

URBAN RESILIENCE FRAMEWORK

A METHODOLOGY FOR URBAN PLANNING
DEVELOPMENT IN CITIES UNDER THREAT.

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2024

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A. DEFINITION AND CONTEXT

URBAN RESILIENCE

Definition of Urban resilience

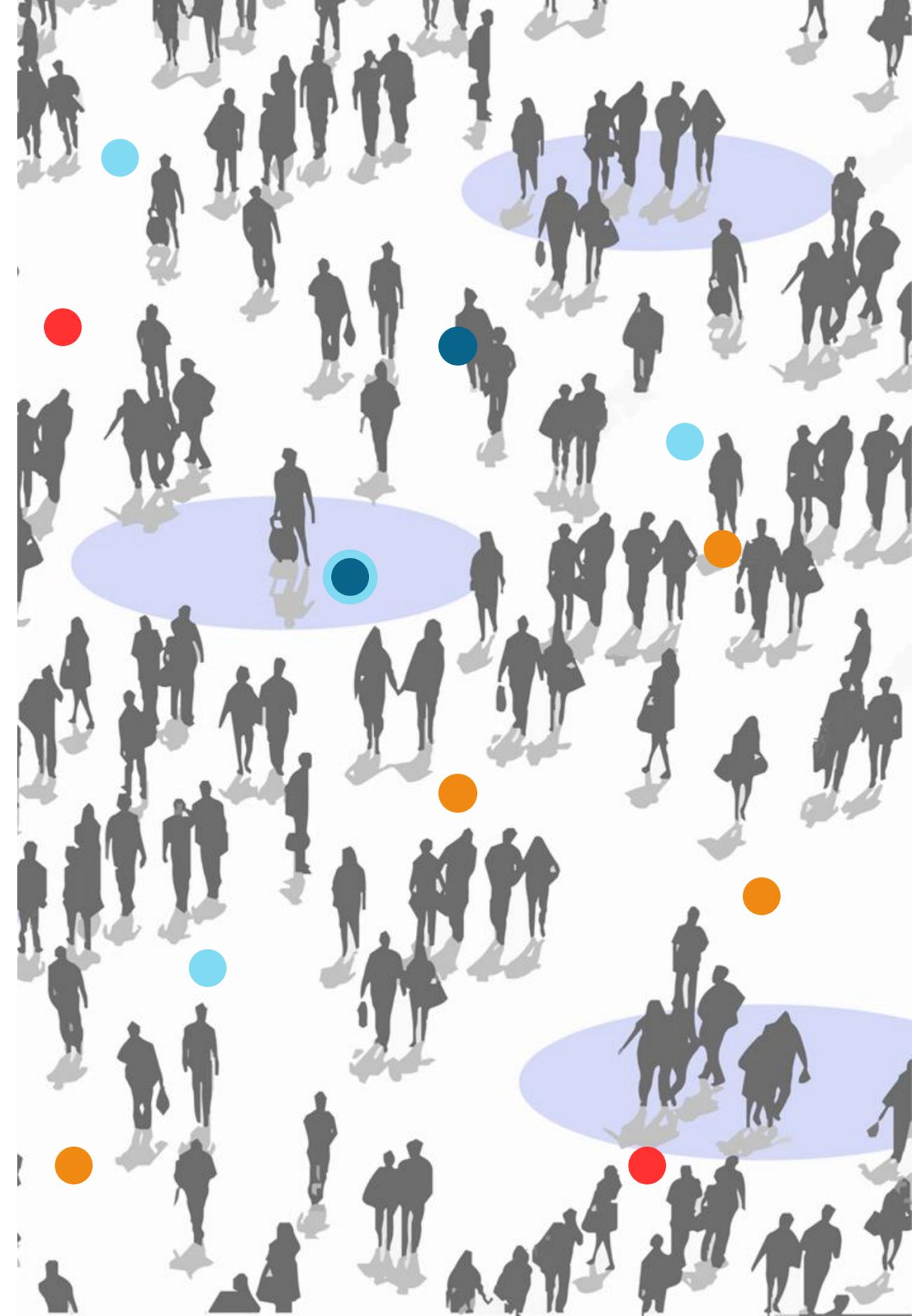
Urban resilience is the ability for society, government, economic sector and environment to create opportunities to face challenges of instability, risks and uncertainties, now and in the future.

Arguments:

- **Military threat**

But also

- **Demography**
- **Environment**
- **Pollution by war and industry**
- **Social, cultural, economic**



A. DEFINITION AND CONTEXT

Values - the international context

Ukraine's path to recovery is guided by shared international values and commitments, providing both a moral compass and a strategic direction. Values are a core of EU policy development and international partnerships. For Ukrainian EU integration, this is a primary factor for reforms, renovation, and Ukrainian post war rehabilitation. For Ukrainian recovery support, the UN Sustainable Development Goals are helpful in connecting to these universal goals.

By aligning with these values and goals, Ukrainian cities not only address their immediate challenges but also create a foundation for long-term recovery, EU integration, and sustainable development.

EU values

In the frame of the EU values* the resilience of a city can be seen as spatial equity, spatial safety and spatial democracy. The principle of equality between women and men underpins all European policies and is the basis for European integration. We describe the EU values through the lens of needs for Urban Resilience.

- Human dignity
- Freedom
- Democracy
- Equality
- Rule of law
- Human rights
- human-oriented and social design
- mobility, ability to have a choice
- society resilience
- accessibility, gender, age
- the ability of policy to ensure transformation
- opportunities and safety

*Source: https://european-union.europa.eu/principles-countries-history/principles-and-values/aims-and-values_en



A. DEFINITION AND CONTEXT

Sustainable Development Goal's

For Ukrainian municipalities, it helps to describe the focus of the work in relation to the Sustainable development goals (SDG's*). These goals are well known, widely agreed and respected and often related to financial and political programs. The short titles of the 17 SDG's are:



- 1.No poverty
- 2.Zero hunger
- 3.Good health and well-being
- 4.Quality education
- 5.Gender equality
- 6.Clean water and sanitation
- 7.Affordable and clean energy
- 8.Decent work and economic growth
- 9.Industry, innovation and infrastructure
- 10.Reduced inequalities
- 11.Sustainable cities and communities
- 12.Responsible consumption and production
- 13.Climate action
- 14.Life below water
- 15.Life on land
- 16.Peace, justice, and strong institutions
- 17.Partnerships for the goals

*Source: https://european-union.europa.eu/principles-countries-history/principles-and-values/aims-and-values_en

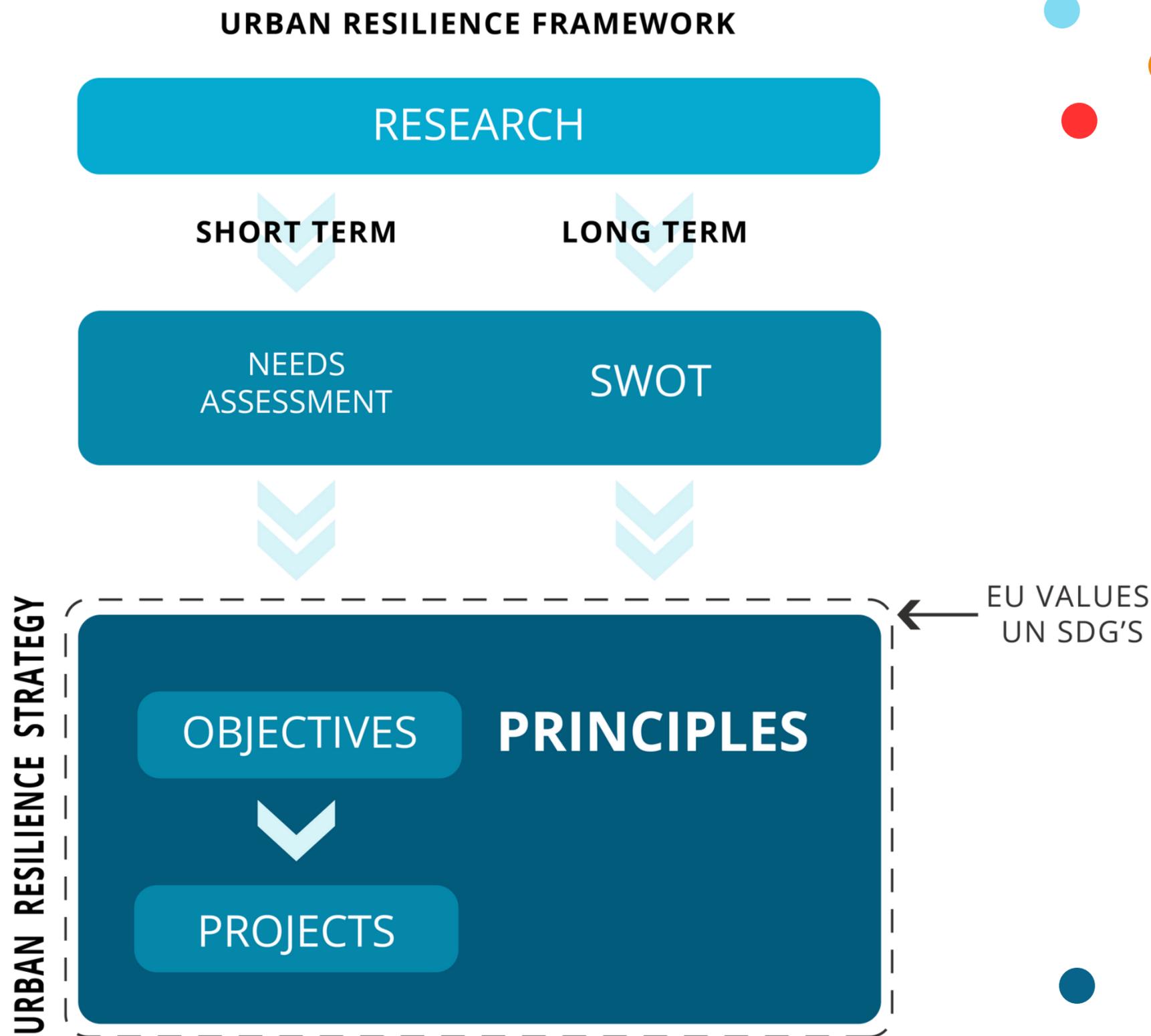
A. DEFINITION AND CONTEXT

Methodology explanation

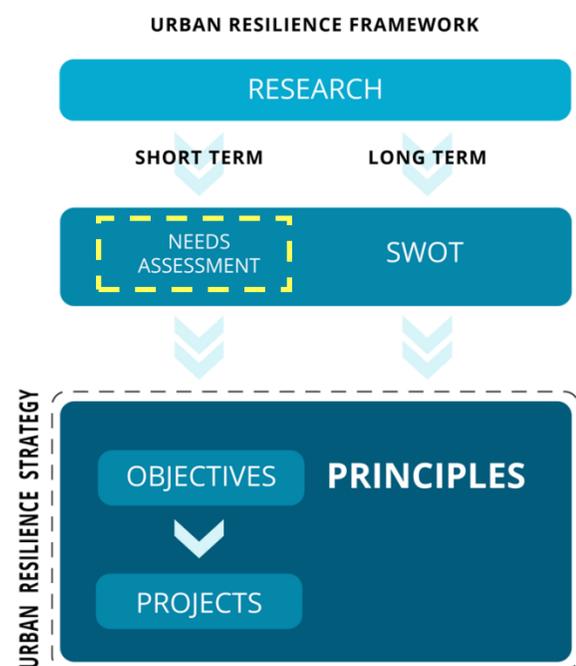
The following diagram is a visual representation of the Urban Resilience Framework, and the interconnection between the different chapters. Follow the the diagram in steps from the top to the bottom.

Key element in this diagram is the connection between short term needs and mid / long term perspectives - so left and right column. The different threats and challenges serve different phases in times, but they are influencing each other.

This diagram tells: when acting now, we need to try to think steps ahead: how do my actions today influence the changes in the future? The minimum requirement is that we will not make actions that will block positive future developments. In the most optimum situation we give perspective to the future goals, as a result the urgent steps right now.



B. ANALYSIS



Needs assessment

A **needs assessment** is a foundational step in the development of any Urban Resilience Strategy (URS). It involves identifying and analyzing the **most critical challenges** and **urgent priorities** a city is facing, while also preparing for long-term improvements.

- 

1. Critical Infrastructure Needs

Direct: Heating, Electricity, Gas, Water
Indirect: Bridges / connectivity, Strategic economic parts
- 

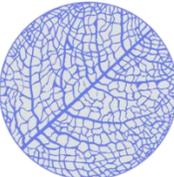
2. Social Infrastructure & Housing

Schools and kindergartens
Hospitals
Housing
- 

3. Tactic of Emergent Practice

Damages
Shelters location
Psychological support
- 

4. Spatial context

Masterplans (general plans)
Strategic urban documents
Spatial visions
- 

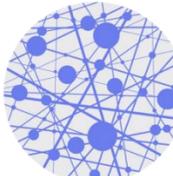
5. Environmental risks

Flooding
Heat stress, cooling
Biodiversity
Pollution (water, air, ground, noise)
- 

6. Economy and demography

Uncertainty in planning
Loss of labor force
- 

7. Safety and security

Community shelters
Safe buildings
Emergency response / road safety
Security, information, first aid, psychological help, desinformation
- 

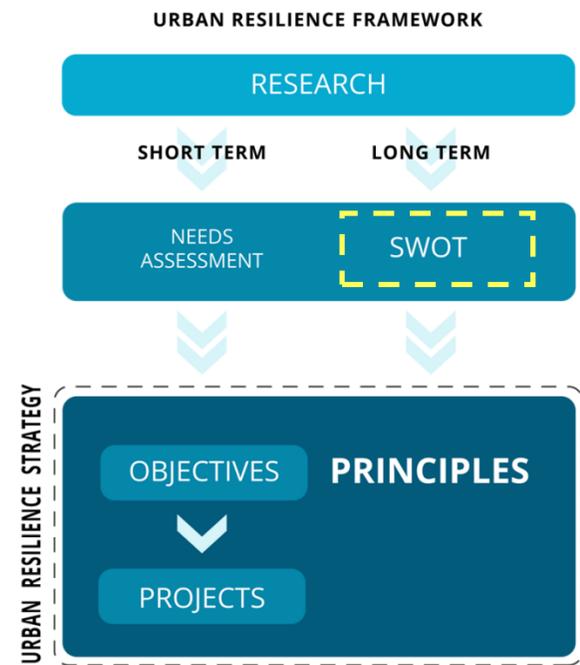
8. Municipal capacity

Data from municipality.
Temporary shelters
IDP's supporting programs
- 

9. Community Needs

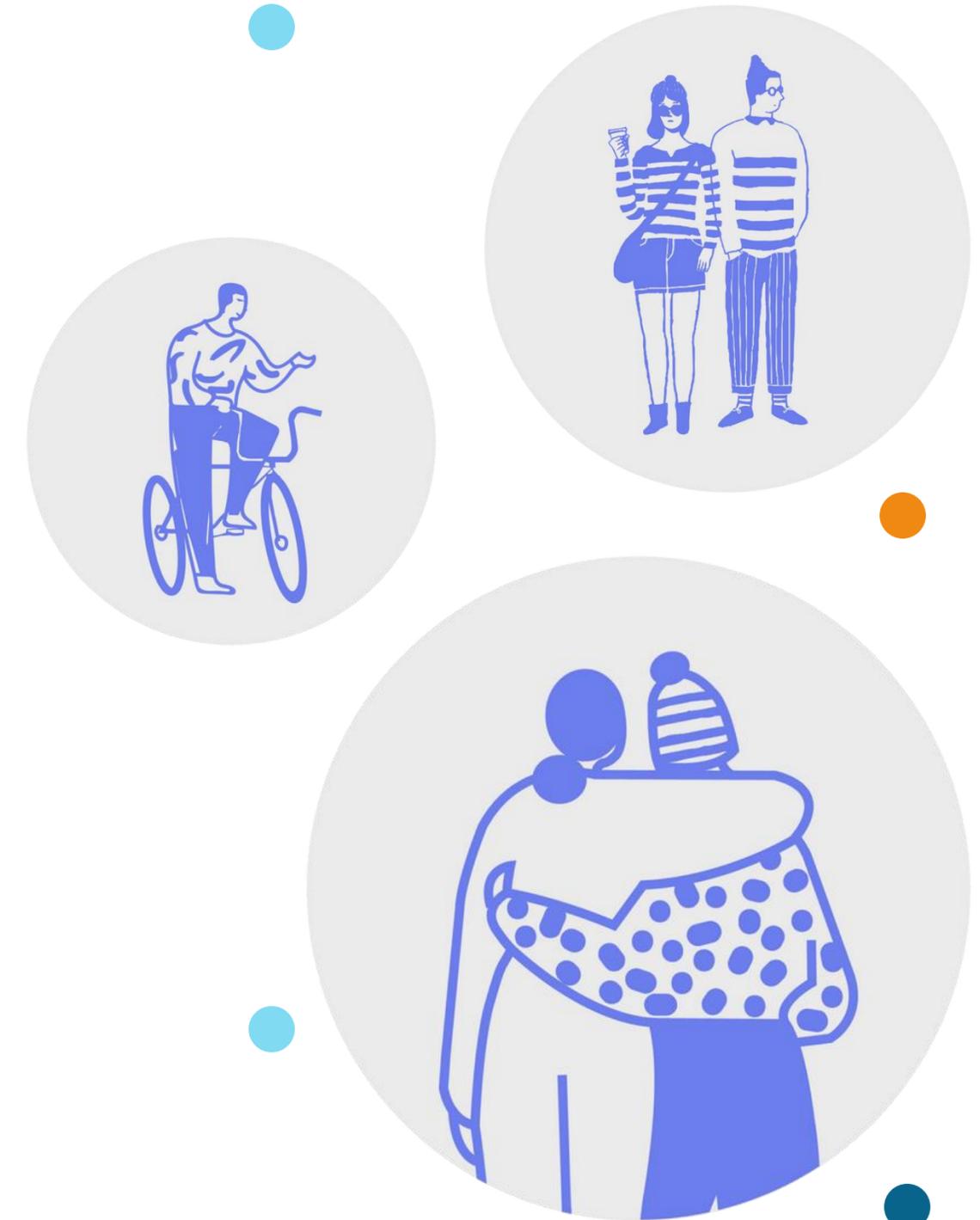
Meeting places / social hubs
Jobs
Communication / information
Participation

B. ANALYSIS

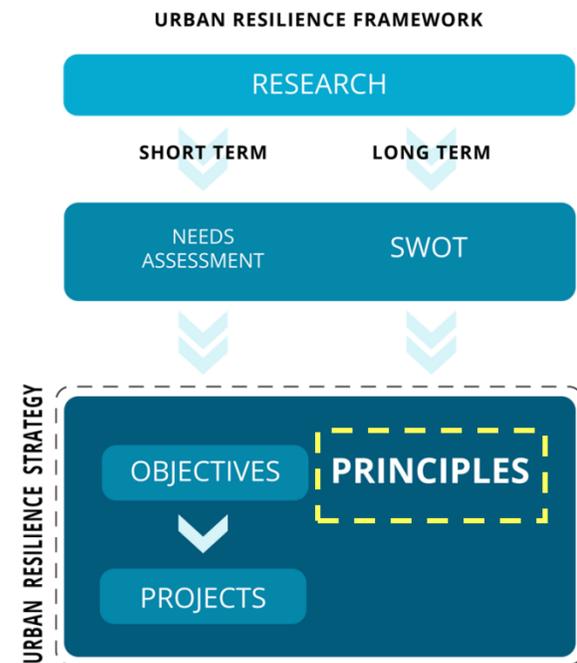


Research and SWOT analysis

Social
Economic
Spatial
Safety and Security
Stakeholders



C. URBAN RESILIENCE STRATEGY



Principles

The principles describe the city's key values and approaches related to the most necessary changes. Principles can be applied both on short term and long term actions. They give focus, in all circumstances, both in times of war, after liberation, in growth and de-growth.

Example of Principles:

SHORT-TERM FOCUS	LONG-TERM FOCUS
Physical safety and psychological well-being of the residents. Decentralisation of energy/electricity supplies.	Safety measures for repeated attacks, natural cataclisms, climate change.
Environmental safety: access to drinking water, flood protection, safe storage of hazardous materials.	Green economy + biodiversity preservation. Clean air, soil and water.

CONFIDENT CITY

Be prepared, be resilient, be safe!

The city must be aware of one's vulnerabilities, anticipate and be ready to counteract the risks, ensuring the continuity and quality of services for all the stakeholders: human and non-human residents, businesses and institutions. Not only the physical safety should be taken into account, but also the psychological well-being of the residents. Therefore, the safety infrastructure should at the same time provide for an improved liveability and attractiveness of the city, while providing clear guidance and instructions for emergency situations.

#safety #resilience #war-life-balance

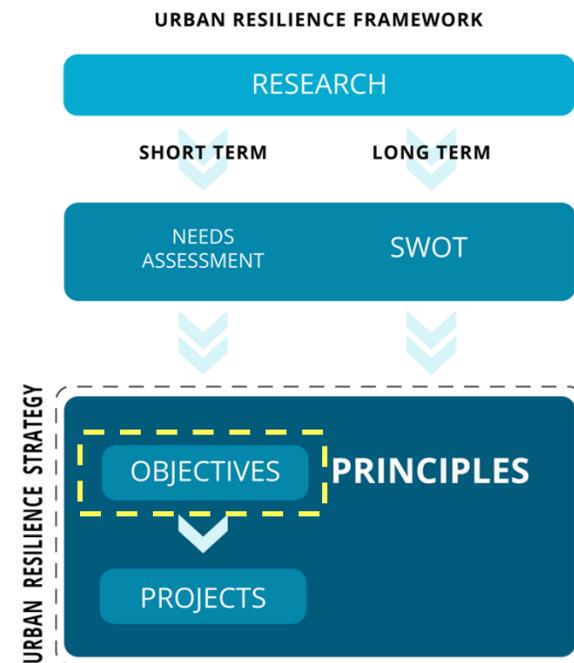
HEALTHY CITY

Build sustainable city

New developments must be provided with special focus on healthy living and wellbeing of both human and non-human citizens. This must account for the balance between urbanization and natural preservation, industrial redevelopment and quality of life. Economical growth must not interfere with, but provide for the opportunities to enhance the green areas and well-being infrastructure of the city.

#doughtnuteconomy #environmentalsafety #biodiversity #sustainability

C. URBAN RESILIENCE STRATEGY



Objectives

Formulate short-term (and mid-term) **resilience objectives** based on the identified needs and research. Objectives should include: Objectives serve as clear, measurable focus points that address the most critical challenges identified during the **Needs Assessment** and **SWOT Analysis**.

- decentralization
- diversification
- education
- multifunctionality
- innovation
- Preservation
- accessibility
- social cohesion
- communication

The objectives bridge the gap between analysis (needs and challenges) and action (projects and strategies).

Example of Objectives in relations with SDG's:

Strengthening Critical infrastructure

Implementation of Smart water management, access to drinking water and alternative water sources

9 11

Improving of monitoring of environmental pollution and regulation (polluters are responsible for the damage repair)

12 13 15

Diversification and decentralization of energy supply

7 11 13

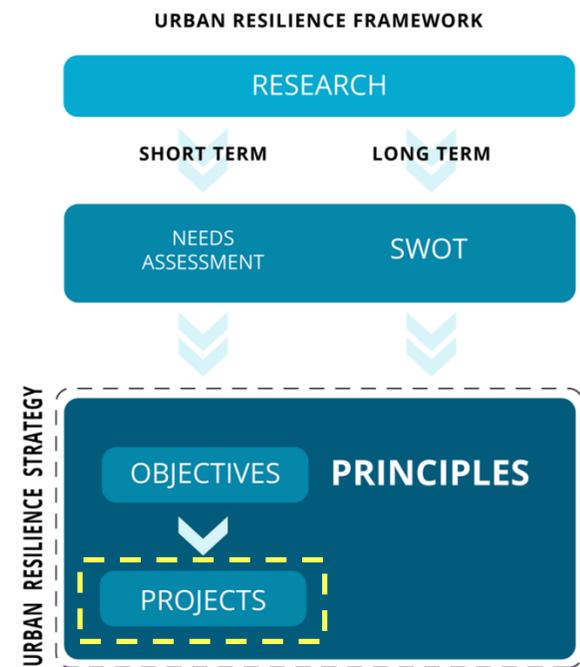
Refinement of energy efficiency (thermal modernization; energy redistribution)

7 9 12 13

Generating efficient mobility plan that ensures accessibility of services and quick response to emergency situations

11 16

C. URBAN RESILIENCE STRATEGY



Project list

Sample:

<https://docs.google.com/spreadsheets/d/10n5xcotma094NkYPglcWMdBpV5FGY0ZZhypInMimpel/edit?gid=0#gid=0>

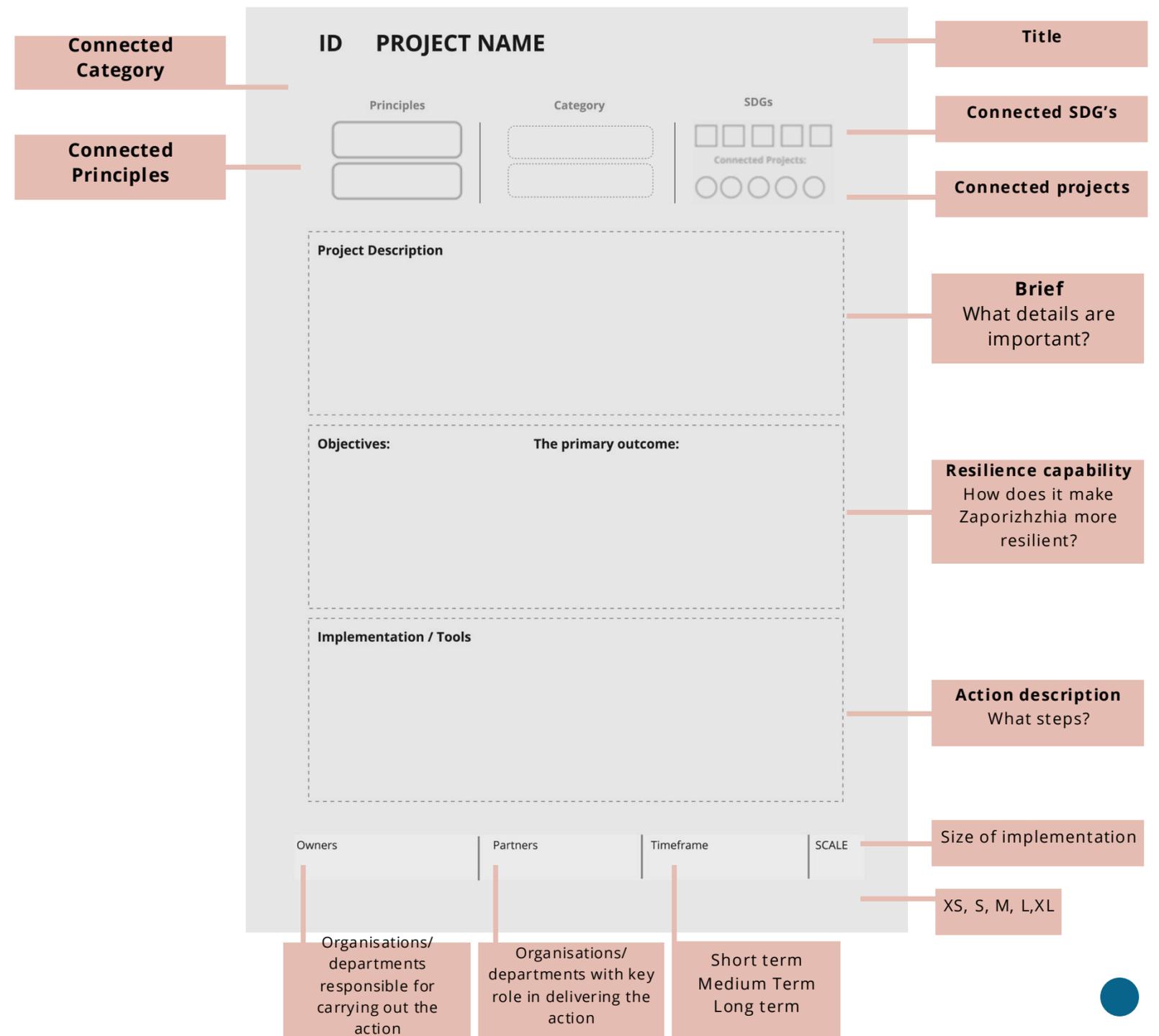
ID	Project name	Description	Outcome	Sphere	Objective	Type	Source	Status	Timing	Financial scope	Location	Related projects	Notes
1	Dual-Purpose Shelters Construction for public use	Program focuses on constructing, renovating, and maintaining dual-purpose shelters and emergency facilities. These shelters will be strategically located near residential areas for easy public access and designed to provide safety during emergencies while serving community functions in normal times. Facilities will include essential amenities, ensuring accessibility for all, including individuals with disabilities, and will adhere to modern safety standards.	Enhanced community resilience through accessible, well-equipped shelters that provide safety and support dual-purpose functionality.	Safety and Security	Civil protection emergency response	Implementation/ Construction/ Planning	UR strategy	Not started	SHORT	M	Location study needed	2, 17	

Example of Project list

C. URBAN RESILIENCE STRATEGY

Projects will be described in project cards

In the projects, links will be made with **SDG's** in order to connect to higher values, also to be connected to possible international aid or collaboration programs.



Project card template

C. URBAN RESILIENCE STRATEGY

Project card example

ID ENERGY- AND WATER- INDEPENDENT NEIGHBOURHOODS

PRINCIPLES	OBJECTIVES	SDGs	
CONFIDENT CITY	STRENGTHENING CRITICAL INFRASTRUCTURE		

DESCRIPTION
 The project involves the construction of mobile stations for the treatment of supernatant water. The project aims to ensure the autonomy of neighbourhoods in case of blackouts, when energy or water supply facilities may be under threat of shelling. Equipping the houses will allow them to be independent.

PROJECT OBJECTIVE:
 Ensuring access to drinking water and electricity in the event of a crisis caused by military operations.

EXPECTED RESULTS:

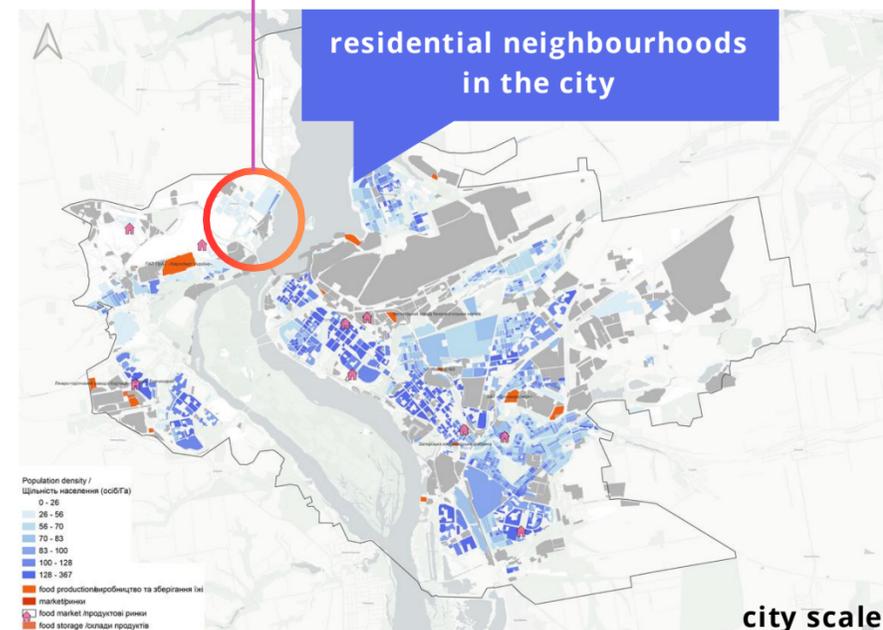
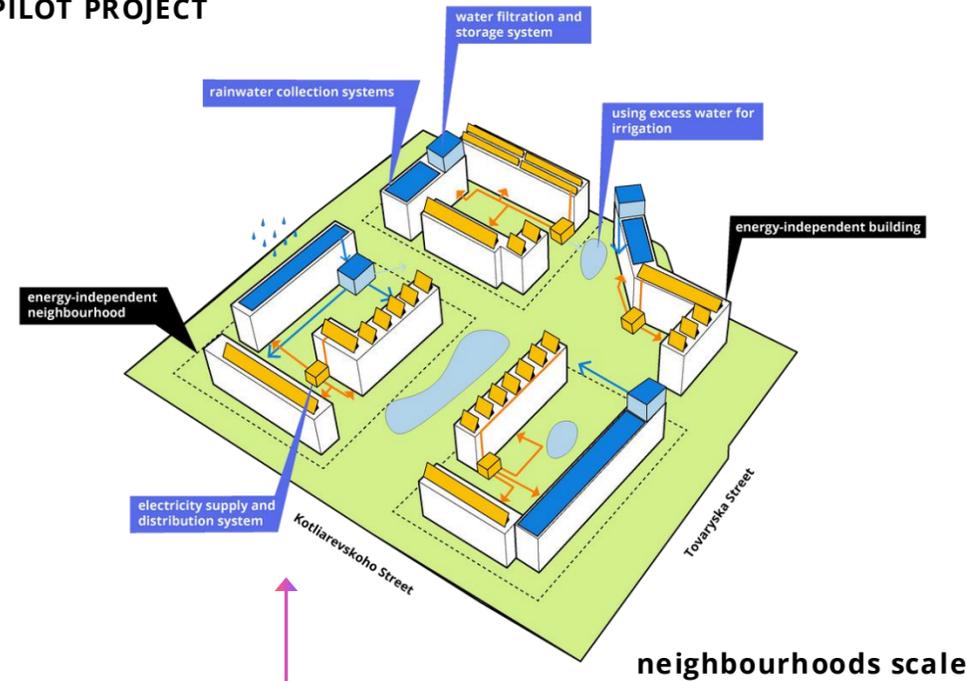
- the first implemented project of backup water and energy supply on the basis of one residential block
- Strengthening the ability of condominiums to ensure autonomy in critical situations
- Ensuring more autonomy of co-owners' associations

NEXT STEPS:

- Implementation of the project in all residential buildings, not only in 'conditionally' safe areas

OWNERS	PARTNERS	TIMEFRAME	SCALE
Municipal enterprise Vodokanal	Municipality	Medium	L

PILOT PROJECT

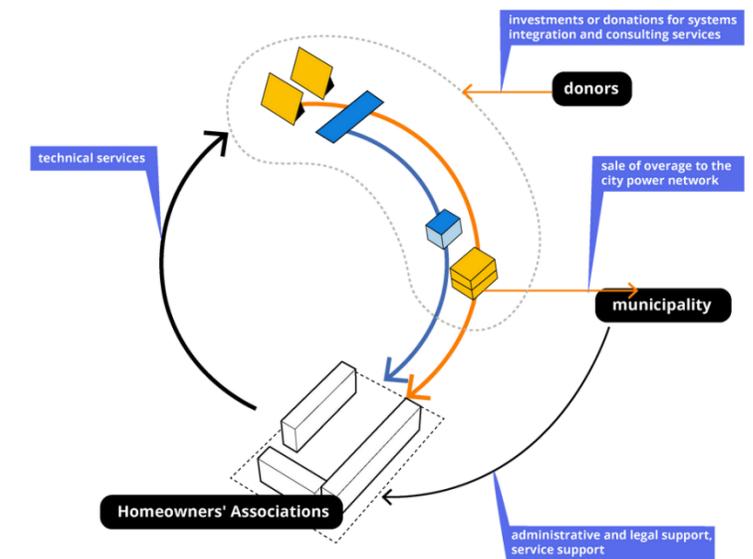


The pilot project of an energy and water independent neighbourhood could be located in Borodynskyi district, as this area is more protected from the risks associated with military aggression.

There are two models of energy and water independence that can be implemented: the creation of interconnected neighbourhoods and the creation of a network of neighbourhoods.

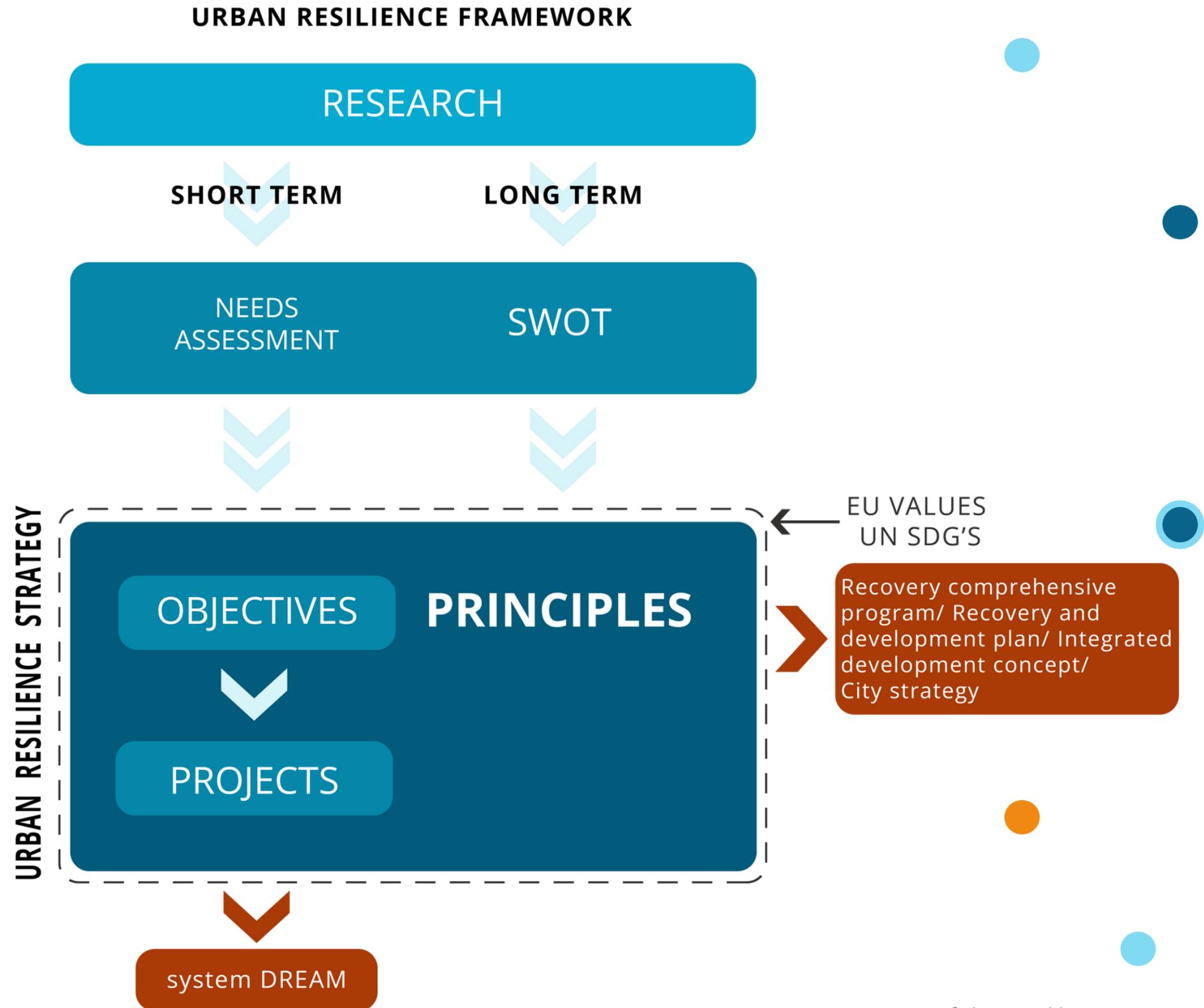
The administration and maintenance of such systems can be entrusted to condominiums.

PROJECT IMPLEMENTATION MECHANISM AND INVOLVEMENT OF KEY STAKEHOLDERS



C. URBAN RESILIENCE STRATEGY

Relation to daily municipal work



C. URBAN RESILIENCE STRATEGY

Local recovery planning

The synchronisation of strategic documents with the Ukraine Facility Plan will help to ensure interaction, create conditions for proper consideration of the needs of regions and territorial communities in accordance with the principle of subsidiarity, and identify priorities at the state, regional and **local levels**.

Integrated Development Concept

The principles or long-term goals of the urban resilience strategy are very useful to be incorporated into the Integrated Development Concept, which will allow for a rapid response to unpredictable changes and a more sustainable long-term development of municipalities.

Other recommendations on informal documents

- Clearly articulated strategic priorities and objectives for the recovery, reconstruction and modernization process, can **serve as a basis for the development of planning documents** and as a basis for short-, long- and medium-term budget planning, and will ensure the strategic allocation of available financial resources at both the central and local levels.
- The integration of documents digitized through **IT platforms such as DREAM, E-Construction** and a unified geographic information system for monitoring and evaluating the development of regions and territorial communities will be an important step to ensure transparency, accountability and efficiency in the use of financial resources.
- **Participatory approach** is mandatory for good results. The law describes only a minimal level, but more communication with and activation of the local community is improving the quality on the long term/ It is recommended to invest in society and in dialogue, as has already been included in the URF processes.

Three case studies

Zaporizhzhia
Kryvyi Rih
Dnipro



URBAN RESILIENCE STRATEGY FOR ZAPORIZHZHIA CITY

February 2025



КРИВИЙ РІГ

ПОСИЛЕННЯ СТІЙКОСТІ МІСТ У СФЕРІ МІСЬКИХ ТЕРИТОРІАЛЬНИХ ГРОМАД В УКРАЇНІ

ОЦІНКА ПОТРЕБ

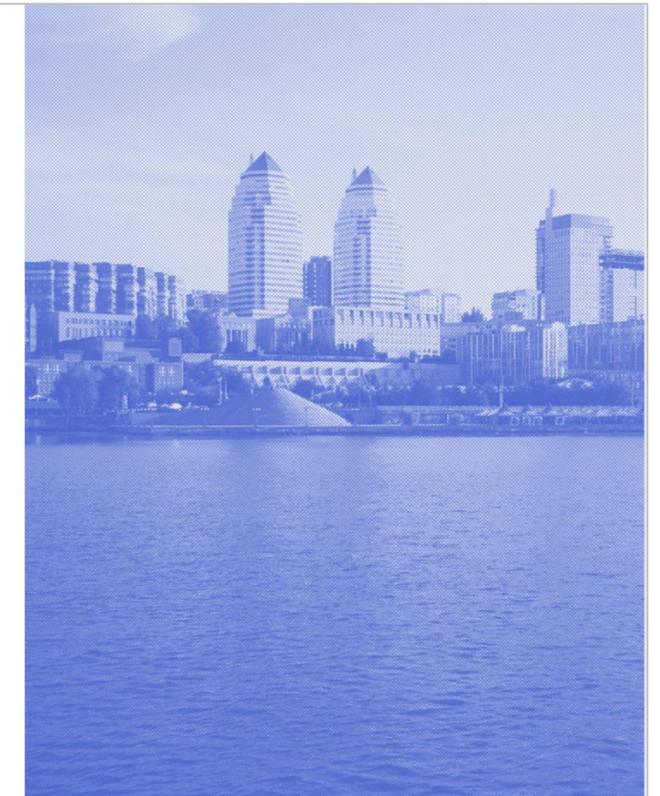
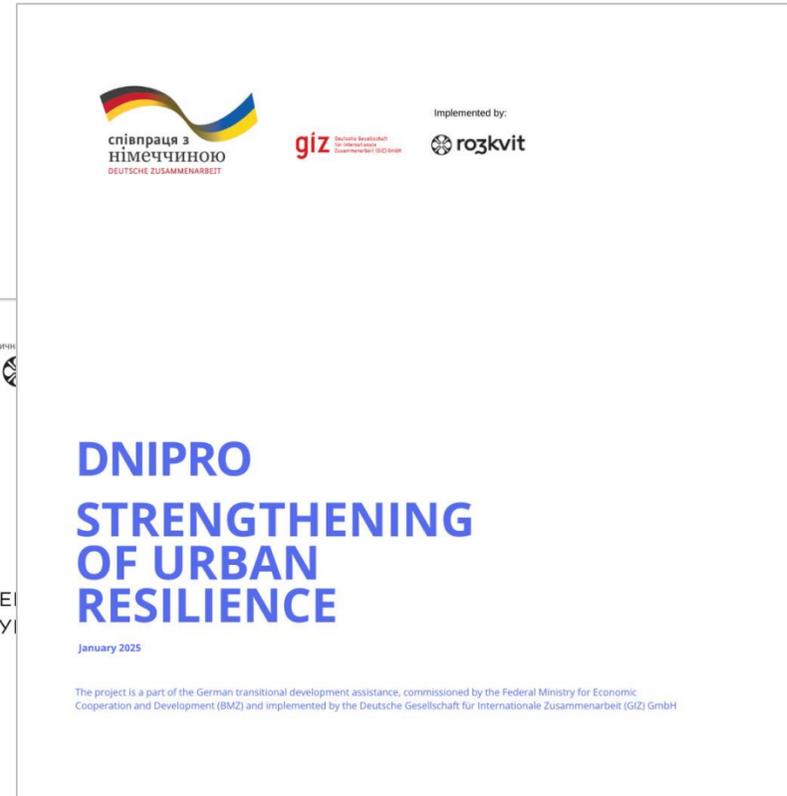
КРЬВЬІ РІН

STRENGTHENING THE RESILIENCE OF CITIES IN THE FIELD OF LIFE SUPPORT OF URBAN TERRITORIAL COMMUNITIES IN UKRAINE (SUR)

NEEDS ASSESSMENT

ПРОЕКТ Є ЧАСТИНОЮ НІМЕЦЬКОЇ ДОПОМОГИ ПЕРЕХІДНОГО ПЕРІОДУ, ЩО НАДАЄТЬСЯ НА ЗАМОВЛЕННЯ ФЕДЕРАЛЬНОГО МІНІСТЕРСТВА ЕКОНОМІЧНОГО СПІВРІВІТНИЦТВА ТА РОЗВИТКУ НІМЕЧЧИНИ (BMZ) ТА ВИКОНУЄТЬСЯ DEUTSCHE GESELLSCHAFT FÜR INTERNATIONALE ZUSAMMENARBEIT (GIZ) GMBH.

THE PROJECT IS PART OF THE GERMAN TRANSITIONAL ASSISTANCE, PROVIDED ON BEHALF OF THE FEDERAL MINISTRY FOR ECONOMIC COOPERATION AND DEVELOPMENT OF GERMANY (BMZ) AND IMPLEMENTED BY DEUTSCHE GESELLSCHAFT FÜR INTERNATIONALE ZUSAMMENARBEIT (GIZ) GMBH.



1 CRITICAL INFRASTRUCTURE

OBJECTIVES

1.1 RESILIENCE OF POWER SUPPLY TO BLACKOUTS

Dnipro gets its power from the Integrated Power System (IPS) of Ukraine, which is then distributed through several dozen electrical substations, making it very centralised. As of June 2024, only a third of Ukraine's total generating capacity has survived destruction, some of which is generated by solar farms and produces much less energy in winter. This leads to extended blackouts which in turn cause malfunctions of heat supply, water and sewerage provision, transportation and other city infrastructure.



KEY ACTIONS

- Installation of cogeneration plants (CHP) on the basis of existing boiler houses, which will allow for the most efficient use of fuel and, in addition to electricity, provide heating and hot water supply. CHP can generate energy from natural gas, but also from solid fuel boilers working on biomass.
- Increasing the capacity of the grid including repairing damaged power substations.
- Installation of autonomous generators (diesel or petrol) that will operate during extended blackouts.
- Installation of powerful storage devices that would allow for the leveling of the power grid's schedule. Such power storages should be installed both at key points of the power system and at individual consumers. The second option is more acceptable in terms of the reliability of power supply and reduction of power flows.
- Propaganda of smart energy consumption on households level. This would help to even out the load schedule in the power grids and reduce the overall required load on power plants.

1.2 DISTRIBUTED ENERGY GENERATION

Large power generators, like Prydniprovsk Power Plant in Dnipro, large solar farms and electric substations are a constant target for enemy attack. The only way to achieve better resilience is to build lots of additional small and medium-scale generation capacity: at the level of households, apartment blocks and businesses. There are national government support programmes for the installation of solar and/or wind power plants together with energy storage facilities by households, associations of apartment owners and businesses.



However, a distributed generation system is not possible without restructuring the electricity supply and distribution system, which currently has a low level of automation. A comprehensive solution to this issue is the introduction of a new technical policy based on smart grids - Smart Grid, which requires a lot of know-how, planning and investment.

KEY ACTIONS

- Promotion and facilitation of national government support programmes for the installation of solar and/or wind power plants and energy storage to associations of apartment owners by conducting regular workshops and trainings
- Creating favourable conditions for the use of waste heat energy from enterprises: establishing cooperation with businesses and conduction of feasibility studies
- Implementation of projects for the installation of solar and/or wind power plants together with energy storage facilities in public and administrative buildings (healthcare facilities, educational institutions, etc.)
- Renovation and automation of distribution power grids in the highest priority areas, power hubs, and districts; creation of highly automated and predictable microgrids

1 CRITICAL INFRASTRUCTURE

OBJECTIVES

1.3 RESILIENT CENTRALISED HEATING AND HOT WATER SUPPLY FOR RESIDENTIAL AREAS

Extended blackouts can cause the central heating system's pumps, controls, and circulation mechanisms to fail. Without circulation, water in pipes may freeze and expand, cracking pipes and radiators, leading to leaks and costly repairs. The lack of reliable heating during cold weather threatens safety, comfort, and health of people.

KEY ACTIONS

- **Creation of an alternative heat supply (a new large boiler house) for 175 houses in the Prydniprovsky district, which as of January 2025 have no heating at all as they are supplied by the Prydniprovsk power station, which was recently damaged**
- Installation of cogeneration plants (CHP) on the basis of existing boiler houses, which will allow for the most efficient use of fuel and, in addition to electricity, provide heating and hot water supply. CHP can generate energy from natural gas, but also from solid fuel boilers working on biomass (wooden pellets, agricultural waste).
- Resumption of centralised hot water supply for households is one of the measures to balance the power supply system

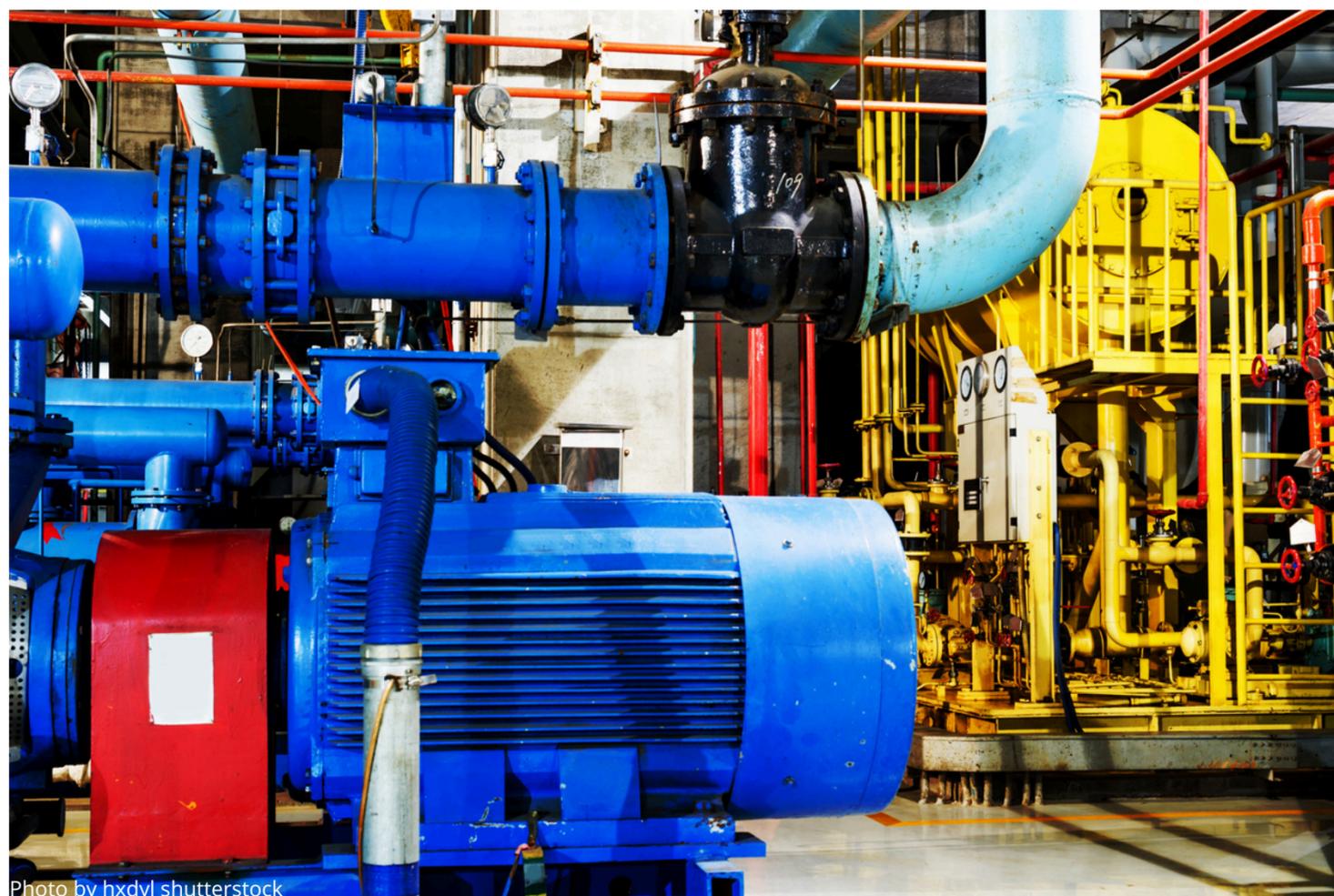


Photo by hxdyl shutterstock

1.4 RESILIENT AUTONOMOUS HEATING FOR CRITICAL FACILITIES

Some critical facilities, like hospitals, schools and administrative buildings need autonomous heating in order to be able to provide critically important services. In this case, reliable heat supply is possible provided that the pumps and boilers' equipment are autonomously powered and fuel is available (in most cases, natural gas). For roof-top boiler houses natural gas is the only option, while for boiler houses located near buildings, it is possible to use alternative fuels (wood chips, pellets, firewood, liquefied gas, diesel), which can significantly increase the autonomy and reliability of energy supply in the event of gas supply interruptions.

KEY ACTIONS

- Installation of autonomous power supply for boiler houses which can be done with:
 - Fuel generators (diesel and petrol);
 - Electricity storage systems based on LiPePo4 batteries, subject to the forecasted periods of availability/absence of electricity supply; it is also possible to use solar modules to reduce own consumption, but this is advisable only if the boiler house operates in the summer for hot water supply.
 - cogeneration units - this is relevant for relatively large boiler houses with their own electricity consumption of 200 kW or more (usually for hospitals and large residential buildings)
- Installation of autonomous heating based on renewables: heat pumps or solid fuel boilers that work on wood chips, pellets, or firewood.

1 CRITICAL INFRASTRUCTURE

OBJECTIVES

1.5 ALTERNATIVE SOURCES OF DRINKING WATER FOR ALL RESIDENTS

The municipality reports over 100 artesian wells on the left bank, but the right bank, particularly the city center, has almost none. This poses a significant risk in the event of new attacks and damage to the centralized water supply. Furthermore, residents noted during our research that even on the left bank, some neighborhoods, like Prydniprovskiy residential district, are inadequately served by wells relative to population density, some wells are not operational and there is no regular maintenance of them by municipal services.

KEY ACTIONS

- Making a survey and identify underserved areas where new wells need to be installed
- Installation of new wells and upgrade of existing ones
- Equipping wells with backup power sources, such as generators or solar systems, to maintain operations during blackouts.
- Establishing a routine maintenance program to prevent breakdowns and extend the lifespan of wells.

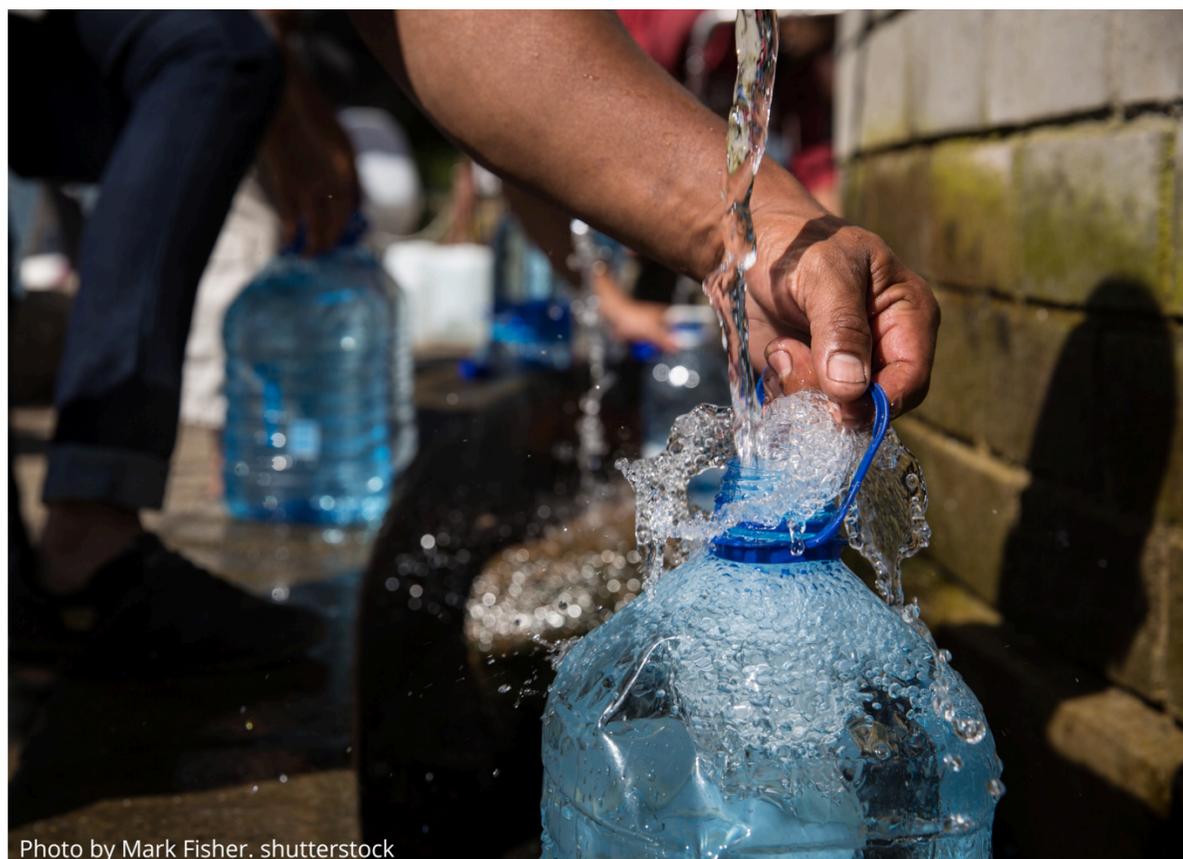


Photo by Mark Fisher. shutterstock

1.6 WATER SUPPLY AND SEWERAGE RESILIENT TO BLACKOUTS

It is important that both water supply and sewerage facilities are in operation at the same time, as the inability to pump wastewater forces water utilities to shut down water supply. Diesel generators are among the main options for backing up power supply for these facilities. Dnipro city receives generators under the support programme of the Japanese government. But given the long blackouts and high fuel costs, this solution is quite expensive, both in terms of capital investment and operating costs.

KEY ACTIONS

- Installation of systems based on electricity storage (especially in combination with solar power plants), which would allow the equipment to operate for several hours in the absence of power supply, and even longer on sunny days.
- The most reliable option would be to connect the water utilities to cogeneration units at nearby boiler houses. This would allow Dnipro to provide the most critical infrastructure in the most efficient way.
- To reduce the required capacity during periods of power outages and improve the reliability of water supply, it is important to increase the treated water tanks in front of the 2nd and 3rd lift stations, which will allow for a significant period of time not to use sufficiently powerful pumps of the first lift, and in peacetime to use these tanks to balance the power system and maximise the use of cheap nighttime electricity and electricity from solar power plants (if installed). At the same time, this solution will be cheaper than installing batteries and powerful inverters.

1 CRITICAL INFRASTRUCTURE

OBJECTIVES

1.7 AUTONOMOUS OPERATION OF KEY HOSPITALS DURING POWER OUTAGES

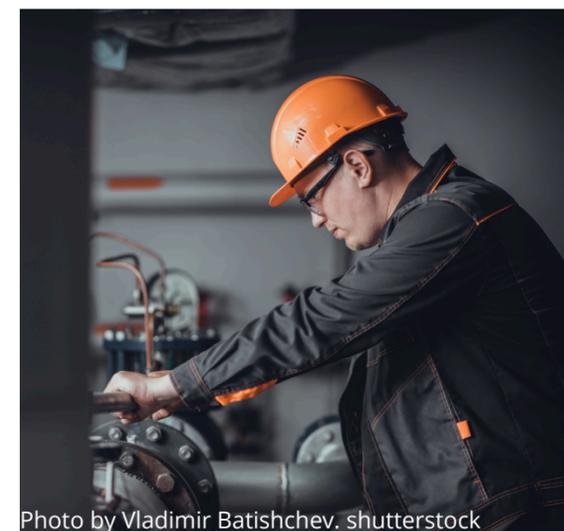
Dnipro, due to its proximity to the frontline, is a key medical hub for both the local population and wounded military personnel. It is a critical need that key medical facilities, such as Mechnikova Hospital must be fully equipped for autonomous operation during blackouts.

KEY ACTIONS

- Installations of generators for autonomous power supply combined with solar panels and power batteries
- Arrangement of wells (boreholes) for autonomous water supply
- Creation of boiler houses working on biomass (wood chips, pellets, or firewood)
- Installation of Starlink stations for uninterrupted communication



1.8 PROMPT AND EFFICIENT RESPONSE TO DAMAGES OF CRITICAL INFRASTRUCTURE



Russian missile strikes have repeatedly targeted Dnipro's critical infrastructure, causing damage to power distribution facilities, water supply networks, and transportation links. Energy facilities in particular have suffered power outages, forcing emergency repairs and heightening the city's vulnerability to additional disruptions. Repairs and preventive measures continue, but ongoing hostilities make it challenging to protect and restore critical systems fully and municipal services are under enormous strain.

KEY ACTIONS

- Creating reserves of fuels, spare parts, materials and protective equipment for emergency services and municipal enterprises.
- Creating a sufficient fleet of specialized machinery and equipment
- Preparation for autonomous operation without external resources - vehicles, special equipment, etc.
- Training of emergency response personnel with division of duties and interchangeability; foster inter-agency coordination so municipal authorities, utility providers, and emergency services can work together seamlessly.
- Development of instructions for maintenance of systems and equipment

1 CRITICAL INFRASTRUCTURE OBJECTIVES

1.9 OPTIMIZATION OF ROADS AND STREETS NETWORK

Planned municipal initiatives of transportation improvement focus on optimising mobility by constructing car parks, allocating dedicated lanes for public transport, and these are all important measures, but they lack comprehensive approach such as analysis and replanning of the road and street network.

By creating a logical hierarchy of transit, distribution, and access routes, the city can better handle through traffic, reduce congestion in the center, and enhance overall connectivity. Especially, also for emergency services (ambulances, firemen) these upgrades can save lives.



Photo by urbex.tr, shutterstock

KEY ACTIONS

- Equip key intersections with battery or generator backups so traffic lights continue operating during outages.
- Organisation of lectures, webinars, study tours, workshops with the involvement of foreign experts for relevant city authorities.
- Develop a strategic plan for the city's road network based on a functional approach that distinguishes mobility corridors into transit, distribution, and access streets and roads; with clear separation between streets and roads.
- Development of the design code for planning and design of streets and roads.
- Reconstruction of streets to reduce excessive street capacity in the city centre and within neighbourhoods - reducing car transit and improving road surfaces.
- Reconstruction of streets and roads to increase the connectivity at different levels: transit, distribution, and access, pedestrian routes

1.10 EFFICIENT AND INCLUSIVE PUBLIC TRANSPORTATION



Photo by 24K-Production, shutterstock

Planned municipal activities prioritize the renewal of rolling stock and renovation of tram, trolleybus, and metro infrastructure, as well as increasing the share of electric transport. However, these efforts lack a comprehensive strategy—particularly a full review of non-rail public transport. Currently, private operators dominate bus services, creating competition that leads to overlapping routes and heightened congestion. Meanwhile, less profitable and remote routes remain underserved, revealing the need for stronger municipal oversight to balance profitability with essential connectivity.

KEY ACTIONS

- Radical reduction of the number of 'marshrutka' routes.
- Simplification and straightening of routes, elimination of duplicating routes.
- Organization of convenient transfer hubs at routes intersections.
- Increasing the number of vehicles on the routes and frequency of movement.
- Prioritization of public traffic vehicles: dedicated lanes, priority sensors at traffic lights.
- Modernizations and development of the tram as a reliable, fast, barrier-free public transportation.
- Expansion and modernization of the metro focusing on completing partially built stations rather than starting new ones.
- Reconstruction of 'pockets' for buses and trolleybuses to approach bus stops to comply with standards and allow them to get close to elevated platforms.

1 CRITICAL INFRASTRUCTURE

OBJECTIVES

1.11 RELIABLE CONNECTION BETWEEN THE TWO BANKS OF DNIPRO RIVER

Reliable bridges are critical for Dnipro, especially now that the city serves as a logistics hub near the frontline. Dnipro's bridges often experience congestion, especially during peak hours. The Central Bridge (often referred to as the New Bridge) is known to be a major bottleneck, accounting for a large share of traffic between the two banks of the river. In addition, wartime conditions and the influx of freight traffic near the front line have compounded the problem. Road accidents and bridge repairs often lead to temporary lane closures, which exacerbate congestion during peak hours. Overall, the situation points to the need for coordinated traffic management.

KEY ACTIONS

- Reducing congestion on the three central bridges (Amursky, Tsentralnyi and Kaidatskyi) by implementing intelligent traffic management systems
- Structural assessment and subsequently structural reinforcement and repairs of city's bridges and overpasses
- Deploying specialized crews and stockpiling spare parts to quickly restore damaged bridges and roads.

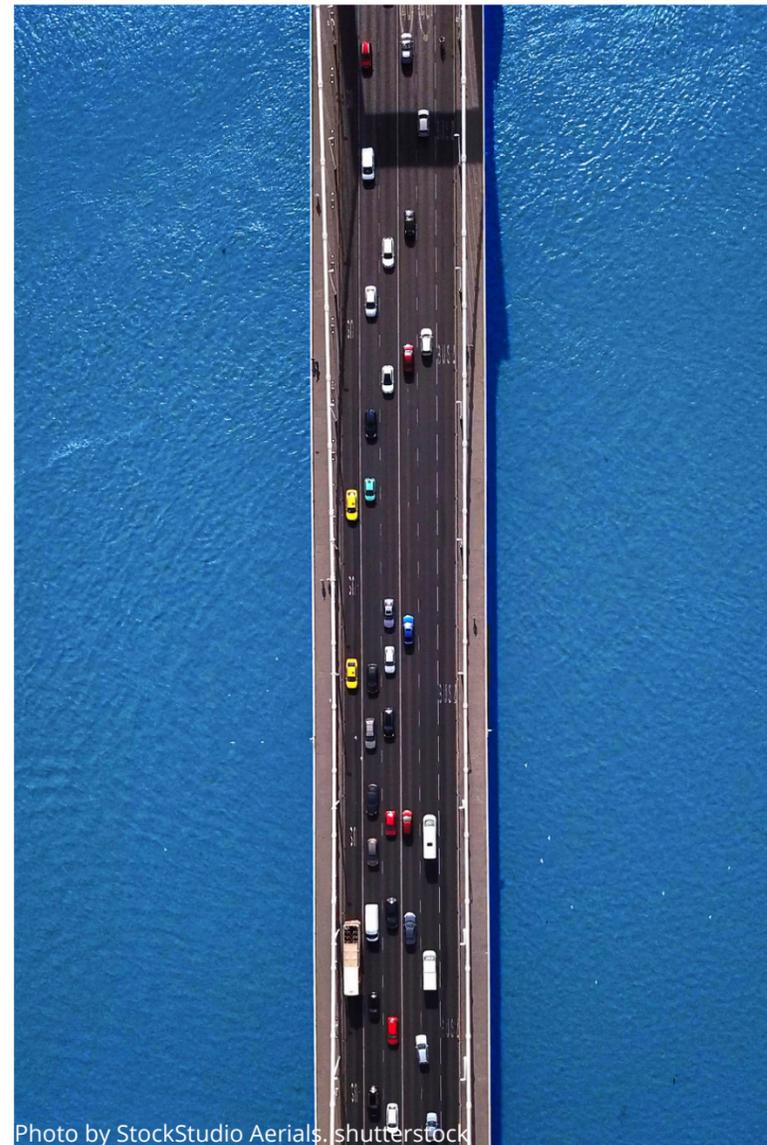


Photo by StockStudio Aerials. shutterstock



Photo by Andriy Tkachenko

2 EMERGENCY RESPONSE & CIVIL PROTECTION

OBJECTIVES & KEY ACTIONS

2.1 WELL-EQUIPPED, SAFE AND COMFORTABLE 'POINTS OF UNBREAKABILITY' ACCORDING TO DENSITIES IN DIFFERENT NEIGHBOURHOODS

2.2 TIMELY CONSERVATION, COMPREHENSIVE ASSESSMENT AND EFFICIENT RESTORATION OF DAMAGED MUNICIPAL AND RESIDENTIAL BUILDINGS

2.3 ALL RESIDENTS OF DNIPRO CAN REACH A SAFE AND QUALITY PROTECTIVE STRUCTURE WITHIN 300 METERS FROM THEIR HOME.

2.4 ALL EDUCATIONAL, MEDICAL AND OTHER CRITICAL FACILITIES HAVE SAFE, INCLUSIVE AND COMFORTABLE PROTECTIVE STRUCTURES

2.5 IMPROVING OVERALL EMERGENCY PREPAREDNESS AMONG RESIDENTS

2.6 EFFICIENT AND COORDINATED EVACUATION PLANS FOR DIFFERENT EMERGENCY SCENARIOS ARE PREPARED

- Making regular surveys of users' needs, identifying where additional Points are needed or equipment and materials are lacking.
- Establish a programme to encourage (financially) employees of public institutions (schools, administrative buildings) and private businesses (shops, pharmacies) that 'host' the Points, in order to create personal interest and thus improve the quality of services.
- Design and establish Resilience Centers based on selected Points of Unbreakability.

- Develop comprehensive protocols, train and expand municipal brigades for damage assessment and conservation.
- Organize training for residents associations (OSBB) and apartment buildings management organizations to learn how to secure external funding for restoration of damaged buildings.
- Combine restoration of damaged buildings with thermal modernisation of facades and roofs and renovation of utility networks.

