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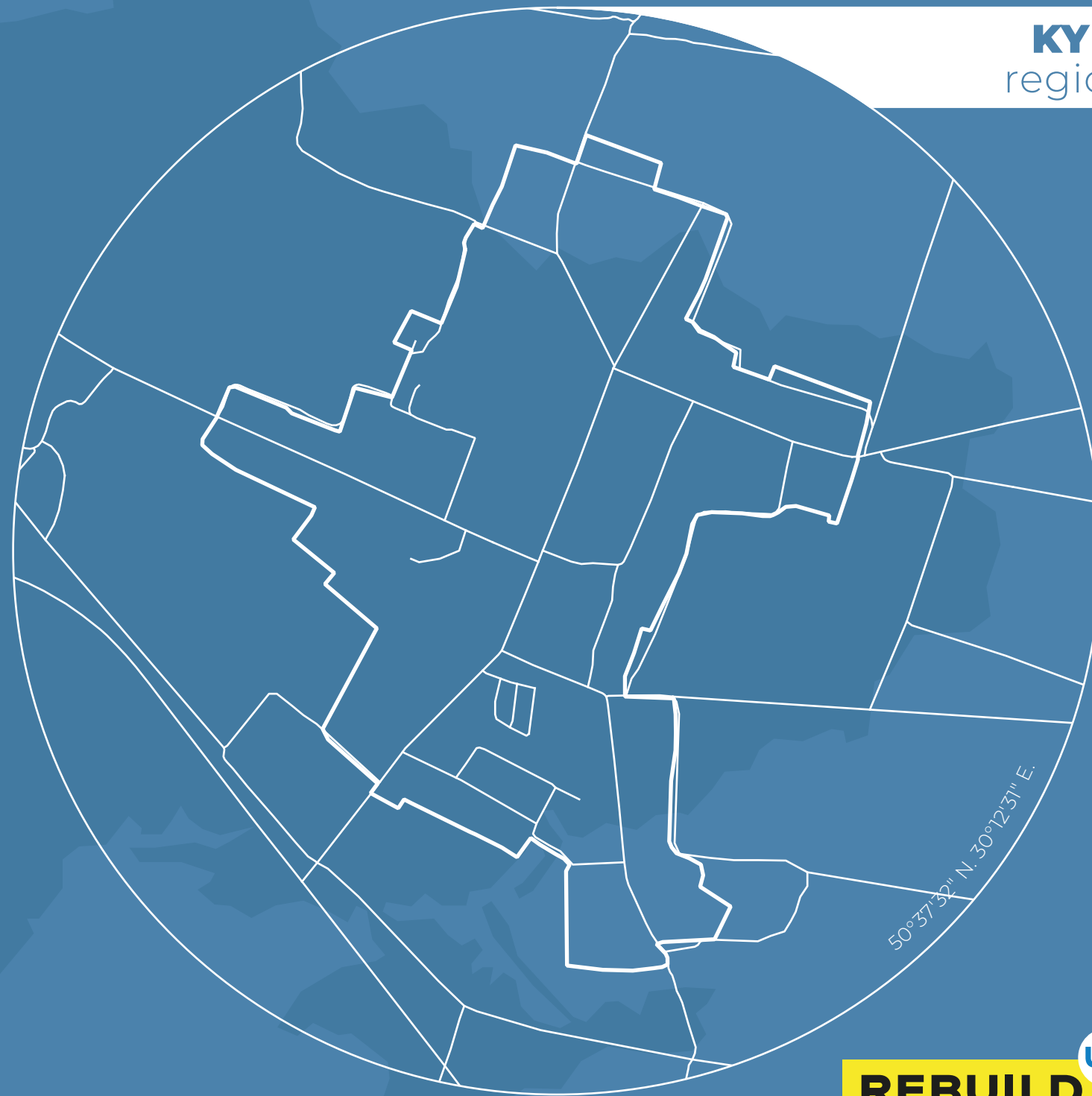OZERA
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50°37'32" N. 30°12'51" E.

DIGITIZATION OF DESTROYED INFRASTRUCTURE

REBUILD UA

ABOUT THE PROJECT

Background

The military actions of russia and belarus cause numerous damages and destruction in almost all regions of Ukraine — housing and infrastructure are being destroyed, 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 losses 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:

SMART Farming_

Land analysis and interaction with communities:

VKURSI ZEMLI

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.
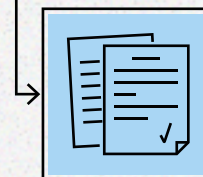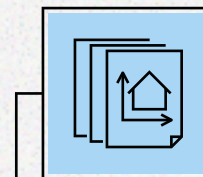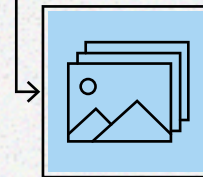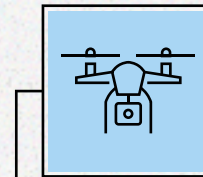
Find out more at the project website: rebuildua.net

ABOUT THE LOCALITY

Ozera is a small village in Borodyanskyi district near Kyiv. Before the war, the village had a developed infrastructure and considerable industrial capacities: a fishing plant, production of biofertilizers, boilers and ceramic blocks.

In March 2022, the occupiers built earthen ramparts in the locality to hide their military equipment (this was recorded by satellite images of Maxar Technologies). During the occupation, a quarter of residential buildings were destroyed, and industrial and social infrastructure was damaged.

Keep track of our next destinations on the map and in the project news.

🌐 rebuildua.net   f /rebuildua.net

Ozera
Horenka
Pushcha-Vodytsia
Irpin
Kyiv

Region	**Kyiv**		Survey area		Population
District	**Buchanskyi**		**294 hectares**		**819 people**
Community	**Hostomelska**				

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DIGITIZATION PROCESS

border of the locality
trajectory of drone shooting

3 flight missions

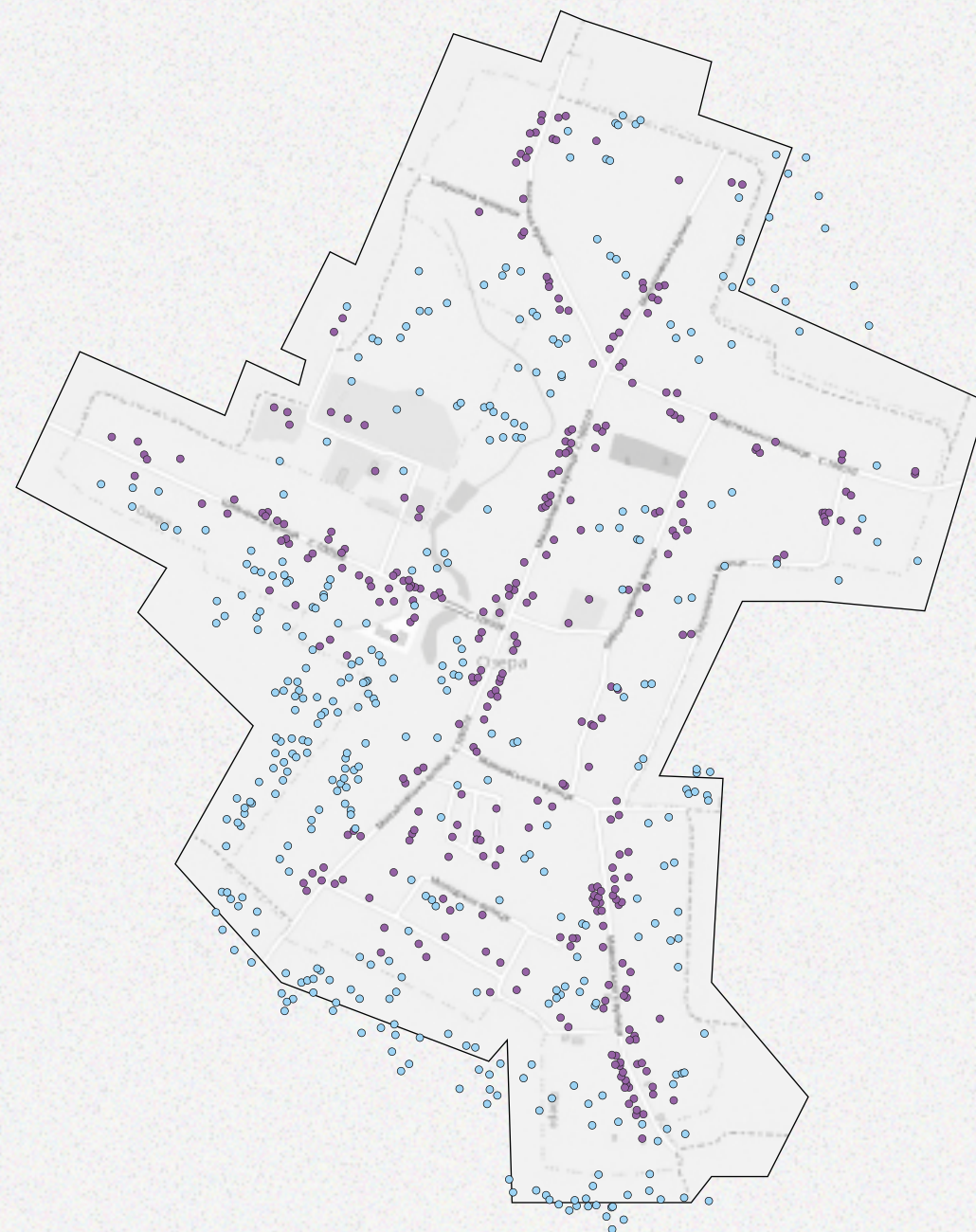**401** pictures for orthophoto

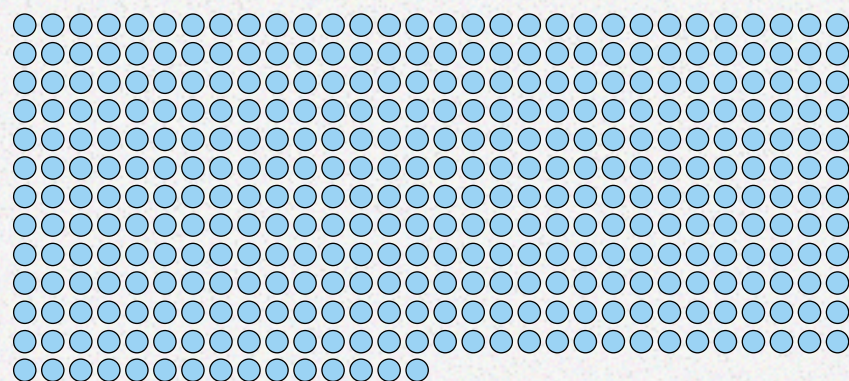**100** hours of data processing

3,9 Gigabytes of data

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LEVEL OF BOMBING

320 destroyed buildings
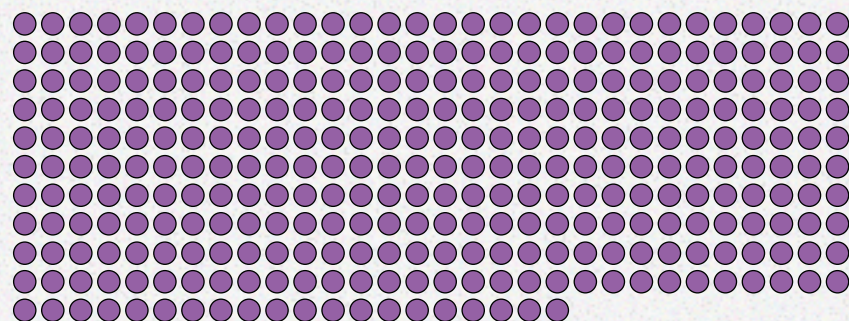
375 shell craters

● destroyed buildings

○ shell craters

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THERMAL MAP OF DESTRUCTION

Destruction of the largest streets
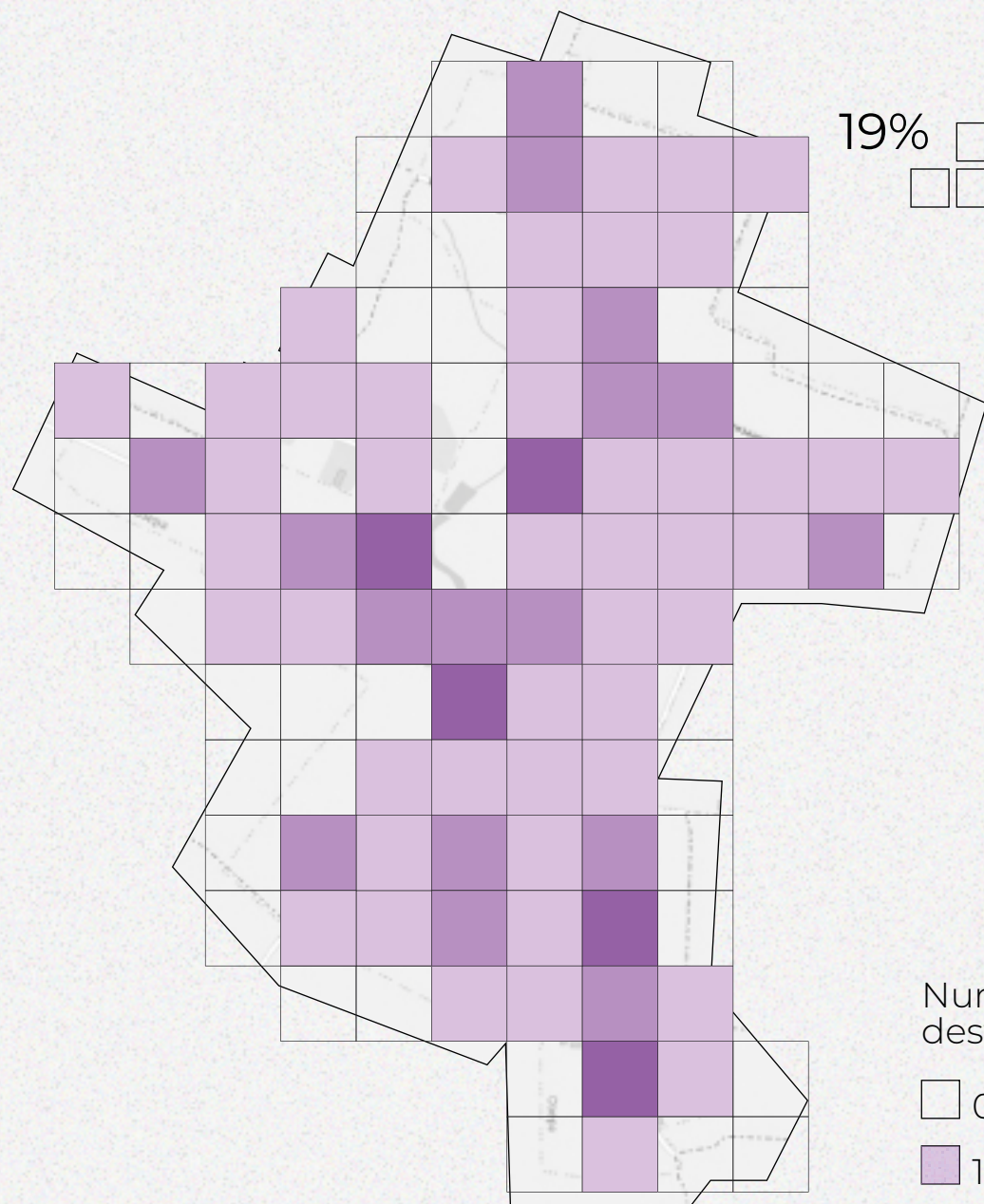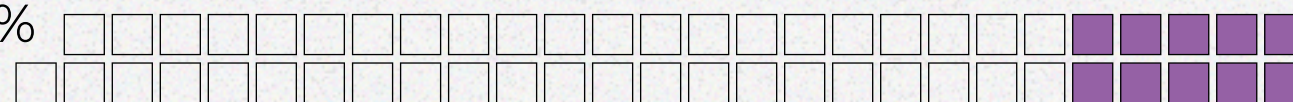
19% **99** / 527 Mykhailivska

25% **62** / 251 Shevchenka

31% **68** / 220 Mayakovskogo

15% **29** / 188 Partyzanska

17% **21** / 121 Pershotravneva

20% **22** / 111 Zhovtneva
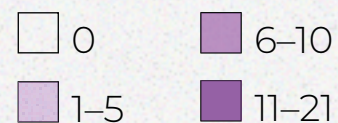
19% **12** / 62 Molodizhnyi lane

10% **6** / 59 Molodizhna

Number of destroyed buildings

☐ 0

1–5

6–10

11–21

■ 10 buildings

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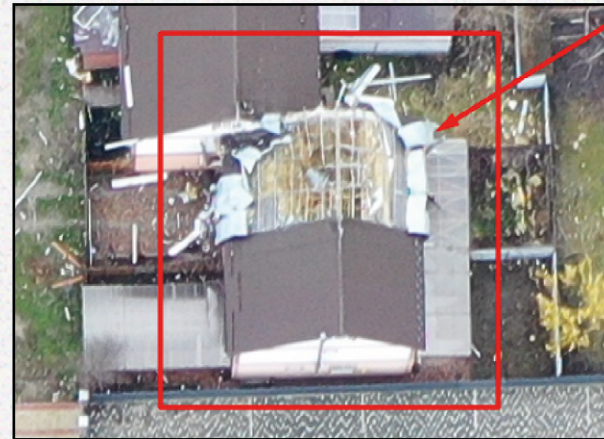
HOW WE DETERMINE LEVELS OF DESTRUCTION

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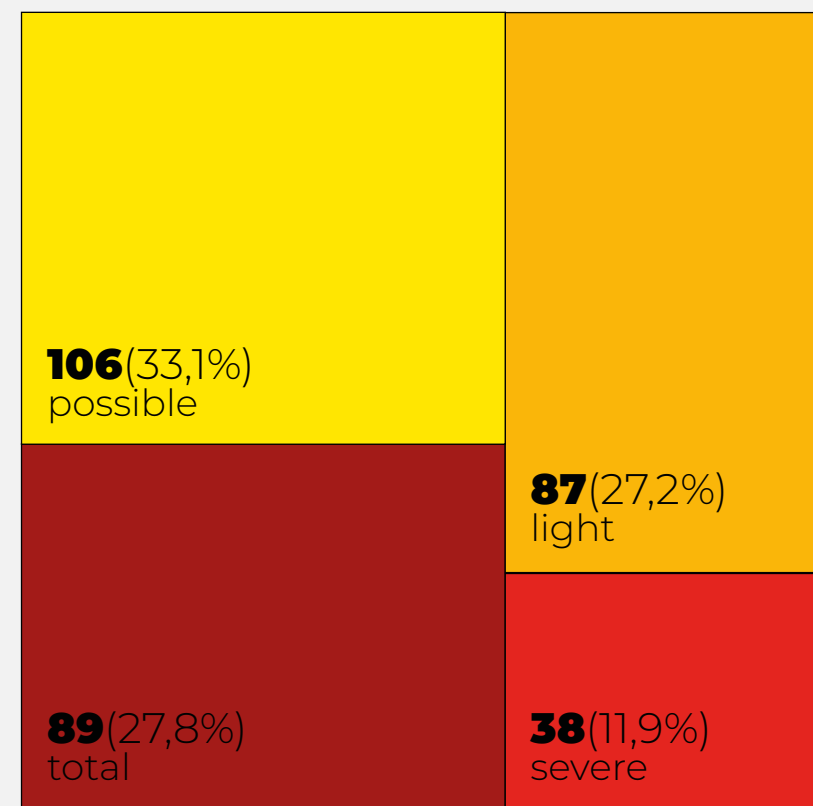
Visual signs may include be small amounts of debris, gravel or sand around the building.

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LEVELS OF DESTRUCTION

Buildings destroyed:

320 out of 1 571

Level of destruction, number of buildings

106 (33,1%)
possible

87 (27,2%)
light

89 (27,8%)
total

38 (11,9%)
severe

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

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TYPES OF DESTROYED OBJECTS

Administrative infrastructure **2** / 3

Social infrastructure **7** / 10

Industrial buildings **13** / 47
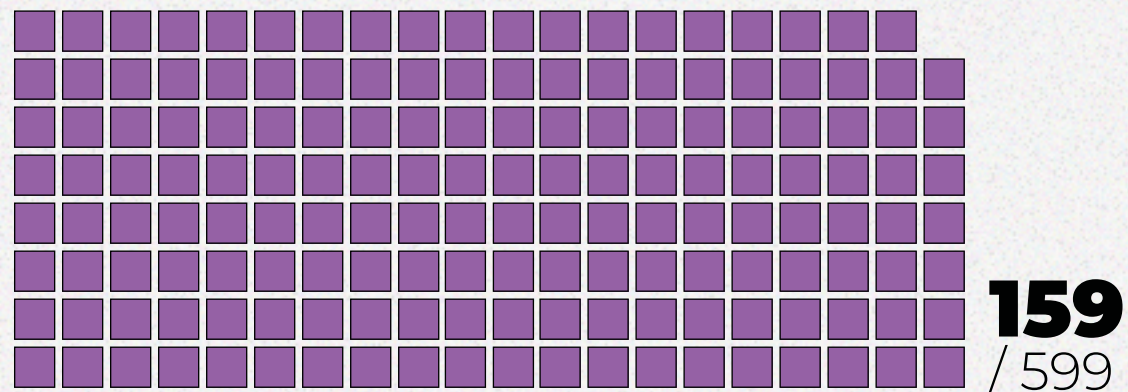
Outbuildings **139** / 912

Residential buildings **159** / 599
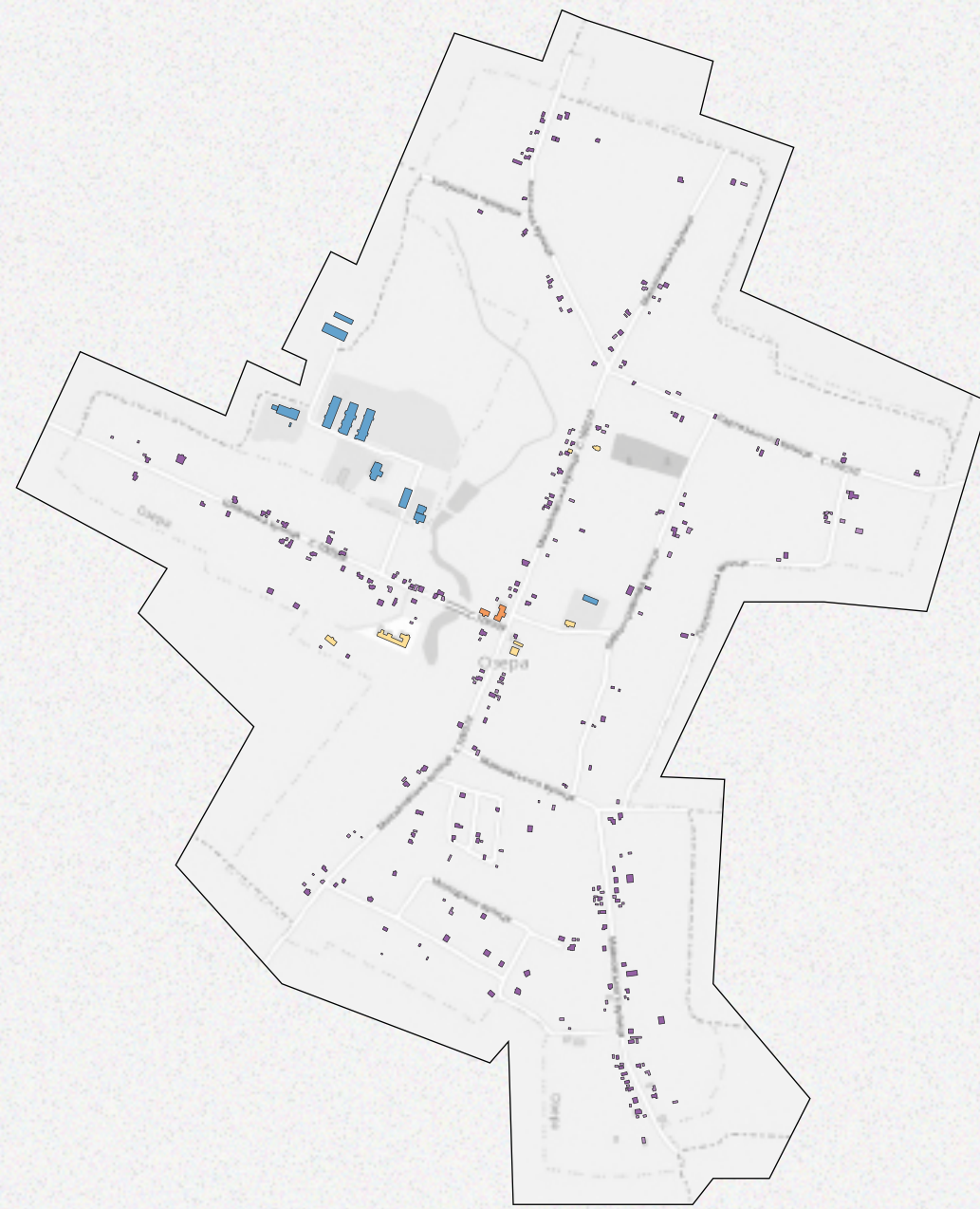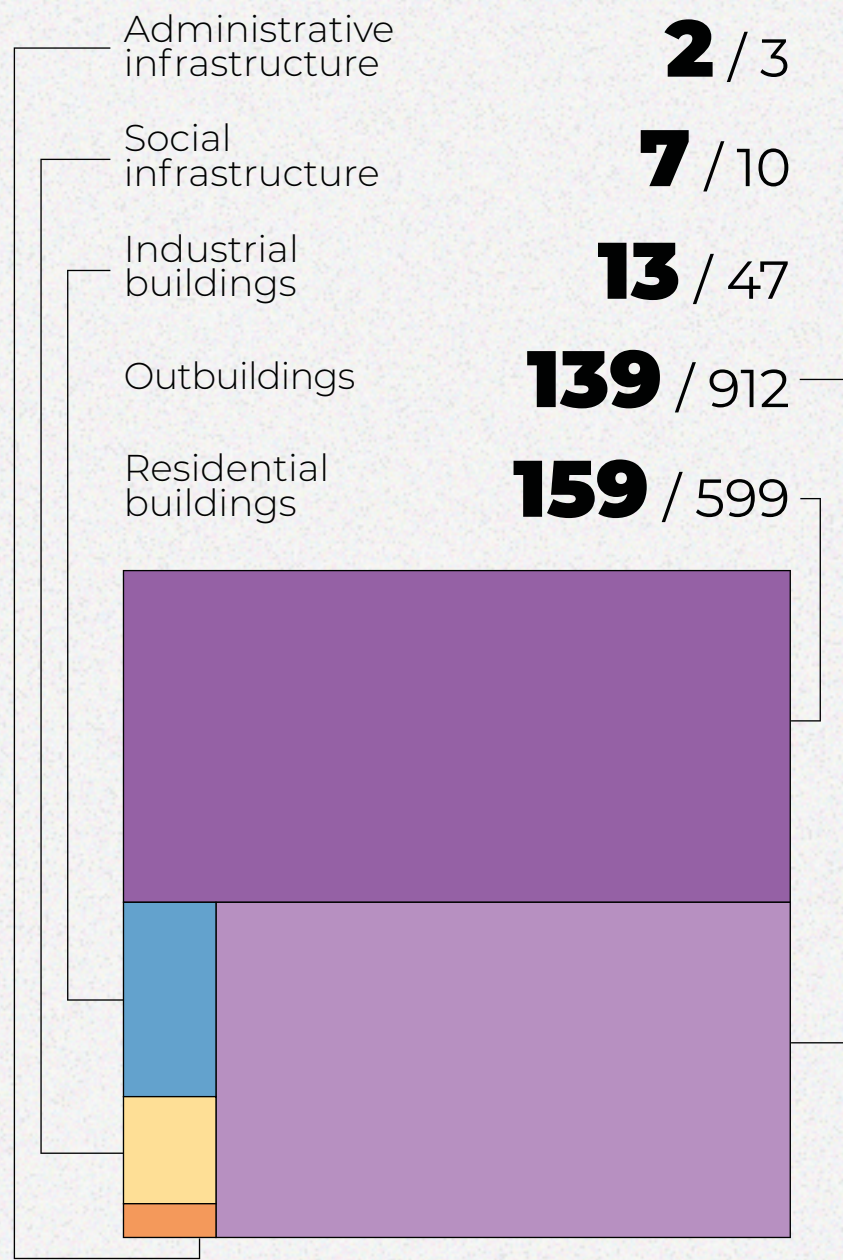
Residential buildings and outbuildings

Industrial buildings
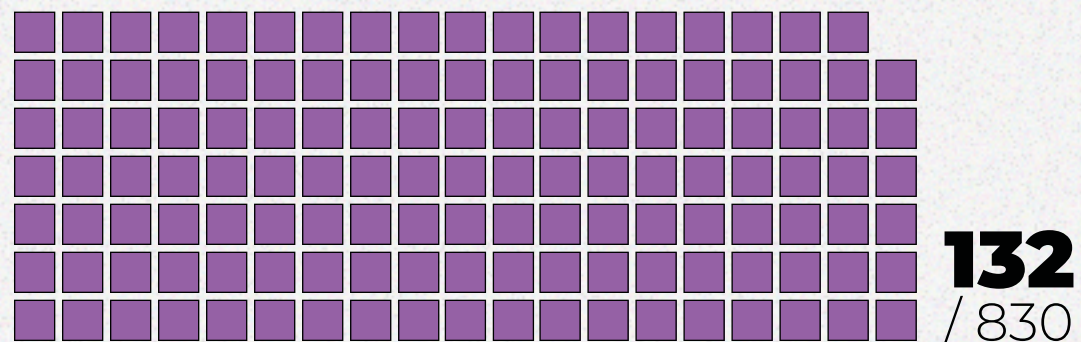
Social infrastructure

Administrative infrastructure

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SCALE OF DESTRUCTION

Residential buildings and outbuildings

Private houses

159 / 599

Outbuildings

132 / 830

Garages

7 / 82

Social infrastructure

Grocery stores
3 / 5

Church buildings
1 / 2

Educational facilities
2 / 2
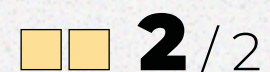
Pharmacies
1 / 1

Industrial infrastructure

Industrial buildings
11 / 24
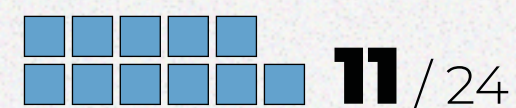
Utility buildings
2 / 19
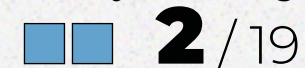
Administrative infrastructure

Administrative buildings
2 / 3

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SCALE OF DESTRUCTION

36,5% possible

28,3% total

23,9% light

11,3% severe
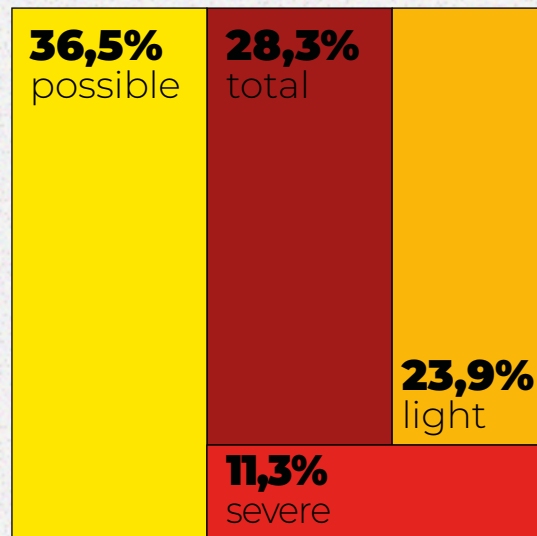
Level of destruction of residential buildings

28,8% light

31,7% total

29,5% possible

10,1% severe
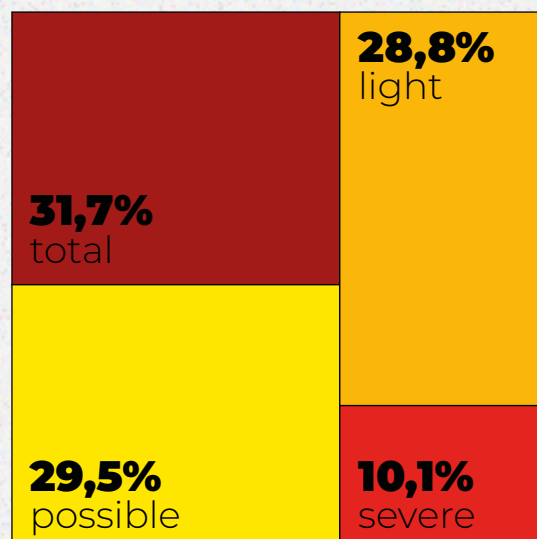
Level of destruction of outbuildings (outbuildings, garages, greenhouses)

Garage

Private house

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Level of destruction

28,6%
possible

57,1%
severe

14,3%
light
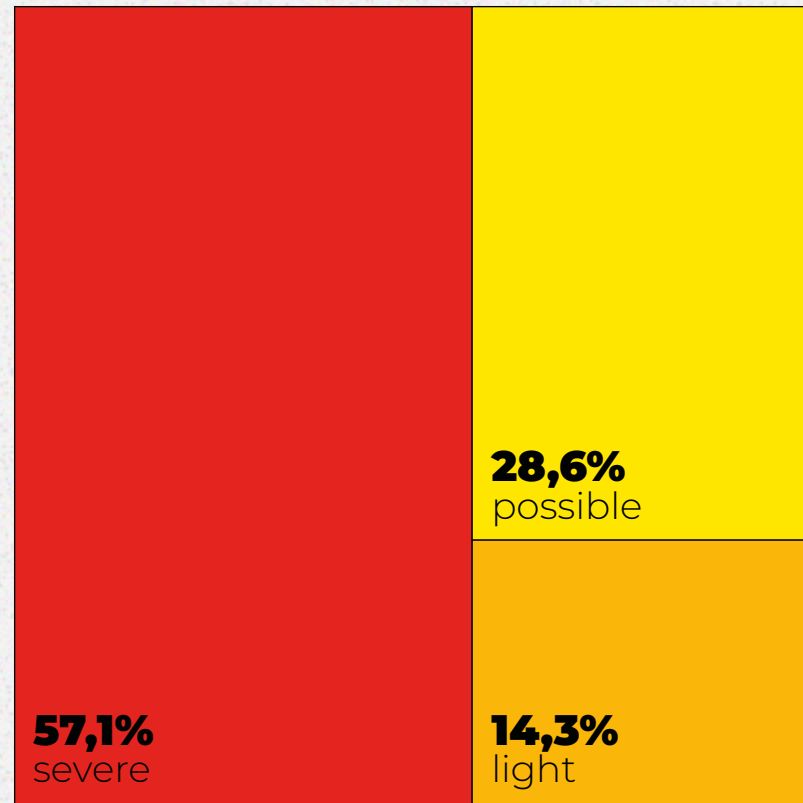
Pharmacy

Grocery store

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SCALE OF DESTRUCTION

Level of destruction

38,5%
possible

46,2%
light

15,4%
severe
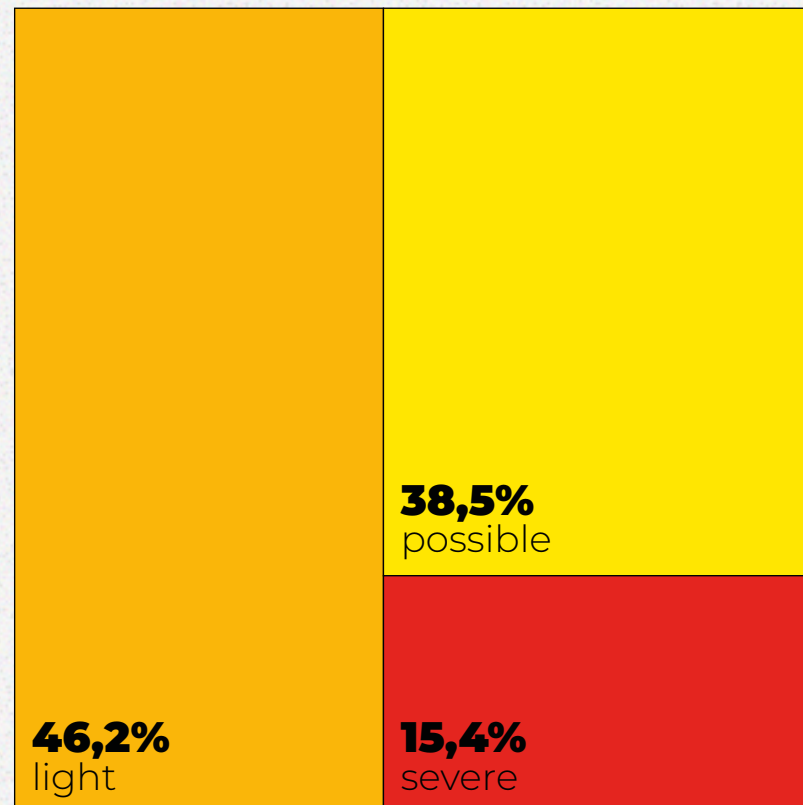
Industrial object

"Kronos Agro" capacities

SCALE OF DESTRUCTION

Level of destruction

100%
light
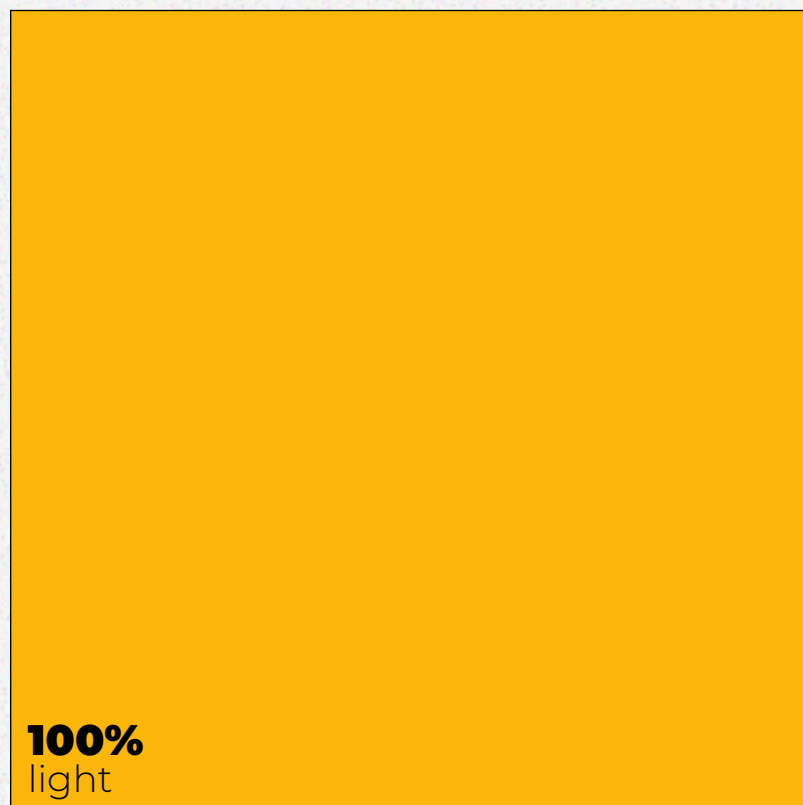
Village council

Administrative service center

ASSESSMENT OF LOSSES

Losses by types of buildings

Residential buildings
and ourbuildings

$10.33 mln

Industrial
infrastructure

$1.92 mln

Total losses

$12.60 mln
(368.42 mln UAH)

Social
infrastructure

$0.19 mln

Administrative
infrastructure

$0.16 mln

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ASSESSMENT OF LOSSES

Residential buildings and outbuildings

$0.64 mln
Outbuildings

$9.61 mln
Private houses

$0.08 mln
Garages

Industrial infrastructure
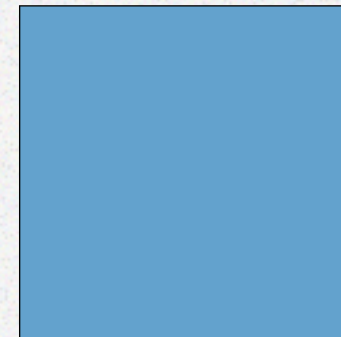
$1.92 mln
Industrial buildings

$4.93 ths
Utility buildings

Social infrastructure

$0.13 mln
Grocery shops

$0.06 mln
Pharmacies

Administrative infrastructure

$0.11 mln
Village council

$0.04 mln
Administrative service center

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METHODOLOGY OF CALCULATION

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).
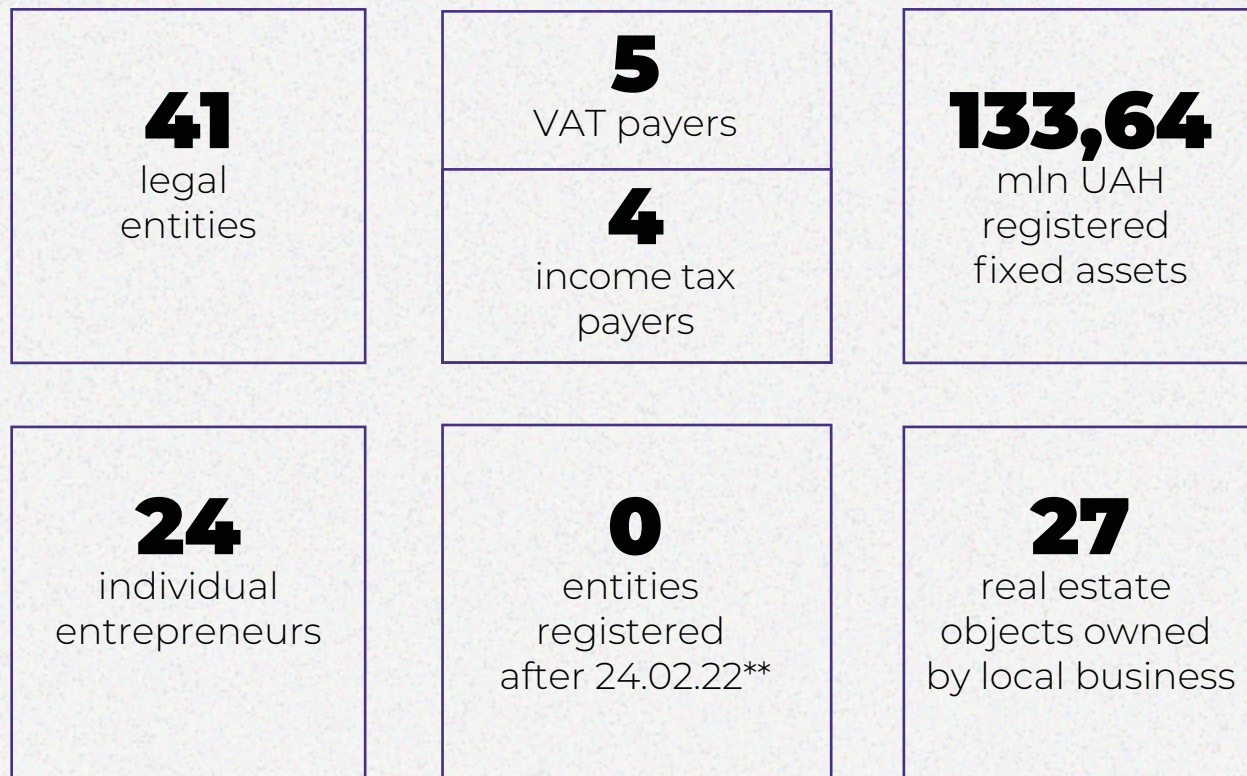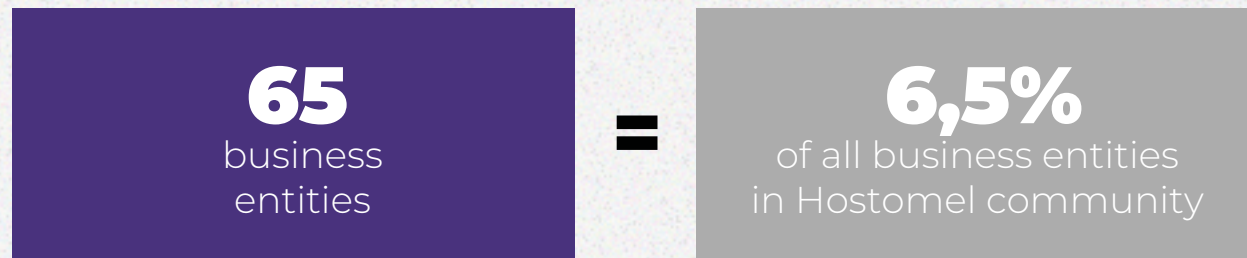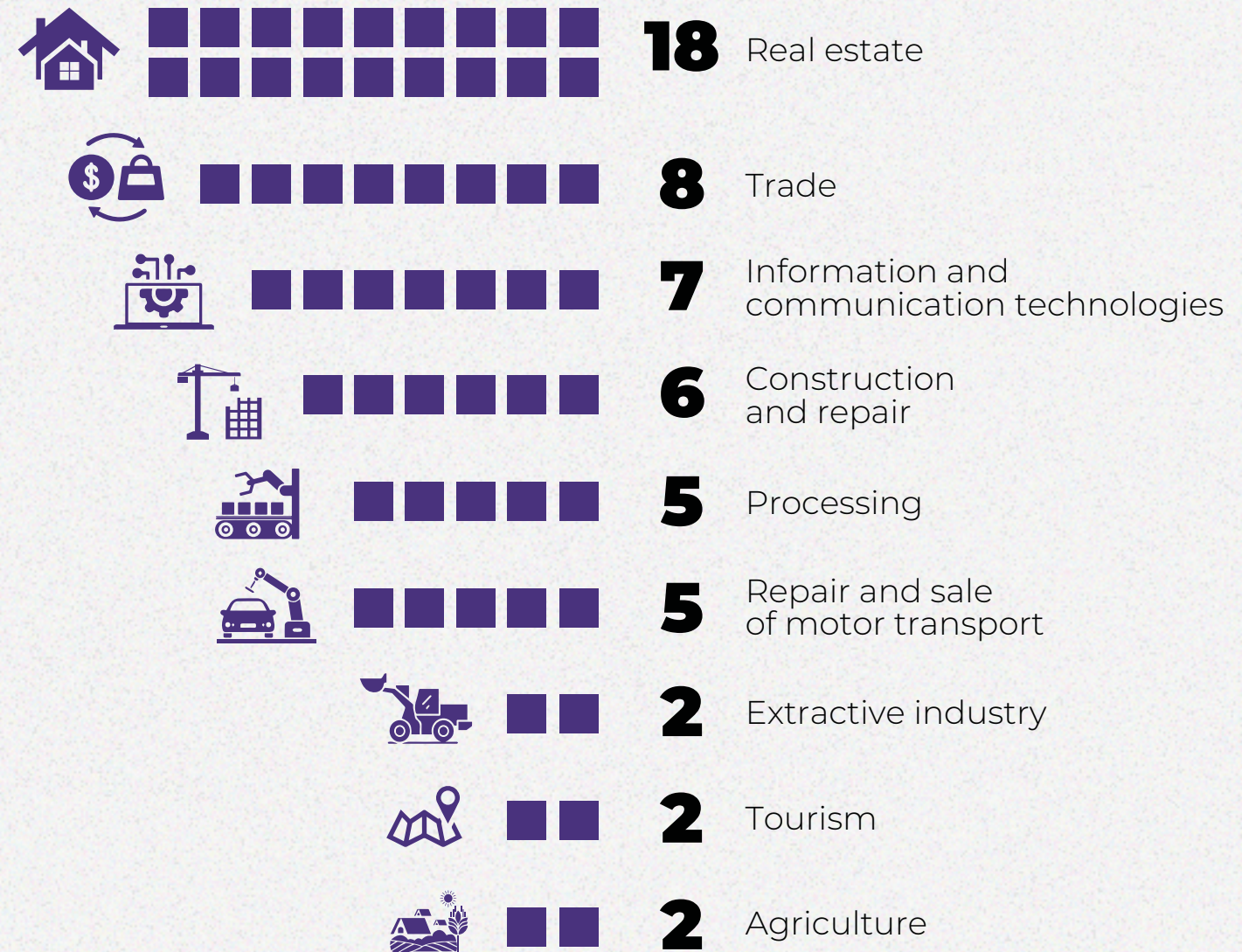

Small objects
Small objects, which include residential buildings, outbuildings and garages, are calculated based on the average footage (taking into account the area and type of area) and the cost per square meter (nominal cost + cost of redecoration repairs + cost of dismantling).

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LOCAL BUSINESS ANALYSIS*

Characteristics of local business

65 business entities **=** **6,5%** of all business entities in Hostomel community

41 legal entities

5 VAT payers

4 income tax payers

133,64 mln UAH registered fixed assets

24 individual entrepreneurs

0 entities registered after 24.02.22**

27 real estate objects owned by local business

Business by clusters of economy

18 Real estate

8 Trade

7 Information and communication technologies

6 Construction and repair

5 Processing

5 Repair and sale of motor transport

**2** Extractive industry

2 Tourism

2 Agriculture

* Source: system data of Economic profile (Vkursi Hromada)

** Since the introduction of martial law in Kyiv region, 870 business entities have been registered

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REBUILD UA

The RebuildUA project aims to analyze and visualize
the destroyed infrastructure of Ukraine, make this information
public and share the results with communities,
public authorities and specialized foundations
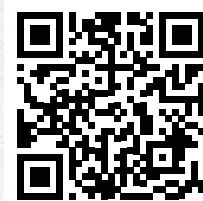
rebuildua.net

Partners:

Visual style and content:	Assessment of losses and damage, budgeting:	Digitization of geospatial information:	Support in cooperation with public authorities:	Cooperation & analysis of community economy, Vkursi Hromada:
TOP LEAD	KSE Institute	Урбанина	Centre for Economic Recovery	Center for Innovations Development

Supported by:

ПАТРУЛЬНА ПОЛІЦІЯ   КІБЕР ПОЛІЦІЯ НАЦІОНАЛЬНА ПОЛІЦІЯ УКРАЇНИ   ДЕПАРТАМЕНТ МІСТОБУДУВАННЯ ТА АРХІТЕКТУРИ   ODGERS BERNDTSON   KERNEL   TVIS   FLY TECHNOLOGY