Prospects for restoration of Ukraine's irrigation system

Article *in* Water International · March 2025

DOI: 10.1080/02508060.2025.2472718

CITATIONS
5

READS
150

9 authors, including:

Boris Faybishenko
Lawrence Berkeley National Laboratory
227 PUBLICATIONS **3,221** CITATIONS
SEE PROFILE

Dmytro Onopriienko
Dnipro State Agrarian end Economic University
11 PUBLICATIONS **83** CITATIONS
SEE PROFILE

Hennadii Hapich
Dnipro State Agrarian and Economic University
44 PUBLICATIONS **318** CITATIONS
SEE PROFILE

Roman Novitskyi
Dnipro State Agrarian and Economic University
111 PUBLICATIONS **457** CITATIONS
SEE PROFILE

WATER INTERNATIONAL
https://doi.org/10.1080/02508060.2025.2472718

VIEWPOINT

Prospects for restoration of Ukraine's irrigation system

Mykhailo Romashchenko [a,b], Boris Faybishenko [c], Dmytro Onopriienko [d], Hennadii Hapich [d], Roman Novitskyi [d], David Dent [e], Roman Saidak [a], Serhii Usatyi [a] and Hynek Roubik [f]

[a]Institute of Water Problems and Land Reclamation, Kyiv, Ukraine; [b]Kyiv Agrarian University of the National Academy of Agrarian Sciences, Kyiv, Ukraine; [c]Energy Geosciences Division, Earth and Environmental Sciences Area, Lawrence Berkeley National Laboratory, Berkeley, CA, USA; [d]Dnipro State Agrarian and Economic University, Dnipro, Ukraine; [e]Independent Scientist, UK; [f]Czech University of Life Sciences Prague, Prague, Czech Republic

ABSTRACT

Southern Ukraine is home to Europe's biggest cluster of irrigated lands. Considering the current situation and prospective stresses from climate change in coming decades, we assess the structure and management of Ukraine's irrigation sector, the initial steps and elements of a new strategy to restore the Kakhovka Reservoir on the Dnipro River, and the need to secure new sources of water to address the water deficit, such as a diversion from the River Danube.

ARTICLE HISTORY
Received 3 December 2024
Accepted 24 February 2025

KEYWORDS
Water security; climate change; irrigation management; Kakhovka Dam; Dnipro River; Ukraine

Introduction

The Russian invasion of southern Ukraine, especially the consequent destruction of the Kakovka Dam, has crippled irrigation and the water systems of the region (see annexe). Rehabilitating the water system will be costly and will face climate change, ecological preservation, and mismanagement problems that loom over future decades, even without military destructiveness.

The goals of this viewpoint are to review (a) the consequences of the disruption of the cascade of Dnipro River reservoirs and the irrigation systems in southern Ukraine, (b) the economic structure and efficiency of irrigation in the face of climate change, and (c) the prospects for restoration of the irrigation systems. The second section summarizes climatic conditions in Ukraine, and the third describes the approach to water resources management on irrigated lands. The fourth section summarizes the history of the Kakhovka Reservoir and the need for its reconstruction. The final section considers what it will take to restore irrigation in Ukraine.

Climatic conditions of Ukraine

Ukraine is temperate, except for the southern coast of Crimea, which enjoys a subtropical Mediterranean climate. The country receives plenty of sunshine, concentrated from May to August, but the rainfall pattern has changed dramatically since the 1980s. Extreme summer

CONTACT Hennadii Hapich hapich.h.v@dsau.dp.ua