



**Information**  
**on the results of the international webinar**  
**“Assessment of ecosystem services of river basins - an opportunity to assess the true impact of hydropower on the environment”, held in Chisinau in connection with the completion of the project “Impact of hydropower on river ecosystems and ecosystem services - some results of an international project implemented within the framework of the regranting scheme of the Civil Society Forum in the Eastern Partnership of the European Union”**

**Chisinau, 13 January 2021**

The project “Ecosystem Services and Hydropower: piloting the European instruments in river basins of the Eastern Partnership countries” focuses on the possibilities of identifying, mapping and assessing natural ecosystems and their services, as well as their application in environmental assessments of hydropower projects. The project participants - environmental NGOs from Azerbaijan, Armenia, Moldova and Ukraine - carried out the selection of assessment methods and their piloting on rivers in their countries, they identified the obstacles typical for our countries. The webinar presented the results of piloting assessments for some rivers in the EaP countries.

**Ruslan Gavrilyuk**, representing the National Ecological Centre of Ukraine (Kiev), noted that conservation of biodiversity, restoration of degraded ecosystems is an integral part of the European Green Deal. By 2030, the EU aims to achieve an indicator of protected area of at least 30%. Moreover, the new EU Biodiversity Strategy, as an element of the Green Deal, contains the goal of restoring at least 25 thousand km of free flow of rivers.

The world is gradually realizing that there is no future without the preservation of ecosystems, that it is not enough to “reduce the impact on the environment”, it is necessary to help nature to recover, otherwise subsequent generations may be left without rivers, forests, steppes.

The European Union is actively working towards mapping and assessing ecosystems and their services. In November 2020, a special report of the Biodiversity Strategy Working Group was released, which summarizes the EU's long-term studies. Key messages from the document include “the need to scale up the conservation and restoration of terrestrial ecosystems to reverse the loss of ecosystem services” and “the risk that certain positive trends associated with reduced pollution, in particular in water bodies, will be reversed due to the increasing impact of climate change and the spread of invasive alien species”.

Mapping and valuation of ecosystems and ecosystem services will become the backbone of environmental conservation. A tool for preventing the negative impact of new projects is the inclusion of ecosystem services in the procedures for strategic environmental assessment and environmental impact assessment.

Especially relevant is the accounting of ecosystem services for hydropower projects, based on the increased business interest in hydropower, especially small-scale, which is supported by the "green tariff", and the catastrophic state of our rivers, which are in

danger of disappearing, and in some cases they disappear under the influence of climate change and anthropogenic influence.

The implementation of the ecosystem approach involves several stages, such as mapping ecosystems, assessing their condition, identifying ecosystem services, and integrated ecosystem assessment. At the core of these stages is some information about the environment - and this is a gap that prevents the use of the ecosystem services tool in practice. Our countries are not covered by the EU landscape map compiled (and updated) based on satellite data as part of the European Copernicus program. And this map is the basis for a map of Europe's ecosystems. We often do not have data on the state of environmental components (water, soil, air) due to the absence of a monitoring system, or are not provided in open and accessible formats for processing by software systems. Moreover, very often, such data are also to be paid, contrary to the requirements of the Aarhus Convention. And the use of software tools such as InVEST provides for the use of long-term historical data, which is a guarantee of a reliable forecast of the impact of the planned activity. The environmental policy of our countries must ensure the collection of the necessary data on the state of the environment and the integration of rosters of such data with European ones. In this case, our countries will be able to develop an ecosystem approach and take into account ecosystem services at various stages of decision-making. In the meantime, economic calculations actually ignore the impact of activities on the environment, which leads to unjustified intensive exploitation of rivers for hydropower, to destruction of their ecosystems and degradation, what is felt by the overwhelming number of inhabitants of each basin.

**Olga Kazantseva**, Eco-TIRAS, Moldova, emphasized in her speech that hydrotechnical construction, carried out to meet the growing energy needs, leads not only to positive, but also to significant negative consequences, therefore, public environmental organizations around the world oppose the recognition of hydropower as a renewable energy source and encouraging its further development within the framework of the Paris Climate Agreement and other UN institutions.

The most important negative consequences of hydro-construction on the Dniester are disruption of the continuity of the river flow and habitats, as well as changes in the hydrological regime. The self-purification mechanisms of the ecosystem *can no longer cope with pollution, and the characteristics of regulated rivers are more typical for stagnant waters than for flowing ones.*

The abundance and diversity of the ecological impacts of dams make it important to assess river and coastal ecosystems and their ecosystem services (i.e. the benefits that people receive from ecosystems) in terms of their economic value. The integration of accounting the value of ecosystem services in business planning *is rapidly developing in the world.* The process of *realizing the importance* of economic valuation of biodiversity and ecosystem services is still under way in Moldova.

At the same time, the experience of assessing ecosystem services under the influence of the Dniester hydropower centre indicates its need for solving *a number of environmental and economic problems of the development of hydroelectric construction*, incl. such as economic justification of alternatives for the development of the territory and justification of additional costs for environmental measures. This is especially important in the face of growing demand for water, which is expected to exceed supply by 1.4 times by the end of the 2030s, and the cost of drinking water in developed countries in retail stores is already comparable to the cost of oil.

**Aram Gabrielyan**, representing in the project the Ecological and Cultural NGO “Khazer” from Armenia, said that as a result of the implementation of the program for the development of small hydropower industry (the number of operating small plants reached 188, and 23 more construction licenses were issued), the natural river ecosystems in the Republic of Armenia are lost.

For a pilot study of ecosystem services, the Argichi River with its drainage basin, which forms in the Lake Sevan basin, was selected. The following specially protected areas have been created in the river basin - the Lichk-Argichi Nature Reserve, designed to preserve the spawning grounds of endemic Sevan trout, and natural monuments: the gorges of the Argichi River with its tributaries, meanders of the Argichi River, a swampy valley, the remains of a natural forest.

The river bed is completely blocked by the dam of a small hydroelectric power plant, built in 2013, but the fish passage cannot ensure the migration of fish along the channel, as a result of which the Argichi SHPP had a catastrophic effect on both the quantity and species composition of the entire ichthyofauna. It can be argued that both in the commercial sense and in the meaning of the natural ecosystem (including fish fauna), the Argichi River, in addition to generating electricity, ceased to perform the function of providing other ecosystem services.

Using mapping in the Argichi river basin, the area of each ecosystem is calculated. Then the value of ecosystem services is calculated based on the value of each unit area of each ecosystem (forest, grassland, pasture, horticulture, arable land, irrigated arable land) and the map of ecosystem services is compiled.

Research on ecosystem services should lead to the development and implementation of payment schemes for ecosystem services. They must become economically viable mechanisms to regulate and mitigate the harmful effects of hydropower on natural ecosystems and on people, who must reap the benefits of this ecosystem.

**Ilya Trombitsky**, Eco-TIRAS, Moldova, dwelled on the impact of hydroelectric construction on Dniester river, as a result of which migratory sturgeon species completely disappeared from the river, and fish catch in it decreased multiple times. At the same time, only the economic component (the price of fish lost in the Moldovan segment of Dniester) is 172 thousand dollars a year. And the government's lost revenue from the sale of recreational fishing permits is approximately \$ 200,000 per year.

However, it is extremely difficult to make such assessments, since there is a lack of data that can be used as a basis for calculations. Anyone attempting to value ecosystem services is bound to face this problem - the availability and access to environmental information. Even now, the volume of collected environmental observations is extremely incomplete and sketchy. Contrary to the Aarhus Convention, countries impose high tariffs for obtaining information, which makes it inaccessible, and the collection and storage - meaningless. Both international organizations and the scientific community suffer from this. The problem must be resolved.

Another significant problem, especially in relation to hydropower, is the poor understanding of the essence of ecosystem services by decision-makers and the population. The scourge of the CECEA (CIS) countries is the pollution of rivers, however, usually, the damage caused is calculated only by the number of fish killed, while other lost ecosystem services of the river are not taken into account. The same happens when,

as a result of hydro-construction, the morphology of rivers is disturbed, which is not taken into account at all.

**Elchin Sultanov**, Ornithological Society of Azerbaijan, noted that the Kura River basin occupies more than 95% of the territory of Azerbaijan and is the most developed in terms of hydropower. On the Kura River itself, a cascade of large reservoirs was created, which completely regulated the Kura River, in addition, more than 20 small and medium-sized hydroelectric power plants were created on the tributaries of this river. The overwhelming majority of these structures were built during the Soviet era with virtually no regard for any environmental consequences. Thus, fish passages were not created on any of them, as a result, the spawning of sturgeon and other valuable fish in natural conditions practically stopped. Many natural lakes and water systems dried up, and instead of them others appeared or enlarged, which in general not only upset the water balance in almost the entire Kura river basin, but also led to changes in landscapes, a drop in ecosystem productivity and a deterioration in living conditions of the population in a number of places. affected by these changes. The application of the ecosystem approach will allow at least partially to restore or improve the quality (optimize) the affected ecosystems, even out, where possible, the water balance and improve the living conditions of the population in areas undergoing large-scale environmental changes.

**Sergey Savchenko**, National Ecological Centre of Ukraine. Within the project an algorithm for processing data from the "Copernicus Land Globe" service was proposed and presented for the purpose of determining ecosystem types according to the MAES classification. The results of pilot mapping of ecosystems of Uzh (Ukraine) and Kura (Azerbaijan and adjacent countries) river basins according to the proposed algorithm using data from the "Copernicus Land Globe" are presented. On the basis of mapping, the prevailing types of basin ecosystems are identified and their percentage share is given. The ratio share of land cover types from the "Copernicus Land Globe" service and types of ecosystems of the MAES classification is presented.

The results of the pilot use of the "Water Yield" model of the InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs) software complex, developed by Stanford University in the framework of the Natural Capital Conversations project, for Uzh river basin are presented. Information on the list of required initial data, as well as possible sources of such data, is provided. The access to data for launching the model, which are used in the world and their analogues for Ukraine, is analyzed. The disadvantages of the model, which were revealed as a result of its launch and preparation of input data, were given.

Biologist **Oksana Stankevich-Volosyanchuk**, NGO "Ecosphere" (Uzhgorod) noted that by the beginning of the 21st century, rivers in Ukraine remained slightly changed and are the few ecosystems that managed to avoid large-scale transformation. Today they can be benchmarks of mountain river ecosystems in Europe, and this is precisely their main value.

The mountain rivers of the Carpathians have attracted close attention relatively recently, after the introduction of the mechanism of state support for renewable energy through the "green tariff". Thus, small hydropower industry got a second wind in the Carpathians after almost half a century of calm. In the twentieth century, cca. 15 small hydroelectric power plants operated on mountain rivers, which became unprofitable after the construction of the Burshtyn CHP. Yes, we must now replace "dirty" carbon energy with "green" renewable energy. But in the conditions of the Carpathians, for this it is necessary to build a powerful network of cascades of small hydroelectric power stations on each mountain stream. Such a large-scale project was presented by the regional authorities in 2012. It was about 360 SHPPs with a dozen reservoirs in the upper reaches of the rivers.

This project did not find support either from the environmental community or among the scientific community, or among local communities. It is because the implementation of this project would mean the targeted use of only one ecosystem service - hydropower, at the cost of the loss of all other ecosystem services provided by the mountain rivers of the Carpathians. The negative impact of hydroelectric power plants on the mountain rivers of the Carpathians is observed on the example of a decrease in biodiversity and a decrease in the number of species, the appearance of invasive species within a year or two after putting the object into operation. Any interference in the life of the river leads to some kind of loss. And the most important of these is the loss of regulatory ecosystem services, which are key to adapting to climate change. By actively developing small hydropower in the Carpathians under the auspices of the fight against climate change, we are chopping off the branch we are sitting on. It is known that most effective against climate change are the unaltered, natural ecosystems that provide a full range of ecosystem services.

Within the framework of this project, for the first time pilot mapping of the main ecosystems of the Uzh river basin was carried out. It is a trans-boundary river with pronounced characteristics of a mountain river in the upper and middle reaches, and with characteristics of a flat river in the lower reaches, the main part of which is in neighbouring Slovakia. For the identified ecosystems, through expert assessment, characteristic ecosystem services have been identified that need to be assessed in the decision-making process, including with respect to hydropower projects.



The project is being implemented thanks to the Regranting 2020 scheme of the Eastern Partnership Civil Society Forum with financial support from the European Union as part of supporting civil society in the region. Its content is the sole responsibility of the International Environmental Association of River Keepers Eco-TIRAS and the project partners and does not necessarily reflect the views of the European Union.