



# LESS CLEAN WATER FOR AGRICULTURE DUE TO MILITARY ACTIVITIES IN UKRAINE



Vita Strokal  
Associate professor

Vita STROKAL, Maryna LADYKA, Yevgeniy BEREZHNIAK

vita.strokal@gmail.com

Department of Agrosphere Ecology and Environmental Control, Faculty of Plant Protection, Biotechnology and Ecology, National University of Life and Environmental Sciences of Ukraine, Kyiv, Ukraine

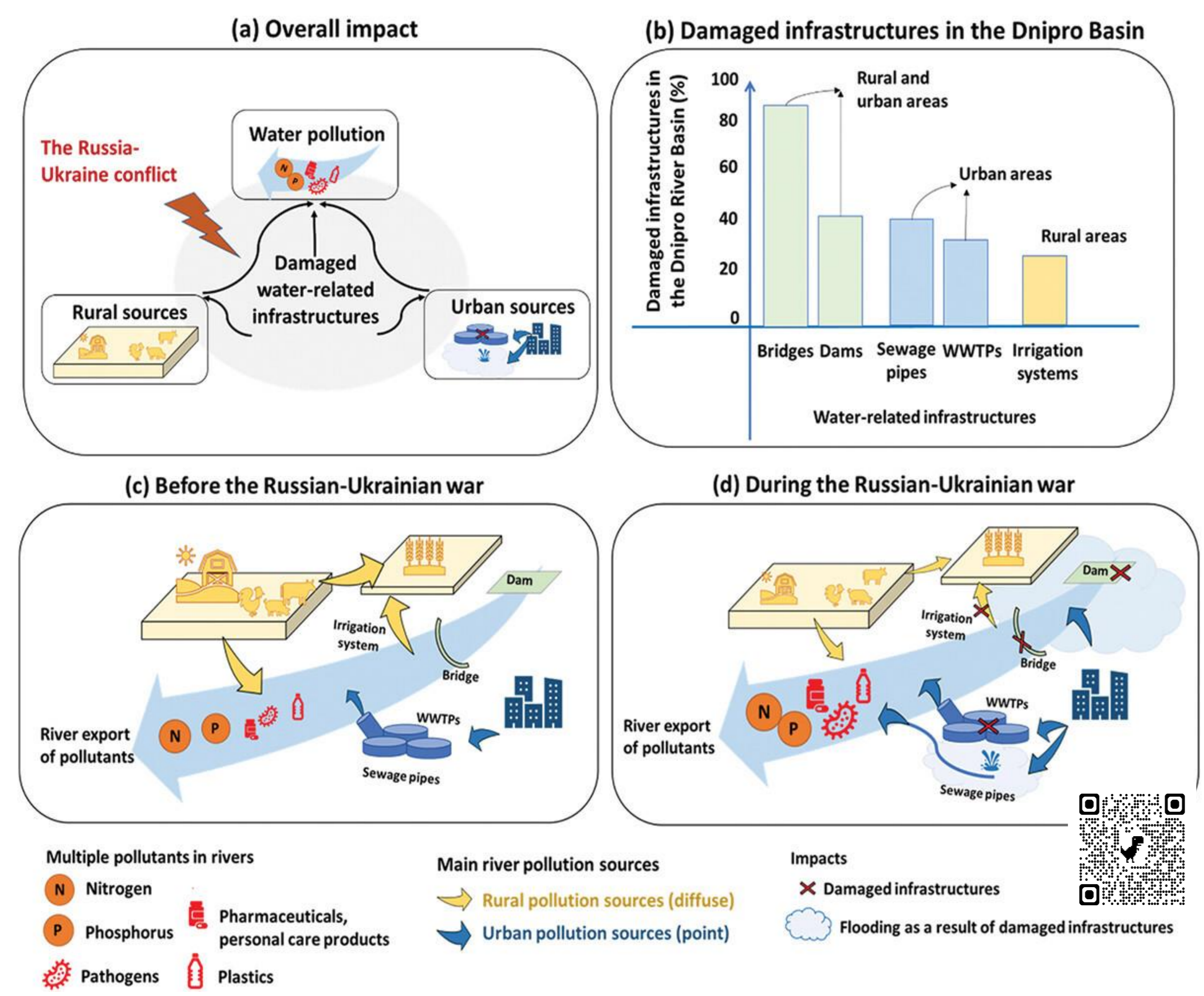
<https://orcid.org/0000-0001-6876-1111>

## Objective:

The main objective is to assess the military activities that affect the agricultural sector within mined territories, and damaged water infrastructures and irrigation systems

## Introduction:

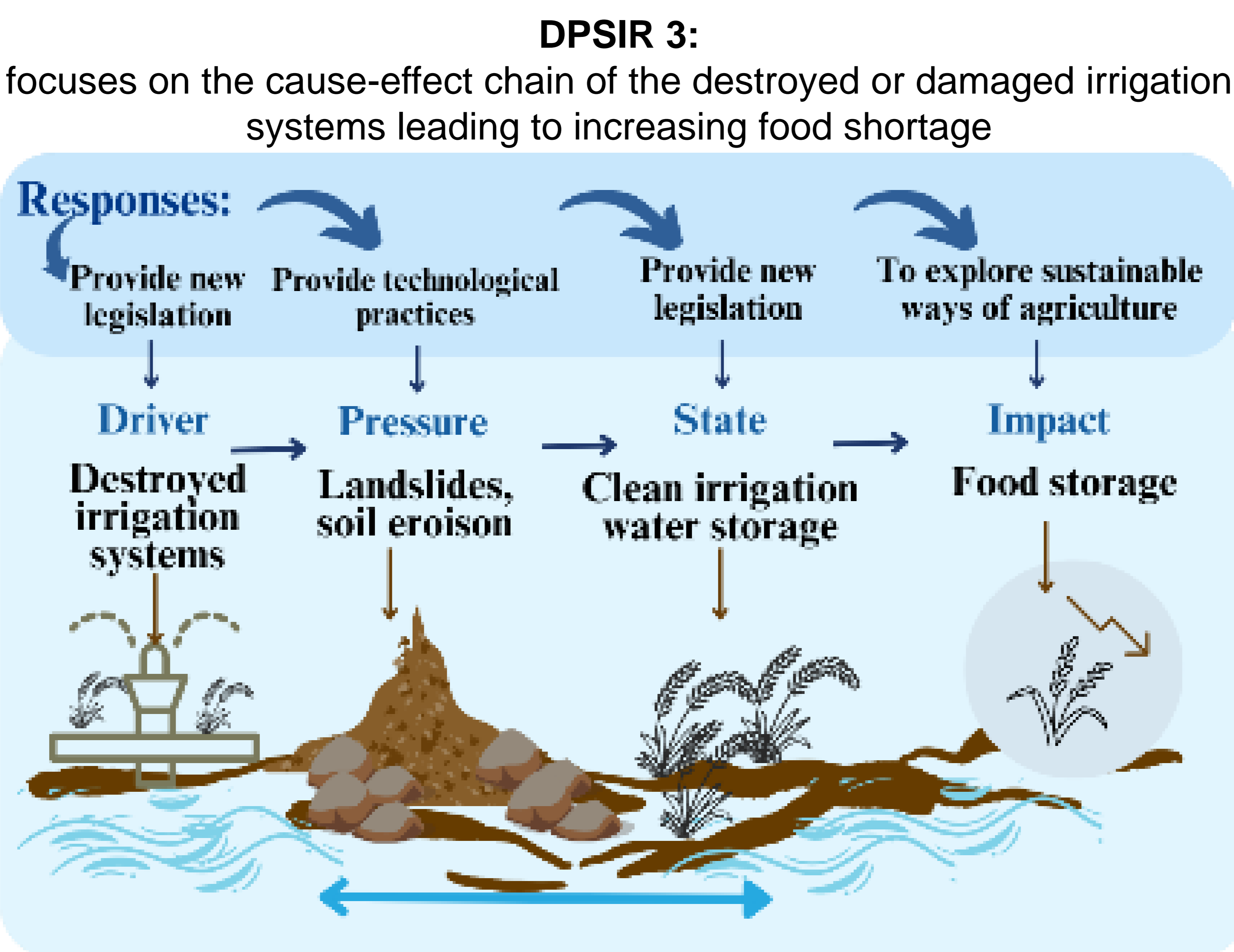
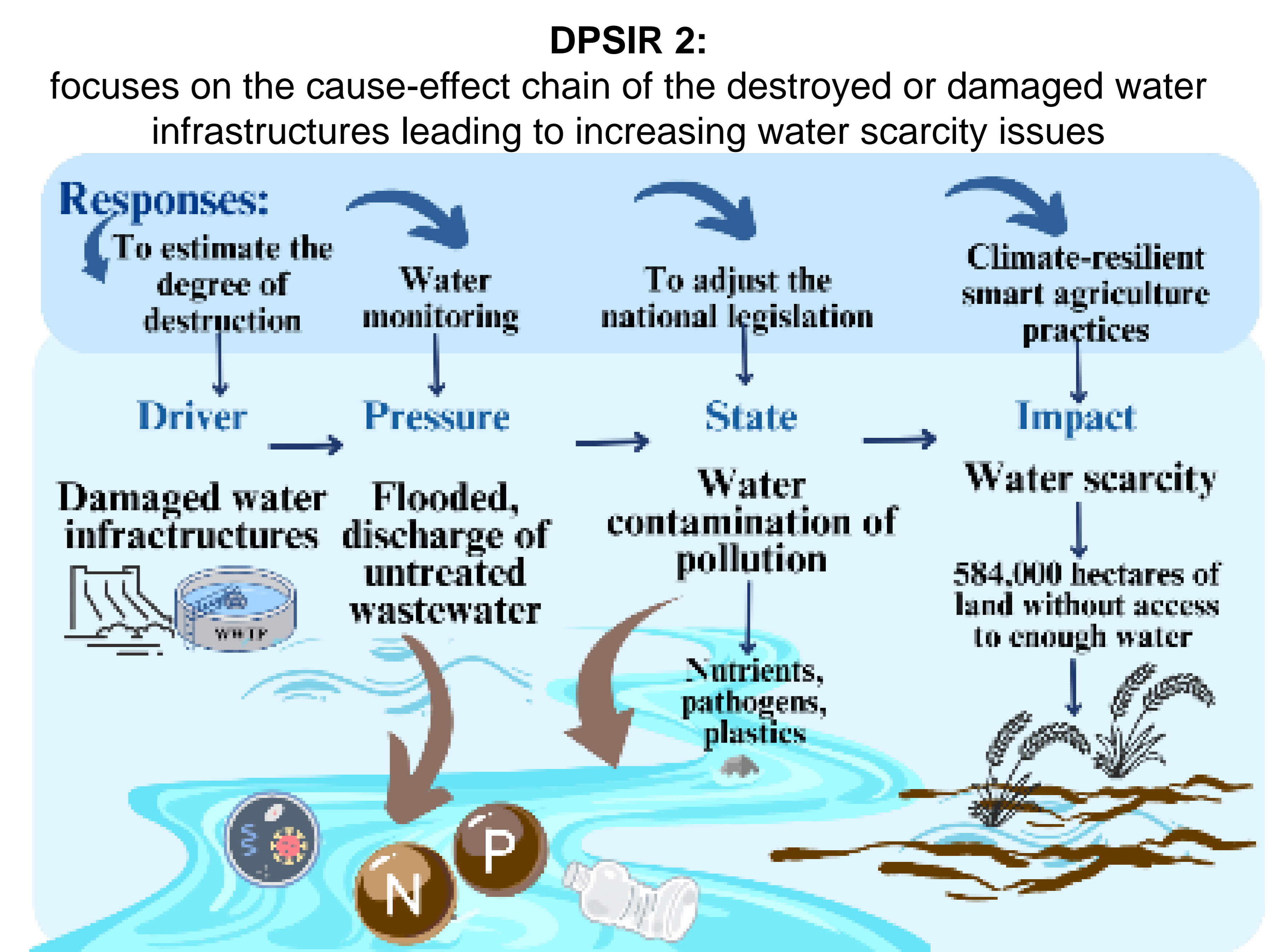
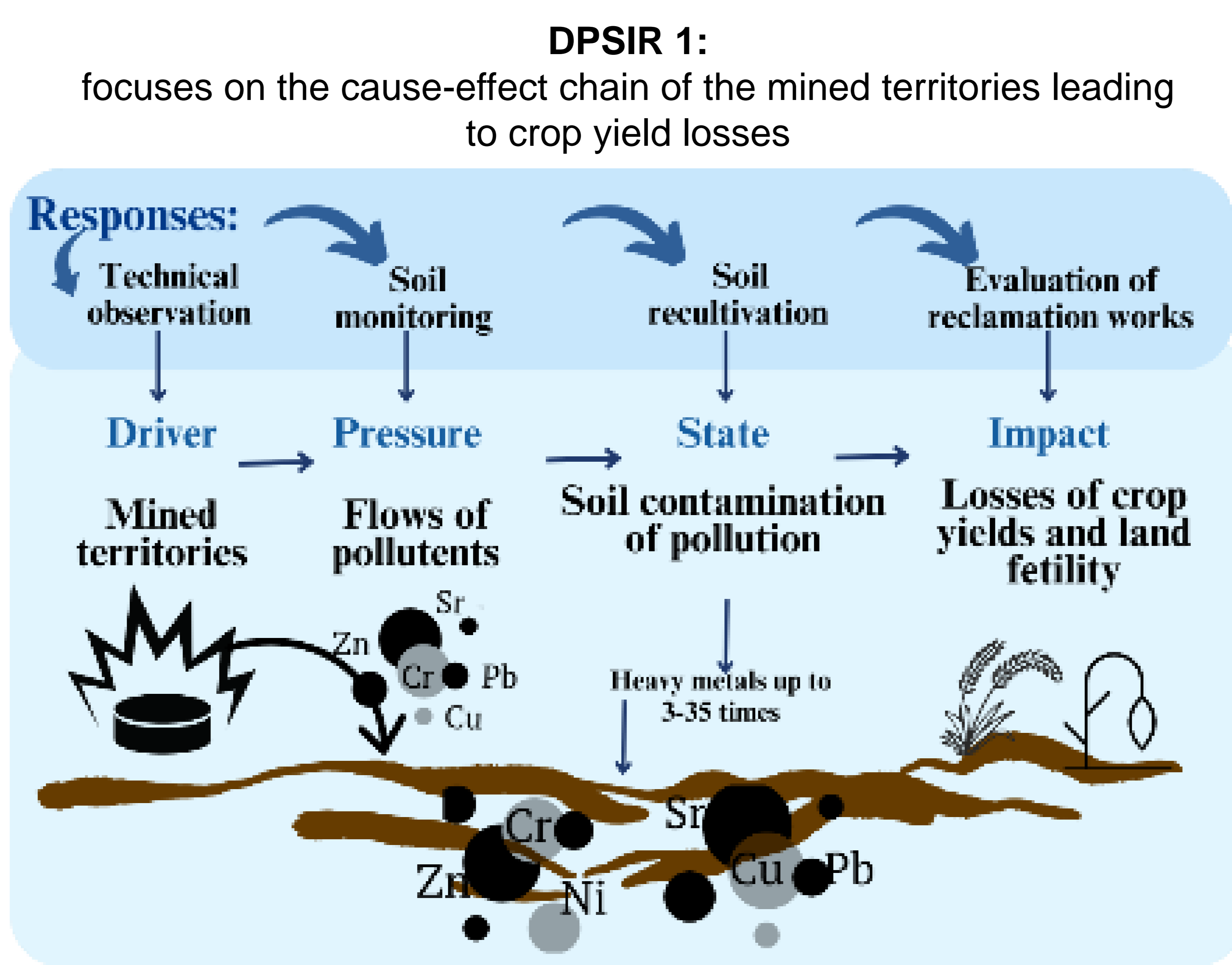
Summarized overview of the impact of damaged water-related infrastructures on river pollution and its rural and urban sources as a result of the Russian-Ukrainian war



## Method:

We applied the internationally recognized **DPSIR framework** to show some potential impacts of military activities on the agricultural sector in Ukraine, especially on crop production. In this study, we applied the frameworks that allowed us to describe the main drivers (**D**) to identify the pressures (**P**) on soil health, assess the state (**S**) of soil and water resources, and justify the impacts (**I**) of military activities that cause less clean water for agriculture. We highlighted the responses (**R**) for minimizing the influence of polluted soil and water on crop production and enhancing soil productivity. We have designed three DPSIR frameworks.

## Results and discussion



## Conclusion:

We designed the three DPSIR frameworks to determine the cause-effect aspects of (1) minded territories, (2) destroyed or damaged water infrastructure, and (3) irrigation systems. We showed the main challenges of those drivers for the decreased availability of clean water for agricultural production and crop yield losses. Our DPSIR analyses show the following implications for crop production: 35% land degradation, 17% crop yield losses, 14% decreased grain product exports, and soil contamination by heavy metals up to 3-35 times compared with standards (0.59587,69 km2 of polluted areas), as well as water contamination with around 1,7 million tons of various pollutants. All these implications decrease soil health and contribute to food security and water scarcity. It is expected that water scarcity and soil deterioration will become more severe in the coming months and years, especially in the southern part of Ukraine. This will challenge the Ukrainian agricultural sector even more than today