



**ENVIRONMENT
PEOPLE LAW**

The rule of law for the protection of the environment

THE WAR INCREASES THE RISK OF EMERGENCIES AT HYDROPOWER PLANTS (HPPs)



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Military action on the territory of Ukraine has led to many social and humanitarian problems, as well as caused serious threats of man-made emergencies resulting from the actions of the occupiers.

The risks to the population associated with damage to facilities that pose an increased environmental risk are of particular concern at this time, because in the absence of control and opportunities to eliminate their negative consequences, the potential for negative impact is increasing.

Since the beginning of the invasion of the aggressor country - the Russian Federation -, it has been trying to occupy and attack the infrastructure of hydro power plants (HPPs) in Ukraine. In the energy complex of Ukraine, hydro power plants rank third after thermal and nuclear power plants. Therefore, it is important to understand and outline the consequences that may occur in the event of hostilities or terrorist attacks by the occupiers on the infrastructure of hydro power plants.

In Ukraine, during hostilities or air strikes, the danger to the population may be posed by hydro power plants, dams and locks of the Dnipro cascade: Dnipro HPP (Zaporizhzhya), Middle Dnipro HPP, Kakhovka HPP, Kremenchuh HPP, Kaniv HPP, Kyiv HPP, small and medium hydropower plants of the Dniester cascade, and dams.

Here are the main risks to the population that may arise from the destruction of hydropower infrastructure of Ukraine (as a result of hostilities or terrorist attacks):

Dnipro HPP. In case of destruction of the Dnipro HPP dam, the speed of the tidal wave will be 4-5 m/sec in wide sections of the reservoir, and in narrower places it will increase significantly. The dam of the Dnipro HPP is located at a distance of 40 kilometers from the Zaporizhzhya NPP. The dams will be washed away by the hydraulic shock, the water level in the Kakhovka Sea will fall sharply after such a cataclysm. The cooling pond of the Zaporizhzhya NPP will be left without water, which will lead to an accident of the Fukushima type due to the problem with the cooling of six reactors-millionaires (newukraineinstitute.org/media/news/529/file/2%20небезпека.pdf).

Two years before the Russian invasion, **the non-governmental organization "National Environmental Council of Ukraine»** distributed the statement **on their concern about the condition of the dams of the Dnipro water reservoirs**. It pointed out that during the construction of the Kaniv HPP (1972-1975), ash from thermal power plants was mixed into the composition of hydraulic concrete. Then it turned out that this was a fatal mistake: water washed away the ashes all these years, voids were formed in its place. It is very difficult to estimate the extent of damage, because the voids are inside the structures. Engineers presume that the entire front of the dam can be near-collapse. Currently, it maintains a pressure of 2.5 cubic kilometers of water, which is a huge load on the hydro power plant. Scientists of the National Environmental Council of Ukraine estimate that the breakthrough of the Kaniv HPP dam will lead to flooding of a large part of Cherkasy region, the emergence of impassable swamps in this area, as well as increasing pressure on the Kremenchuh water reservoir dam and its breakthrough. That is, the dams downstream will collapse one by one like dominoes.

Also, environmentalists noted that at the bottom of the Kaniv water reservoir lies radioactive strontium-90 and cesium-137 after the Chernobyl disaster (<https://fbc.ua/news/suspilstvo/ekologij-poperedzhayut-pro-rujnuvannya-grebel-na-ges/>). Therefore, the breakthrough of this water reservoir carries risks of radiation pollution of the Dnipro and the Black Sea, and consequently a threat to the health of the population consuming water from the Dnipro.

Kyiv HPP. In case of destruction of the dam of Kyiv HPP only in the area of Kyiv, the flooded zone may cover 42 sq. km with a population of 400 thousand people. The total area of catastrophic floods on the territory of Ukraine due to hydrodynamic accidents may cover 8294 km², where 536 settlements are located (newukraineinstitute.org/media/news/529/file/2%20небезпека.pdf).

Kremenchuh HPP. In case of a breakthrough, 70 settlements and 200,000 people may get into the catastrophic flood zone (<https://www.telegraf.in.ua/topnews/10101763-kremenchuk-mozhe-potrapiti-u-zonu-katastrofichnogo-zatoplennja-u-razi-napadu-rf.html>).

