The Nova Kakhovka dam disaster: Another Chernobyl?

Salome Abuladze*

Abstract: The destruction of the Nova Kakhovka dam necessitated instant humanitarian action, yet, it will have massive far-reaching economic and social consequences over a much greater geographical area, including potential displacement and population migration risks.

According to the information published at dawn on 6 June 2023, a torrent of water burst through the massive dam on the Dnipro River that separates Russian and Ukrainian forces in southern Ukraine, submerging an inhabited region of the war zone and forcing villagers to flee. The city of Kakhovka in Kherson District is located on the left bank of the Dnipro River, currently occupied by Russia. The right bank of the Dnipro, including the city of Kherson, is under the control of the Ukrainian authorities. Neither side gave prompt public indication of who was responsible. The Russians accused Ukrainian armed forces of delivering numerous attacks on the Kakhovka Hydroelectric Power Plant. The destruction of the hydraulic sluice valves at the station triggered an uncontrolled discharge of water. Ukraine meanwhile denied responsibility and accused Russia of blowing up the dam. The blast at the

*Salome Abuladze is a lawyer in the Agency for State Care and Assistance for the (Statutory) Victims of Human Trafficking in Georgia. Her main activity relates to the rights of the children, especially to the victims of domestic violence. She is a member of the Regional Council of Guardianship and Care, which issues the children placed in state care. Salome is an alumna of the Master's Programme in Human Rights and Democratisation in the Caucasus (CES).

Nova Kakhovka dam was assessed as a war crime and possible act of environmental destruction, or "ecocide".

Recent statistical data

The authorities declared a state of emergency. The police and emergency services of the Kherson region were alerted and instructed to evacuate citizens from settlements located on the right bank of the Dnieper River in the potential flood zone. There were more than 35 settlements and territories in the flood zone. More than 11,000 people in the affected area had to be evacuated and the floodwaters are assumed to have caused over €1.2bn billion worth of damage. By 21 June, 58 people were reported dead and 31 missing. More than 3,100 homes remained underwater. The majority of them will probably be unfit to live in when the water eventually recedes.

The United Nations and humanitarian organisations have already provided urgent assistance, such as water, food, cash and clothing to over 16,000 affected people. They continue to evacuate and to help provide accommodation for evacuees and their pets. For its part, the International Atomic Energy Agency is closely monitoring the situation at Zaporizhzhia and has reported no immediate threat.

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The significance of the Nova Kakhovka dam

The Soviet-era Nova Kakhovka dam played a vital role in providing energy, drinking water, irrigation and river transport to various regions in southern Ukraine, as well as supplying water for industries in other areas.

The Kakhovka reservoir was the main water source delivering water to many regions. The destruction of the dam has suspended or polluted the water supply in all these regions. The collapse of the dam also released up to several hundred tonnes of petroleum products into the Dnipro river, making it hazardous to consume any water below it; therefore, surrounding territories will face a drinking water shortage. Moreover, the dam used to feed a complex of canals that irrigated tens of thousands of hectares of fields in several oblasts (regions). The flooding, as well as the absence of water supply, may cause the loss of several million tonnes of crops. The main products grown on the affected land included grains and oilseeds, of which Ukraine is a leading international grower and exporter, as well as melons and vegetables.

Acute consequences

The drying up of the irrigation network could lead to climate change in the region, including dust storms and soil degradation. Long-term outcomes of the dam's collapse include the higher food prices and less general availability of food as well as probable starvation in poorer countries.

Due to the water shortage, the soil in the affected areas may become parched and barren over time. The destruction of the Kakhovka hydroelectric station could turn fields in southern Ukraine into deserts for the next year.
News of the dam's collapse was instantly disseminated through the Ukraine's population; however, lots of people were unaware of the potentially massive consequences of the flooding. For instance, in the village of Vasylivka, a 53-year-old man refused to move to a safer place, preferring to stay at home as he did not believe anything bad would happen; he drowned while asleep.
Rescuers and volunteers had to evacuate more than 4,000 people urgently as many were unable to escape the sudden flow of water. However, many domestic pets and wild animals, including many rare Red Data Book species, were trapped in the flood zone. The Kazkova Dibrova Zoo was completely submerged and all 300 animals drowned.
The ecosystem is also in extreme danger as many hectares of the protected sites, essential for fish spawning and provide habitat for birds and animals, have been destroyed. In some areas, a mass die-off of fish has been identified.
Moreover, the large floodwaters will dramatically affect to the salinity of the water of the Black Sea, which means that the devastating outcomes will be expanded to flora and fauna there as well.

Another outcome of the flooding relates to long-standing health risks as a result of discharge of perilous chemicals from manufacturing plants located downstream. The flood poses a heightened risk of a cholera outbreak in the region. Due to the results of the water tests, indicating deterioration in water quality, including dangerous levels of salmonella and other hazardous elements, some of the popular beaches along the Black Sea have banned swimming.
Not only have lives been lost because of the flood, but people living in the area lack access to basic needs such as clean drinking water, medical aid and shelter. Approximately 700,000 people face the immediate problem of lack of clean drinking water. Furthermore, the crisis is having a severe impact on the psychological well-being of the Ukrainian community.
Fast-moving water will also shift landmines to areas previously considered safe, thereby placing people in further and unpredictable danger from mine and explosive ordinance contamination. Moreover, the dam's destruction may negatively affect electricity generation and in turn the safety and security of the Zaporizhzhia Nuclear Power Plant downstream, the largest nuclear power station in Europe.
In all likelihood, the reconstruction of the dam requires between US$800 million and US$1 billion, taking at best five years; it is doubtful that any such work will occur as long as hostilities are ongoing.

The breach of International Law

The Geneva Conventions and its protocols unambiguously prohibit war-time attacks on ' 'installations containing dangerous forces' including dams because of the risk posed to civilians. It is forbidden to attack such installations even in the interest of legitimate military aims 'if such attack may cause the release of dangerous forces and consequent severe losses among the civilian population'.

There is no direct mention of dams in the 1998 founding statute of the International Criminal Court (ICC). However, the statute prohibits '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'.

The Geneva Conventions and additional protocols underline that parties involved in a military conflict must consider attacks on civilian objects prohibited. Even if the dam could be seen as a military target, an attack could be legally classified as disproportionate if the incidental loss of civilian life or damage to civilian objects is excessive. The installations containing hazardous forces must receive special protection precisely because of the potential impact of their destruction on civilian populations. The ICC has already been examining attacks on infrastructure. Besides, deliberate weaponisation and targeting of civilian infrastructure in times of war violate international humanitarian law, for which parties must be held accountable.

Conclusion

The Kakhovka dam collapse is being called the next Chernobyl. While it may sound like an exaggeration, this is one of the largest human-caused catastrophes in recent times. The destruction has devastating long-term impact not only from a human perspective, but with dire consequences for the environment and global food supply. Drought, toxic waste, and useless agricultural lands are just some of the costs of a degraded environment. Dealing with the escalating longer-term repercussions caused by the disaster requires not only the involvement of local authorities but also ongoing international assistance for many decades before they are able to gradually wind down support.