ECOLOGICAL PROBLEMS OF WATER RESOURCES IN UKRAINE

Vyacheslav Isaev

Faculty of Electrical Engineering and Automation,

National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"

Water is one of the most important aspects of people's daily lives. Someone may think that all the advantages of water end with the fact that it is important for direct consumption, but in fact, the quality, purity and many other parameters of water are closely related to many fields, such as energy production, the food industry, the pharmaceutical industry and microelectronics. Therefore, the topic of this article is very relevant to the world in general and to Ukraine, particularly.

Water is used to cool steam at thermal and nuclear power plants (TPPs, NPPs). Thanks to this, corrosion and surface deposits are prevented, a high degree of mineralization is guaranteed, and the chemical composition is stable.

Food cleaning, product processing, and beverage production rely heavily on water acidity. Even small contaminants can affect the acidity and safety of food, so water must meet all standards for bacteria, viruses, essential metals, and chemicals (*Uses of Water in Food Production and Processing*, 2015).

Water used in the pharmaceutical industry is very pure and contains very few ions, bacteria or pyrogens. This type of water is distilled for liquid extraction, purification and injection.

As for microelectronics, ultrapure water (UPW) should be used in a limited-volume container for microchips and other electronic components. Chip degradation or other defects in electrical devices can be the result of the accumulation of microparticles from bad water purification.

Therefore, knowing and understanding the importance of water and its multiple usages, we can talk about the environmental aspect. Due to the war that has been continuing for ten years in Ukraine, the condition of water has been influenced by numerous factors, such as:

1) Pollution of water bodies with corpses and subsequent poisoning with

products associated with their decomposition.

2) Use of illegal and inhumane means of destruction by a terrorist country and/or deliberate poisoning of water bodies/rivers with harmful waste.

3) Undermining dams, which causes a complete disruption of the entire ecosystem that is tied to the river or water body (*Rapid Environmental Assessment of Kakhovka Dam Breach,* 2023).

Other aspects not associated with the war are poisoning rivers with waste that large enterprises throw out and throwing waste on the beaches, river banks, and other public places by the citizens.

International environmental organizations, such as WWF (World Wildlife Fund), emphasize the risk of long-term contamination that is expected to persist even after the conflict ends (*Ukraine needs a sustainable, climate and nature-positive reconstruction,* 2022). This includes damage to water treatment infrastructure and industrial facilities, leading to toxic discharges into water and the accumulation of pollutants in rivers and soils.

According to UN data (Zhovtonog, 2023), in the long term, Ukraine may focus on strategies to protect water resources, focusing on the modernization of water supply and sewerage lines, as well as on advanced integration of solutions management of water resources to avoid the impact of climate change and the consequences of war.

Thus, large-scale recovery will require substantial resources and a comprehensive approach to ensure the sustainable restoration of Ukraine's ecosystems.

References:

1. *Rapid Environmental Assessment of Kakhovka Dam Breach Ukraine, 2023.* (2023). Retrieved from: https://www.unep.org/resources/report/rapid-environmental-assessment-kakhovka-dam-breach-ukraine-2023

2. *Ukraine needs a sustainable, climate and nature-positive reconstruction: New WWF/BCG report. (2022).* Retrieved from: *https://www.wwf.eu/?7631816/Ukraine-needs-a-sustainable-climate-and-nature-positive-reconstruction-New-WWFBCG-*

report

3. *Uses of Water in Food Production and Processing*. (2015). Retrieved from: https://www.eufic.org/en/food-production/article/use-of-water-in-food-production

4. Zhovtonog, O. (2023). *Challenges and Highest Priorities for the Water Policy of Ukraine: Security and Rebuilding Strategic tasks now and after the War*. Retrieved from: https://unece.org/environment/documents/2023/06/presentations/challenges-and-highest-priorities-water-policy-ukraine