According to data of Zaporizhzhya RSA, in the worst case the destruction of hydraulic structures (dams breakthrough) of Kremenchuh, Kamyanske, Dnipro water reservoirs will lead to catastrophic flooding of the Zaporizhzhia region.

In case of breakthrough of the dam of Kremenchuh water reservoir:

in 5 hours 48 min – the destructive water flow will reach the village of Fedorivka of Zaporizhzhia district;

in 6 hours 18 min - the wave will reach the dam of the Dnipro HPP;

in 20 hours 00 min when the water reaches the level of a breakthrough - 53 m, the dam of the Dnipro HPP is destroyed, after which the flooding of the lower reaches of the district along the Kakhovka water reservoir will begin.

The rise of water in some places of the catastrophic flood zone will reach 8 - 12 m and will last from 4.0 to 7.0 hours with a subsequent decline in water levels lasting for 2-4 days.

The Civil Protection Code of Ukraine details the measures of response to emergencies and liquidation of their consequences.

To coordinate the actions of public authorities and local governments, government agencies and civil defense forces, and to plan and organize implementation of a set of measures and activities to eliminate the consequences of emergencies the following is done: control points and emergency control centers are used; special commissions for liquidation of consequences of emergency situations are formed; emergency response headquarters are formed. Prior to the establishment of a special commission for the elimination of the consequences of emergencies, the organization of measures for the elimination of consequences of emergencies shall be carried out by the relevant commissions on technogenic and environmental safety and emergencies.

The system of emergency assistance to the population works on a single telephone number 112

Notification of the threat or occurrence of emergencies

2. Notification of the threat or occurrence of emergencies shall be ensured through:

- operation of national, territorial, local automated centralized alert systems for the threat or occurrence of emergencies, special, local and on-site alert systems;

- centralized use of public electronic communication networks, including mobile communication, departmental electronic communication networks and electronic communication networks of economic entities, as well as networks of national, regional and local radio and television and other technical means of transmission (display) of information;

- operation of automated systems for early detection and notification of emergencies at high-risk facilities;

- the functioning of signal-loudspeaker devices and electronic information boards for the transmission of information on civil protection in settlements, as well as places of mass stay of people.

Installation of signal and loudspeaker devices and electronic information boards is entrusted to local governments or business entities.

Civil protection authorities are obliged to provide the population with prompt and reliable information through the media, including in a form accessible to persons with visual and hearing impairments. The information should include data on the entity providing it and the scope of its operation, the nature of the potential risks of emergencies, including effects on humans and the environment, how to inform the public in the event of a threat or actual emergency and behavior in such circumstances.

In accordance with paragraph 14 of the Resolution of the Cabinet of Ministers of Ukraine "On approval of the Regulations on the organization of notification of the threat of occurrence or actual occurrence of emergencies and communications in the area of civil protection."

14. At the hydraulic structures of the Dnipro and Dniester cascades and in the zones of their possible catastrophic flooding, special warning systems must ensure:

transmission of the signal "Attention to all";

transmission of messages on the territory of a hydro power plant and its industrial zone;

notification of chiefs of shifts (dispatchers in charge) of hydraulic structures of the cascade of hydro power plants, dispatching services of the state enterprise "National Energy Company "Ukrenerho" and the Ministry of Energy, services of local executive bodies (local self-government bodies) that are on duty, territorial bodies of the State Emergency Service and the National Police.

It should be noted that points 1 and 4 of Art. 4 of the Law of Ukraine "On the legal regime of martial law" state that in the territories where martial law has been imposed, temporary public authorities - military administrations – can be established in order to ensure action of the Constitution and laws of Ukraine, implementation of measures of legal regime of martial law, defense, civil protection, public safety and order, protection of rights, freedoms and legitimate interests of citizens.

Thus, terrorist acts and hostilities on the territory of Ukraine including seizure of energy infrastructure, can lead to catastrophic consequences for human life and health, for the environment, and industrial facilities. Therefore, the protection of such facilities by the Armed Forces of Ukraine, as well as No Fly Zone for Ukraine is currently the most important tasks for the leadership of the country and international community!