



NEMISHAEVE  
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**DIGITIZATION  
OF DESTROYED  
INFRASTRUCTURE**

# 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

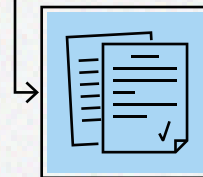
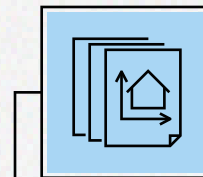
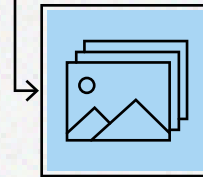
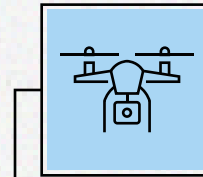
To ensure completeness of the input data, the project team captures photos and videos, as well as collects additional information from verified sources.

### 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](https://rebuildua.net)



# ABOUT THE LOCALITY


Nemishaeve is an urban-type village of 8,000 people in Buchanskyi district of Kyiv region. It is located along the Kyiv-Kovel highway, between Bucha and Borodyanka. Russian tanks came here at the end of February.

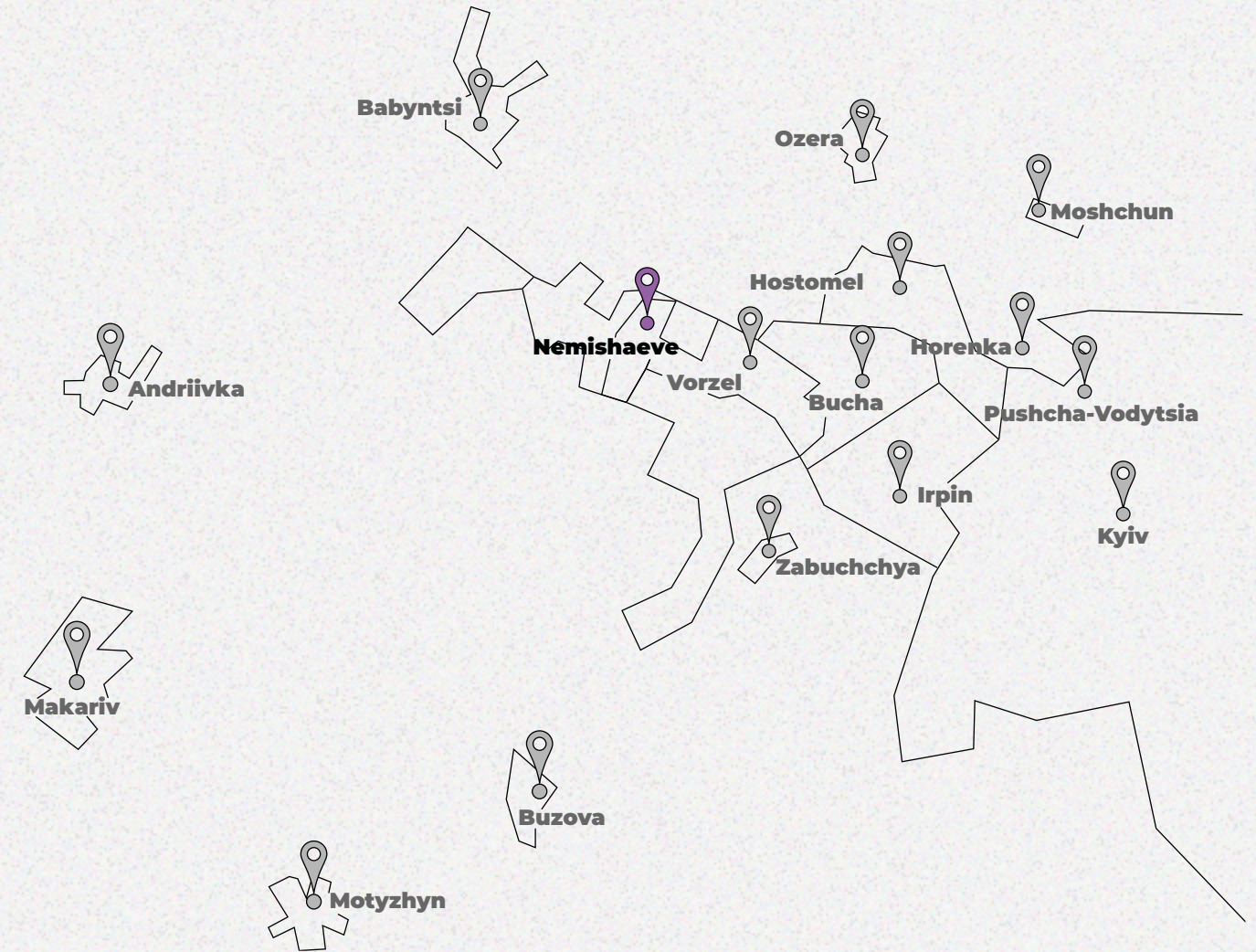
Residents had to survive under constant shelling, they were afraid to go outside, felt cold, hunger, lack of electricity while experiencing a complete blockade. The infrastructure was also affected, even though the damage was slightly less than in the neighbouring settlements.

This analytical report by RebuildUA team describes the destruction and damages caused to Nemishaeve by Russian occupiers.




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

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



Region **Kyiv**  
 District **Buchanskyi**  
 Community **Nemishaivska**

  
 Area  
**5,9 km<sup>2</sup>**

  
 Population  
**7,783**



# DIGITIZATION PROCESS



**7** flight missions

**1,424** pictures for orthophoto

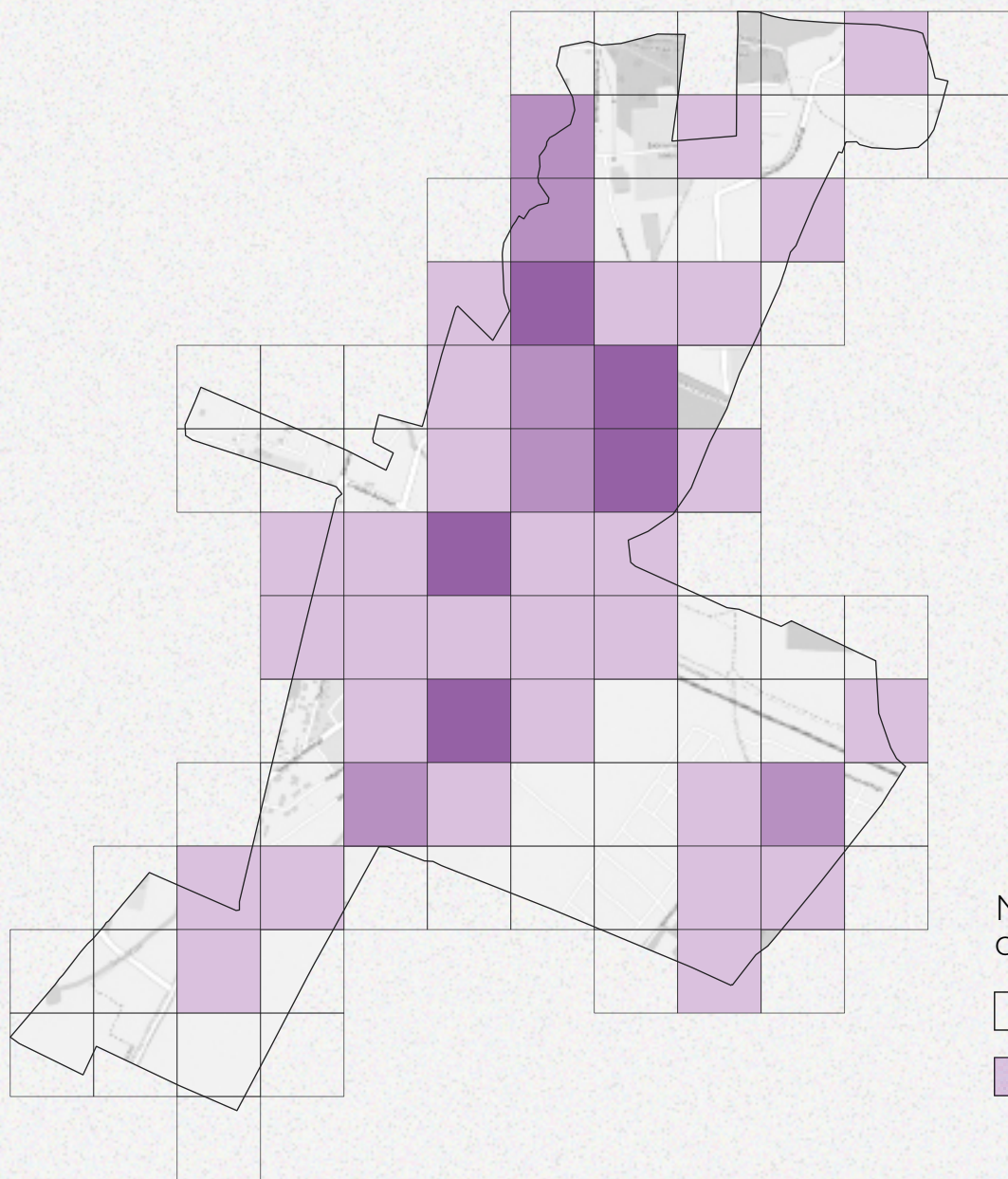
**120** hours of data processing

**13.6** Gigabytes of data

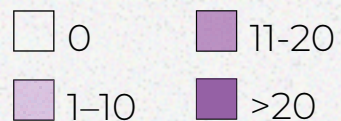
— border of the locality  
..... trajectory of drone shooting



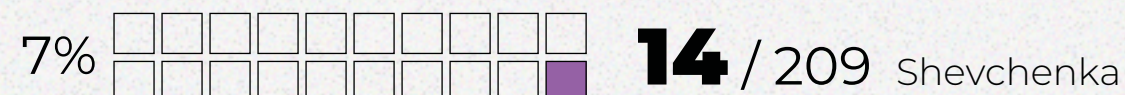
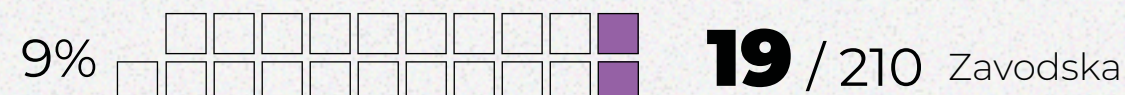
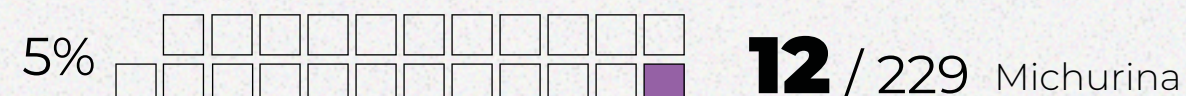
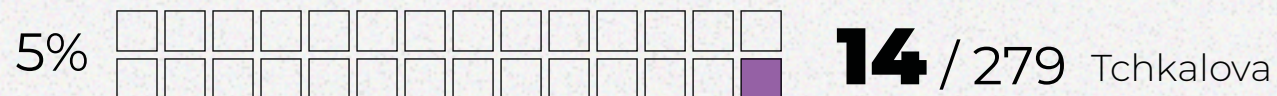
# THERMAL MAP OF DESTRUCTION



Number of destroyed buildings



## Destruction of the largest streets



10 buildings

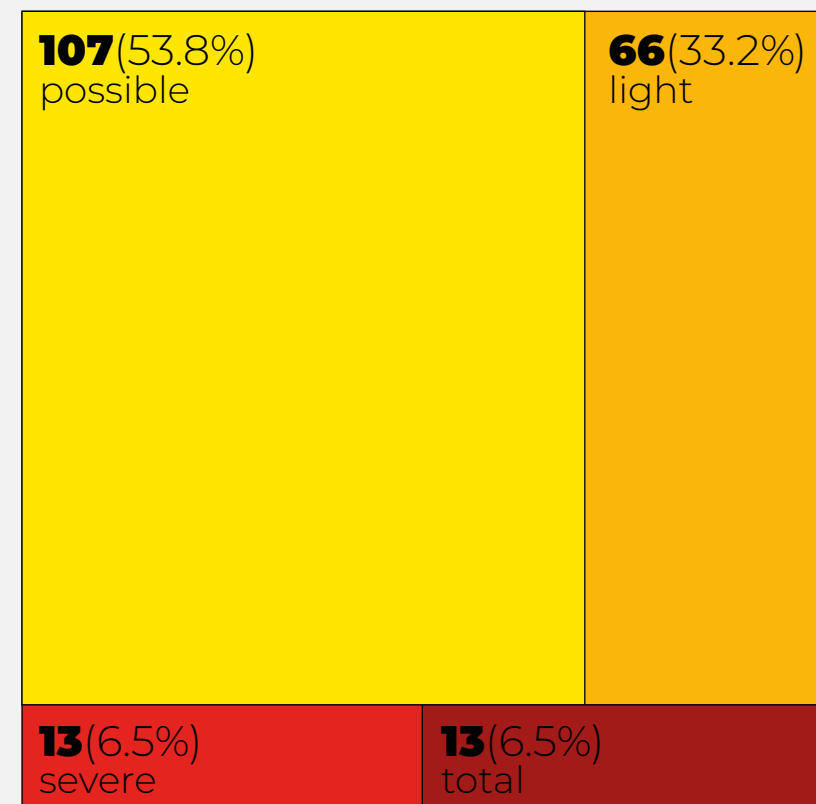


# LEVELS OF DESTRUCTION

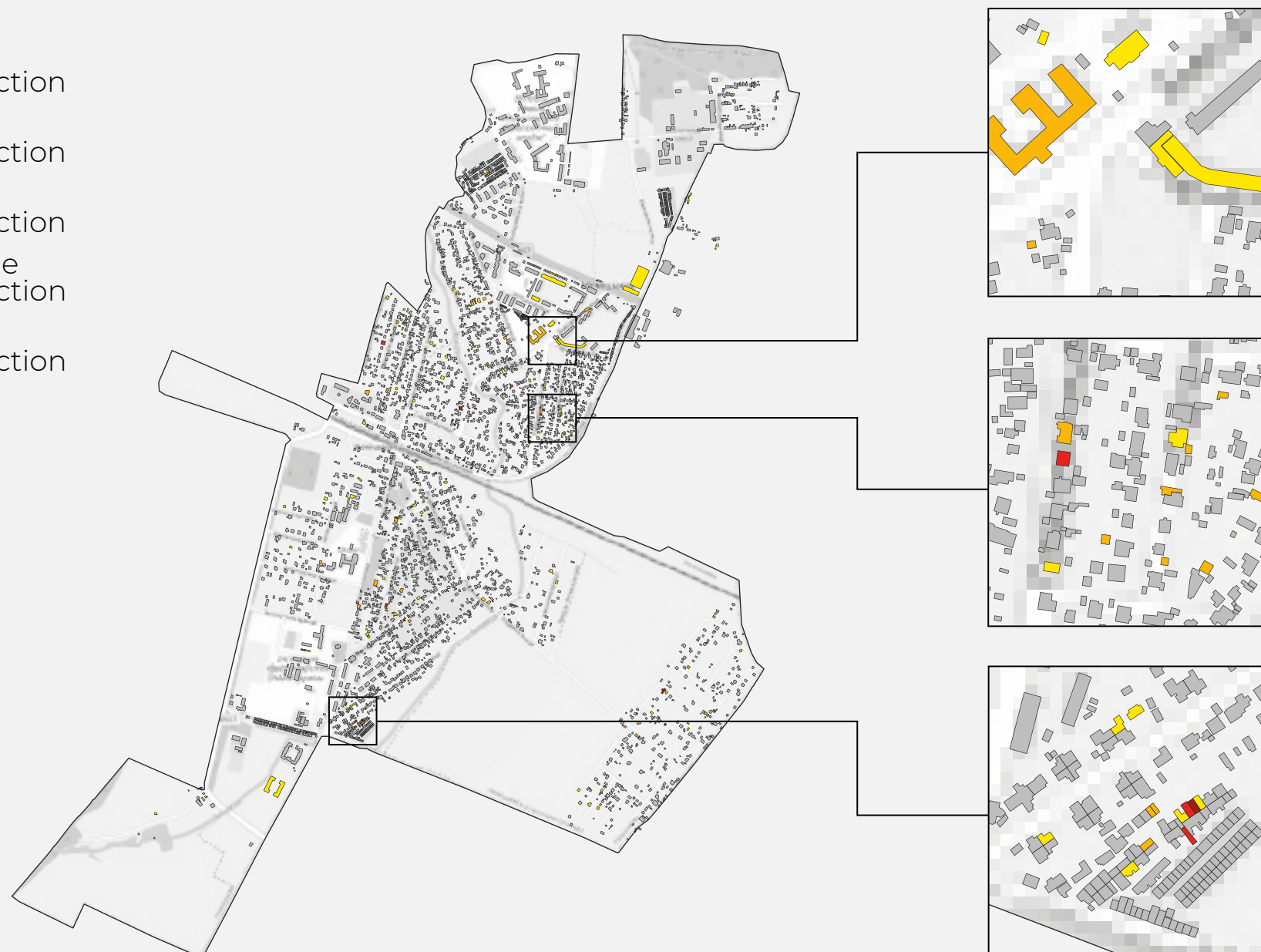
Buildings destroyed:

**199 / 4,202**

Level of destruction, number of buildings

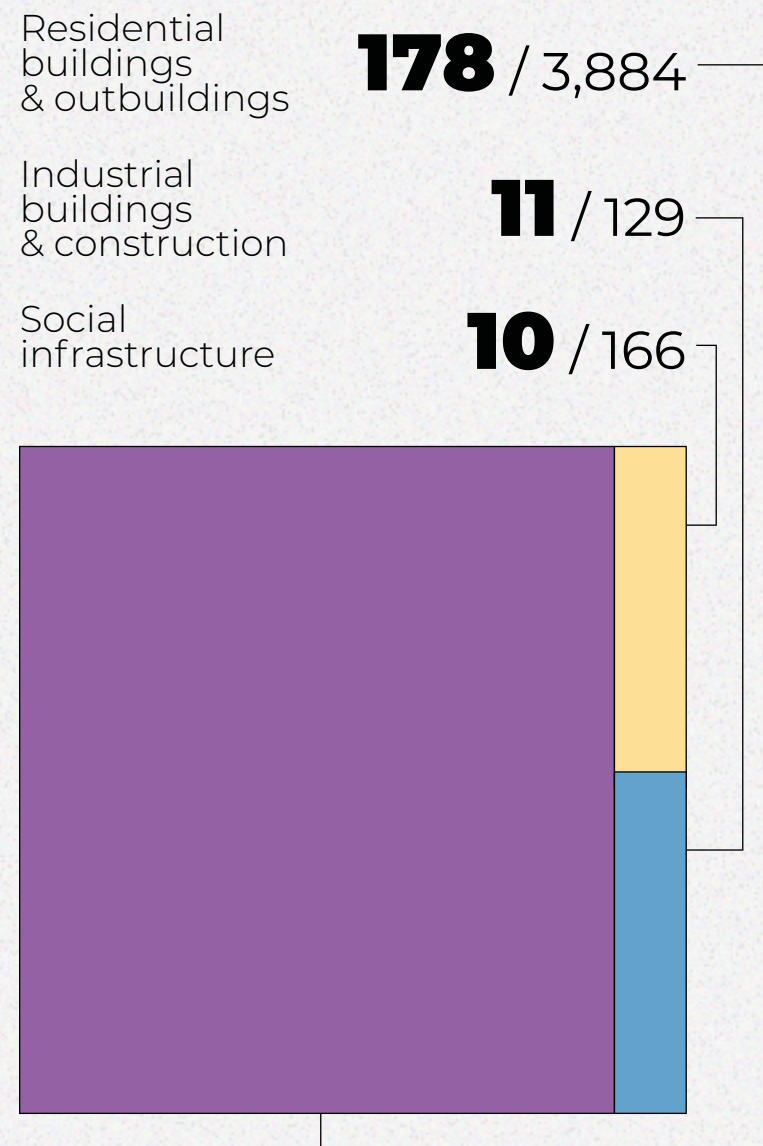


- total destruction
- severe destruction
- light destruction
- possible destruction
- no destruction





# TYPES OF DESTROYED OBJECTS

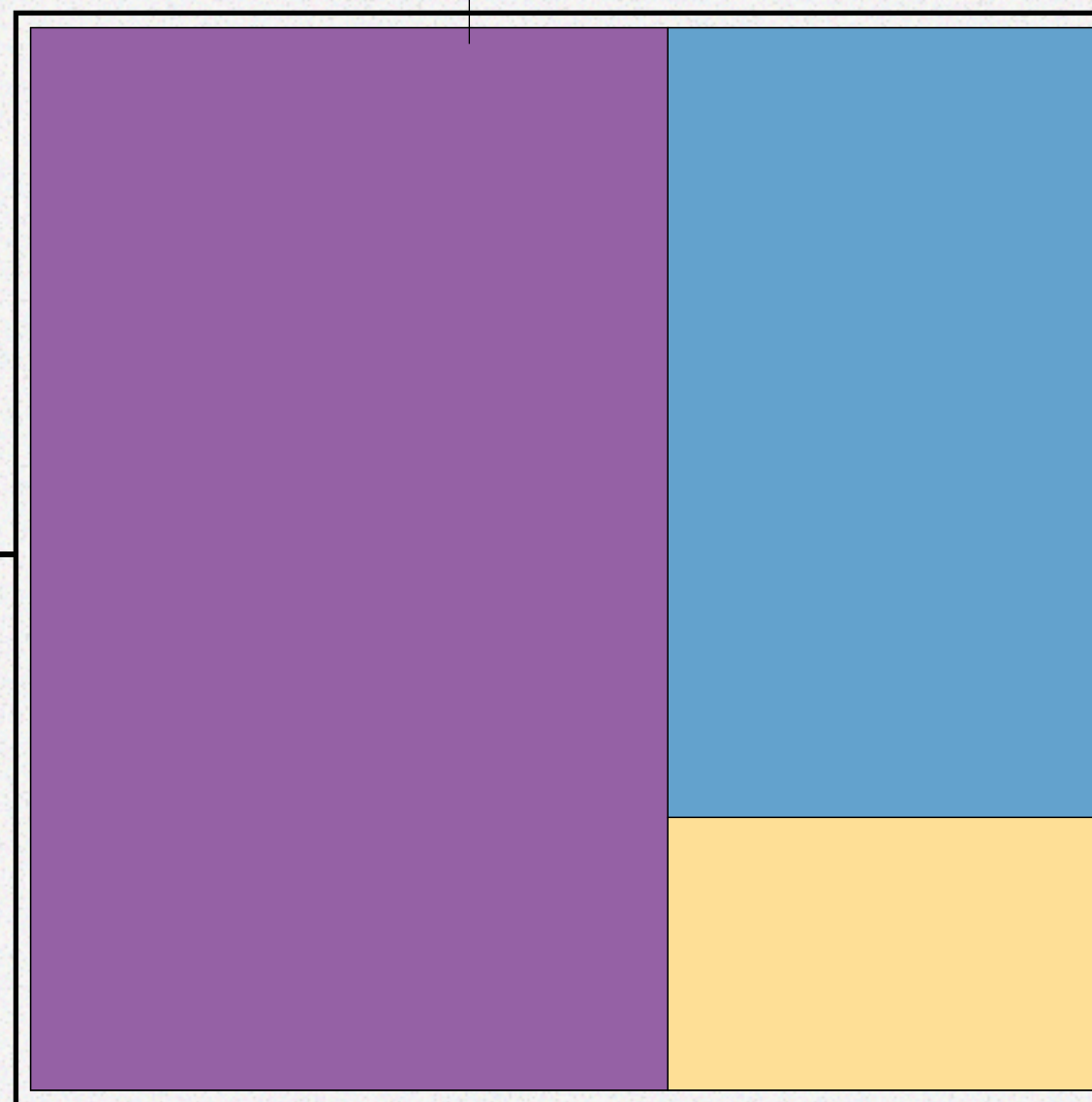


- Residential buildings & outbuildings
- Industrial buildings & construction
- Social infrastructure



# ASSESSMENT OF DAMAGES

### Damages by types of buildings



**\$1.90 million**  
Residential buildings  
& outbuildings

**\$0.93 million**  
Industrial buildings  
& construction

**\$0.68 million**  
Social infrastructure

**Total damages**  
**\$3.5 million**



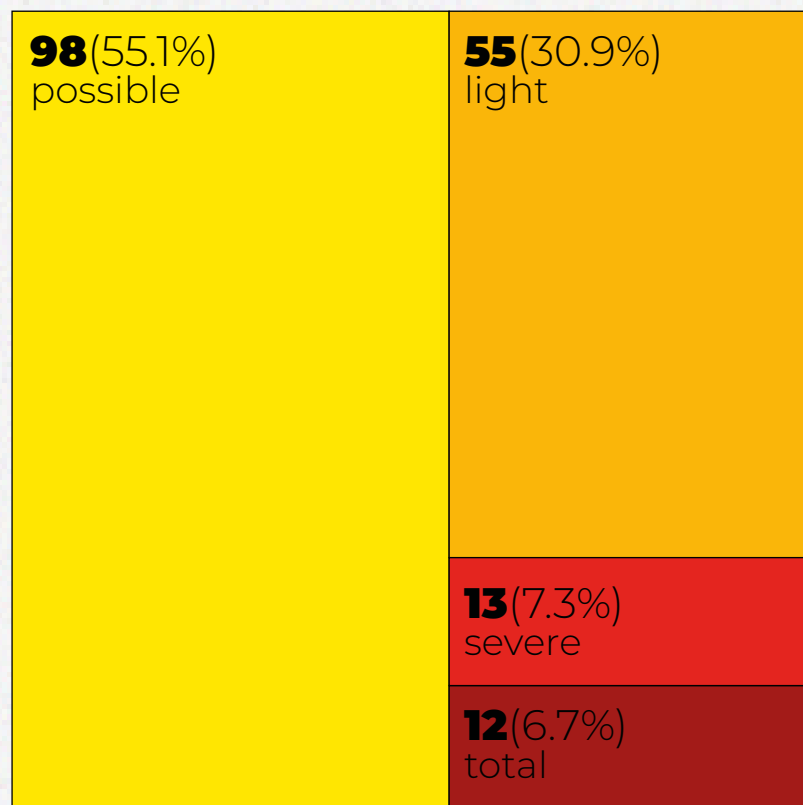
# SCALE OF DESTRUCTION





# SCALE OF DESTRUCTION

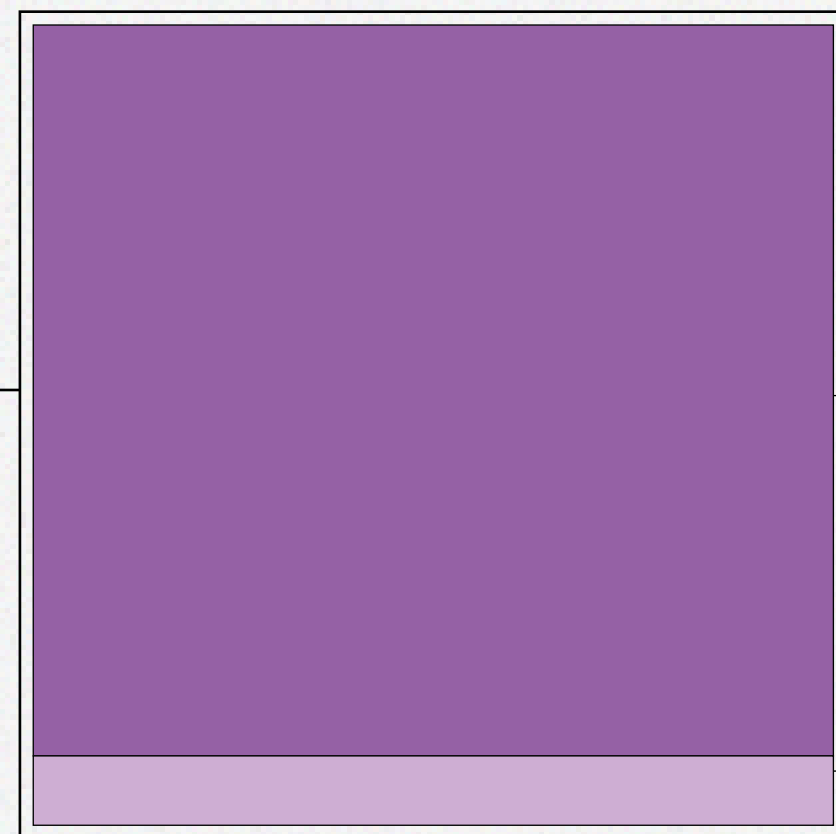
## Level of destruction



## Assessment of damages

Total damages

**\$1.9 million**





# APARTMENT BUILDINGS

Apartment building



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

143.3 ths m<sup>2</sup> 

4,622 people 

no destruction

possible

 21.7 ths m<sup>2</sup>

 700 people

Total area of damage

**21.7 ths m<sup>2</sup>**

Number of residents affected

**700**



# PRIVATE HOUSES & TOWNHOUSES

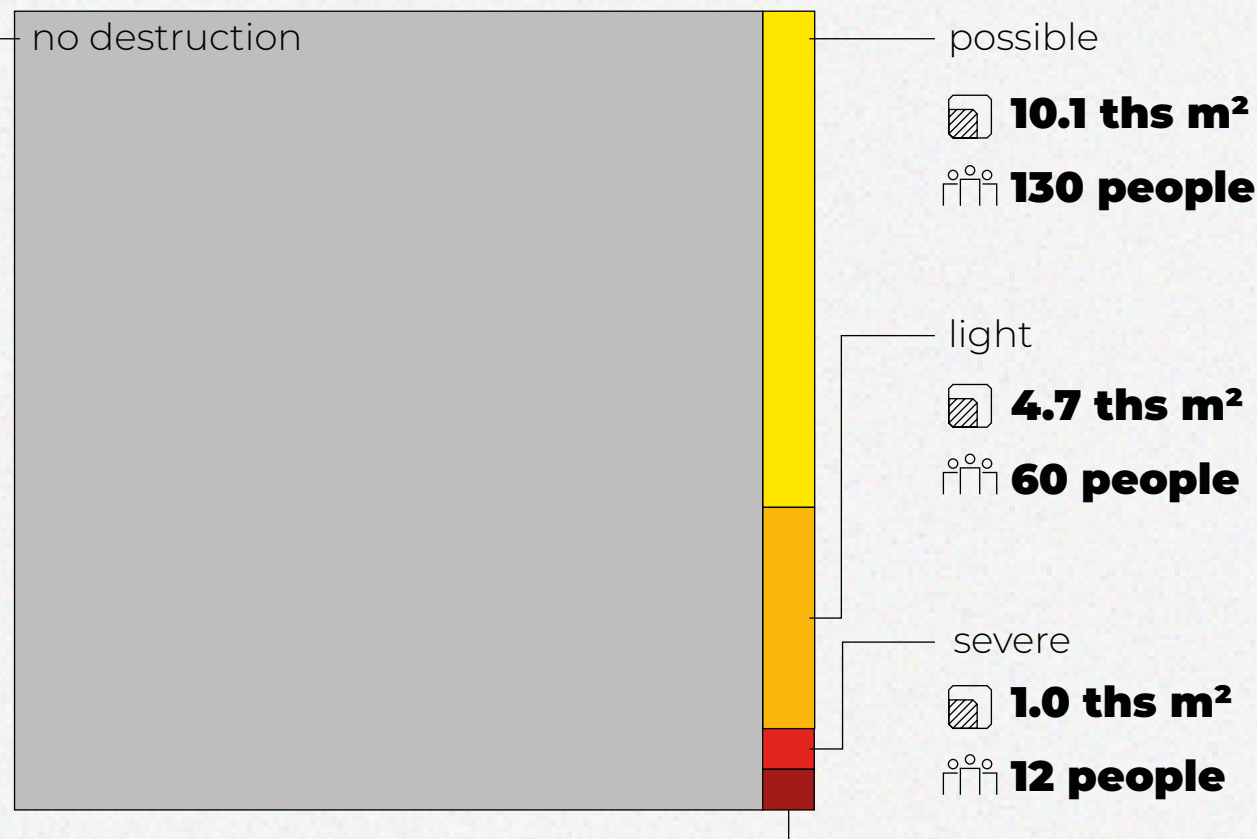
Private house



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

**241.8 ths m<sup>2</sup>**  **3,105 people** 

total  
**1.0 ths m<sup>2</sup>**  **13 people** 



Total area of damage  
**16.8 ths m<sup>2</sup>**

Number of residents affected  
**216 people**



# OUTBUILDINGS




## Area of destruction

**111.4 ths m<sup>2</sup>** 

no destruction


possible

 **2.2 ths m<sup>2</sup>**

light

 **1.5 ths m<sup>2</sup>**

severe

 **0.5 ths m<sup>2</sup>**

total

**0.3 ths m<sup>2</sup>** 

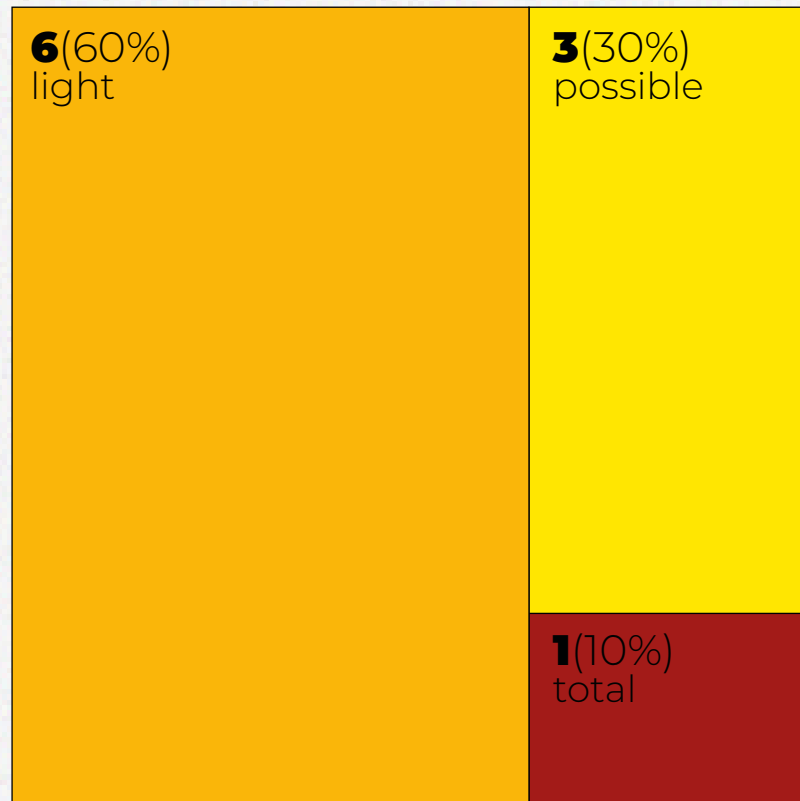
Total area of damage

**4.5 ths m<sup>2</sup>**



# SCALE OF DESTRUCTION

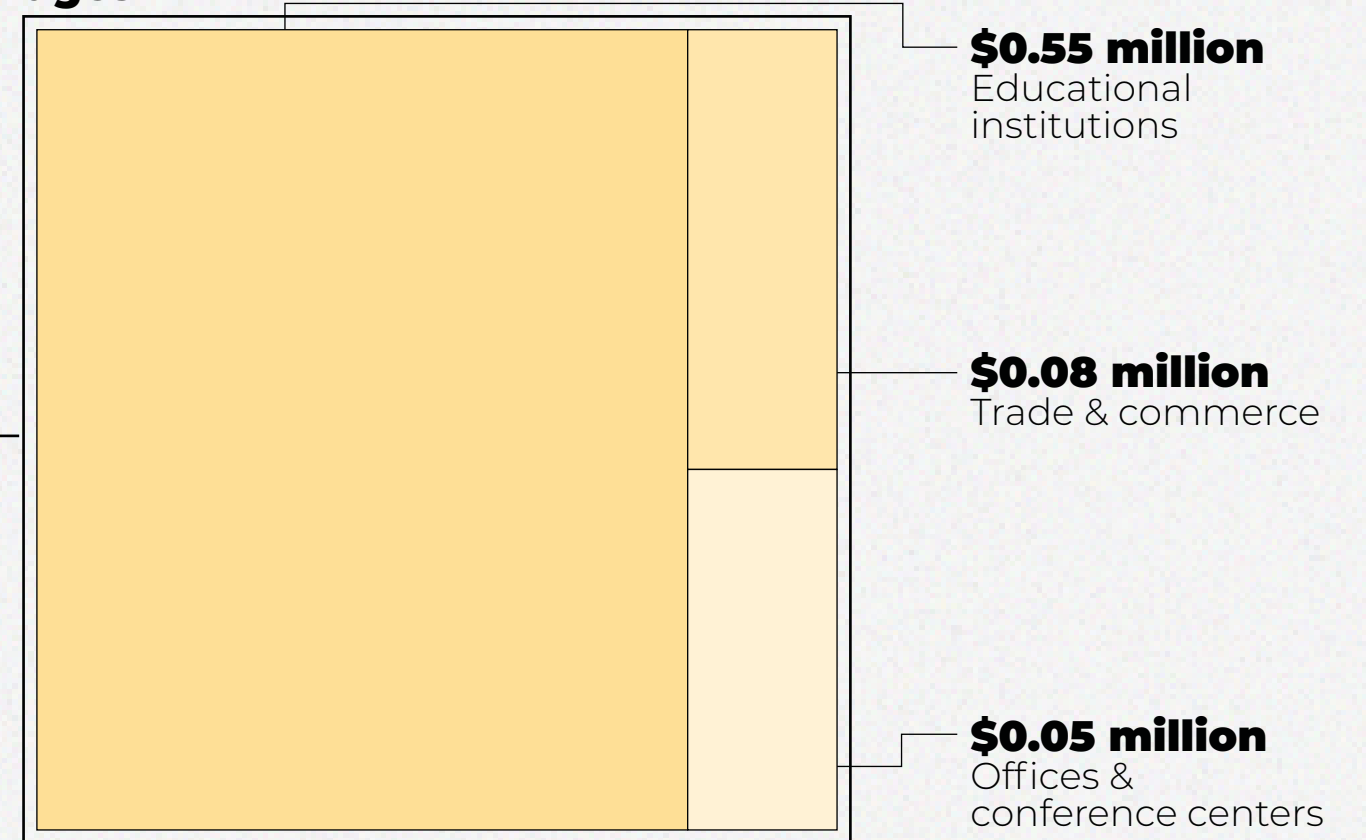
## Level of destruction



## Assessment of damages

Total damages

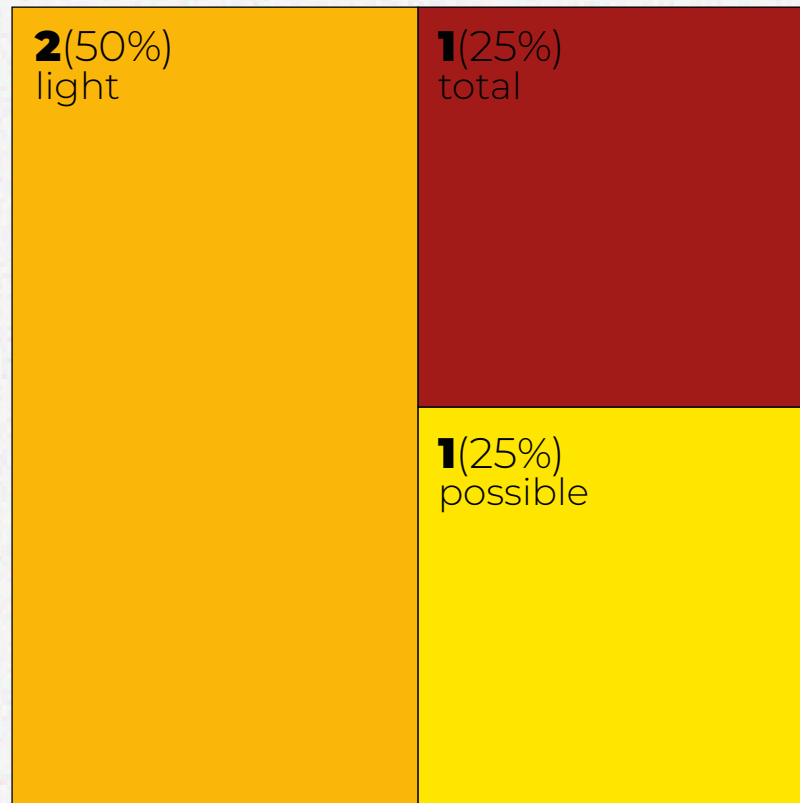
**\$0.7 million**





# EDUCATION & HEALTHCARE

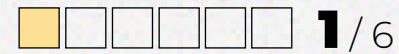
## Level of destruction



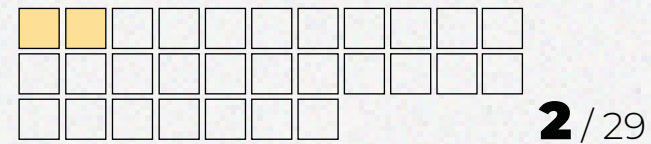
Total damages  
**\$0.6 million**

## Number of destroyed buildings

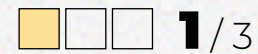
Kindergarten



College and research  
institute buildings



School



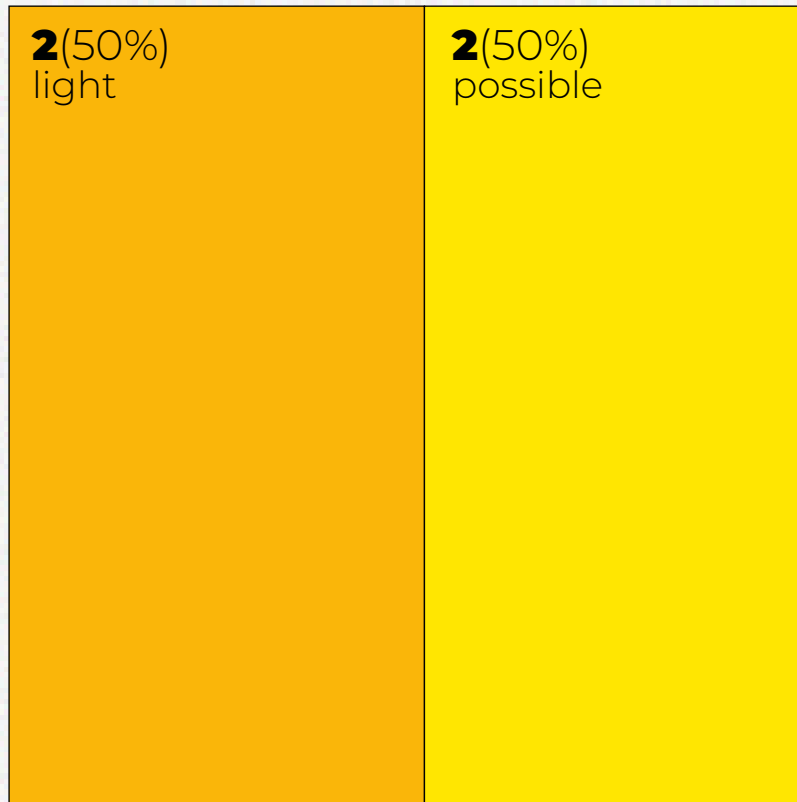
Kindergarten





# COMMERCIAL BUILDINGS & OFFICES

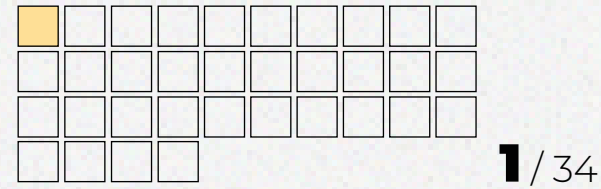
## Level of destruction



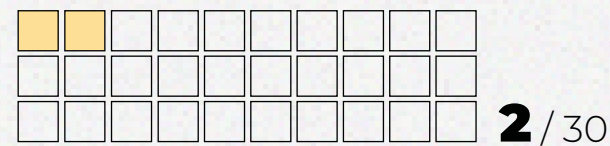
Total damages  
**\$0.12 million**

## Number of destroyed buildings

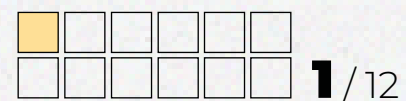
Grocery stores



Commercial services and institutions



Offices



Commercial object





# SCALE OF DESTRUCTION

## Level of destruction

**6** (54.6%)  
possible

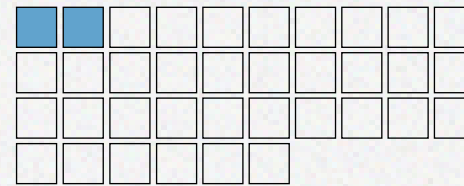
**5** (45.4%)  
light

Total damages

**\$0.9 million**

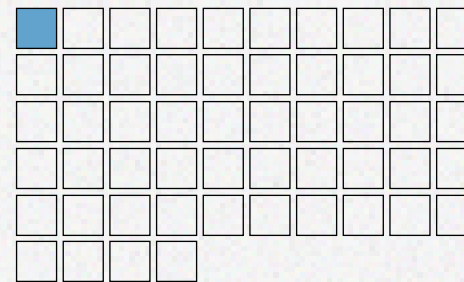
## Number of destroyed buildings

Industrial buildings



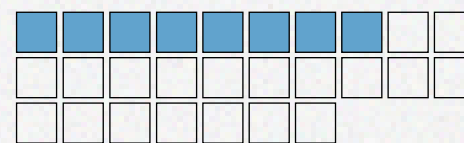
**2** / 36

Utility buildings



**1** / 54

Construction



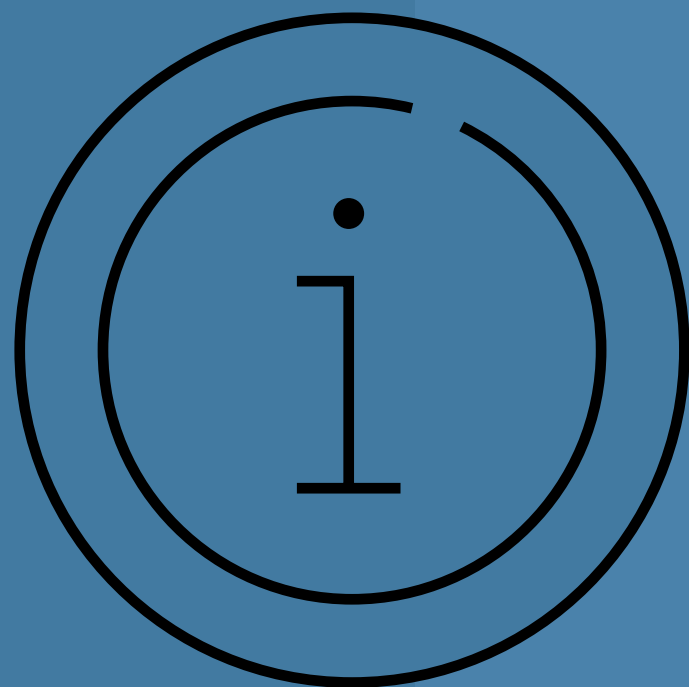
**8** / 27

Industrial object





# METHODOLOGIES AND ADDITIONAL INFORMATION



**REBUILD**

UA



# HOW WE DETERMINE LEVELS OF DESTRUCTION

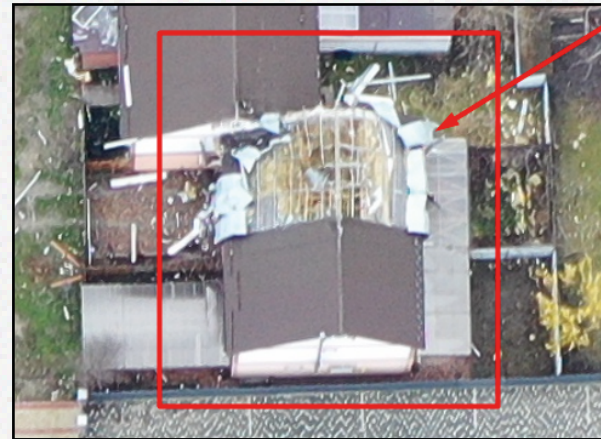
## Total destruction



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).



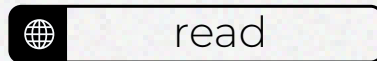
### Small objects

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).

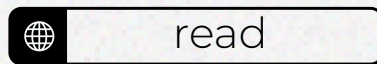


# NEMISHAEVE THROUGH THE EYES OF BEHOLDERS

Break out of the occupation. How we saved ourselves from the russian invaders



Evacuation from Nemishaevo: Russians fired on all the cars with both children and pregnant women



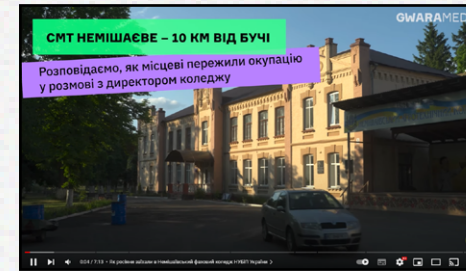
This is a crime against humanity, I stopped calling it war, I call it genocide — an activist from a village in Kyiv region



In the village of Nemishaeve, the occupiers fired directly at civilians. How a mother and a daughter managed to escape to Rivne region



12 days of hell in Nemishaevo near Bucha — podcast



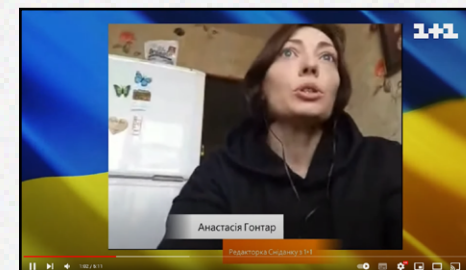
How people lived under occupation in Nemishaeve, which is located in 10 km from Bucha



Russian equipment drives like at home: testimony of a resident of Nemishaeve



The Russians deliberately set fire to the house in front of me! The story of Oleksandr Lytvynenko from the village of Nemishaeve



Under constant shelling without electricity, gas, food and communication — how people survive in occupied Nemishaeve

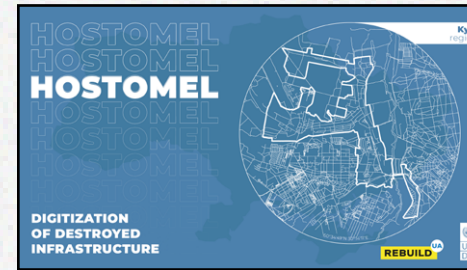
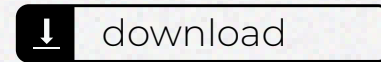




# PREVIOUS REPORTS



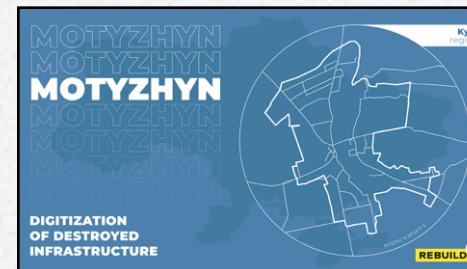
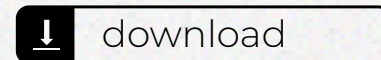
**Moshchun,**  
Buchanskyi district,  
Kyiv region



**Hostomel,**  
Buchanskyi district,  
Kyiv region



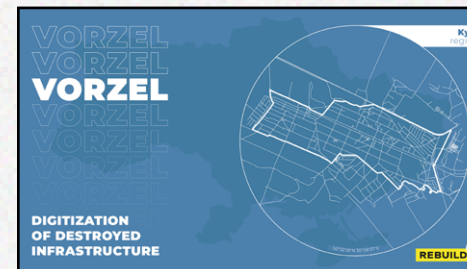
**Horenka,**  
Buchanskyi district,  
Kyiv region



**Motyzhyn,**  
Buchanskyi district,  
Kyiv region



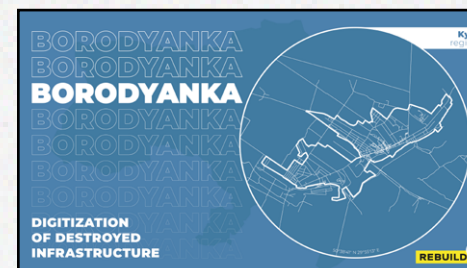
**Irpin,**  
Buchanskyi district,  
Kyiv region



**Vorzel,**  
Buchanskyi district,  
Kyiv region



**Bucha,**  
Buchanskyi district,  
Kyiv region

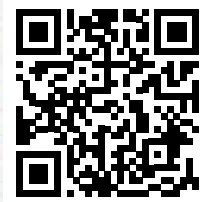


**Borodyanka,**  
Buchanskyi district,  
Kyiv region





# REBUILD



[rebuildua.net](http://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:

