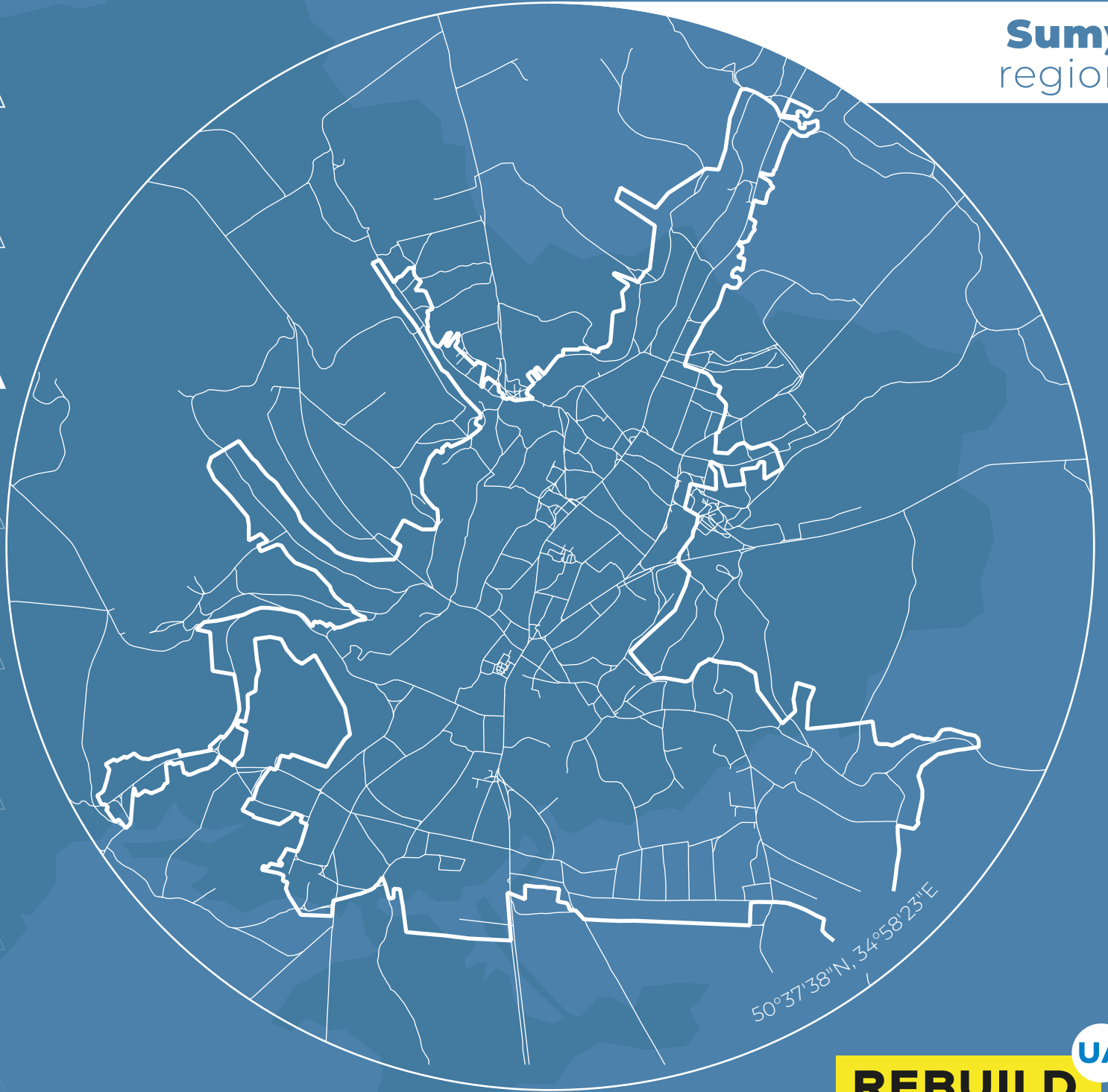


BOROMLYA
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BOROMLYA
**DIGITIZATION
OF DESTROYED
INFRASTRUCTURE**

Sumy
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

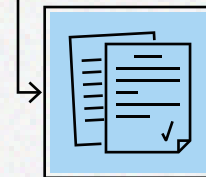
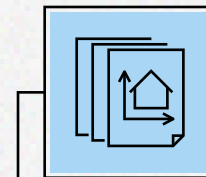
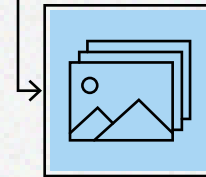
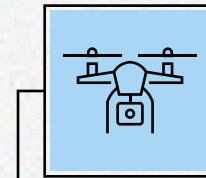
To ensure completeness of the input data, the project team captures photos and videos, as well as collects additional information from verified sources.

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:




ABOUT THE LOCALITY

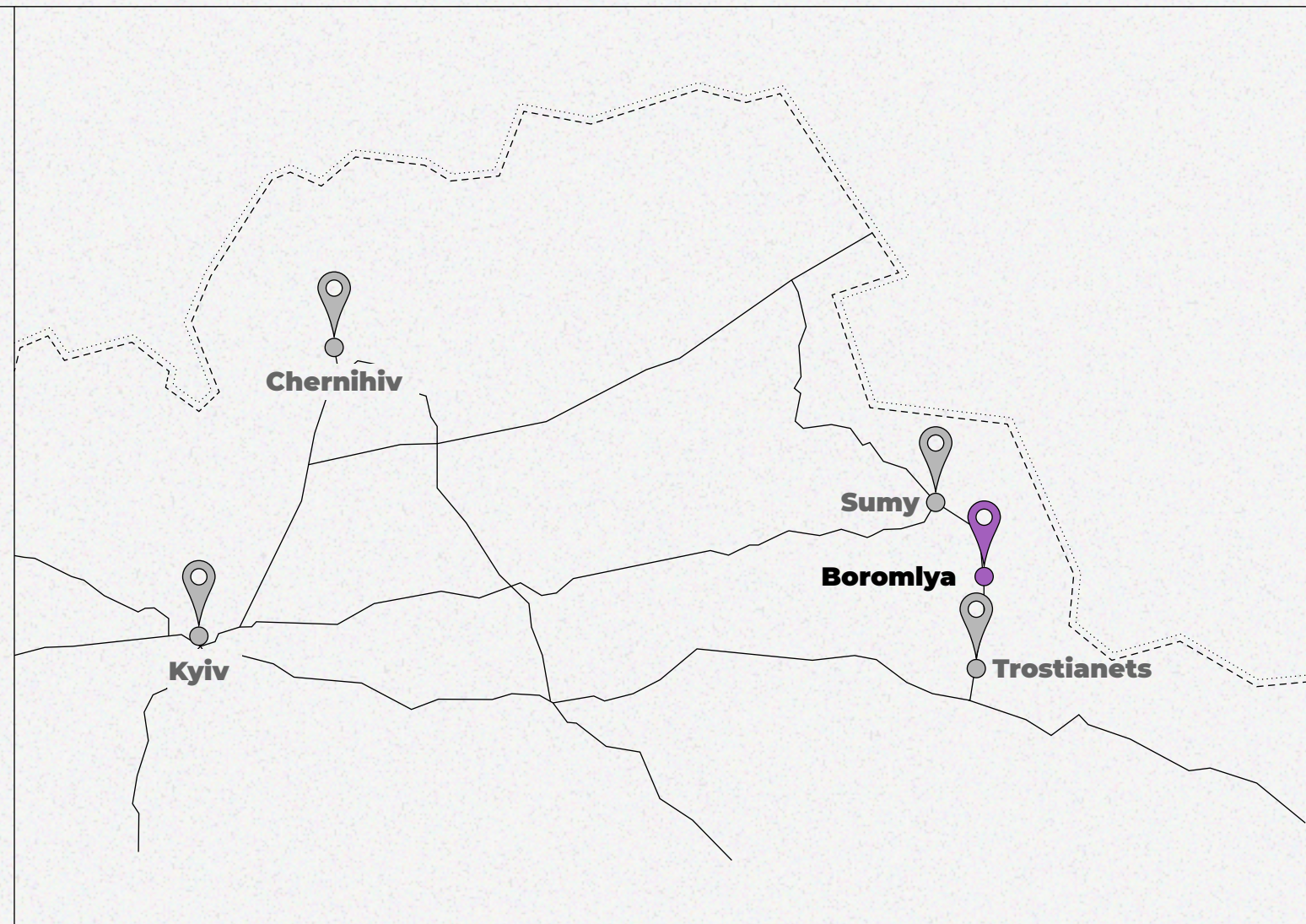
Enemy troops invaded the village of Boromlya near Oktyrka in Sumy region on February 24. According to residents, columns of russian vehicles moved from two directions at once. For 31 days, the occupiers shelled residential buildings and infrastructure facilities, stole products and destroyed private property, and abused the villagers. This "russian peace" left behind only destroyed houses, broken windows and dozens of lost lives.

