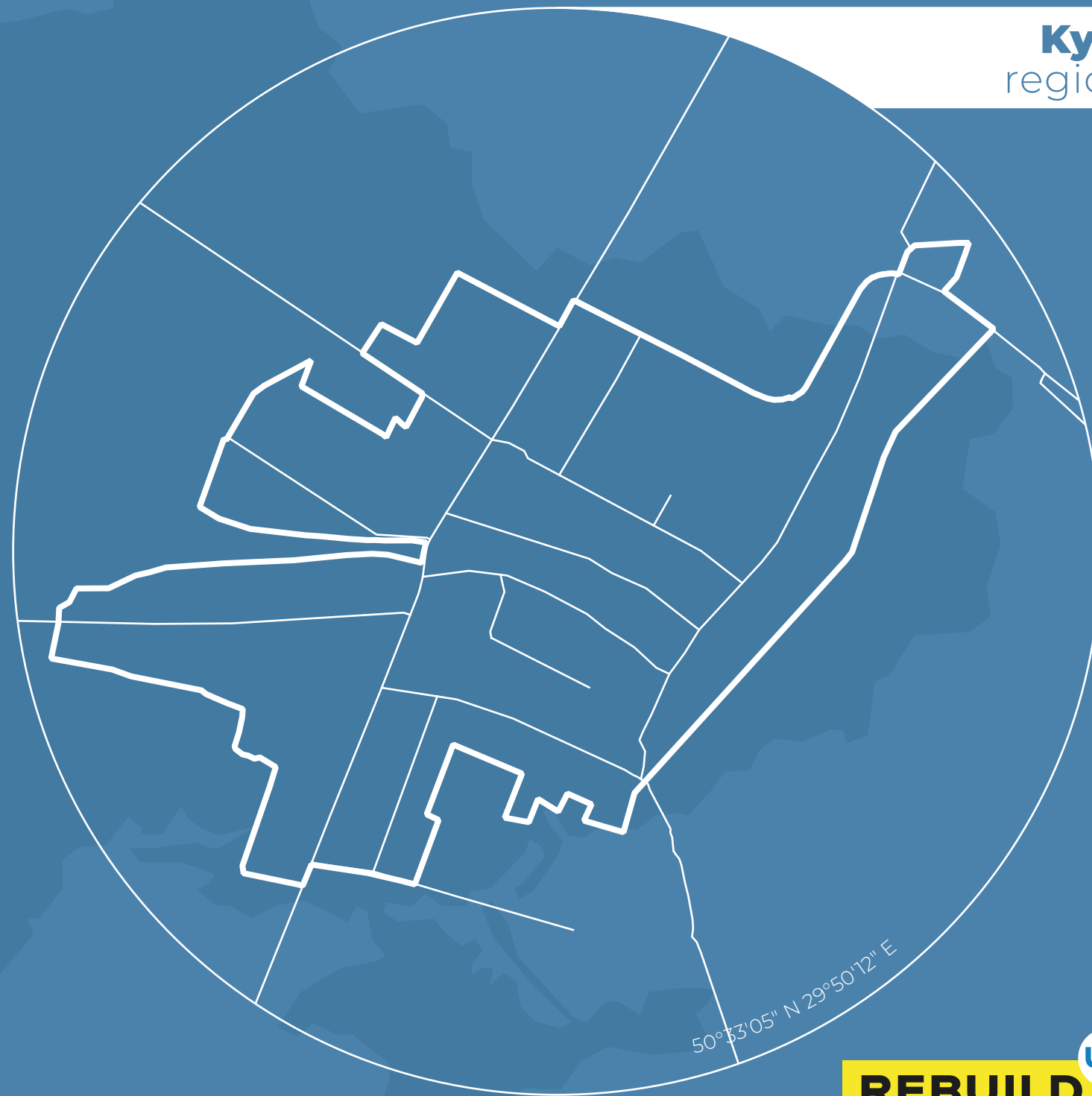


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**DIGITIZATION
OF DESTROYED
INFRASTRUCTURE**

Kyiv
region



REBUILD **UA**

ABOUT THE PROJECT

Background

The Russian aggression has caused a large amount of damage and destruction in almost all regions of Ukraine — housing and infrastructure have been destroyed, and industrial facilities and local businesses shut down.

The speed and efficiency of the country's recovery processes directly depend on a competent assessment of the damage, correct budgeting and a step-by-step plan for reconstruction. A transparent assessment of damages will justify the need for funding as well as simplify the process of raising funds for recovery.

About the project

The RebuildUA project aims to digitize, analyze and demonstrate to the world the destruction of Ukraine's infrastructure. The geography of the project covers all regions of the country affected by military aggression.

The results will be made public, communicated to communities, public authorities and specialized recovery funds.

Project founders:

Drone survey and digitization of geospatial information:



Land analysis and interaction with communities:



The initiative is being financially and technically supported by the United Nations Development Programme in Ukraine.

Methodology

1. Drone photography and orthophoto creation

The use of drones allows the project team to collect detailed data on the destruction: to fly at low altitudes, and shoot buildings at different angles and from all sides. For localities where drone shooting is not possible, we use high-resolution satellite images.

2. Collection of photos and videos

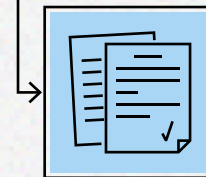
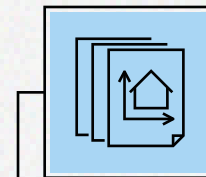
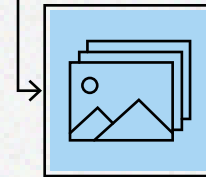
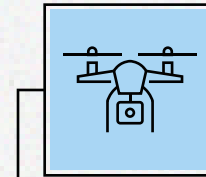
To ensure completeness of the input data, the project team captures photos and videos, as well as collects additional information from verified sources.

3. Destruction detection and data processing

Based on orthophotos, GIS specialists digitize all buildings, identify destroyed objects, classify building types, and determine levels of destruction.

4. Publication of analytical reports

Designers and content managers present the complete information in public infographic reports.



Find out more at the project website:



rebuildua.net

ABOUT THE LOCALITY

"Little Mariupol", the most destroyed village in Kyiv region, the village that was under occupation for the longest time — all this tells a story of Andriivka near Bucha.

Andriivka is located on the road leading to Kyiv from the belarussian border. The occupiers moved along this road, and at the beginning of the war fierce battles were fought here. Most of the buildings in the village have been bombed or badly damaged, including those with the signs "People" and "Children" on their gates. Tanks among the houses, looted property, shelling and other atrocities — the settlement was practically wiped off the face of the earth.

Learn more about the destruction of Andriivka in our report.



 rebuildua.net


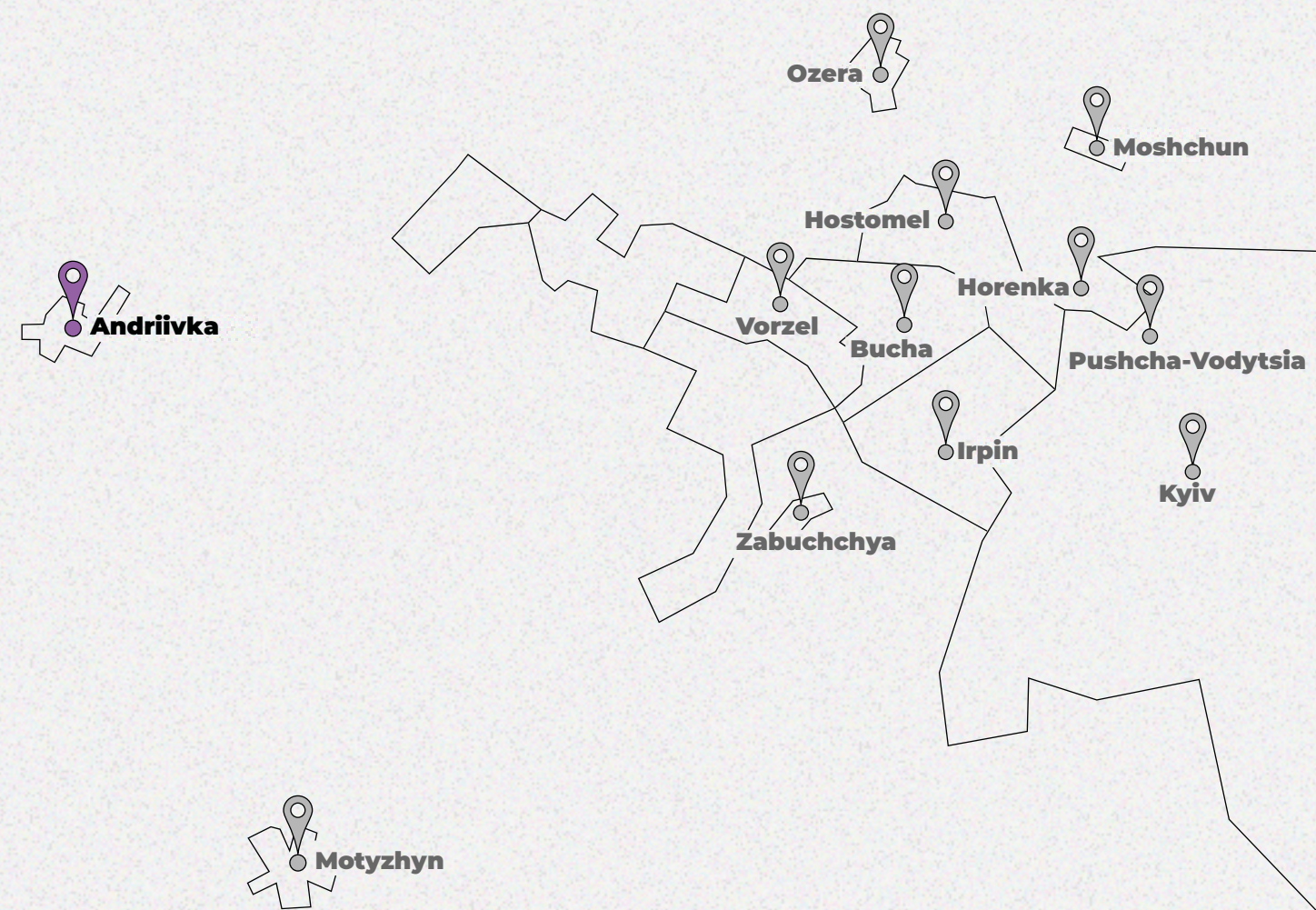

 [/rebuildua.net](https://facebook.com/rebuildua.net)

Photo: [censor.net](https://www.censor.net), open sources



Region **Kyiv**
 District **Buchanskyi**
 Community **Makarivska**

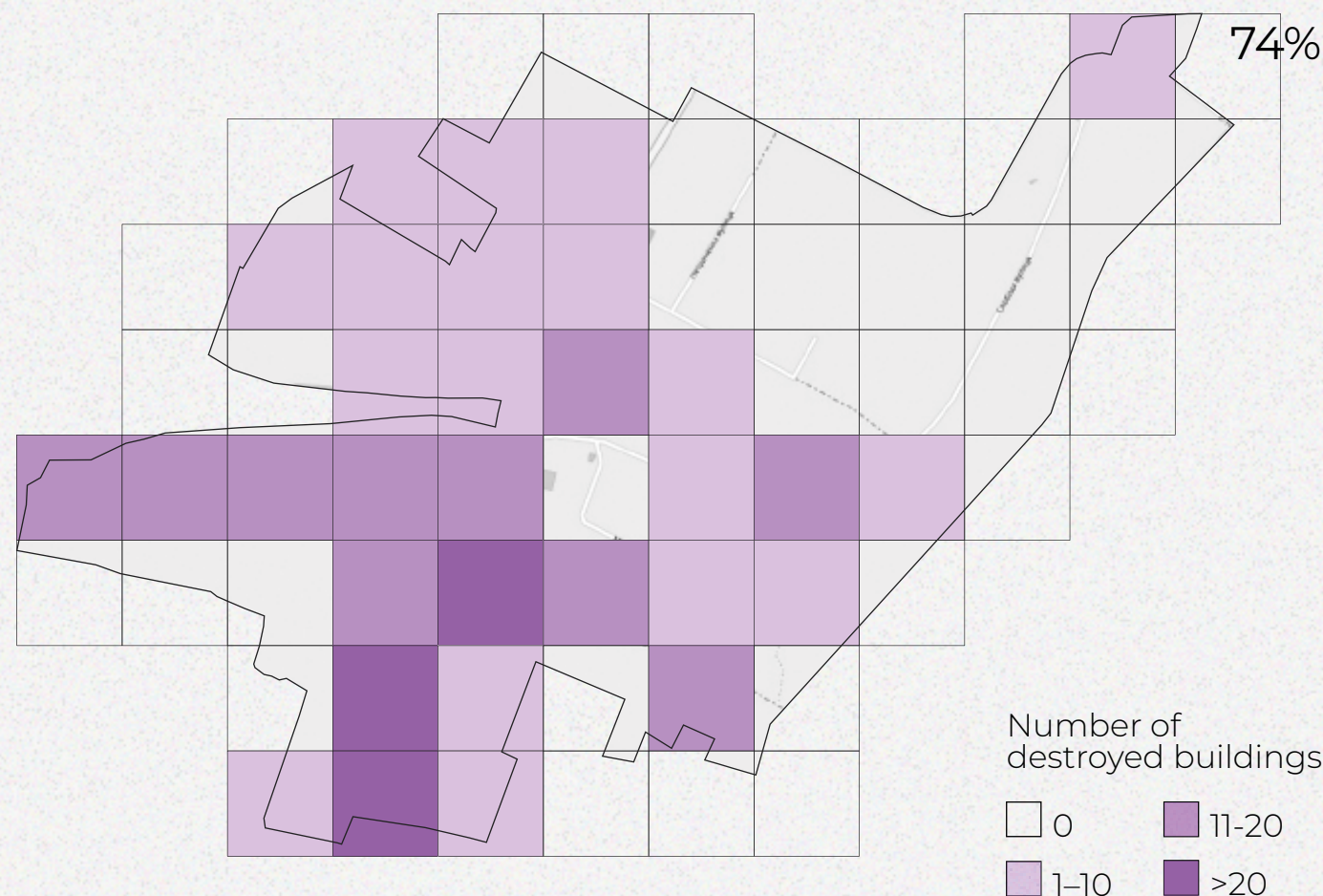

 Area
0.512 km²


 Population
1,082 people

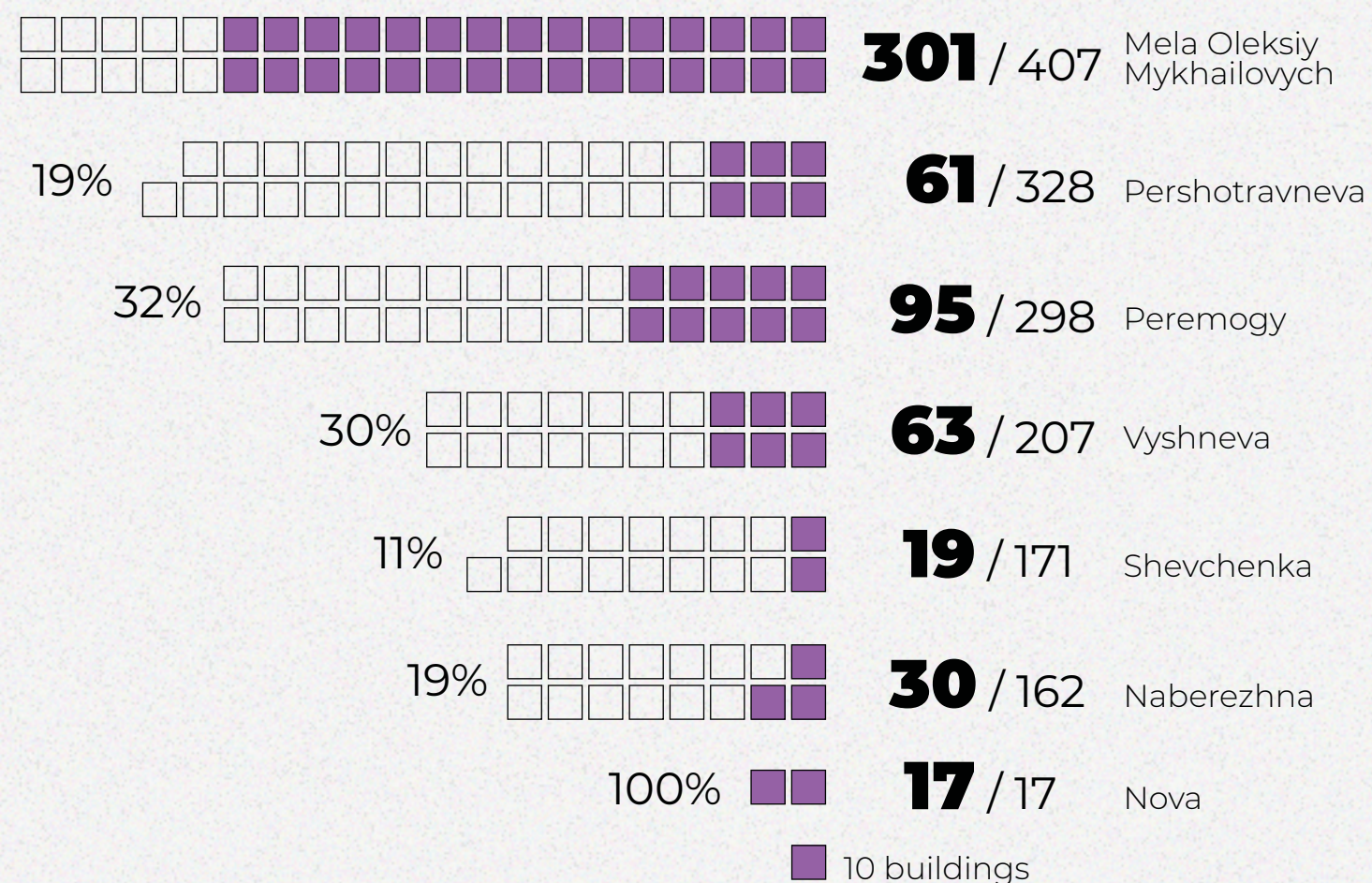
DIGITIZATION PROCESS



THERMAL MAP OF DESTRUCTION



Destruction of the largest streets

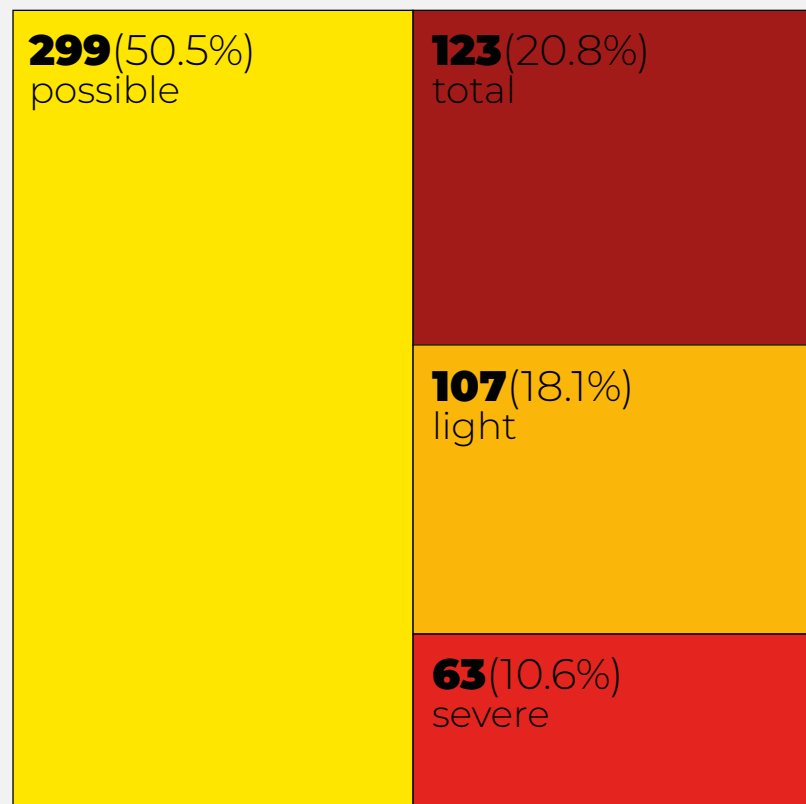


LEVELS OF DESTRUCTION

Buildings destroyed:

592 / 1,993

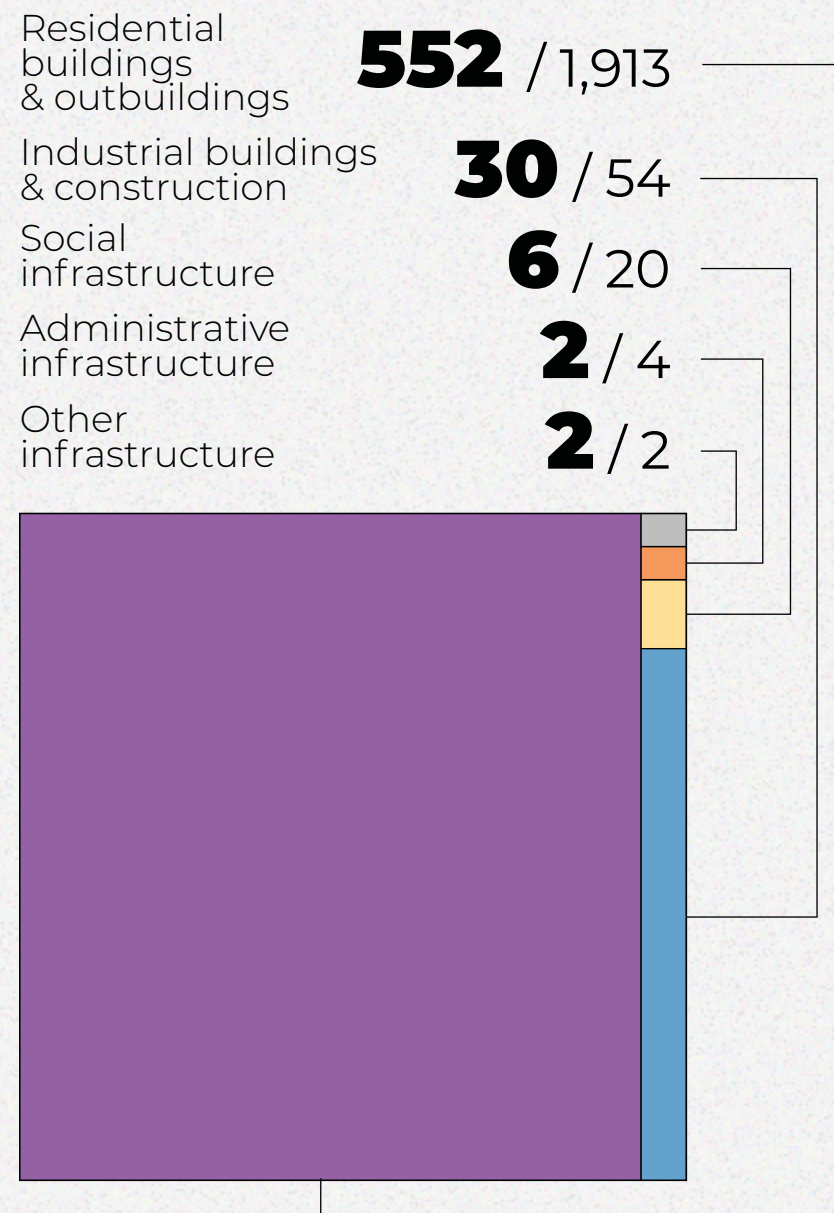
Level of destruction, number of buildings



- total destruction
- severe destruction
- light destruction
- possible destruction
- no destruction



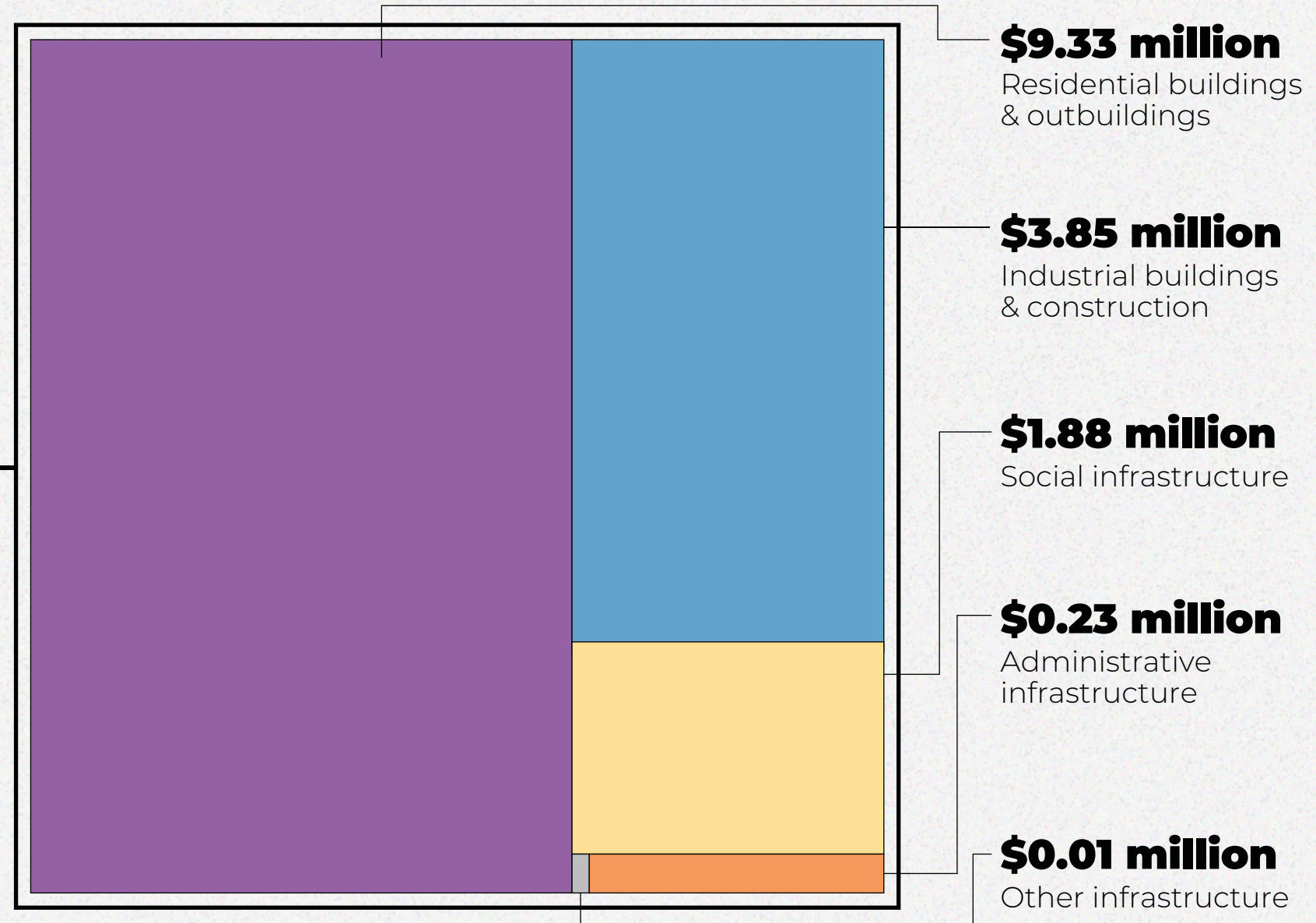
TYPES OF DESTROYED OBJECTS



ASSESSMENT OF DAMAGES

Damages by types of buildings

Total damages
\$15.3 million



SCALE OF DESTRUCTION

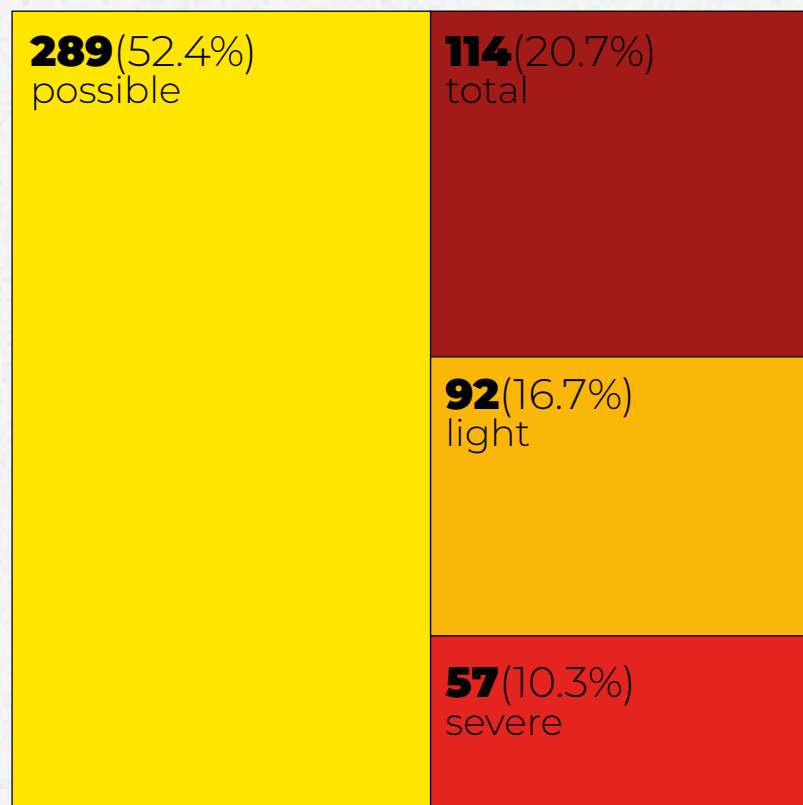


REBUILD



SCALE OF DESTRUCTION

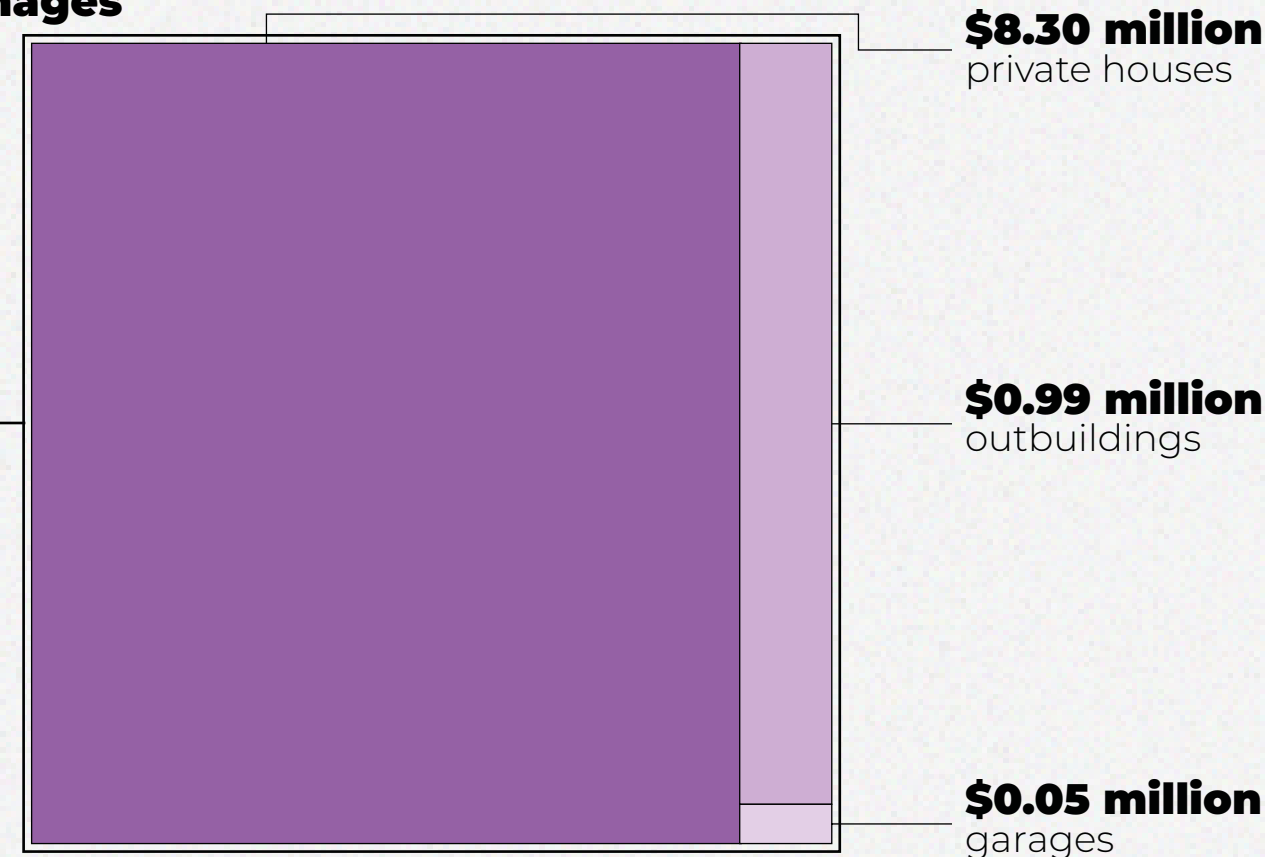
Level of destruction



Assessment of damages

Total damages

\$9.3 million

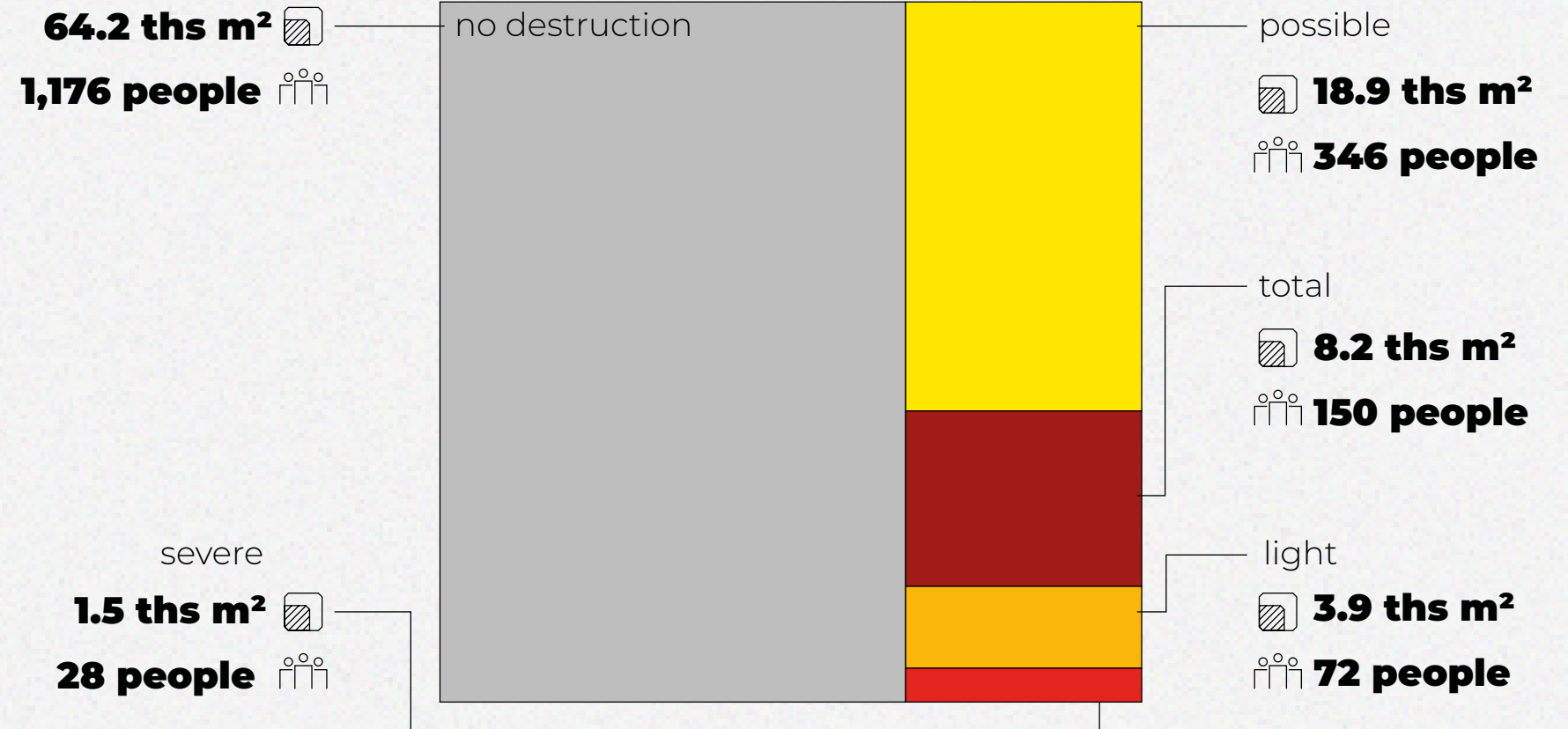


RESIDENTIAL BUILDINGS

Private house



The area of destruction and the number of residents who suffered damage



Total area of damage
32.5 ths m²

Number of residents affected
596

OUTBUILDINGS

Garage



Area of destruction

34.2 ths m²

severe
2.6 ths m²

no destruction

possible

7.7 ths m²

total

2.4 ths m²

light

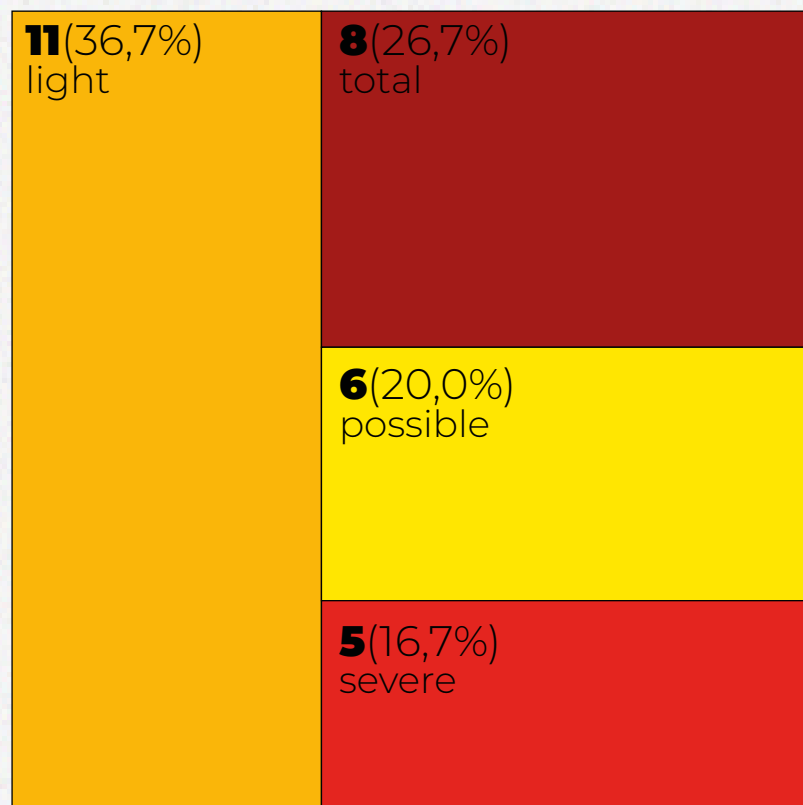
3.2 ths m²

Total area of damage

15.9 ths m²

SCALE OF DESTRUCTION

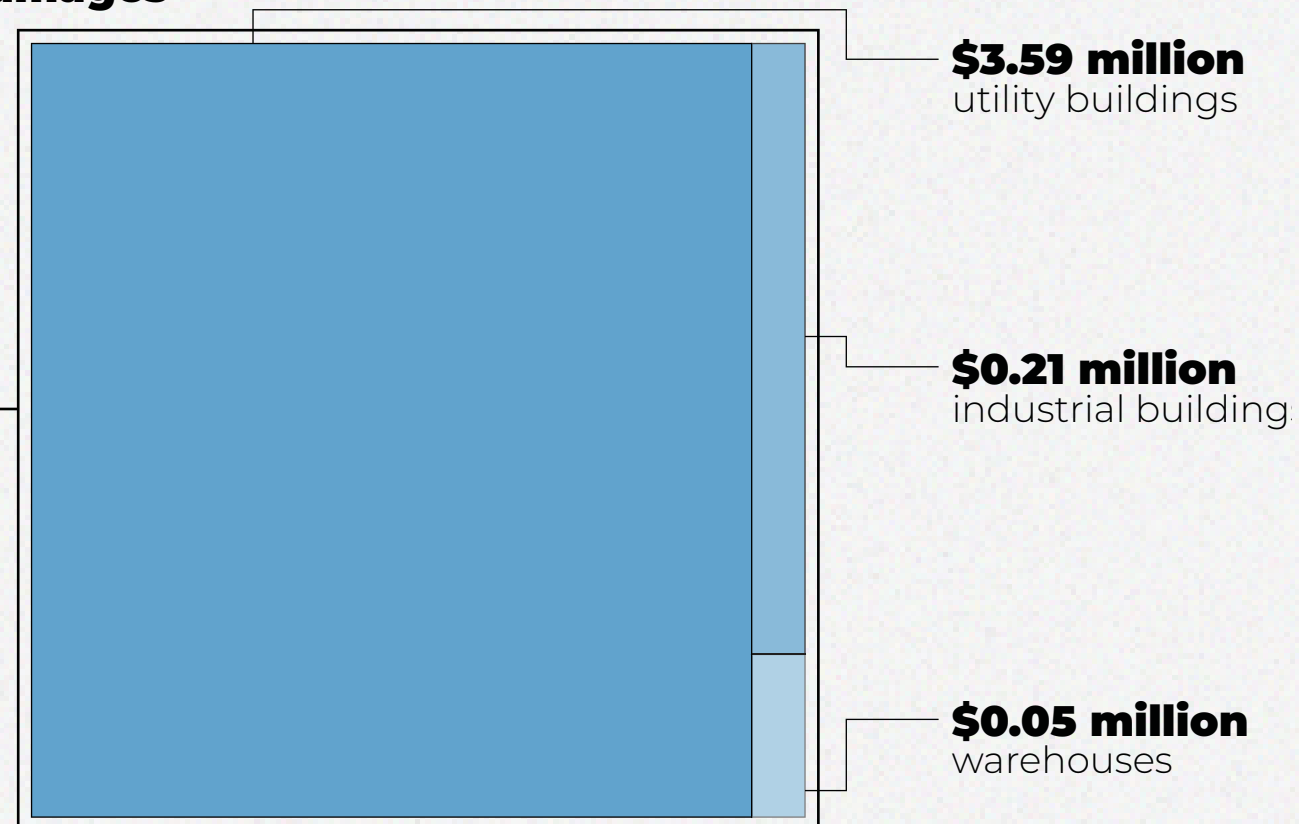
Level of destruction



Assessment of damages

Total damages

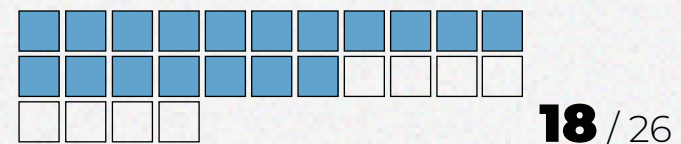
\$3.9 million



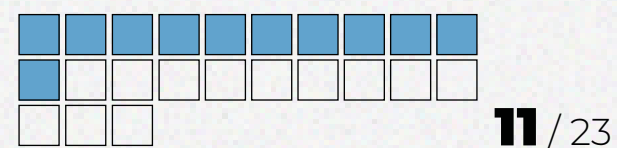
SCALE OF DESTRUCTION

Number of destroyed buildings

Industrial buildings



Utility buildings



Warehouses

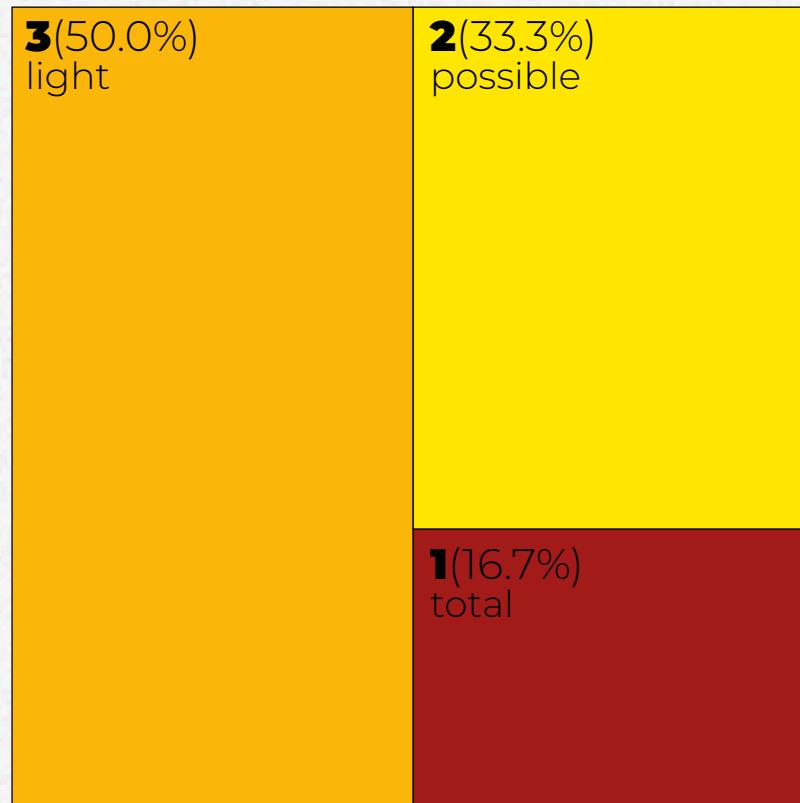


Utility building



SCALE OF DESTRUCTION

Level of destruction



Assessment of damages

Total damages

\$1.9 million

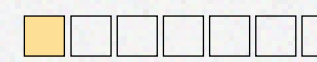


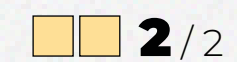
\$1.87 million
Educational institutions

\$0.01 million
Trade & commerce

Number of destroyed buildings

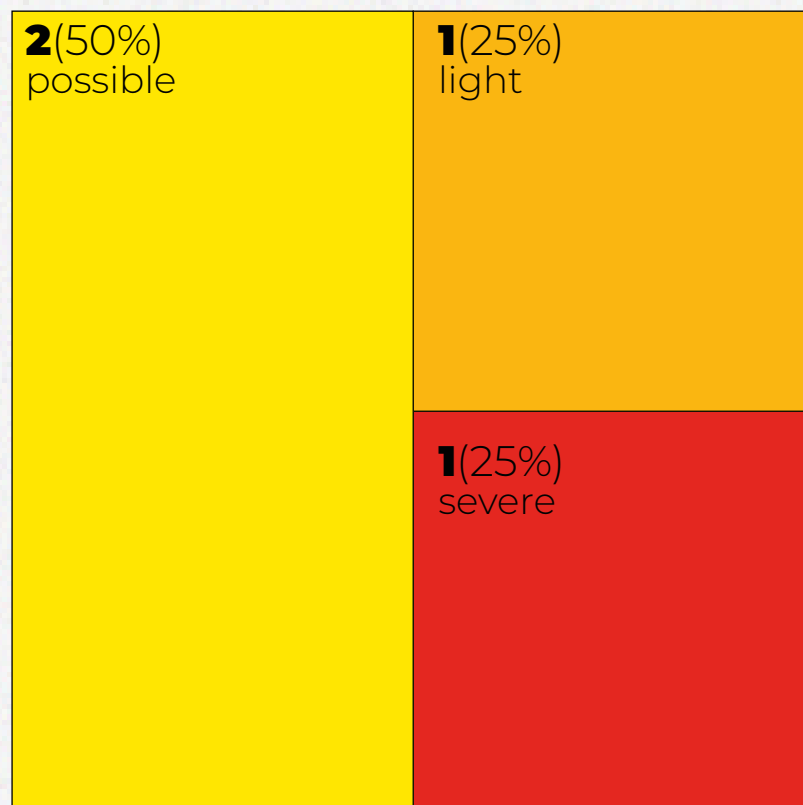
Trade & commerce
 **3** / 7

Buildings of general purpose
 **1** / 7

Education
 **2** / 2

SCALE OF DESTRUCTION

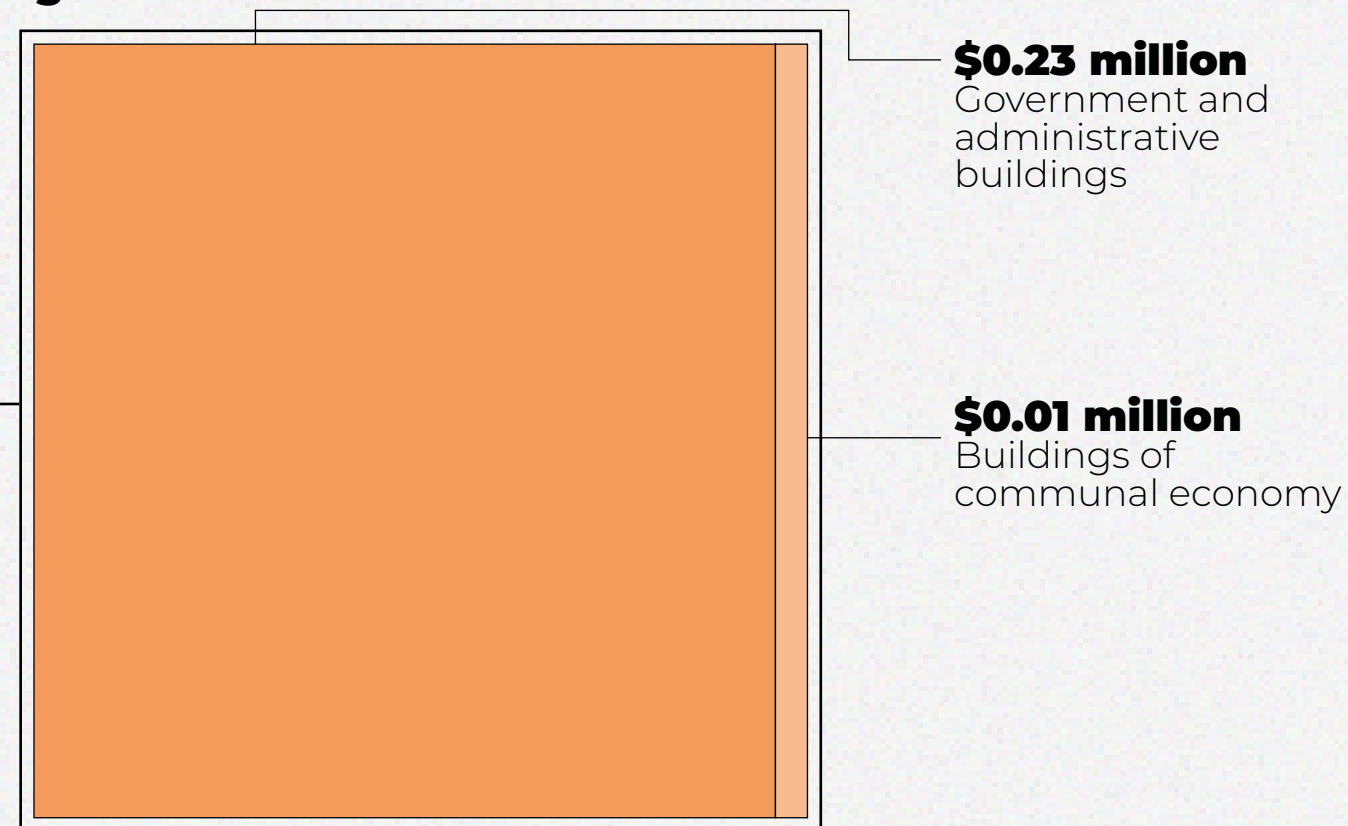
Level of destruction



Assessment of damages

Total damages

\$0.2 million



SCALE OF DESTRUCTION

Level of destruction

Government and
administrative
buildings

 **2/2**

Buildings of
communal economy

 **2/2**

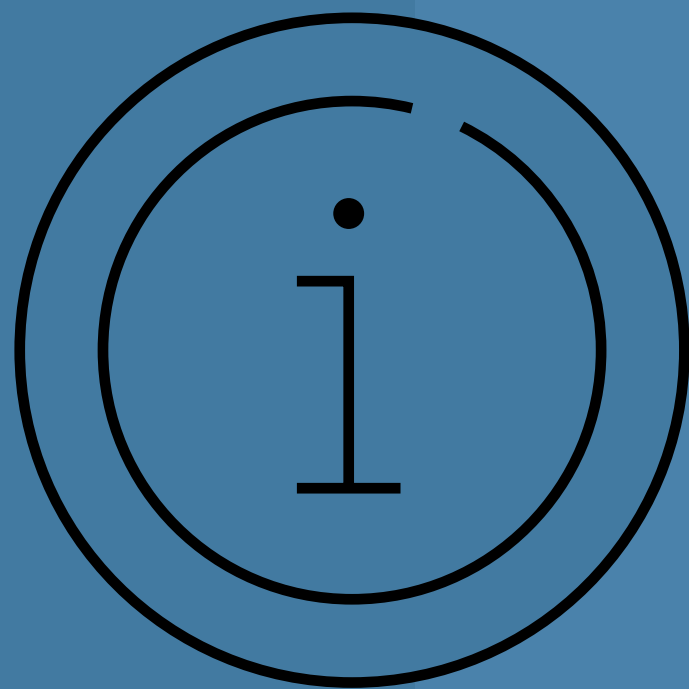
Administrative building



Building of communal economy



METHODOLOGIES AND ADDITIONAL INFORMATION



HOW WE DETERMINE LEVELS OF DESTRUCTION

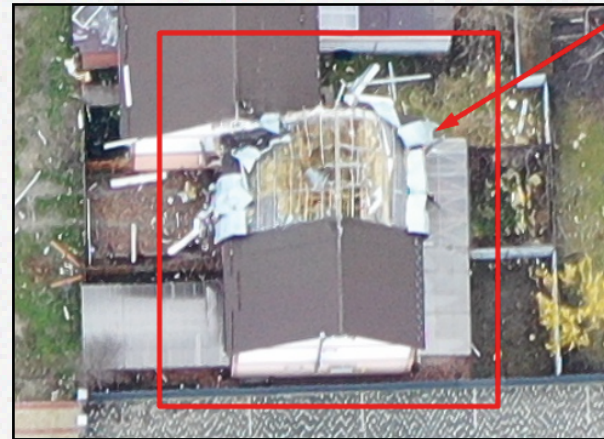
Total destruction



Appointed when the original structure of the building is no longer detectable restoration is impossible, namely:

- the building is completely or significantly destroyed (> 50%);
- only part of the building collapsed to the foundation.

Severe destruction



Implies significant visible damage to the building and its structure, which includes:

- collapse of part of the roof;
- serious destruction and damage to the walls.

Light destruction



Implies minor partial damage to the building and its structure:

- minor damage to the roof,
- collapse of chimneys,
- damage to facade, decorative and removable elements,
- a large amount of debris.

Possible destruction



Intended for buildings that are difficult to interpret due to lower image quality (for example, shadow or poor resolution due to high angle of shooting).

Visual signs may include be small amounts of debris, gravel or sand around the building.

1. Assumptions

The following fractions were used for calculations:

100%

of the replacement cost of total destruction

50%

of the replacement cost of severe destruction

10%

of the replacement cost of light destruction

0%

of the replacement cost of possible destruction

2. Value determination



Large objects

The assessment of large objects, in particular enterprises, is calculated individually on the basis of financial statements and other public sources regarding value information.



Medium objects

Medium facilities, in particular, social infrastructure, trade objects, and services (health, education and culture, shops, hotels, restaurants, etc.) are calculated on the basis of average cost data, taking into account the type of area (urban/rural).



Small objects

Small objects, which include residential buildings, outbuildings and garages, are calculated based on the average footage (taking into account the area and type of area) and the cost per square meter (nominal cost + cost of redecoration repairs + cost of dismantling).

ANDRIIVKA THROUGH THE EYES OF BEHOLDERS

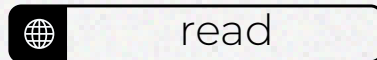
Russian mines, abandoned projectiles and destroyed homes: the village of Andriivka near Bucha, bombed by russian army



Unhealed wounds of the occupation: what russian troops left behind in the village of Andriivka



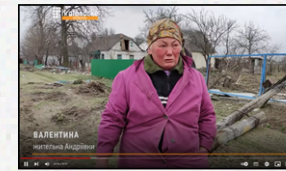
The village of Andriivka in Kyiv region is called the most destroyed in the region



Andriivka. The tragedy of one village



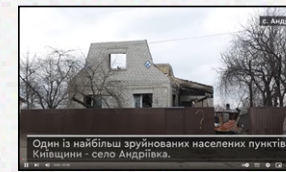
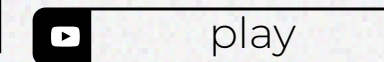
A bird's-eye view of one of the villages most affected by shelling in Kyiv region



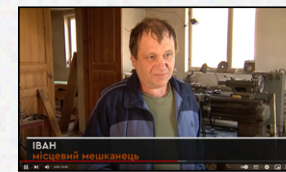
Robbery, rape, shooting. Andriivka



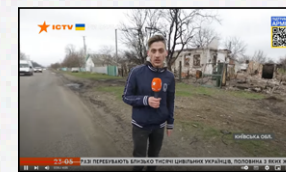
«Village of Intelligence». How Andriivka near Kyiv survived the occupation



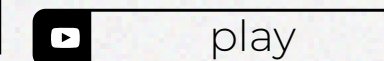
This was not seen even during the Second World War! Stories of residents from de-occupied Andriivka



We burned all the furniture they came in contact with: residents of Andriivka about crimes and looting by russians in the village



Shot Andriivka: how russians destroyed the entire social infrastructure of the village



GRATITUDE TO VOLUNTEERS

Being a volunteer is a necessary and responsible mission, because the contribution of every citizen is important for the reconstruction of the country. The active position, engagement and tireless work of volunteers support the work of the RebuildUA project team, bringing us closer to the desired result.

These people helped RebuildUA digitize the destruction of Andriivka:

Vadym Denysenko

Volodymyr Kharchykhin

Yulia Khursa

Tetyana Kizilova

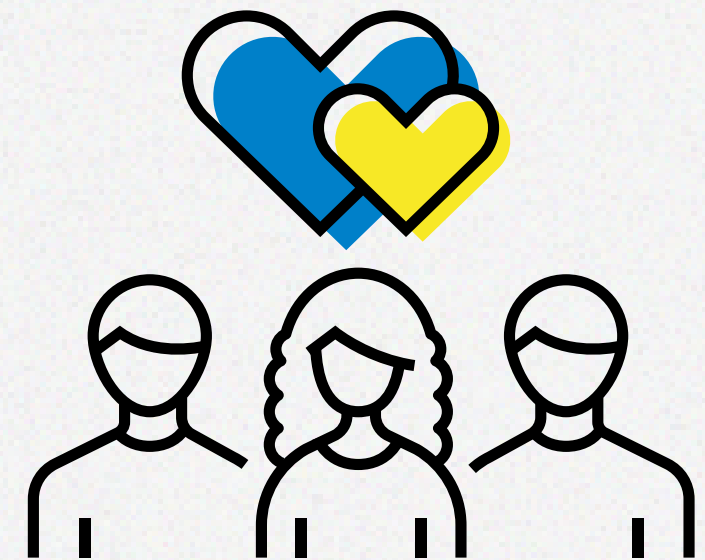
Nadiya Pilipaka

Oksana Piasetska

Olesya Shevchyk

Bohdana Stoyan

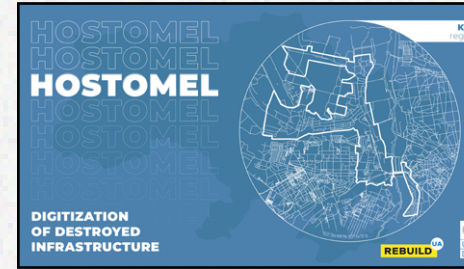
Olena Vitko



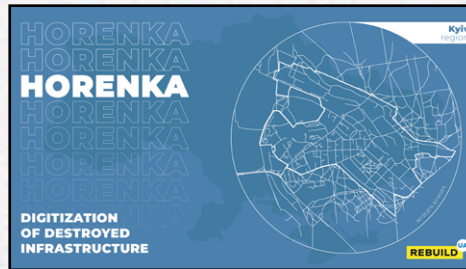
PREVIOUS REPORTS



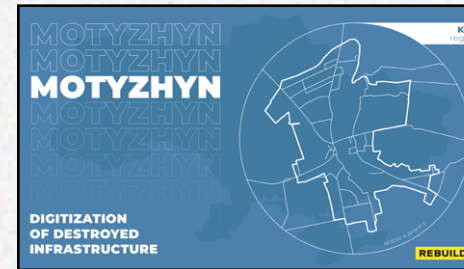
Moshchun,
Buchanskyi district,
Kyiv region



Hostomel,
Buchanskyi district,
Kyiv region



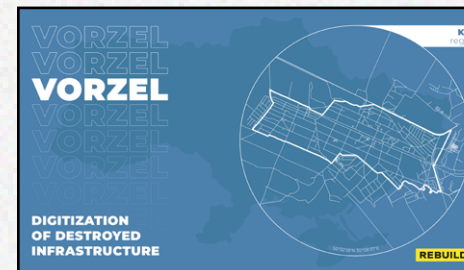
Horenka,
Buchanskyi district,
Kyiv region



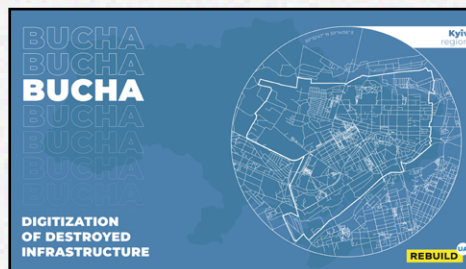
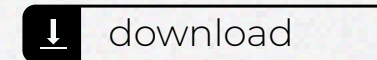
Motyzhyn,
Buchanskyi district,
Kyiv region



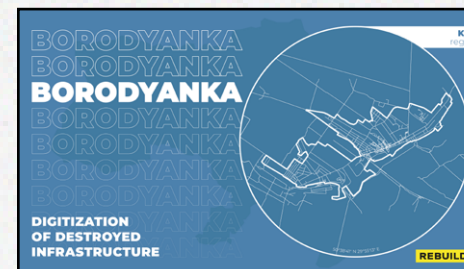
Irpin,
Buchanskyi district,
Kyiv region



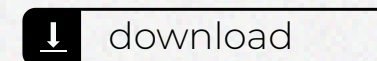
Vorzel,
Buchanskyi district,
Kyiv region



Bucha,
Buchanskyi district,
Kyiv region



Borodyanka,
Buchanskyi district,
Kyiv region



REBUILD



rebuildua.net

Partners:

Assessment of losses and damages, budgeting:



Financial and technical support



Shooting of settlements



Digitization of geospatial information:



Visual style and content:



Support in cooperation with public authorities:



Cooperation & analysis of community economy, Vkursi Hromada:



Creation of an online map of destroyed new buildings



Supported by:

