

Список використаних джерел:

1. *E-commerce живий? Що відбувається з онлайн-продажами в Україні під час війни* URL: <https://surl.li/hmdlgr>
2. *Зламати бізнес-модель: як Tesla стала найбільш швидкозростаючим брендом у світі.* URL: <https://surl.li/tbfujo>
3. *Нова пошта у світі.* URL: <https://surl.li/lekykg>
4. *Як війна вплинула на інтернет-магазини України: статистика 2021–2024.* URL: <https://shop-express.ua/ukr/blog/ecommerce-research-trends-insights/>

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INNOVATIVE TRENDS FOR OVERCOMING THE WATER CRISIS

Before the full-scale invasion, Ukraine used over 6 billion cubic meters of water annually, with 66% allocated for industrial needs, 16.5% for sanitary and hygiene purposes, and 16% for irrigation. The war has led to a critical reduction in water consumption, particularly in the hydro-reclamation sector, where water use dropped by 80% between 2021 and 2023. The destruction of the Kakhovka Hydroelectric Power Plant (HPP) dam effectively eliminated irrigation in Kherson, Zaporizhzhya, and parts of Mykolaiv regions. Moreover, in 2021, the volume of irrigation water used in Kherson region alone was twice as high as the total irrigation water consumption across Ukraine in 2022–2023. Only Cherkasy region saw a 45% increase in irrigation water use (Table 1).

Table 1

Dynamics of water resource utilization in Ukraine, mln.m³

	2021	2022	2023	2023/2021, %
Used fresh water	6161.3	3401.3	3576.5	58.0
Used fresh water for irrigation	970.5	143.2	192.3	19.8
Dnipropetrovsk	21.3	21.6	14.7	69.0
Zaporizhzhya	89.5	2.7	1.5	1.7
Mykolayiv	53.6	4.7	36.8	68.7
Odesa	107.1	73.0	89.8	83.8
Poltava	10.5	5.7	6.8	64.8
Kherson	648.4	0.9	0.3	0.0
Cherkasy	18.3	22.0	26.6	145.4

Source: Own calculations based on the data [1].

Reviving the reclamation sector based on resource-efficient principles is undoubtedly a promising component of Ukraine's agricultural intensification and efficiency improvement.

A study of global experiences in addressing water scarcity and optimizing water use in agriculture has revealed various strategies and technologies aimed at enhancing water efficiency, reducing losses, and adapting to climate change. The implementation of advanced technologies and the use of artificial intelligence (AI) play a key role in effective water management, helping to optimize its use and prevent shortages. The most common innovative trends include:

- Digitalization and the adoption of innovative technologies – deployment of smart water management systems (AI, IoT, and Big Data), nanotechnologies, soil moisture sensors, real-time flood detection and alert systems, as well as alternative energy sources and energy-efficient pumping equipment;
- Implementation of efficient irrigation methods – subsurface drip irrigation, precision irrigation systems, and closed-type water supply networks;
- Climate change adaptation – transitioning to drought-resistant crops, developing vertical farming, using hydrofilm, and considering the Water Footprint concept, including crop rotation adjustments and reducing consumption of water-intensive products;
- Soil moisture conservation – minimal tillage, mulching, use of water-absorbing fertilizers, and agroforestry;
- Utilization of alternative water sources – desalination (including reverse osmosis and wave energy applications), reuse of treated wastewater for irrigation, and rainwater harvesting;
- Enhancing political and economic mechanisms – implementation of scientifically grounded water pricing to encourage water conservation, subsidies and support for water-saving technologies, basin-based water resource management, and sustainable water use practices [2, 3].

The adoption of these practices will help mitigate the risks of natural disasters, promote rational use of natural resources, and create a resilient water supply system adapted to modern challenges and the country's needs. Therefore, solving the issue of water scarcity lies in implementing innovative water-saving solutions, including in the agri-food sector.

References:

1. State Agency of Water Resources of Ukraine. URL: <https://surl.li/ucypml>
2. StartUs Insights (2024). Explore the Top 10 Irrigation Industry Trends in 2024. URL: <https://surl.li/stfpwm>
3. StartUs Insights (2024). Top 8 Water Management Trends & Innovations in 2025. URL: <https://surl.li/xdlrgo>