

# ASSESSMENT OF **RESIDENTIAL DAMAGE** IN SEVEN SETTLEMENTS IMPACTED BY KAKHOVKA DAM FLOODING

## Background

On 6 June 2023, the breach of the Kakhovka Hydroelectric Power Plant Dam, located on Ukraine’s Dnipro River approximately 70 km from the city of Kherson, caused major flooding in large areas downstream, resulting in extensive damage to residential infrastructure. To support shelter response and reconstruction efforts, **REACH assessed damage to residential buildings in seven settlements in impacted areas** under the control of the Government of Ukraine as of August 2023: Antonivka, Bilozerka, Ivanivka, Komyshany, Lvove, Olhivka and Sadove.



## Methodology and limitations

[Click on the settlements above to access maps](#)

**A combination of remote sensing of high-resolution satellite imagery and flood line boundary mapping allowed to identify buildings impacted by flooding.** All buildings within the impact zone were visually inspected to exclude non-residential buildings (i.e.: sheds). This assessment therefore comprises residential buildings only, with the vast majority being single-family homes. This approach allowed REACH to allocate impacted buildings **to two categories based on the type and estimated severity of incurred damage:**

**1** Buildings identified as flooded through remote sensing are likely to have **incurred severe damage** such as structural instability, interior damage, content loss, damage to electrical and plumbing systems, contamination from pollutants and mold growth.

**2** Buildings identified as impacted through flood line boundary mapping are likely to have been subject to hydrostatic pressure due to the rise of surface water levels, with **potentially compromised structural integrity** and foundation erosion.

While there is a high level of confidence in the identification of damaged buildings through remote sensing based on high-resolution satellite imagery, this method does not allow for the identification of fine-scale details such as structural issues, interior damage, and the full extent of damage. Buildings identified as impacted through flood extent mapping may also present varying damage levels ranging from minimal to severe. Results should therefore be interpreted as indicative and be complemented with on-the-ground assessments to effectively inform shelter programming. Furthermore, this assessment does not cover all the settlements impacted by this flood event, which should be considered in response prioritisation.

## Flood-impacted settlement in Kherson region

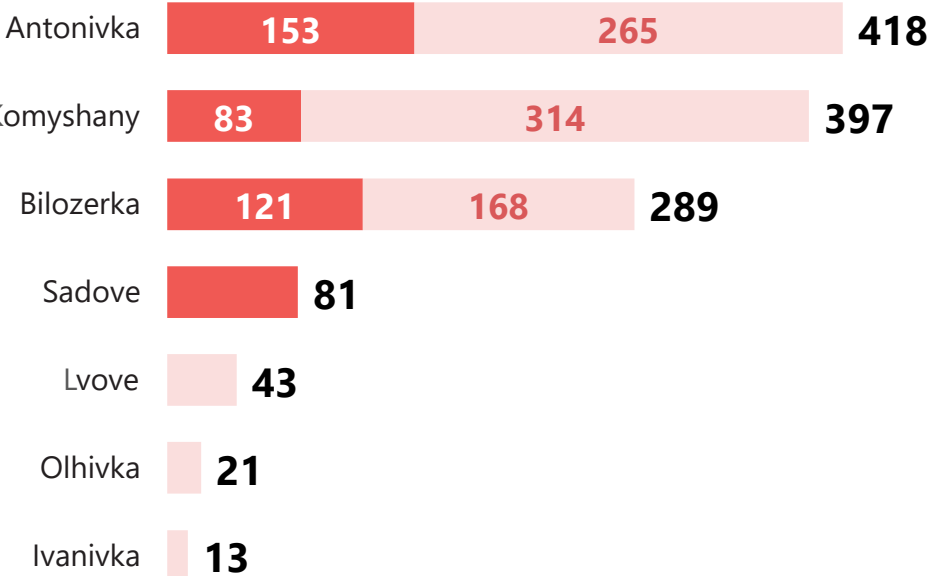


Source: Libkos/AP

## Findings

*To access the detailed assessments, [click on the settlements in the graph below or on the map on the left](#)*

Across the **7** assessed settlements:  
**1,262** residential buildings were identified as flood impacted  
**438** are likely to have incurred severe damage  
**824** are potentially damaged due to the rise of surface water levels.



In addition to short-term impacts such as structural damage, foundation erosion, interior water infiltration, electrical and plumbing system disruption, and content loss, unaddressed flood damage can result in deterioration of building materials and mold growth, with detrimental consequences to human health. Furthermore, flood damage can result in substantial financial strain for impacted residents.

Needed repairs range from immediate measures such as replacing damaged materials and restoring electrical systems, to addressing long-term issues such as mold management, foundations stabilisation, and implementation of preventative measures against future floods. A multi-faceted approach to repairs that addresses both immediate and long-term impacts is crucial not only to prevent structural decline and health hazards, but also to alleviate the financial strains on residents in a conflict-affected area characterised by impacted livelihoods and high levels of humanitarian needs.

### UADamage

is a Ukrainian organisation specialised in the application of artificial intelligence (AI) and remote sensing technologies to assess conflict-driven damage in Ukraine and inform reconstruction efforts. REACH in Ukraine is partnering with UADamage to perform various types of damage assessments.