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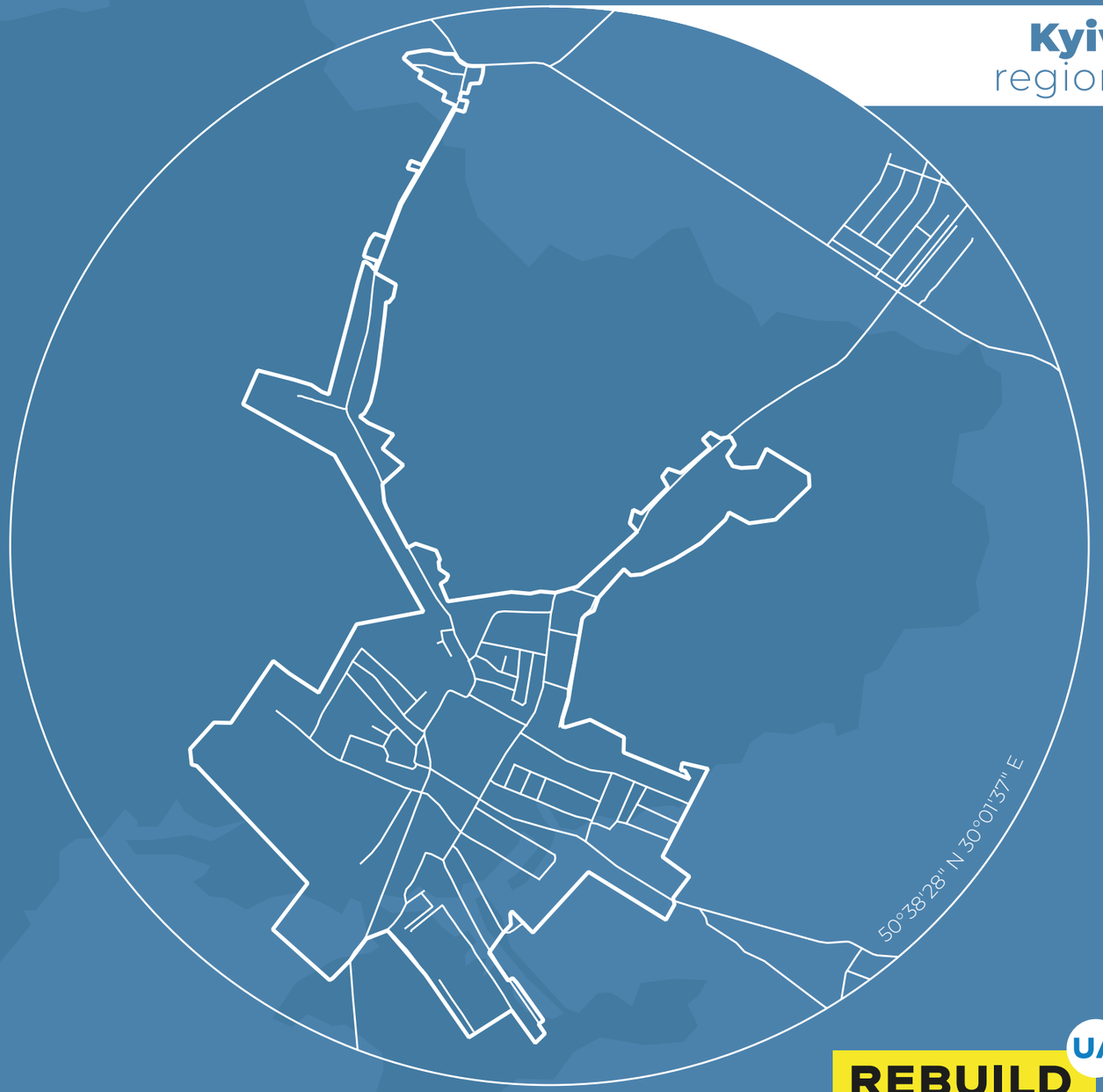
DIGITIZATION OF DESTROYED INFRASTRUCTURE



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:

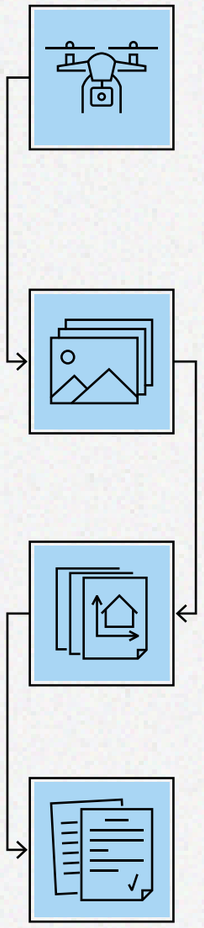
SMART Farming

Land analysis and interaction with communities:

VKURSI ZEMLI

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

The village of Babyntsi in Buchanskyi district, along with neighboring settlements, suffered from russian shelling in mid-March. Near the village, the russian military opened fire on cars with civilians, as a result human lives were lost.

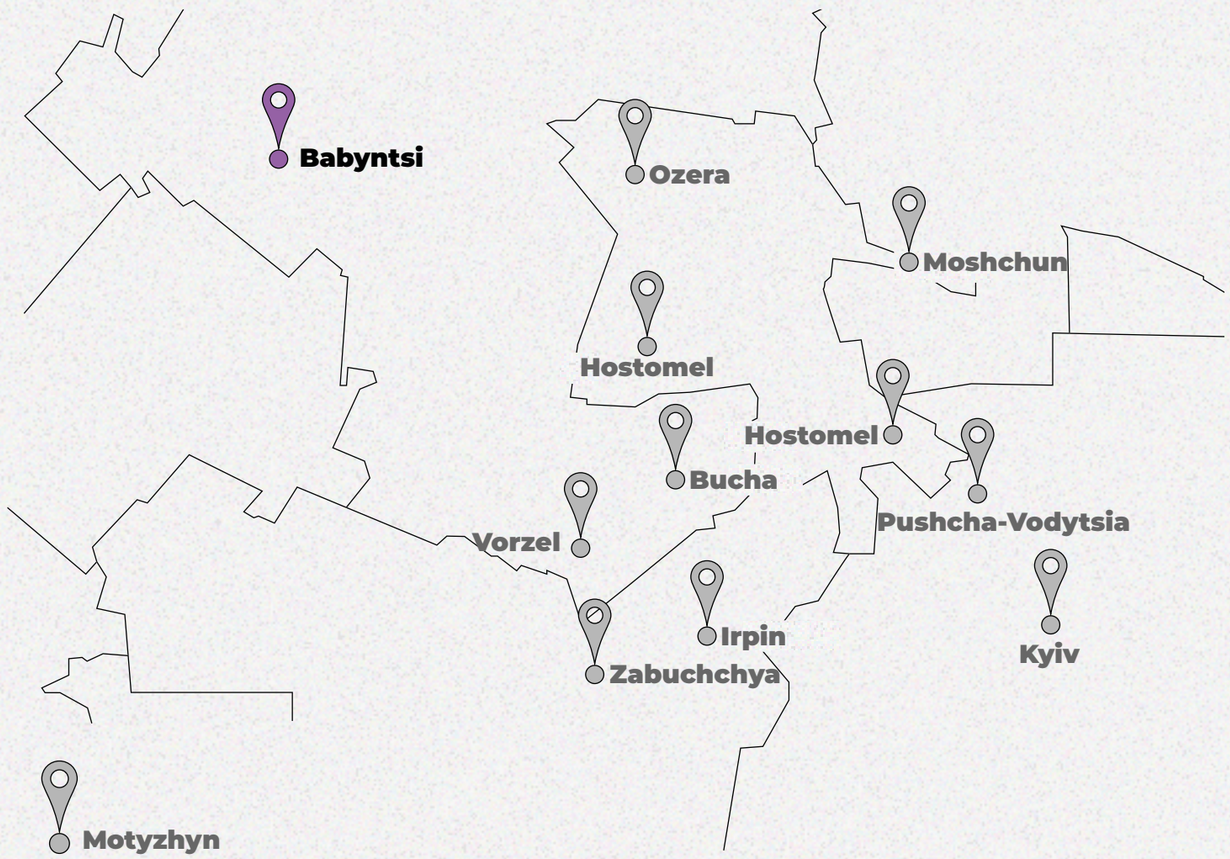
Together with other towns and villages of the Kyiv agglomeration, the village blocked access to the capital, and therefore did not avoid serious damages and destruction of the local infrastructure.

The RebuildUA team visited the locality and analyzed the damage caused by the occupiers.

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

rebuildua.net

/rebuildua.net

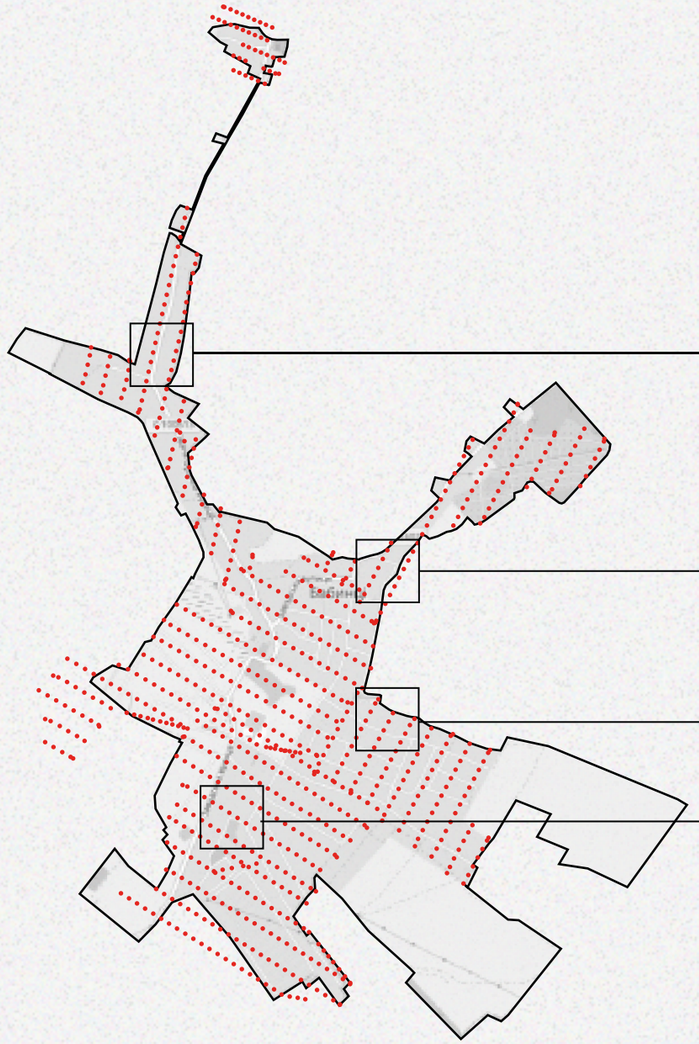


Region	**Kyiv**
District	**Buchanskyi**
Community	**Buchanska**

Area
34 м²

Population
2 798 people

DIGITIZATION PROCESS



border of the locality
trajectory of drone shooting

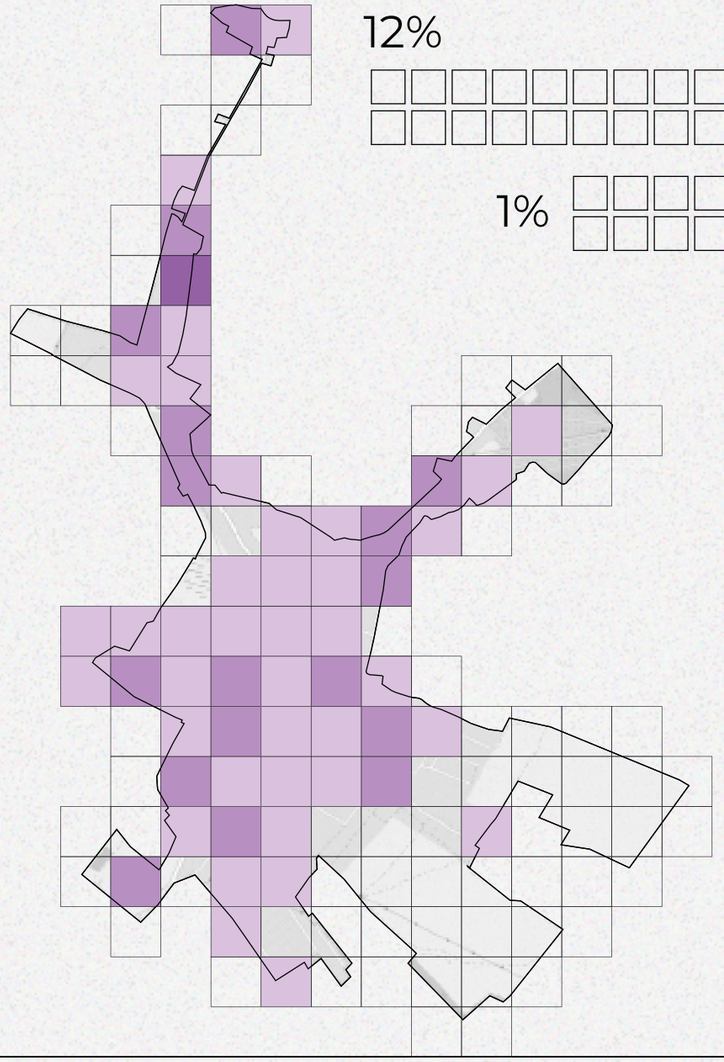
8 flight missions

820 pictures for orthophoto

60 hours of data processing

8.8 Gigabytes of data

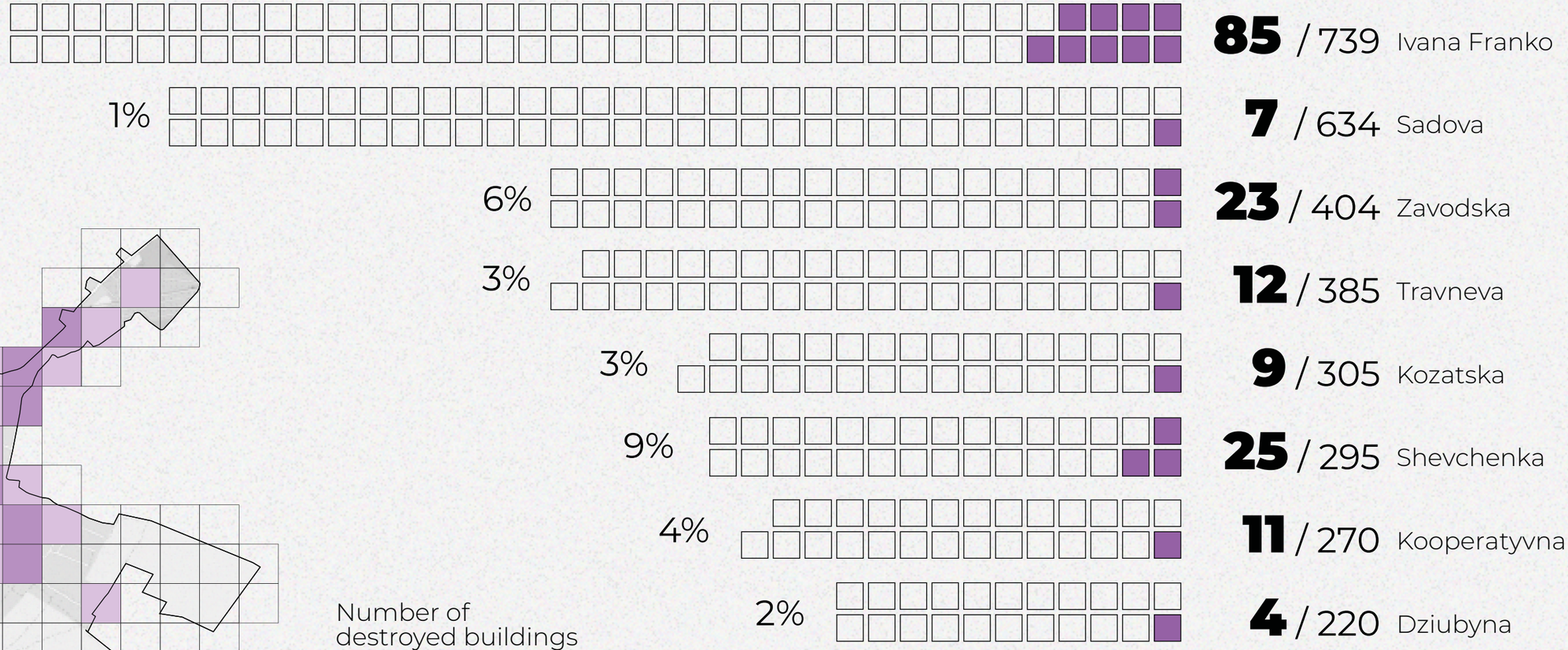
THERMAL MAP OF DESTRUCTION



Number of destroyed buildings

0 · 1–5 · 6–10 · >10

Destruction of the largest streets



85 / 739 Ivana Franko

7 / 634 Sadova

23 / 404 Zavodska

12 / 385 Travneva

9 / 305 Kozatska

25 / 295 Shevchenka

11 / 270 Kooperatyvna

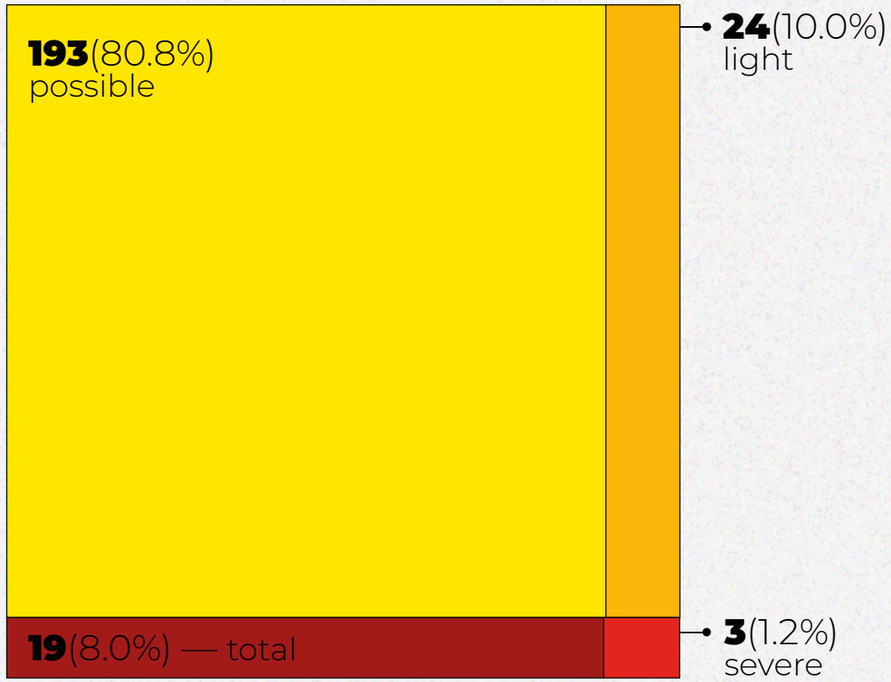
4 / 220 Dziubyna

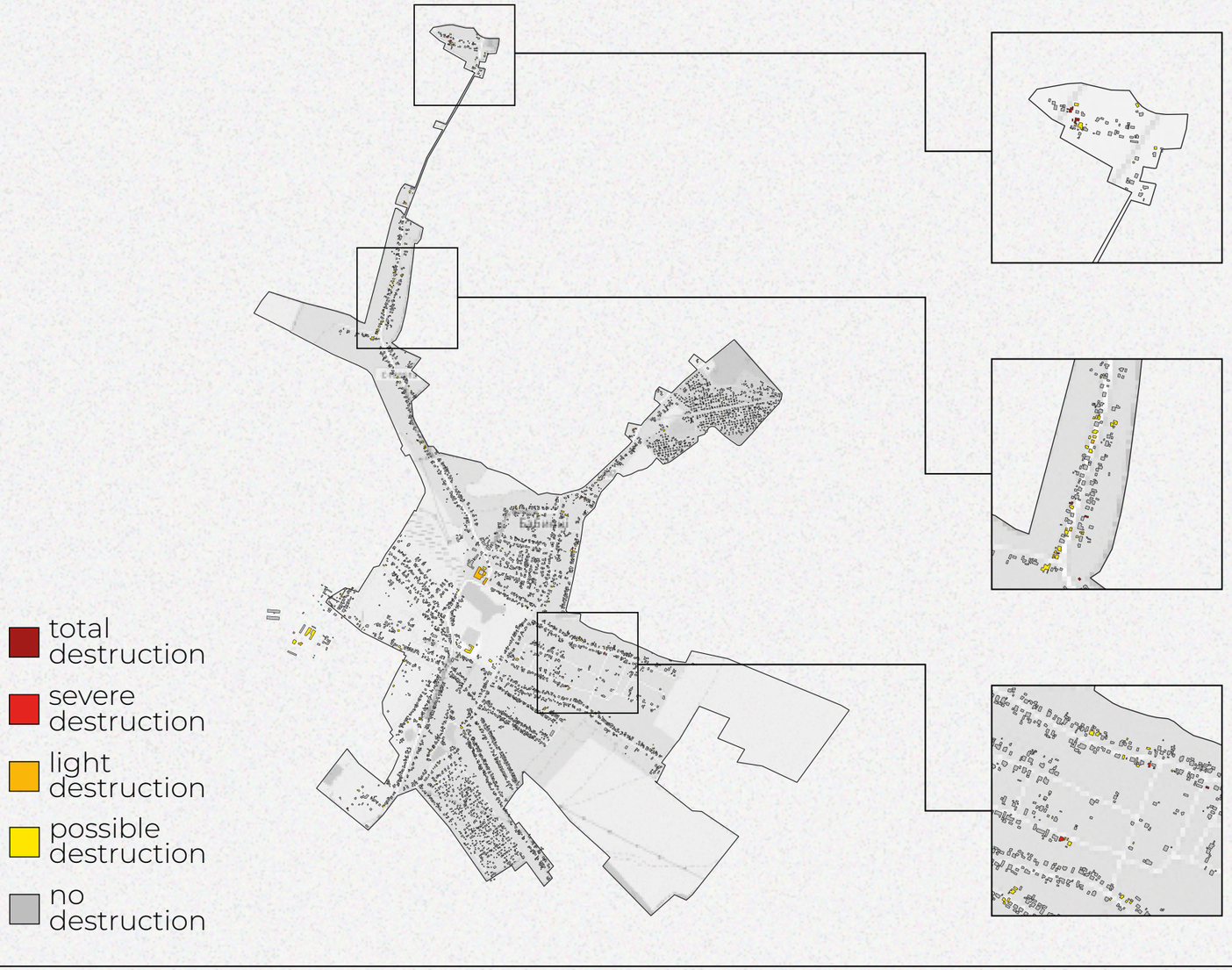
LEVELS OF DESTRUCTION

Buildings destroyed:

238 / 5,046

Level of destruction, number of buildings



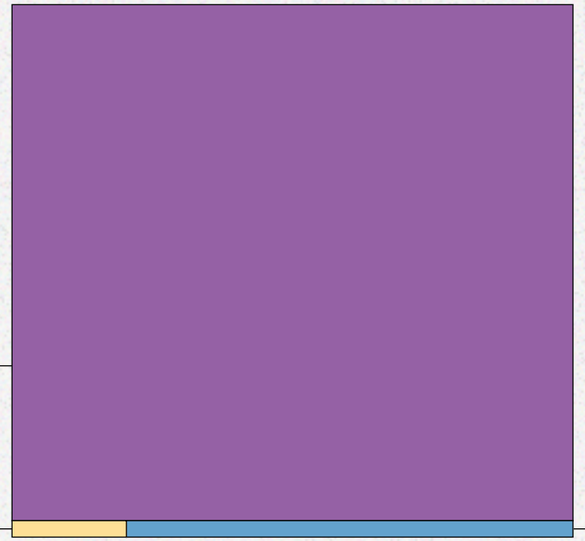


TYPES OF DESTROYED OBJECTS

Social infrastructure **3** / 39

Industrial buildings & construction **14** / 86

Residential buildings & outbuildings **222** / 4,911



Residential buildings & outbuildings

Industrial buildings & construction

Social infrastructure

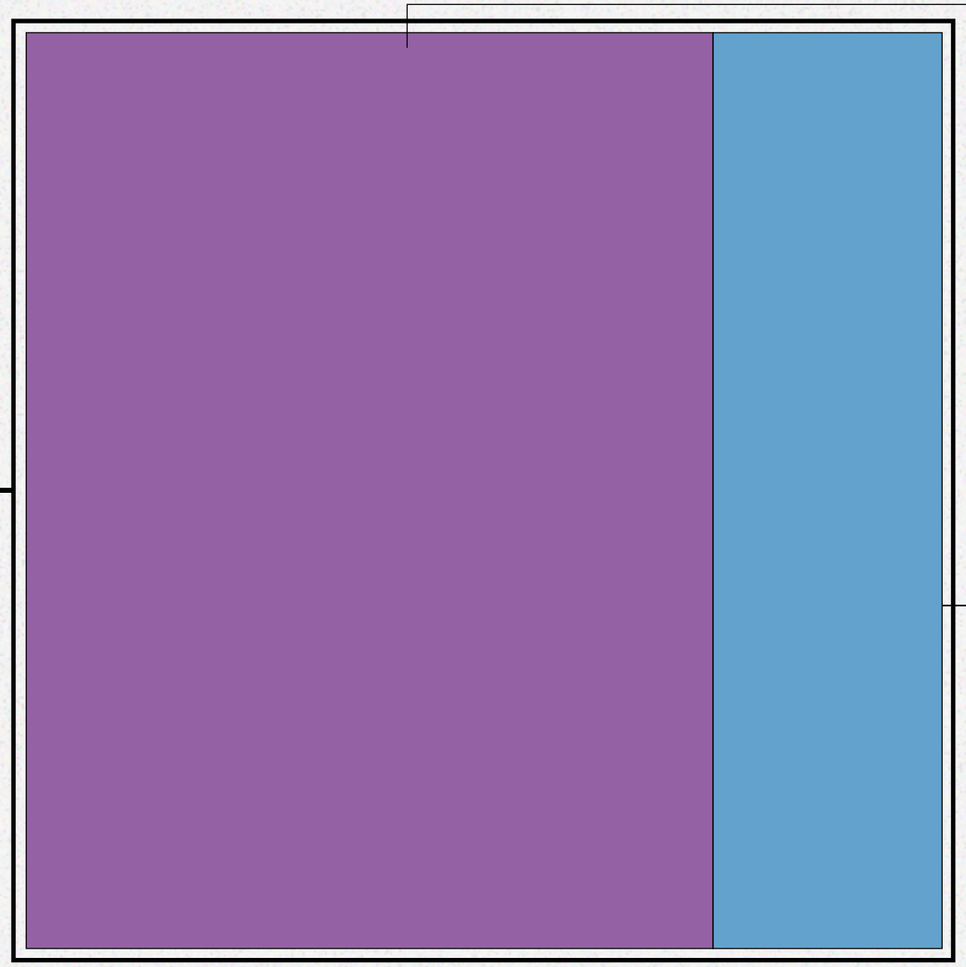
ASSESSMENT OF DAMAGES

KSE | Institute

Damages by types of buildings

Total damages

$1.5 million



$1.09 million
Residential buildings
& outbuildings

$0.37 million
Industrial buildings
& construction

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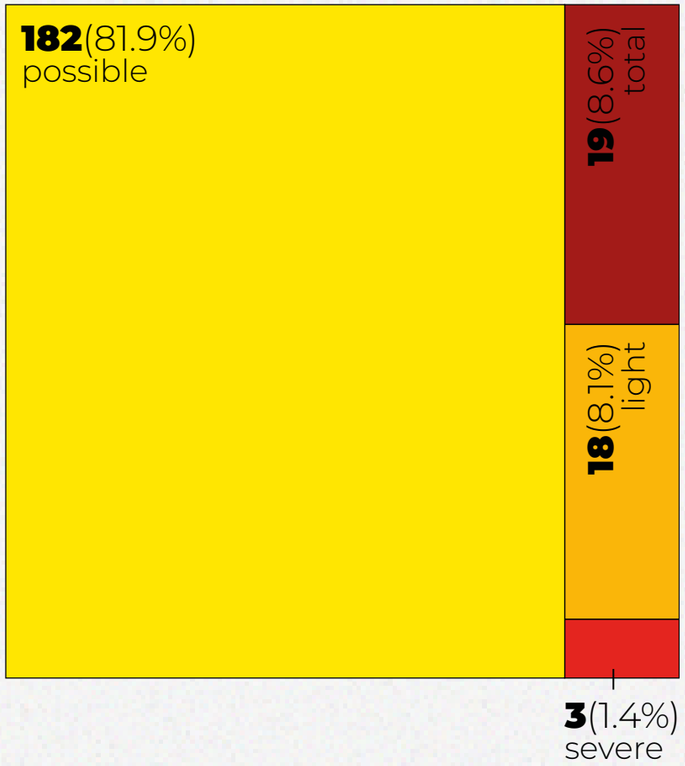
SCALE OF DESTRUCTION

SCALE OF DESTRUCTION

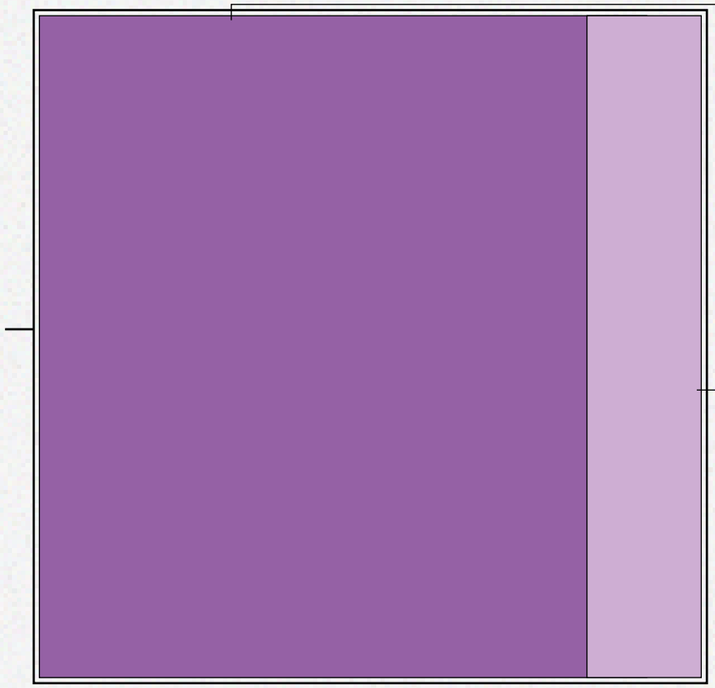
RESIDENTIAL BUILDINGS & OUTBUILDINGS

Level of destruction



Assessment of damages

Total damages
$1.1 million



$0.93 million
Private houses & townhouses

$0.16 million
Outbuildings

SCALE OF DESTRUCTION

RESIDENTIAL BUILDINGS & OUTBUILDINGS

Outbuilding

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

Total area of damage

18.4 ths m²

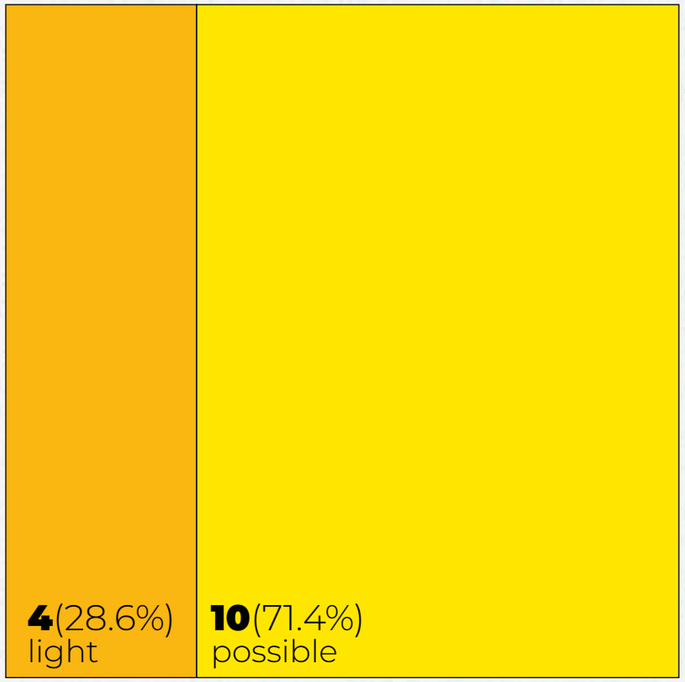
Number of residents affected

183

SCALE OF DESTRUCTION

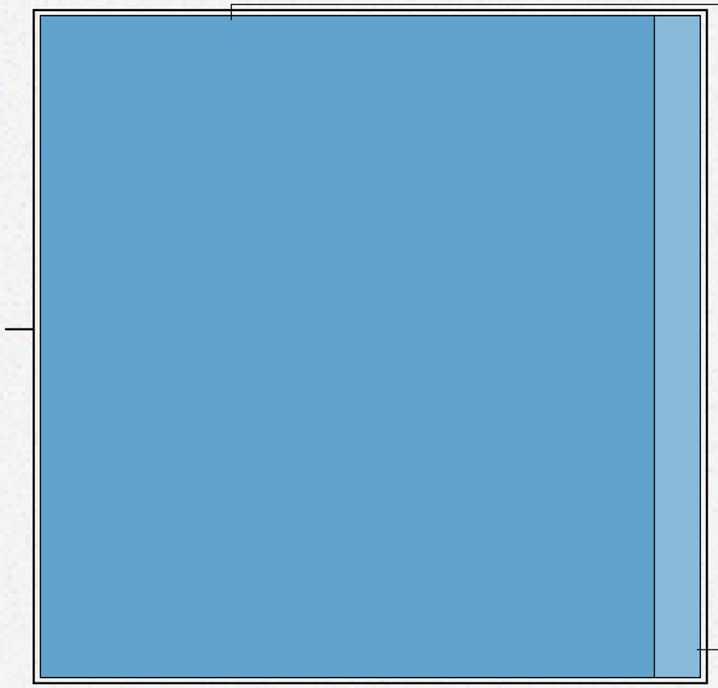
INDUSTRIAL BUILDINGS & CONSTRUCTION

Level of destruction



Assessment of damages

Total damages
$0.4 million



$0.35 million
Industrial buildings

$0.02 million
Utility buildings

SCALE OF DESTRUCTION

Number of destroyed buildings

Utility buildings

3 / 45

Industrial buildings

6 / 14

Construction

4 / 21

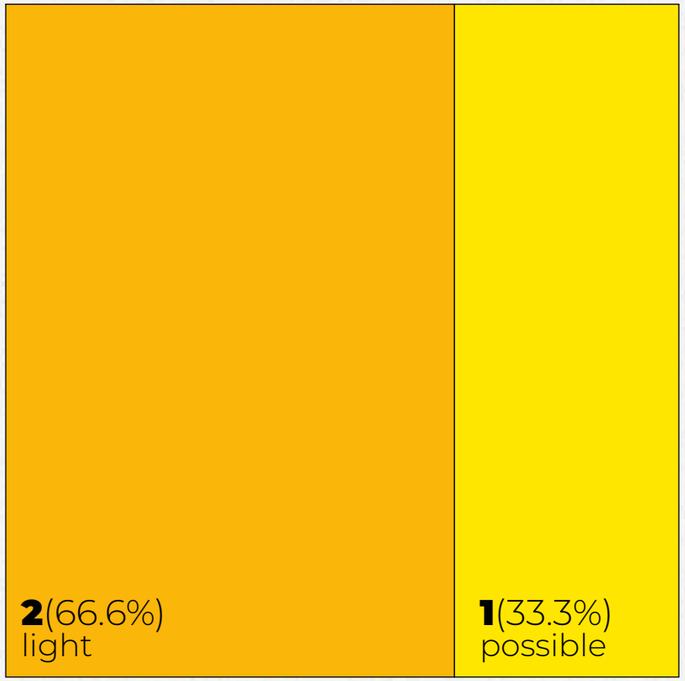
Warehouses

1 / 6

Industrial object

SCALE OF DESTRUCTION

Level of destruction



Number of destroyed buildings

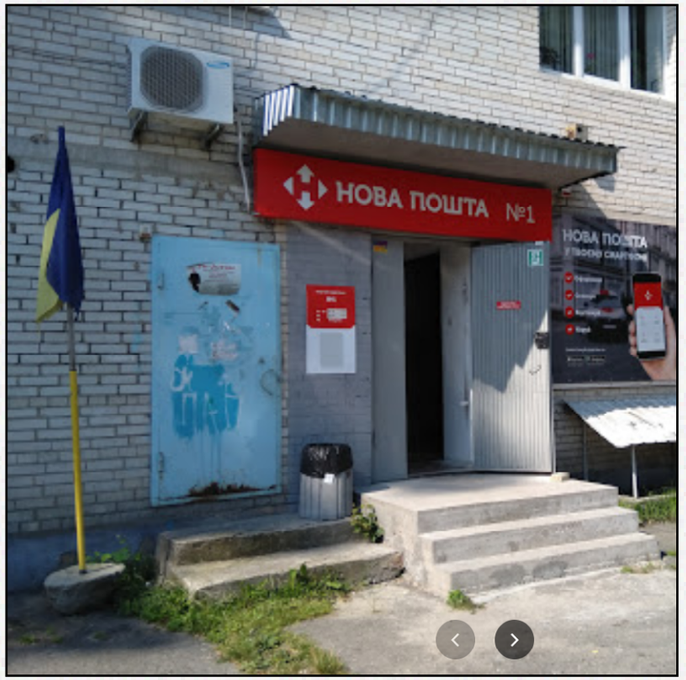
Buildings of general purpose

2 / 14

Educational institutions

1 / 2

Nova Poshta office



METHODOLOGIES & ADDITIONAL INFORMATION

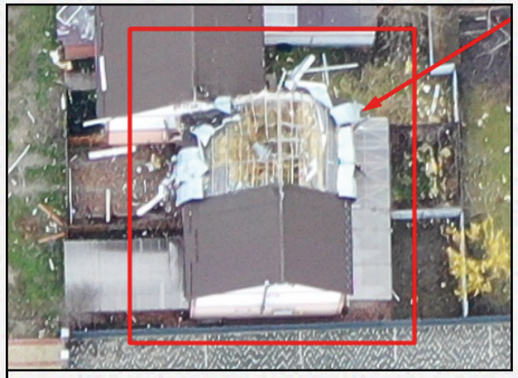
HOW WE DETERMINE LEVELS OF DESTRUCTION

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.

METHODOLOGY OF CALCULATION

KSE | Institute

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).

* All calculations are made according to the dollar exchange rate as of January 1, 2022

SMART Farming
VKURSI ZEMLI
TOP LEAD

BABYNTSI THROUGH THE EYES OF BEHOLDERS

The Security Service of Ukraine identified Kadyrov's friend who tortured a minor during the temporary occupation of Kyiv region

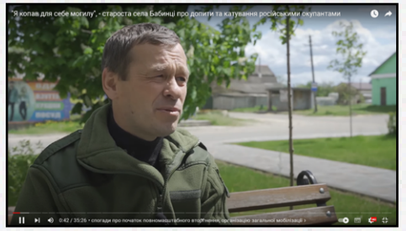
read

Babyntsi. Memories of the occupation: «Everyone worked for victory»

read

Two collaborators were detained in Babyntsi, Kyiv region

read



«I dug a grave for myself», - the village head of Babyntsi about the interrogations and torture by the Russian occupiers

play

They searched for vodka and shot for fun: people from Babyntsi remember how they survived the occupation

play

«We didn't even have anything to eat». Babyntsi in Kyiv region. History of the occupation.

play

A resident of the village talks about what he experienced during the occupation in Babintsy

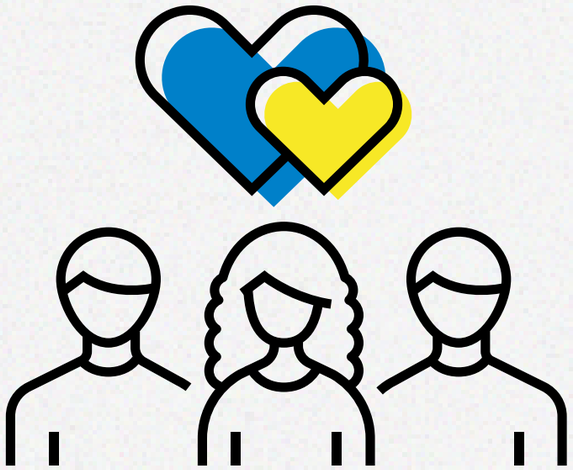
play

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.

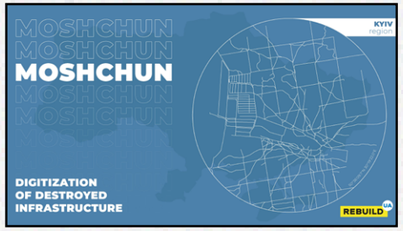
These people helped RebuildUA digitize the destruction of Babyntsi:

Valentyn Shkliarenko
(completely on his own)



REBUILD UA

PREVIOUS REPORTS



Moshchun,
Buchanskyi district,
Kyiv region

download

Horenka,
Buchanskyi district,
Kyiv region

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Ozera,
Borodianskyi district,
Kyiv region

download

Irpin,
Buchanskyi district,
Kyiv region

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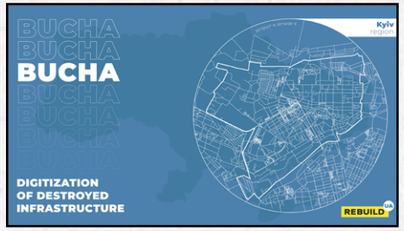
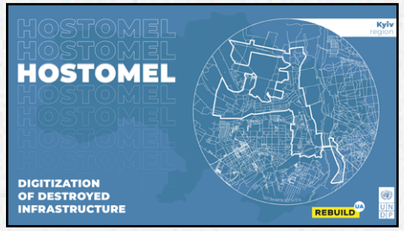


Bucha,
Buchanskyi district,
Kyiv region

download



Hostomel,
Buchanskyi district,
Kyiv region

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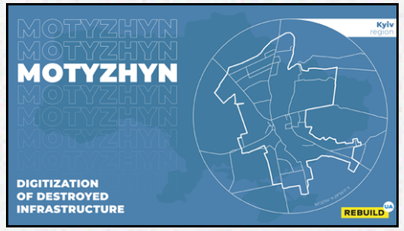

Motyzhyn,
Buchanskyi district,
Kyiv region

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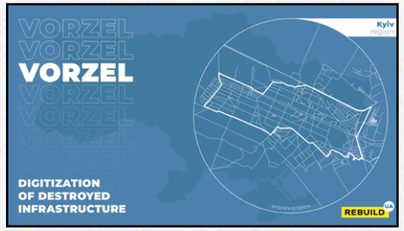

Vorzel,
Buchanskyi district,
Kyiv region

download

REBUILD UA

rebuildua.net

Partners:

Assessment of losses and damages, budgeting:

KSE Institute

Financial and technical support

UNDP

Shooting of settlements

CULVER AVIATION

Digitization of geospatial information:

Урбанина

Visual style and content:

TOP LEAD

Support in cooperation with public authorities:

Centre for Economic Recovery

Cooperation & analysis of community economy, Vkursi Hromada:

Center for Innovations Development

Creation of an online map of destroyed new buildings

ЛУН

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ДЕПАРТАМЕНТ МІСТОБУДУВАННЯ ТА АРХІТЕКТУРИ

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ОТГ
ВСЕУКРАЇНСЬКА АСОЦІАЦІЯ