The RebuildUA team assessed and recorded the damage that occupiers caused to the village.



 rebuildua.net

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

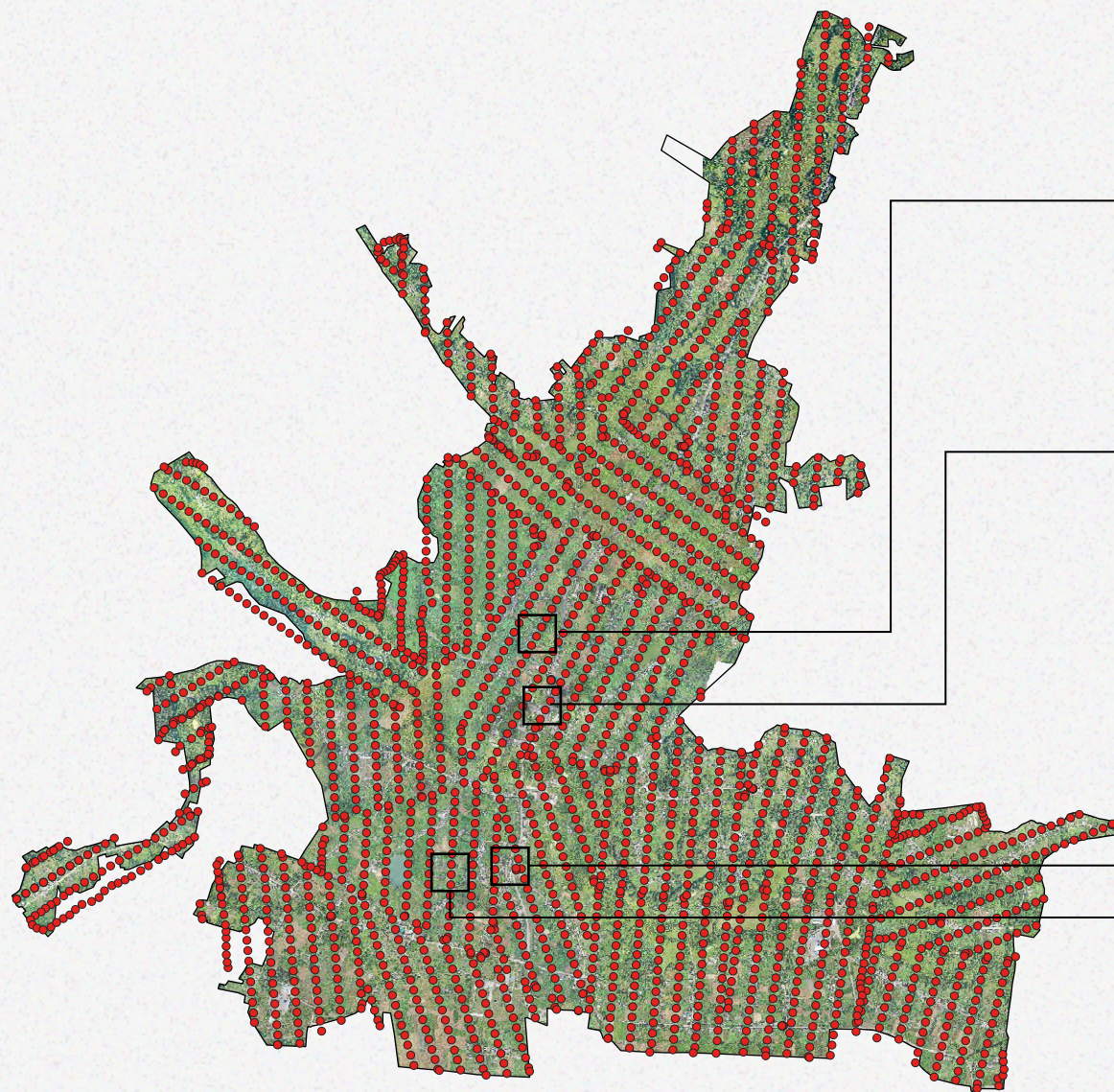


Region **Sumy**
 District **Okhtyrskyi**
 Community **Boromlyanska**


 Area
52 km²


 Population
4,357 people

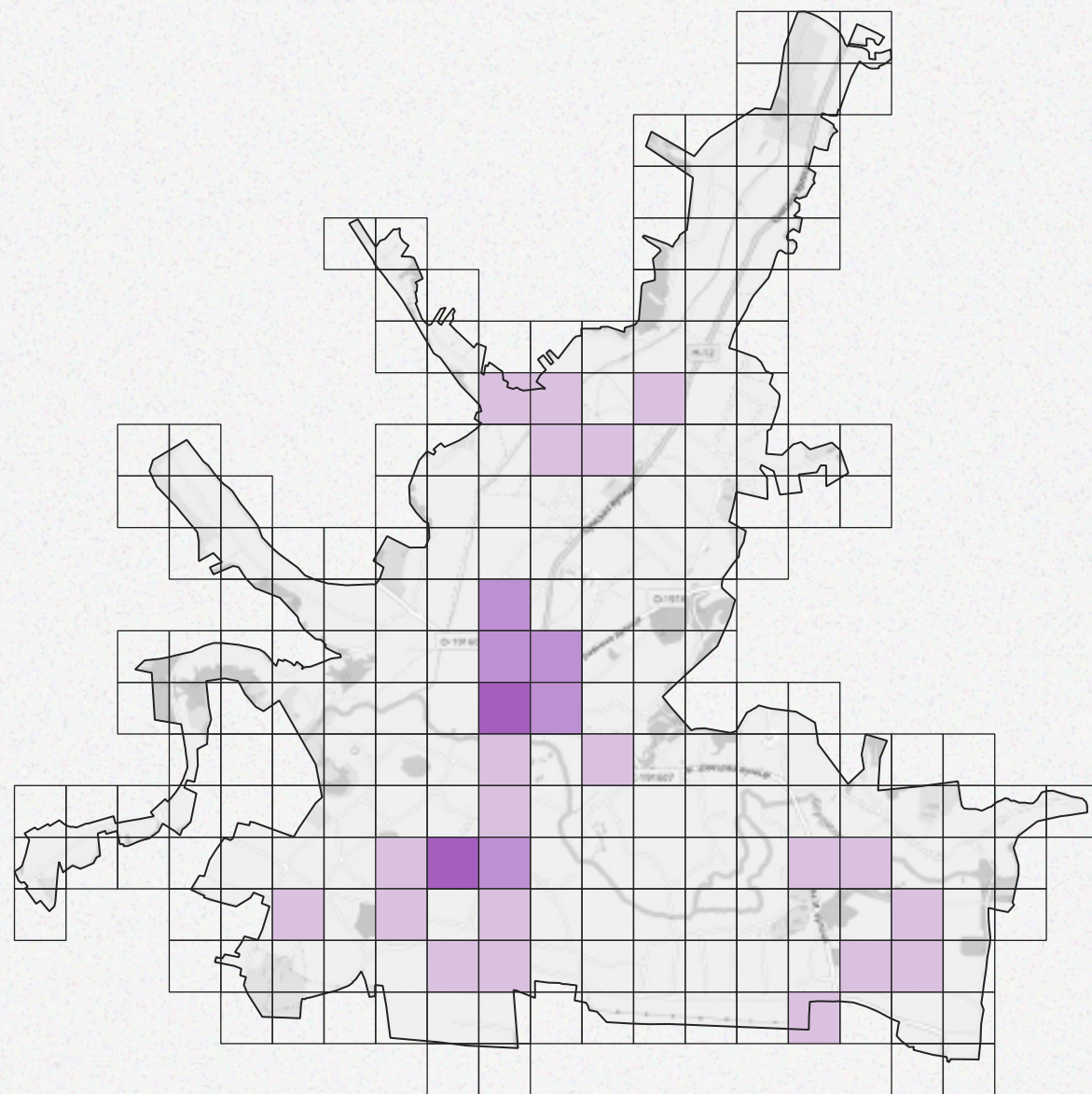
DIGITIZATION PROCESS



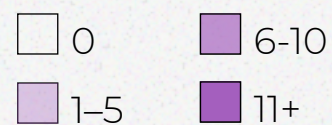
20 flight missions
2,522 pictures for orthophoto
400 hours of data processing
31.4 Gigabytes of data

— border of the locality
..... trajectory of drone shooting

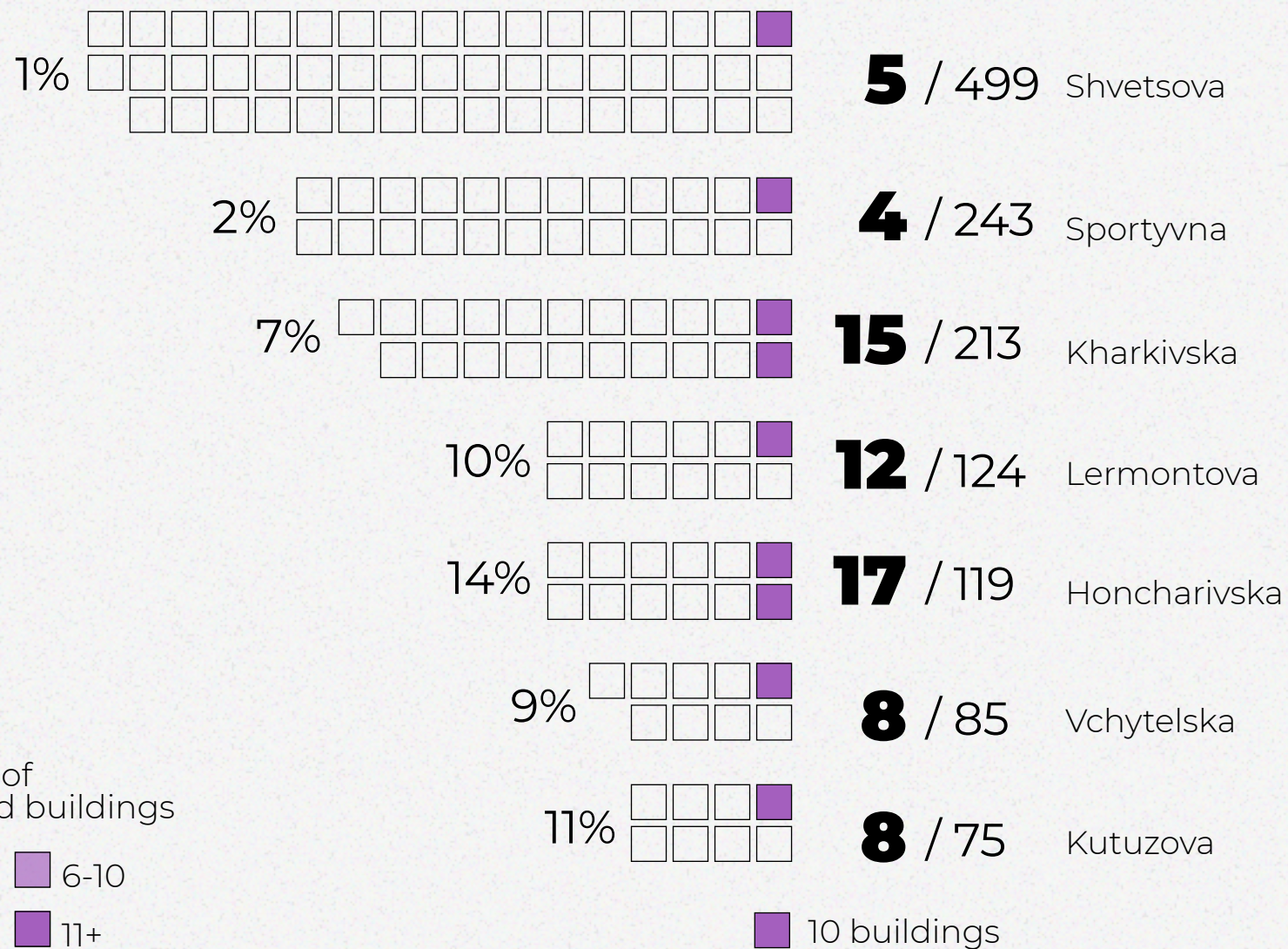
THERMAL MAP OF DESTRUCTION



Number of destroyed buildings



Destruction of the largest streets

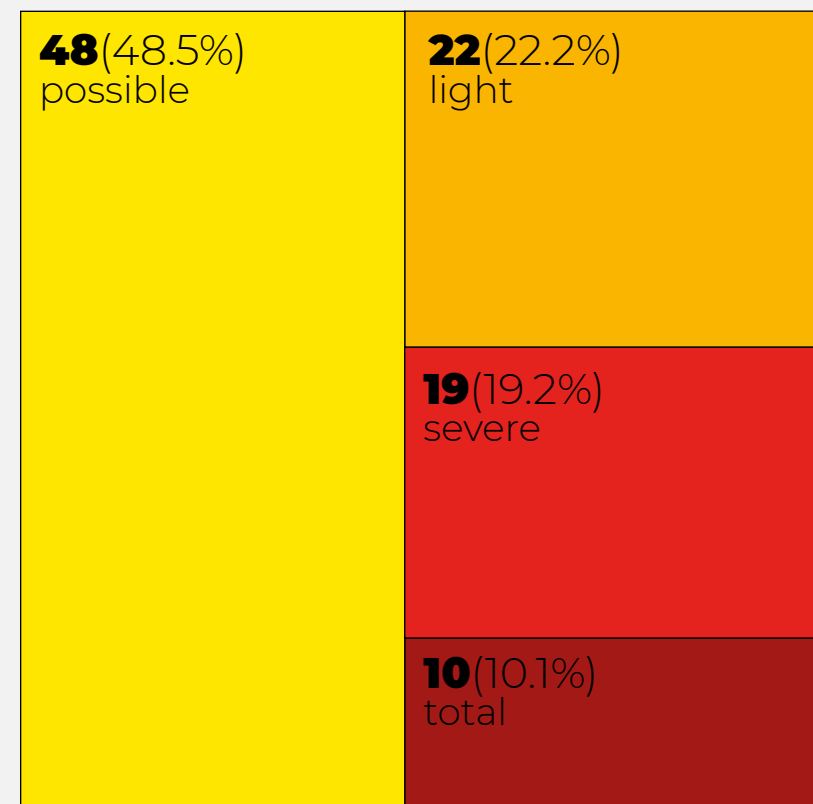


LEVELS OF DESTRUCTION

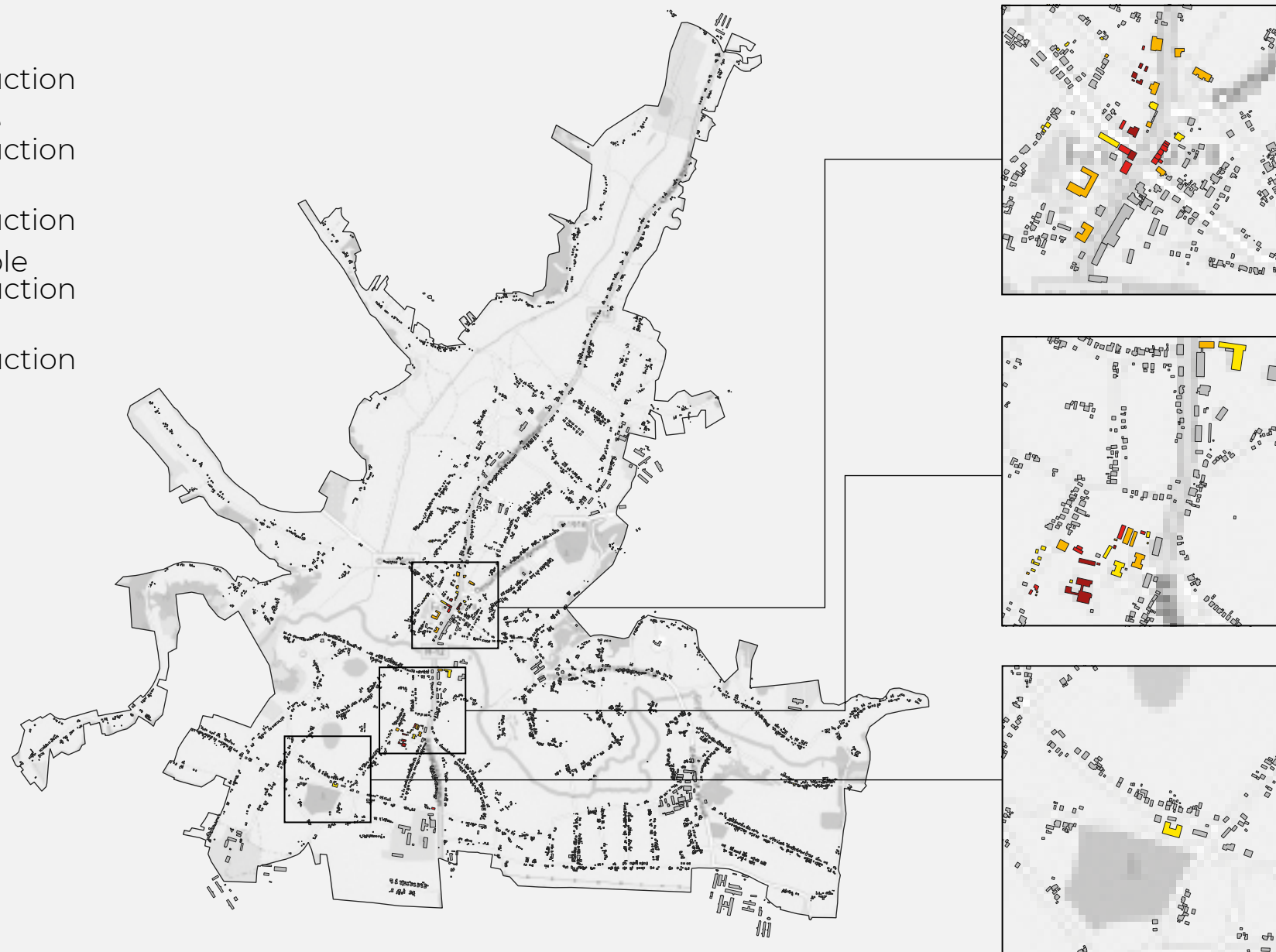
Buildings destroyed

99 / 7,615

Level of destruction, number of buildings



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



TYPES OF DESTROYED OBJECTS

Residential buildings
& outbuildings

68 / 7,317

Social
infrastructure

22 / 71

Industrial buildings
& construction

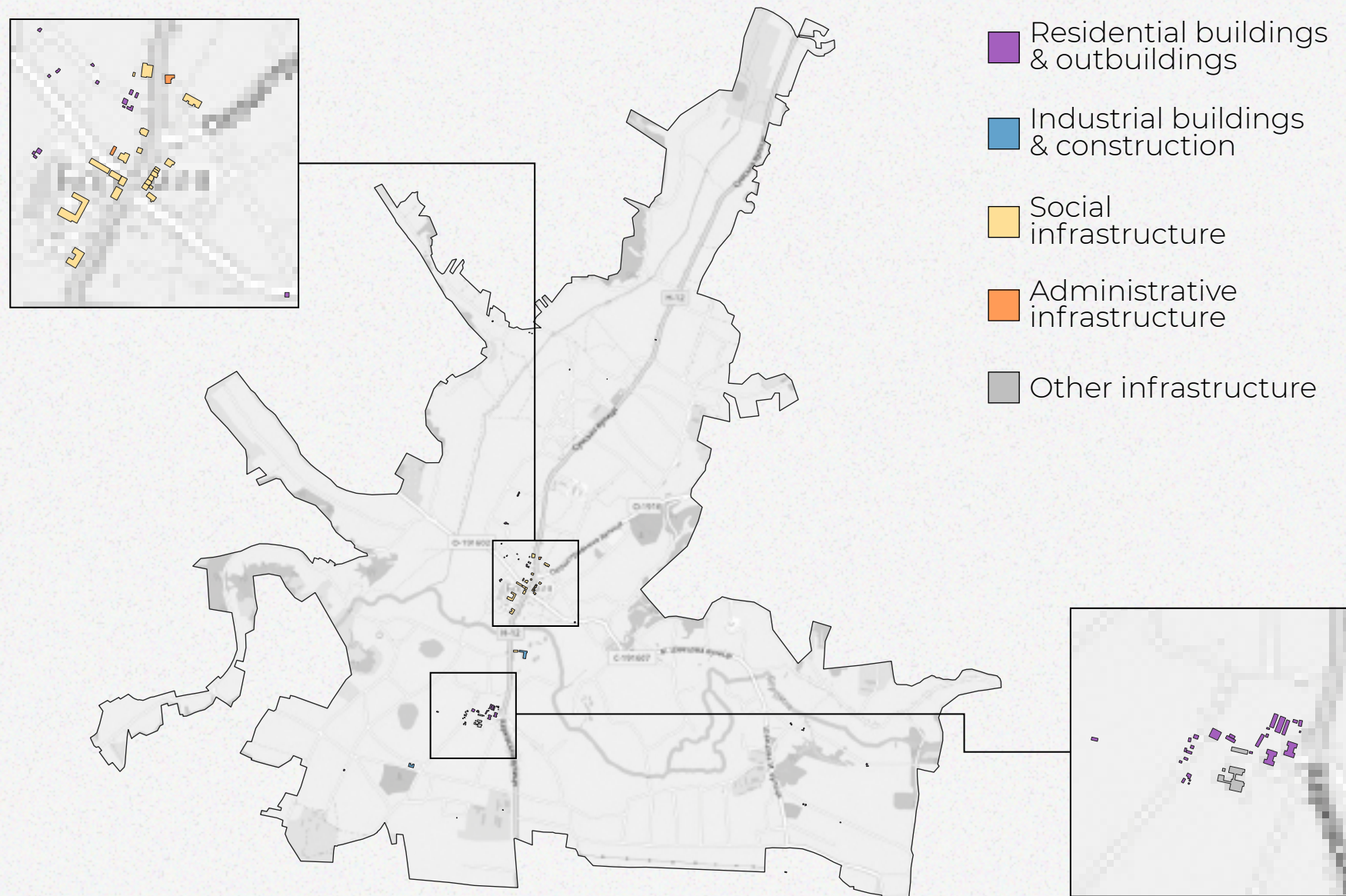
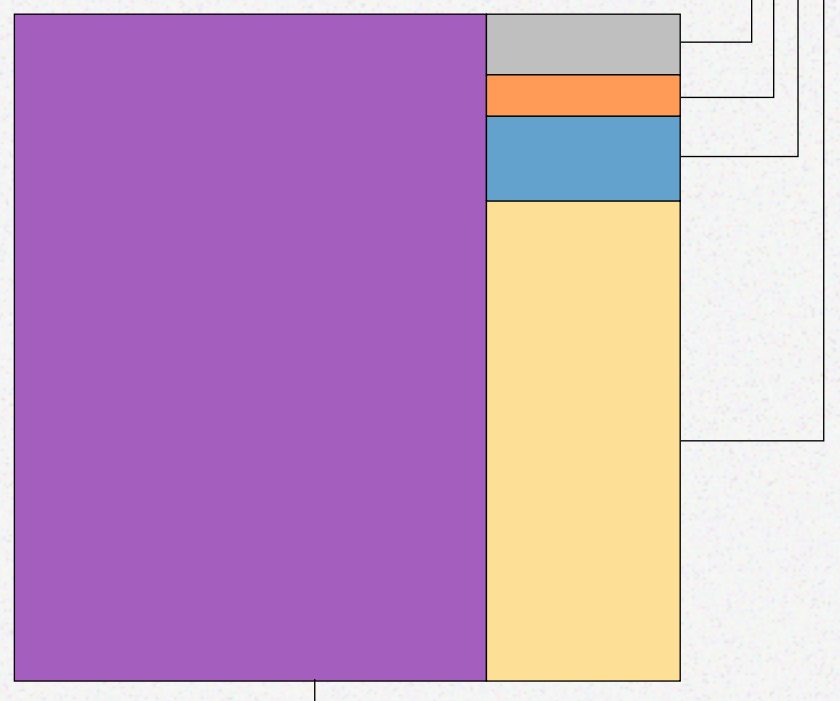
4 / 207

Administrative
infrastructure

2 / 6

Other
infrastructure

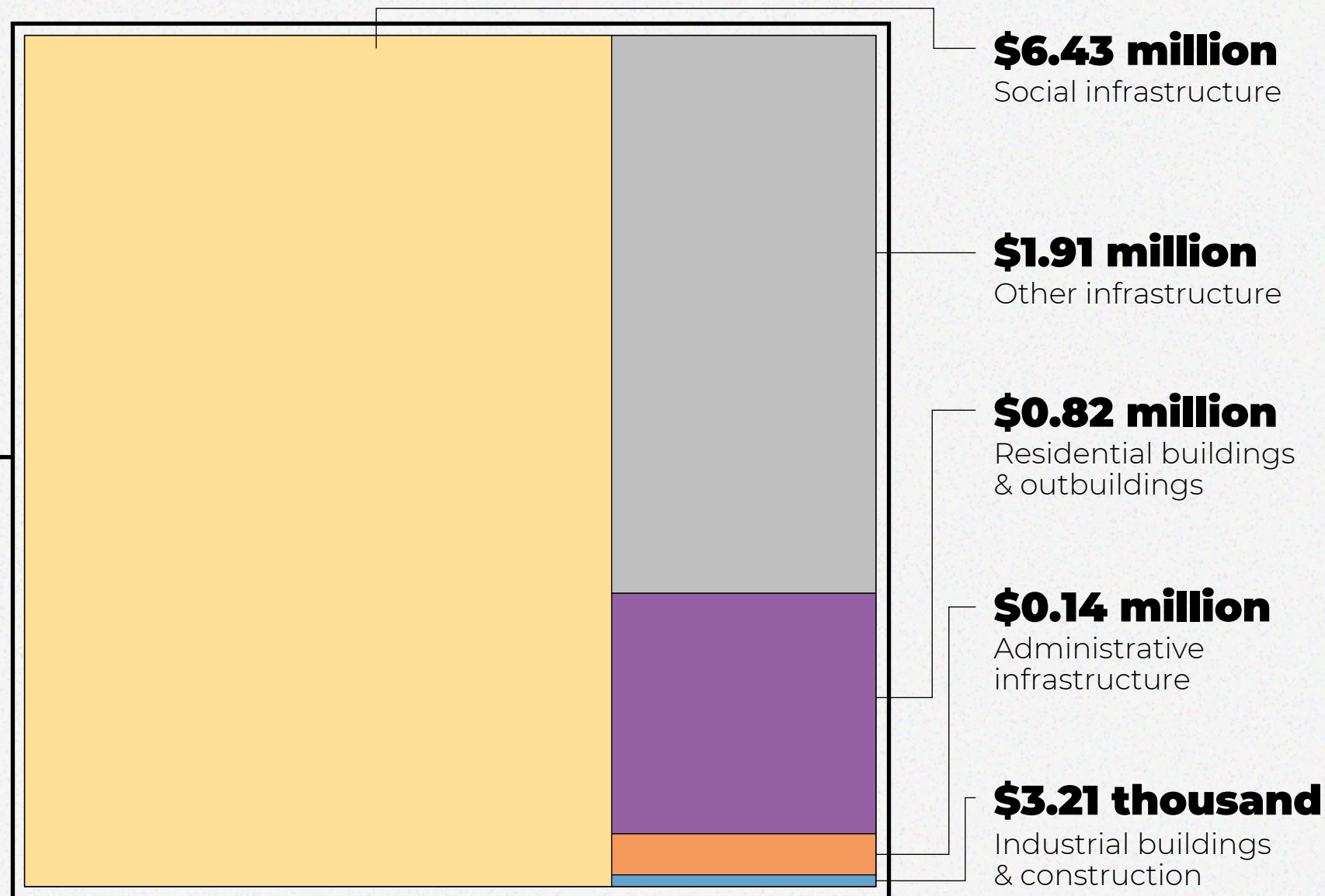
3 / 12



ASSESSMENT OF DAMAGES

Damages by types of buildings

Total damages
\$9.3 million

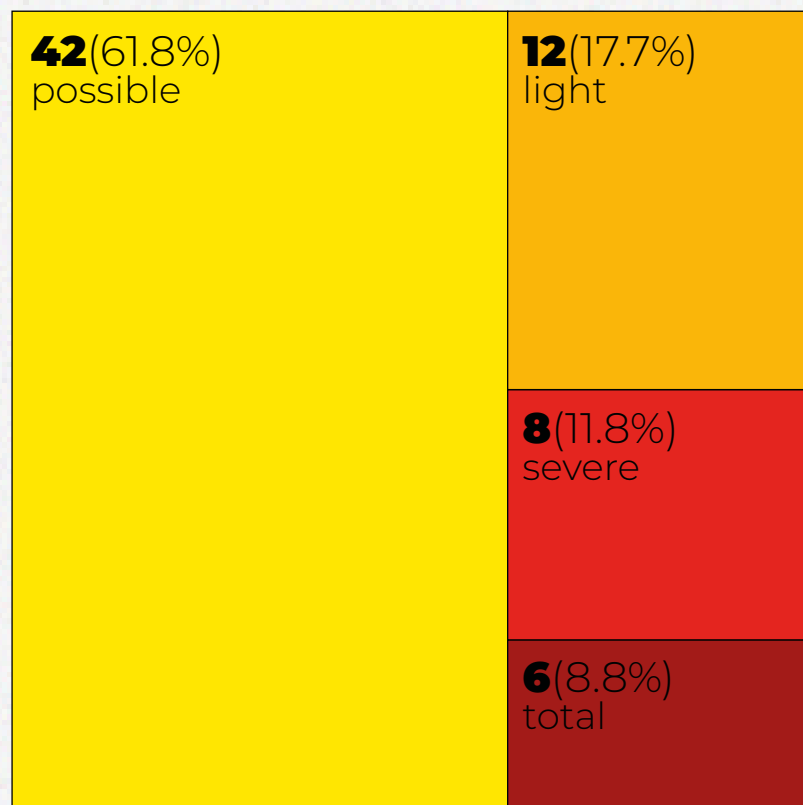


SCALE OF DESTRUCTION



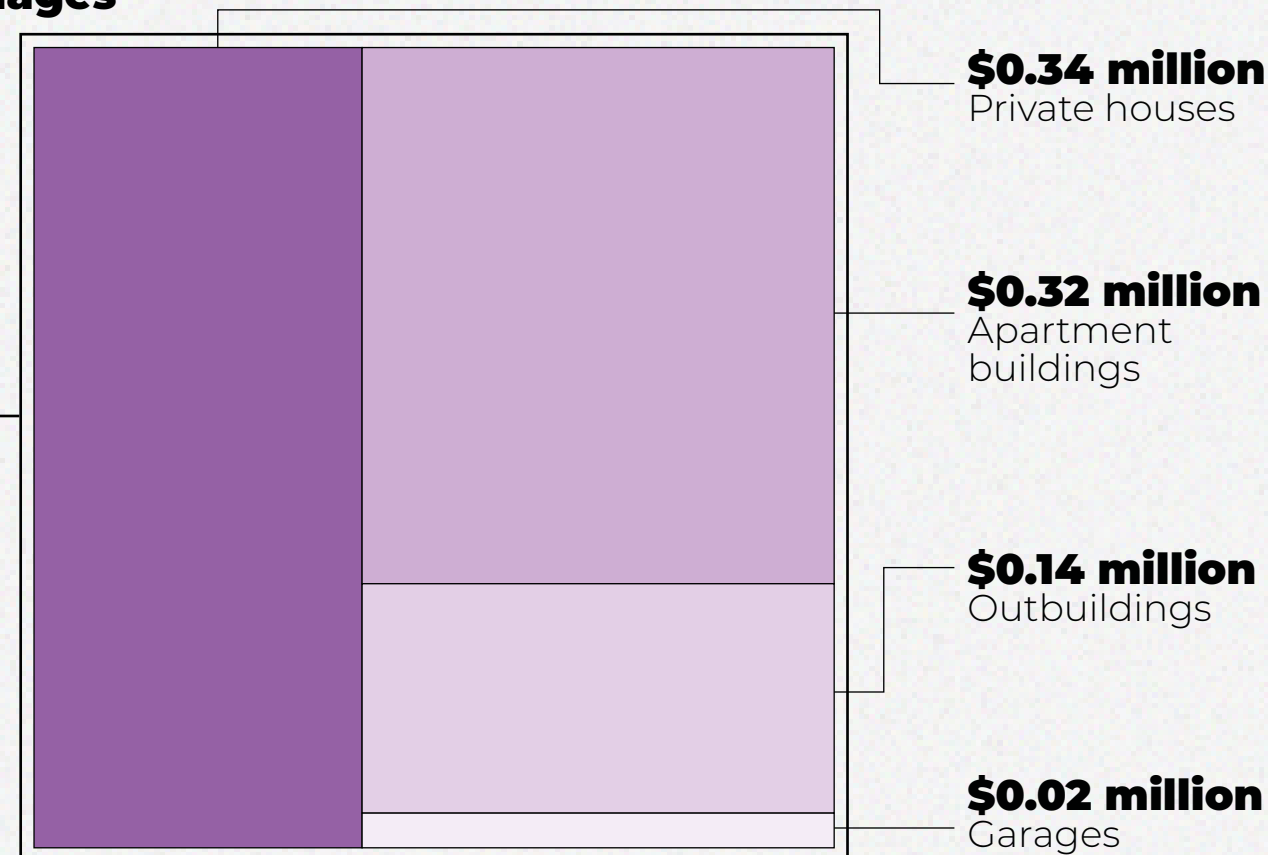
SCALE OF DESTRUCTION

Level of destruction



Assessment of damages

Total damages
\$0.82 million



RESIDENTIAL BUILDINGS



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



Total area of damage
6.0 ths m²

Number of residents affected
183

OUTBUILDINGS



Area of destruction

223.9 ths m² 

no destruction

possible

 **1.6 ths m²**

light

 **0.8 ths m²**

severe

 **0.6 ths m²**

total

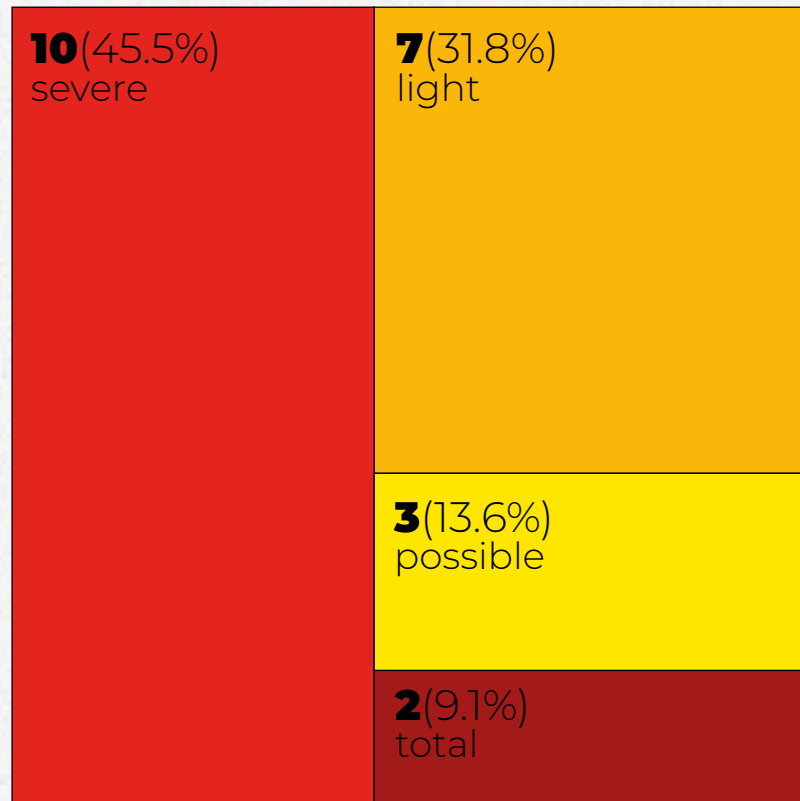
0.2 ths m² 

Total area of damage

3.2 ths m²

SCALE OF DESTRUCTION

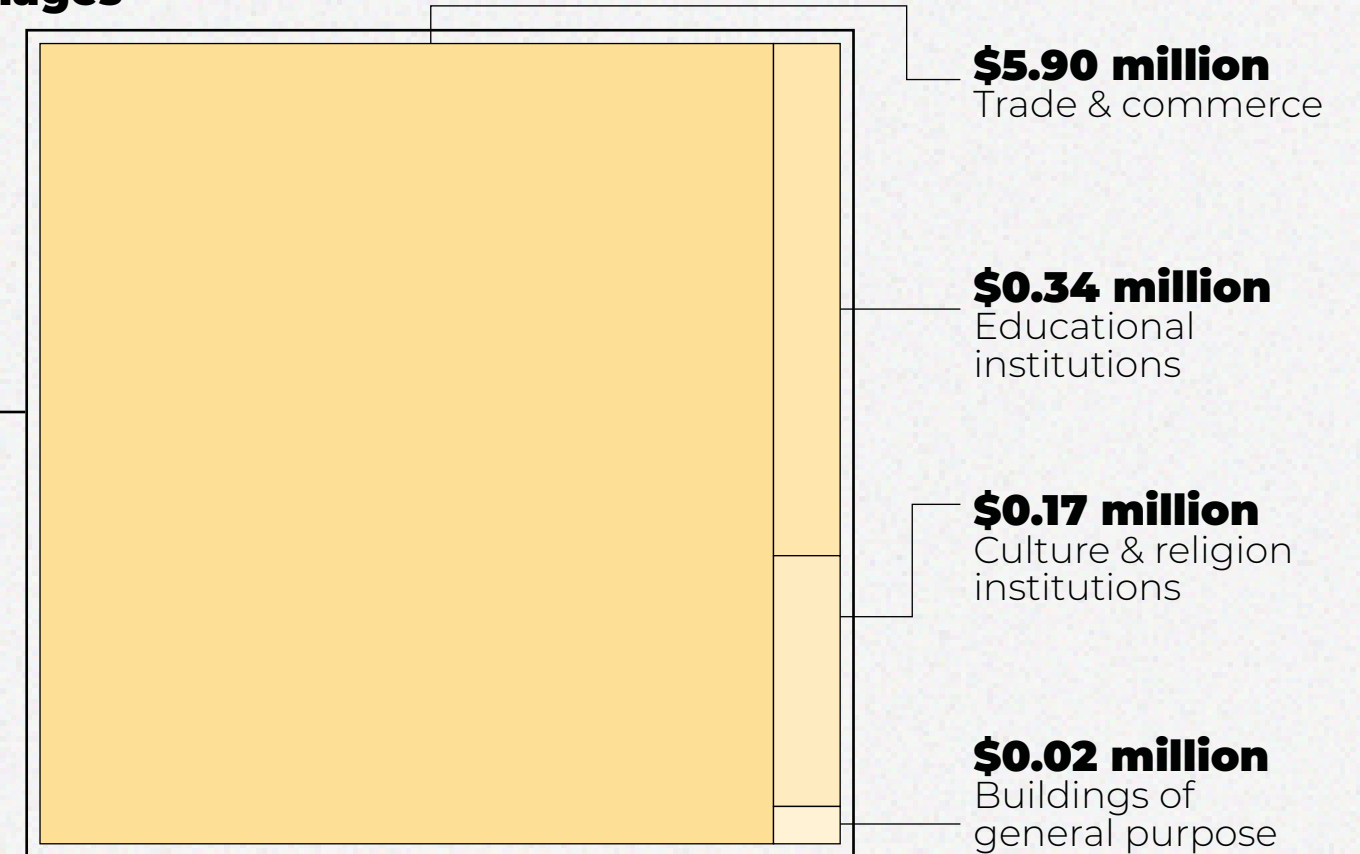
Level of destruction



Assessment of damages

Total damages

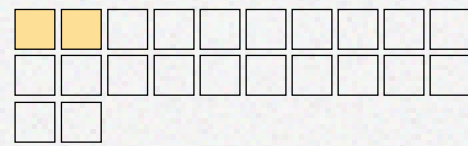
\$6.43 million



SCALE OF DESTRUCTION

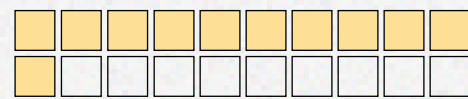
Number of destroyed buildings

Buildings of general purpose



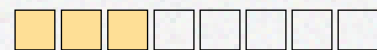
2 / 22

Trade



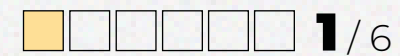
11 / 20

Grocery stores

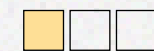


3 / 8

Commercial services
& institutions



Cafes & restaurants



1 / 3

Cultural & educational
institutions



2 / 2

Schools



2 / 2

Commercial object

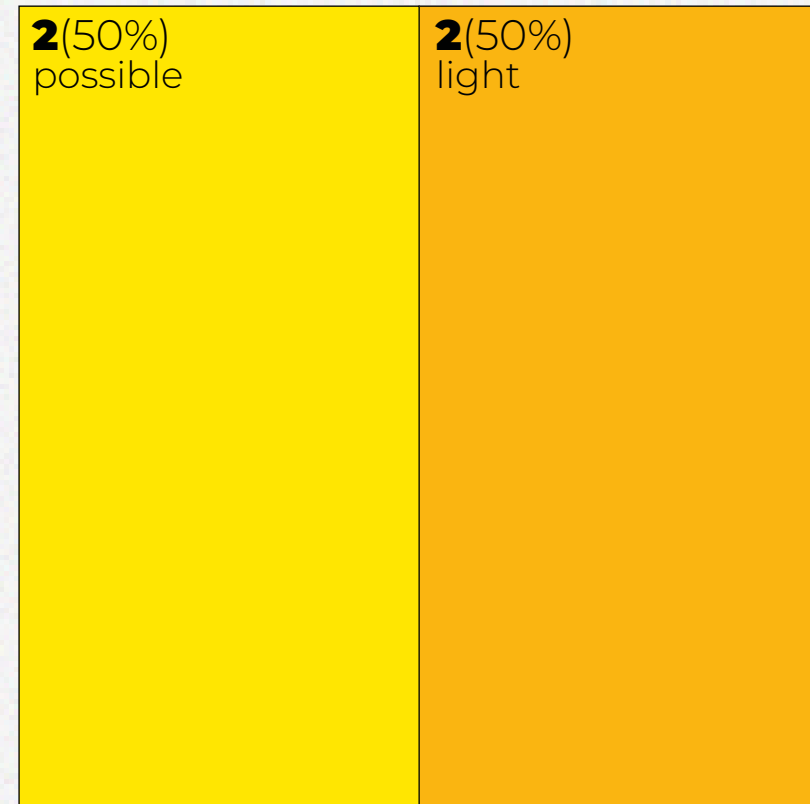


SCALE OF DESTRUCTION

Level of destruction

**2(50%)
possible**

**2(50%)
light**

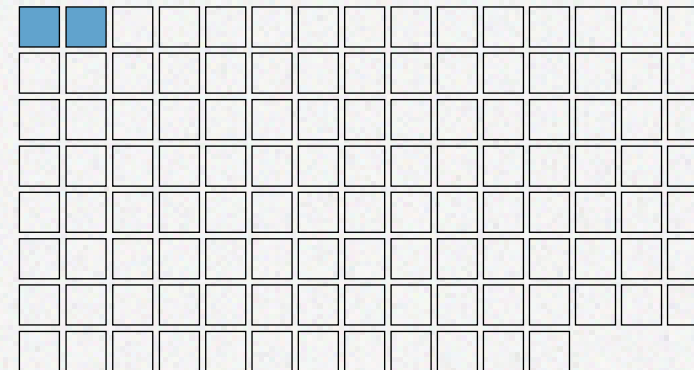


Total damages

\$3.21 thousand

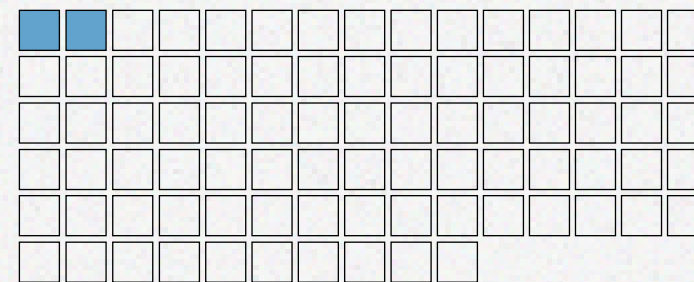
Number of destroyed buildings

Industrial buildings



2 / 117

Utility buildings



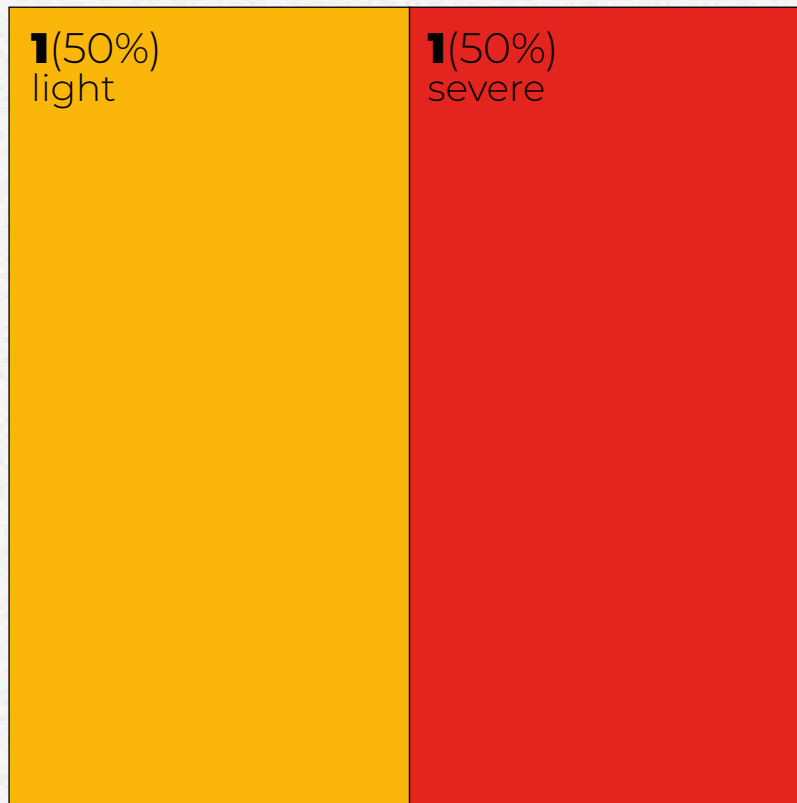
2 / 85

Industrial building



SCALE OF DESTRUCTION

Level of destruction

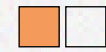


Total damages

\$0.14 million

Number of destroyed buildings

Government & administrative buildings



1/2

Post office



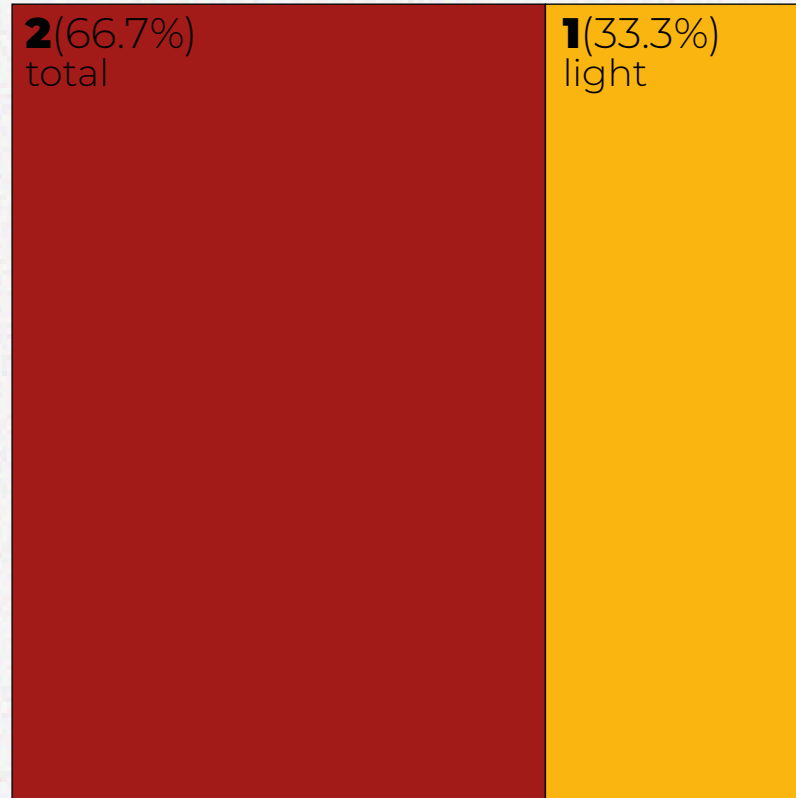
1/1

Village council



SCALE OF DESTRUCTION

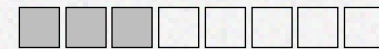
Level of destruction



Total damages
\$1.91 million

Number of destroyed buildings

Buildings of communal economy

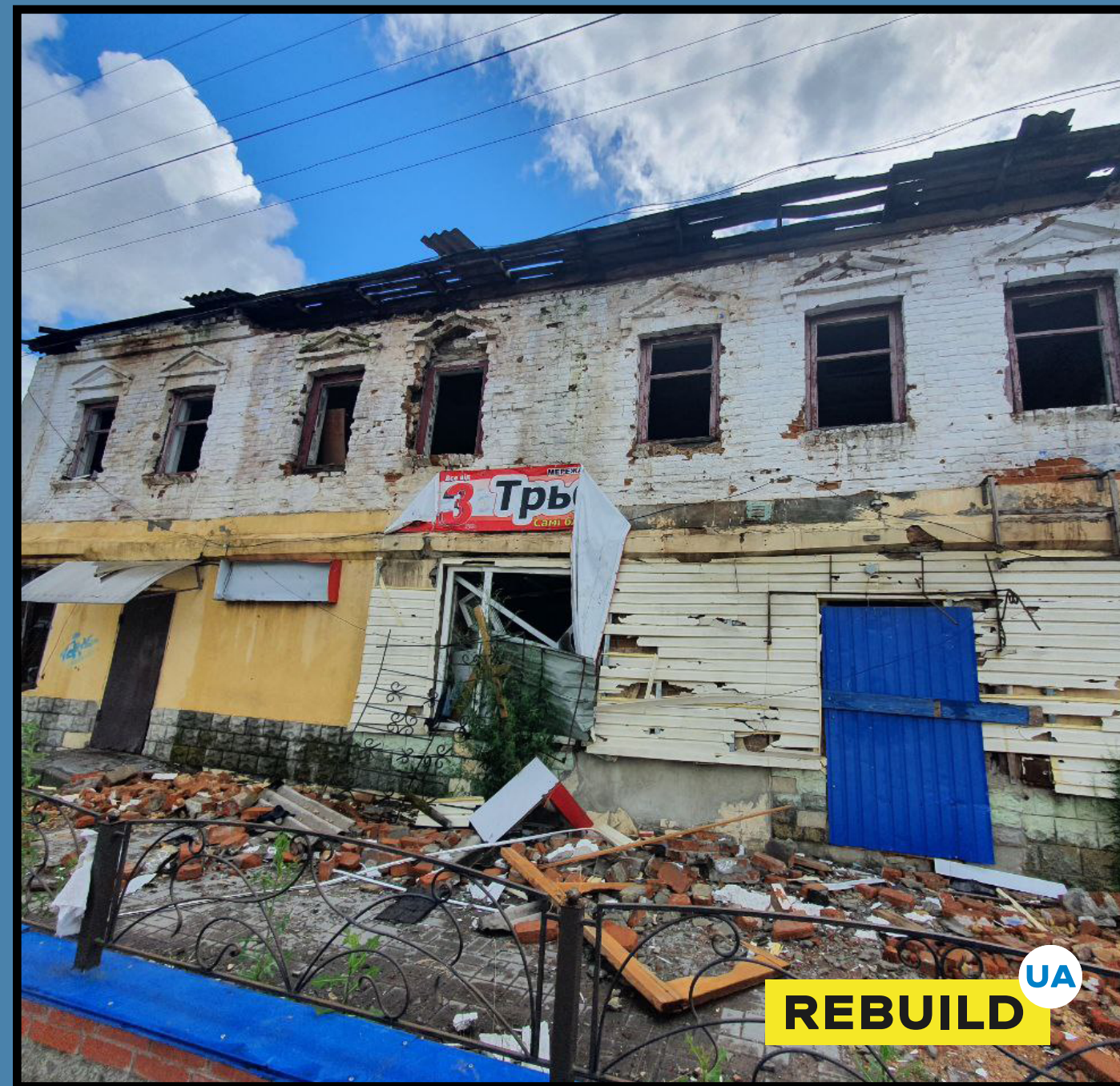
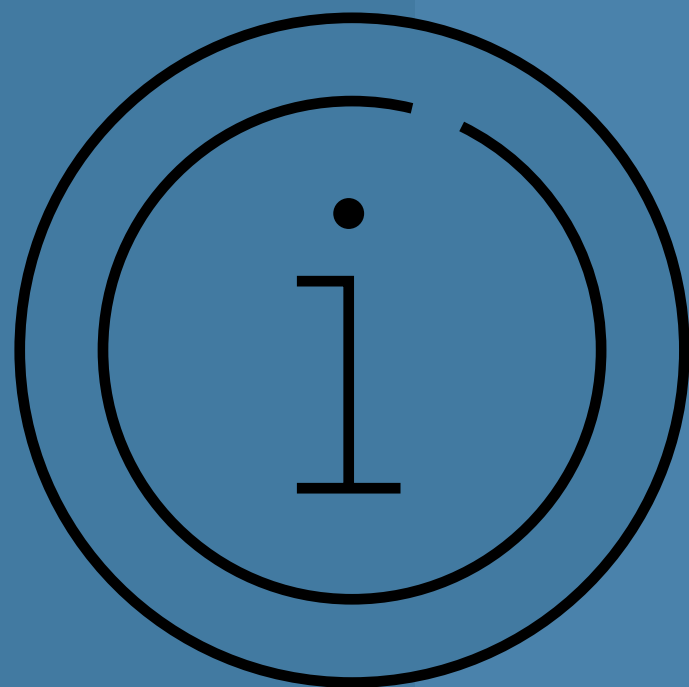


3 / 8

Building of communal economy



METHODOLOGIES AND ADDITIONAL INFORMATION



HOW WE DETERMINE LEVELS OF DESTRUCTION

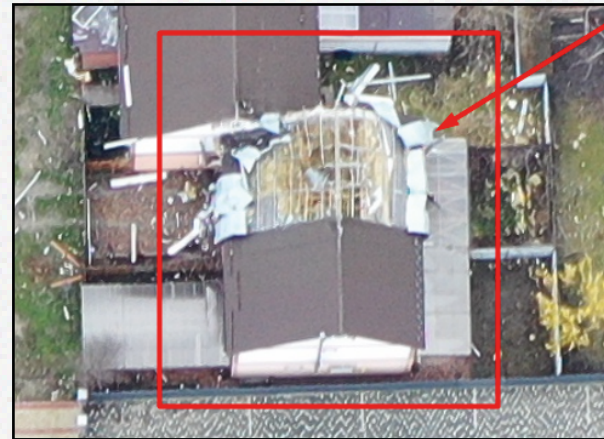
Total destruction



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).

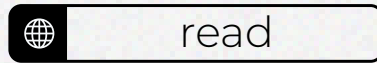


Small objects

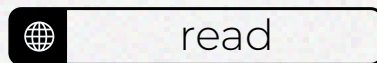
Small objects, which include residential buildings, outbuildings and garages, are calculated based on the average footage (taking into account the area and type of area) and the cost per square meter (nominal cost + cost of redecoration repairs + cost of dismantling).

BOROMLYA THROUGH THE EYES OF BEHOLDERS

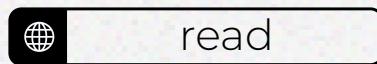
31 days of horror: the story of Boromlya in Sumy region



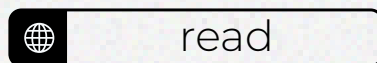
What the de-occupied village of Boromlya in Sumy region looks like. Photo report



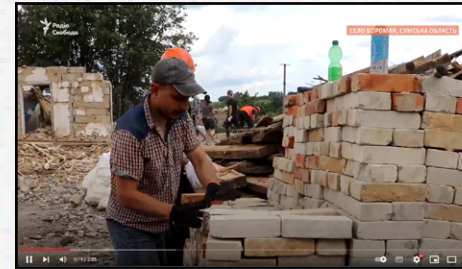
Bodies of people tortured by aggressors continue to be found in Boromlya, Sumy region



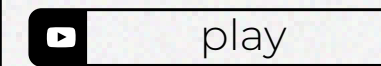
The village of Boromlya in Sumy region has been liberated from russian occupiers. Terrifying footage of the consequences



Residents of the village of Boromlya in Sumy region told how they survived the occupation



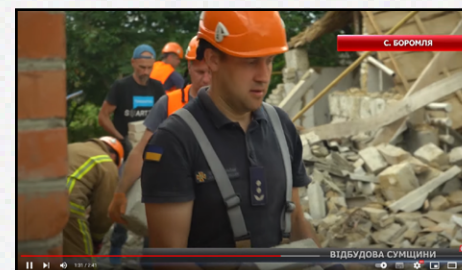
«Now we appreciate the wealth we had» — people in Boromlya clean up the consequences of russian occupation



Boromlya. The first shots after liberation



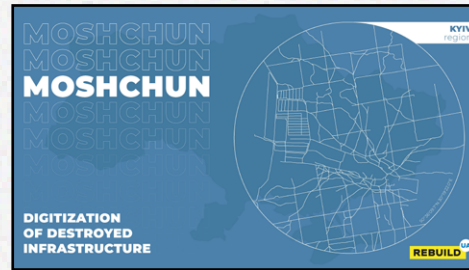
Boromlya, Sumy region | They tortured my brother for texting on the phone



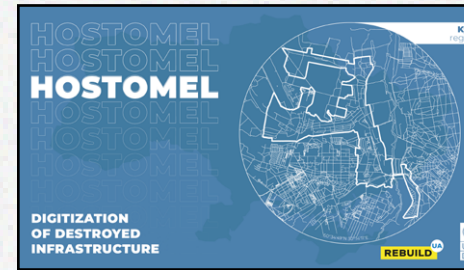
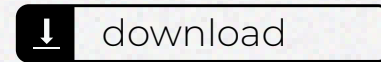
«We will rebuild everything»: in Boromlya near Okhtyrka, Dobrobat workers help to clean up the destroyed buildings



PREVIOUS REPORTS



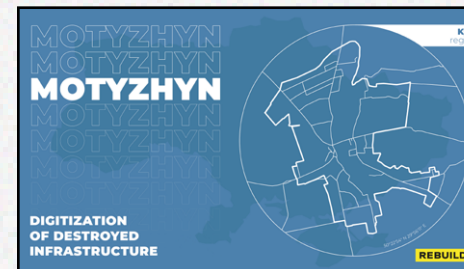
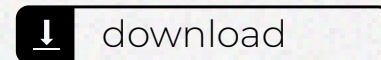
Moshchun,
Buchanskyi district,
Kyiv region



Hostomel,
Buchanskyi district,
Kyiv region



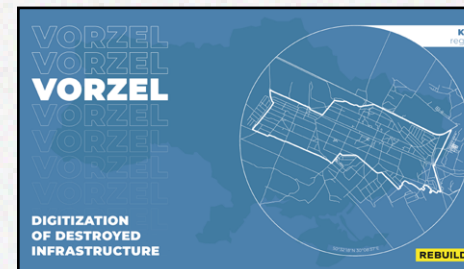
Horenka,
Buchanskyi district,
Kyiv region



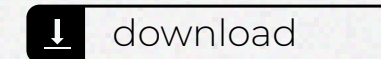
Motyzhyn,
Buchanskyi district,
Kyiv region



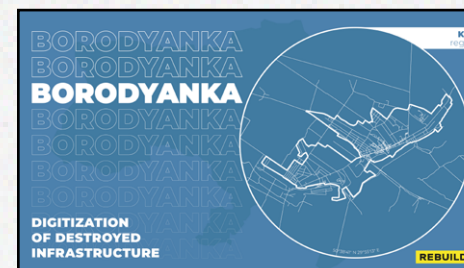
Irpin,
Buchanskyi district,
Kyiv region



Vorzel,
Buchanskyi district,
Kyiv region



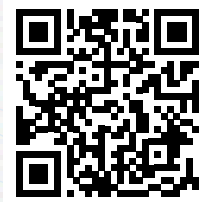
Bucha,
Buchanskyi district,
Kyiv region



Borodyanka,
Buchanskyi district,
Kyiv region



REBUILD



rebuildua.net

Partners:

Assessment of losses and damages, budgeting:



Financial and technical support



Aerial photography of settlements



Digitization of geospatial information:



Visual style and content:



Support in cooperation with public authorities:



Cooperation & analysis of community economy, Vkursi Economy:



Creation of an online map of destroyed new buildings



Supported by:

