EXPLORING PATHWAYS FOR RESTORATION OF LOWER DNIPRO RIVER ECOSYSTEMS, UKRAINE, AFTER BLASTING OF KAKHOVKA DAM IN 2023

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Ukraine War Environmental Consequences Work Group

Ukrainian Nature Conservation Group

(UNCG) is a Ukrainian organization of professional biologists who combine their potential to preserve biodiversity and nature reserves and implement European environmental legislation in Ukraine

https://uncg.org.ua/

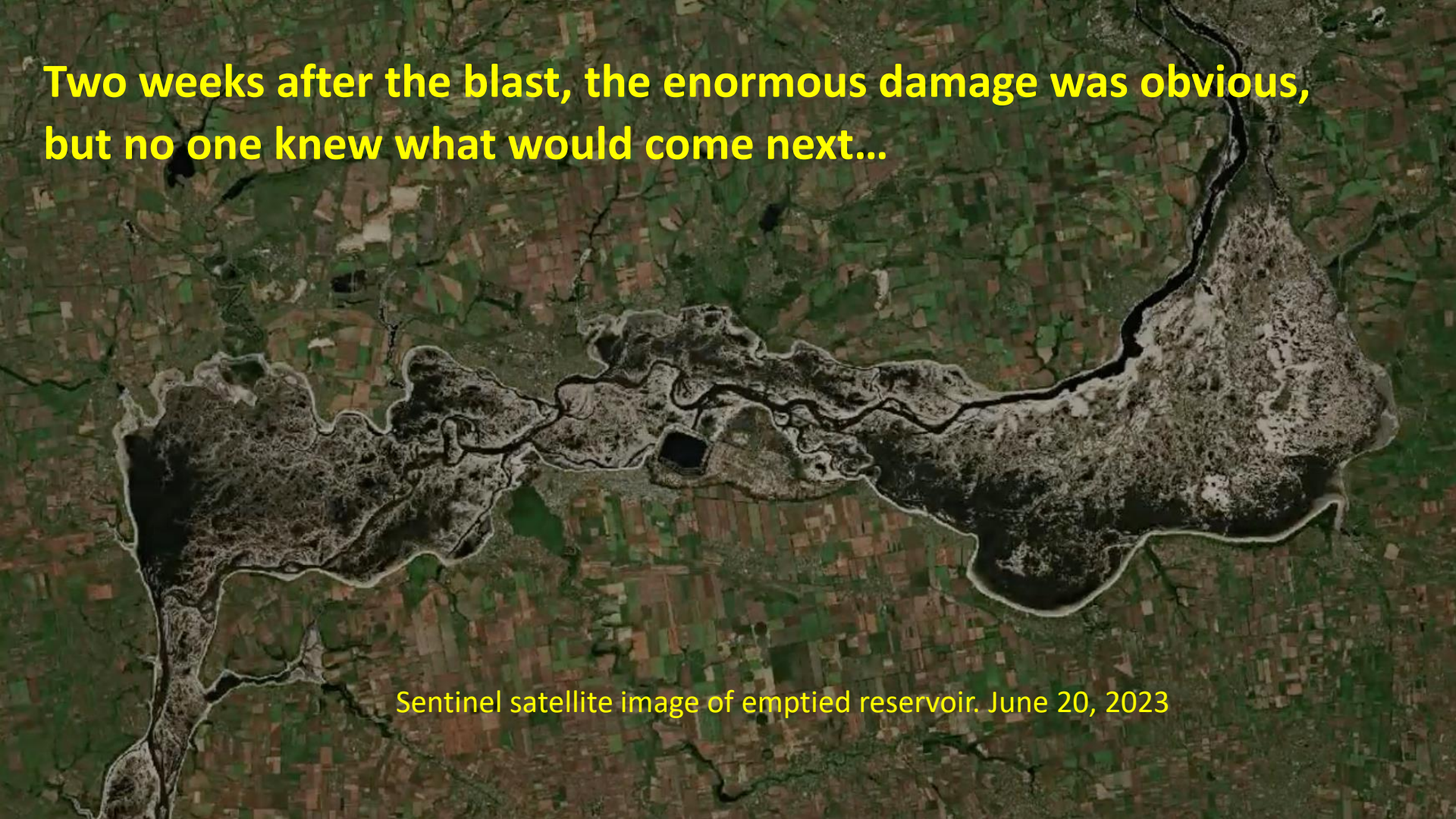
Ukraine War Environmental Consequences Work Group

UWEC Work Group is an independent environmental media that launched in May 2022. Its mission is to verify and analyze the direct and indirect environmental consequences of Russia's war in Ukraine, educate a multi-stakeholder audience, and evaluate and advocate in support of environmentally-sustainable "green" solutions.

https://uwecworkgroup.info/

Analysing diverse consequences of the destruction of the Kakhovka dam and the resulting environmental change on reservoir's bottom and downstream of destroyed dam

Two weeks after the blast, the enormous damage was obvious, but no one knew what would come next…



Sentinel satellite image of emptied reservoir. June 20, 2023

“RECOVERY” AFTER THE BLAST. RESTORING WHAT?

“Ukrhydroenergo” – the company-owner of Kakhovka and 5 more dams upstream — is considering only one future scenario – rebuilding, with a new larger hydropower plant. It is actively mobilising allies from European corporations and development banks.

The occupying Russian authorities on the Dnipro’s left bank also insist on the dam’s swift restoration. They need the reservoir’s water to supply occupied Crimea.

The government of Ukraine, which now controls only the right bank (left being occupied by the enemy), has so far made three decisions:

- To use state funds to develop an engineering design for future dam restoration after the war;
- To design and build new water supply systems for each city, independent of the Kakhovka dam;
- To enact a 15-year prohibition on the transfer lands in the reservoir’s former bed for other uses (e.g. agriculture). Ukraine’s parliament is also working on a new law that would allow establishing protected areas there.

We are exploring the feasibility of restoration of Lower Dnipro ecosystems and plan coordinated activities in the research community and civil society which would help to safeguard and enhance ecosystem self-restoration, a process now actively progressing.

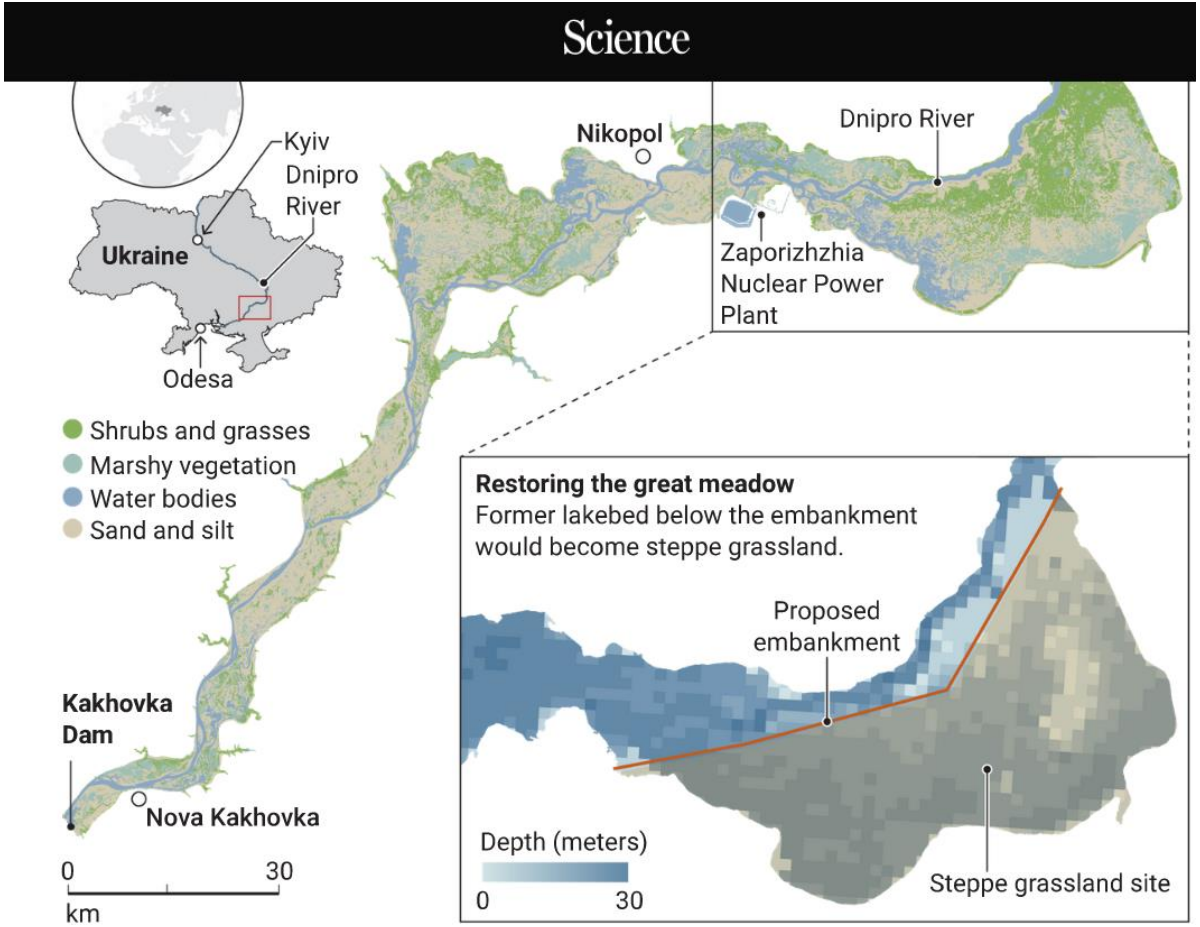
“BUILD BACK BETTER (DAM) COMPROMISE”

Many agencies and interest groups have proposed a number of “restoration” visions in place of the reservoir.

These experts call for more efficient use of land and water resources, rather than nature conservation.

One plan proposes to use a dyke to divide deep and shallow parts of the reservoir. It is disguised as a proposal to restore the “steppe meadow” without actual floodplain restoration. Others bluntly envision a dyke to use the shallow area for fish-farming or drained for agriculture.

Map source: Laid to waste. Science. 5 Jan.2024 DOI: 10.1126/science.adn7986



HOPES FOR A “WIN-WIN” REVIVAL

We are exploring alternative means to satisfy the socio-economic needs fulfilled by the former reservoir while considering the war’s effects, climate change, and advances in land and water management.

The ongoing war renders any immediate steps to rebuild the reservoir impossible. The most optimistic forecast of its completion is “6-7 years after the war”.

Pressing needs of population and economy necessitate expediting alternative solutions to war-time social and economic problems. For instance, water supply to all key cities is being rapidly built from other water sources, and its water quality is far better than it was from the shallow Kakhovka Reservoir. Vulnerability of large power plants to rocket fire spurs development of alternative power sources: decentralized solar and wind farms. Destruction of the obsolete reservoir even in times of war gives Ukraine a chance to modernize infrastructure and land use.

Those trends and widespread criticisms of dam rebuilding plans are helping society to realize that Lower Dnipro ecosystems’ revival may be a more sustainable and realistic alternative, especially considering war-time constraints. As conservationists, we believe that time is on our side.

IN SEARCH OF A RESTORATION BASELINE

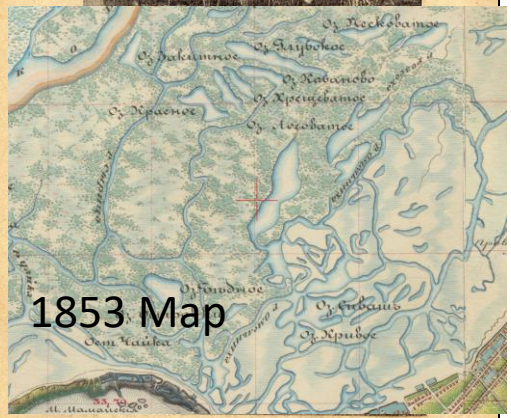


Фото 23. Зарості Butomus коло Селевеня

Протока між Виноградним о-вом і правим берегом Дніпра — досить широка і в верхній частині о-ва досягала майже 0,5 км завширшки; в нижній частині вона звужувалась. Протока засмічена камінням, і течія води швидка. Біля лівого берега Дніпра, відокремлений від нього прото-

Analysis of past biodiversity and land-use information to develop a baseline for assessing restoration progress and planning enhancement measures

Analysis of early 1950s data of 2000 km2 of pre-inundation land-cover:

- **Tree and shrub complex 20%**
- **Meadows 15%**
- **Psammophyte complex 15%**
- **Sandy spits and ridges 2%**
- **Wetlands 34%**
- **Clay cliffs, rocks 1%**
- **Water surface 13%**

However, these proportions were likely typical from 1930 to 1959 when Soviet collective farms started using large machinery for haying.

EVOLVING LANDSCAPE

We assume that, before the rise of industrial livestock breeding and use of floodplains for pastures and hay production, forested areas occupied larger parts of the Dnipro floodplain.

The ecosystem dominated by native tree species (mainly Salix spp.) is actively recovering now. In the changing climate, these floodplains are likely the only place in southern Ukraine where large-scale forest restoration remains possible.

We seek help from European experts to assess the carbon sequestration potential of the ongoing self-restoration process.

1943 Aerial Photo

HOW TO FORECAST FURTHER CHANGES IN ECOSYSTEMS?

Kakhovka Reservoir bottom three months apart: June 30 -October 19, 2023 (by O. Khodosovtsev)

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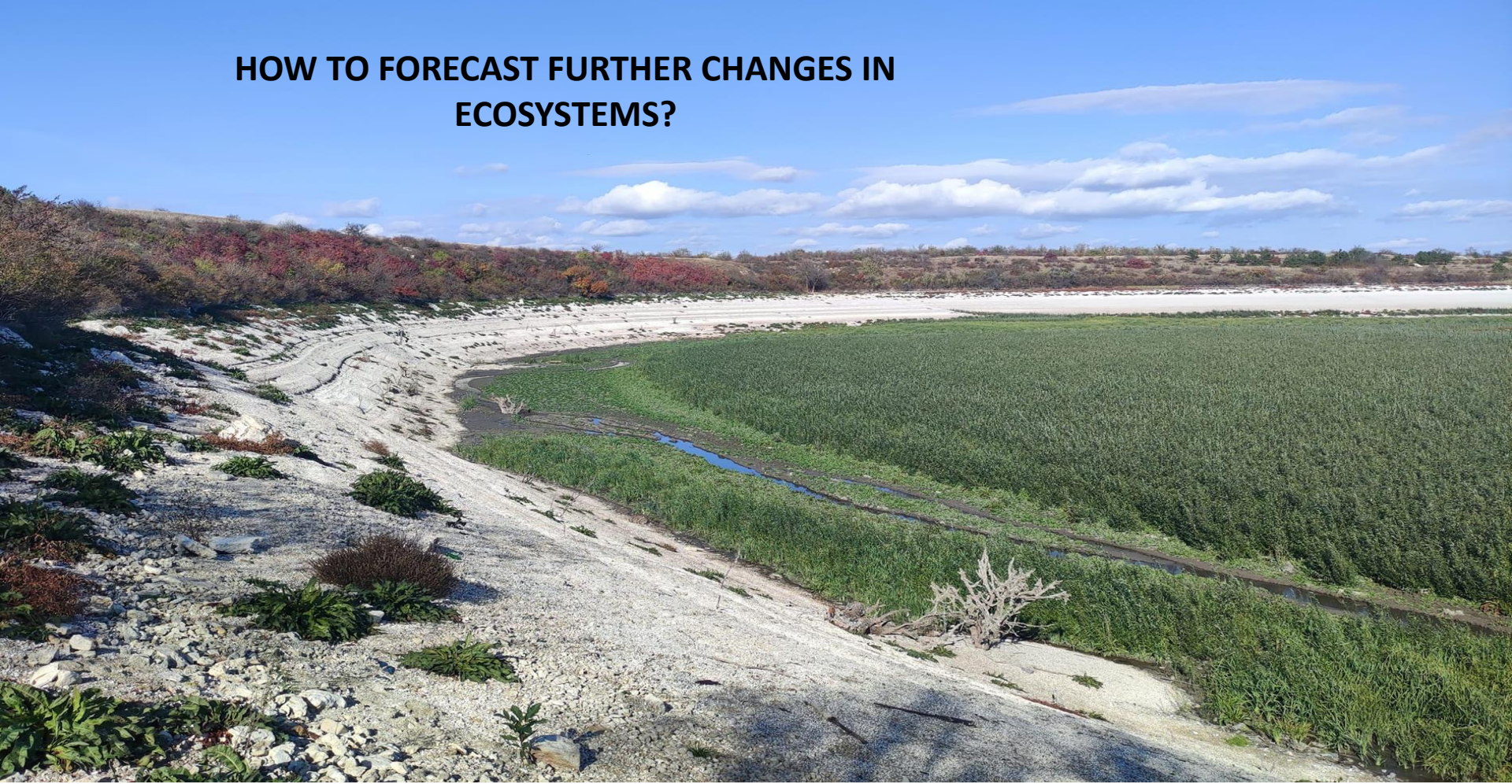

Kakhovka Reservoir bottom three months apart: June 30 -October 19, 2023 (by O. Khodosovtsev)

MONITORING THE ECOSYSTEM REVIVAL

Monitor and predict self-restoration of biodiversity: recolonization by native and invasive plants, changes in fish and bird migration and species composition, restoration of hydro-morphological processes

Photo above: Danube sturgeons caught by poachers upstream of former Kakhovka dam in Zaporizhzhia in May 2024.

Three weeks after the dam's destruction UNCG's geobotanist team established the first vegetation monitoring plots at reservoir bottom. As of the August 2024 they have conducted three expeditions to the area.

Plant species diversity is increasing, while the share of invasive species (23% in July 2023) is decreasing.

It remains unsafe to conduct animal surveys. However, a return of migratory sturgeons to the upper part of former reservoir was documented in May 2023 by gov't fishing Inspectors.

Photo Olena Kravchenko

Photo Liubov Borsukevich

HOW TO SECURE FLOODS TO ENSURE ECOSYSTEM HEALTH ?

Design and implementation of environmental flow releases from upstream reservoirs to sustain downstream floodplain ecosystems

It is not only forests that are recovering, but also wetlands, beaches, sand dunes, etc. All elements of the Lower Dnipro floodplain, however, depend on a natural flow regime.

With five upstream dams forming the Dnipro hydropower cascade, this recovery requires designing and negotiating environmental flow regimes.

UWEC started a dialogue with EBRD, one bank financing dam modernization, but we need the support of European NGOs and experts to ensure that sufficient environmental flow provisions are designed and implemented.

ENLISTING PUBLIC SUPPORT AND PERSUADING DECISION-MAKERS

Informing public opinion to influence policies supporting ecosystem restoration

Fourteen Ukrainian civil society organizations have united into a coalition they named Kakhovka Platform. Their aim is to develop models for integrated solutions for the recovery of areas affected by the dam's destruction. On the first anniversary of that event, the civil society's communication efforts have yielded results: mass media and society at large sees the lush floodplain ecosystem regrowth as rare good news in the midst of war.

The high-level International Panel on the War's Environmental Consequences suggested in its "**Green Compact for Ukraine**" report, that options other than rebuilding the old dam should be considered, together with broad public participation and independent assessments.

However, in the long term this is not victory but only the first step in securing Lower Dnipro ecosystems' preservation. We need to map all actors with whom conservationists should communicate to gain support from key Ukrainian stakeholders and decision-makers.
Success also depends on gaining support from European partners assisting in Ukraine's rebuilding and accession to the EU.

See the floodplain revival video HERE

OPPORTUNITIES FOR EUROPEAN INTEGRATION

Accession to the EU has important conservation dimensions.

The Bern Convention on the Conservation of European Wildlife and Natural Habitats stipulates that the total area of (natural) ecosystems be increased to 30% of all land on the continent by 2030. Ukraine has great potential to contribute to this goal.

In Europe, practical achievement of these objectives was to be facilitated by the EU Nature Restoration Law, agreed upon on 27 February 2024. According to the law, EU member states will introduce effective measures for nature restoration with the goal of collectively restoring at least 20% of land areas and at least 20% of sea areas by 2030, as well as restoring 25,000 kilometers of European rivers previously fragmented by dams.

We need help from European colleagues to justify and support restoration of Lower Dnipro ecosystems through interpretation of laws and programs in the context of Ukraine's accession to EU.

LARGEST FRESHWATER RESTORATION OPPORTUNITY IN EUROPE

Restoration of natural ecosystems along the 250-kilometer Dnipro River may become the largest freshwater restoration project ever carried out in Europe. It has the potential to serve a decisive contribution by Ukraine to the EU's commitment to restore rivers to their natural condition by 2030.

JOIN OUR EFFORTS FOR THE RESTORATION OF LOWER DNIPRO ECOSYSTEMS!

READ MORE HERE :

Photo by Vincent Mundi, 2024

After the deluge: One year on, can the ecosystems disrupted by the destruction of the Kakhovka Dam recover?

June 3, 2024 1 Comment