war crimes, and crimes against humanity, and identify the most suitable paths to redress.

[info@projectexpeditejustice.org](mailto:info@projectexpeditejustice.org)

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