- Conduct surveys of conditions in existing shelters and, where appropriate, improve with soft measures (improved navigation, better heating, ventilation, friendlier attitude of people managing the sites) to encourage residents to use them.
- Conduct surveys to identify the most underserved and high-risk areas, especially those near common enemy targets, and prioritize the construction of new shelters based on this data.
- Establish a programme to encourage (financially) employees of public institutions (schools, administrative buildings) and private businesses (shops, pharmacies) that manage shelters, in order to create 'personal interest and thus improve the quality of services.
- Identify existing spaces that can be converted into bomb shelters with less investment than building new ones.
- Prepare plans for new shelters in a participatory way, together with communities and NGOs; involve public sector organisations in the process of securing funding.
- Build more multi-functional protective structures that meet all safety standards and are multifunctional, so that they can be used for other peaceful purposes in the future.

- Perform inspections of all educational, medical, and administrative shelters to identify deficiencies related to space, ventilation, lighting, insulation, and accessibility.
- Involve teachers, healthcare workers, administrative staff, students, patients, and their families in the planning and decision-making process to ensure that protective structures meet their needs. Encourage sessions where community members can collaborate on optimizing the interior layouts of shelters for better comfort and functionality.
- Create channels for continuous feedback and suggestions about potential improvements.
- Collaborate with private sector such as producers of ventilation to better equip protective structures for schools, kindergartens, hospitals.
- Build more multi-functional protective structures that meet all safety standards and are multifunctional, so that they can be used for other peaceful purposes in the future.

- Offer workshops on first aid and wound care so people can provide immediate assistance to others and stabilize injuries until professional help arrives.
- Teach people how to access and relay critical information—via official channels, radios, or community networks—during power outages or when standard communication systems fail.
- Provide guidance on stress management and emotional support techniques.

- Establish a phased evacuation strategy that includes routes, means of transport and designated assembly points.
- Establish a central hub to coordinate evacuation efforts, manage resources and make real-time decisions.
- Educate the public about evacuation plans, emergency procedures and preparedness measures through media campaigns.
- Identify and prepare multiple evacuation routes to avoid bottlenecks and provide redundancy in case some routes are compromised.
- Ensure adequate supplies of food, water, medical supplies, clothing and other necessities.

2 EMERGENCY RESPONSE & CIVIL PROTECTION

OBJECTIVES

2.1 WELL-EQUIPPED, SAFE AND COMFORTABLE 'POINTS OF UNBREAKABILITY' ACCORDING TO DENSITIES IN DIFFERENT NEIGHBOURHOODS

Points of unbreakability have the potential to become real community centres in the future, as they are sometimes used as such now when conditions allow - families come to socialise during power cuts rather than stay at home without electricity. These spaces are in demand, but the problem is that many points lack basic inclusivity and comfort, and often don't provide the full list of basic services, including: heating, generators, phone chargers, drinking water, wifi, and first aid kits.



Photo: Oleksandr Shaldybin/Souspilne Dnipro

2.2 TIMELY CONSERVATION, COMPREHENSIVE ASSESSMENT AND EFFICIENT RESTORATION OF DAMAGED MUNICIPAL AND RESIDENTIAL BUILDINGS



Photo: Recovery service in Zaporizhzhia region

The scale of the destruction is enormous, and it is not possible to restore all the damaged buildings in the short term. However, it is necessary to take measures to prevent further deterioration and to carry out a comprehensive assessment of the damage in order to make informed decisions about restoration.

In most cases, these measures are the responsibility of municipal companies, as apartment owners do not have the means to organise them. Municipal services are also unprepared for this amount of work and often lack the necessary machinery and equipment, which means that many buildings are left unprotected in the rain and snow with broken windows, which in turn leads to faster deterioration.

KEY ACTIONS

- Carry out regular surveys of existing Points to identify 'weak spots' where additional Points are needed or where equipment and services are lacking.
- Establish a programme to encourage (financially) employees of public institutions (schools, administrative buildings) and private businesses (shops, pharmacies) that 'host' the Points, in order to create personal interest and thus improve the quality of the service.
- Design and create Resilience Centres based on selected *Points of Unbreakability*. The creation of such centres is supported by the government programme, and while there are several in the Dnipro region, there are none in the city of Dnipro. Such centres should be fully accessible, barrier-free spaces where community residents can access free professional support. Services will include consultations with social work specialists, individual and family sessions with psychologists, participation in training programmes, self-help groups and activities aimed at promoting self-reliance and community resilience.

KEY ACTIONS

- Develop comprehensive protocols and train municipal brigades for damage assessment and preservation.
- Organise training for residents' associations (OSBB) and housing management organisations to teach them how to secure external funding for the restoration of damaged buildings.
- Combine the restoration of damaged buildings with the thermal upgrading of facades and roofs and the renovation of building services.

2 EMERGENCY RESPONSE & CIVIL PROTECTION

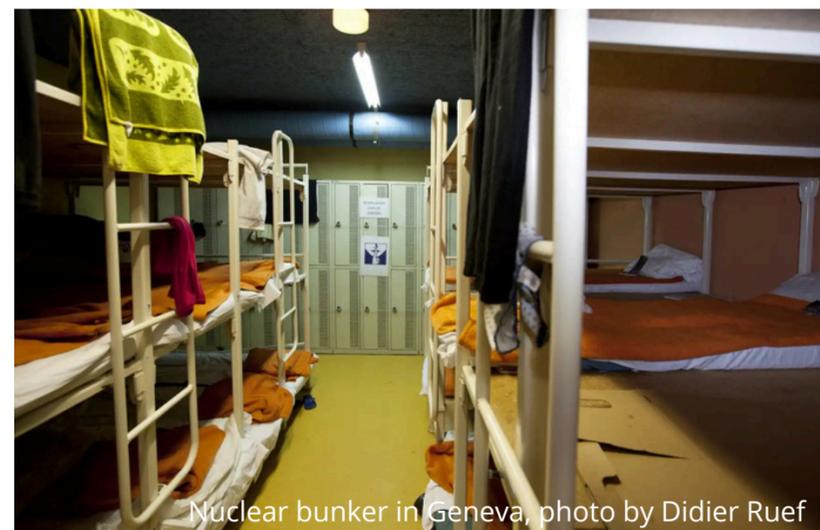
OBJECTIVES

2.3 ALL RESIDENTS OF DNIPRO CAN REACH A SAFE AND QUALITY PROTECTIVE STRUCTURE WITHIN 300 METERS FROM THEIR HOME.

A baseline survey suggests that over half of the population never reach shelters and remain exposed to injury and death. While construction of many new quality protective structures requires time and investments, in some cases, soft measures can improve the situation.

KEY ACTIONS

- Conduct surveys of conditions in existing shelters and, where appropriate, improve with soft measures (improved navigation, better heating, ventilation, friendlier attitude of people managing the sites) to encourage residents to use them.
- Establish a programme to stimulate the institutions and employees that take care of the shelters to create 'personal interest' and thus improve the quality of the spaces and being more 'welcoming' to the visitors.
- Conduct surveys to identify the most underserved and high-risk areas, especially those near common enemy targets, and prioritize the construction of new shelters based on this data.



Nuclear bunker in Geneva, photo by Didier Ruef

- Prepare plans for new shelters in a participatory way, together with communities and NGOs; involve public sector organisations in the process of securing funding by giving them permission and the 'green light'.
- Identify existing spaces, particularly in industrial facilities, that can be converted into bomb shelters with less investment than building new ones.
- Build more multi-functional protective structures that meet all safety standards and are multifunctional, so that they can be used for other peaceful purposes in the future.

2.4 ALL EDUCATIONAL, MEDICAL AND OTHER CRITICAL FACILITIES HAVE SAFE, INCLUSIVE AND COMFORTABLE PROTECTIVE STRUCTURES

The educational process in Dnipro is seriously disrupted by the lack of availability and quality of shelters in educational institutions. While the city authorities have taken steps to address this problem - 29 school shelters have been renovated and equipped by June 2024, and a further 27 are being renovated and a few are under construction - many shelters remain inadequately uncomfortable, and many are considered 'basic shelters' as they are simply converted basements that do not provide the necessary level of protection.

KEY ACTIONS

- Perform inspections of all educational, medical, and administrative shelters to identify deficiencies related to space, ventilation, lighting, insulation, and accessibility. Prioritize actions based on urgency and impact.
- Involve teachers, healthcare workers, administrative staff, students, patients, and their families in the planning and decision-making process to ensure that protective structures meet their needs. Host sessions where community members can collaborate on optimizing the interior layouts of shelters for better comfort and functionality.
- Create channels for continuous feedback and suggestions about potential improvements.
- Collaborate with private sector such as producers of ventilation to better equip protective structures for schools, kindergartens, hospitals.
- Build more multi-functional protective structures that meet all safety standards and are multifunctional, so that they can be used for other peaceful purposes, like parking, gyms, concerts, exhibitins, swimming pools, etc

Issues such as limited space, poor ventilation, inadequate lighting, and low temperatures make it difficult to conduct a normal learning process for children during air raids.

Similarly, hospitals require protective structures that can comfortably accommodate all patients, visitors, and medical staff, while also enabling the uninterrupted delivery of urgent medical procedures during emergencies.

2 EMERGENCY RESPONSE & CIVIL PROTECTION

OBJECTIVES

2.5 IMPROVING OVERALL EMERGENCY PREPAREDNESS AMONG RESIDENTS

Despite the fact that almost three years have passed since the start of the full-scale war, most Dnipro residents haven't had the opportunity to improve their skills that are crucial in long-term emergencies, such as first aid and stress management. There are some initiatives that provide this kind of training, but they cannot cover the vast majority. It is important to scale up emergency preparedness training, starting with those responsible for others, such as school and kindergarten teachers and tutors.



Photo by Rawpixel.com. shutterstock

KEY ACTIONS

- Offer workshops on first aid and wound care so people can provide immediate assistance to others and stabilize injuries until professional help arrives
- Teach people how to access and relay critical information—via official channels, radios, or community networks—during power outages or when standard communication systems fail.
- Provide guidance on stress management and emotional support techniques.
- Encourage local volunteer teams.

2.6 EFFICIENT AND COORDINATED EVACUATION PLANS FOR DIFFERENT EMERGENCY SCENARIOS ARE PREPARED



Photo: facebook.com/MNS.GOV.UA

The front line is steadily approaching Dnipro, and the enemy has already demonstrated its ability to cause various disasters - from the destruction of dams in the Dnipro River cascade to possible radioactive attacks or even occupation of the city. The Mariupol experience underscores the need to prepare for all possible scenarios. This includes establishing multiple evacuation and emergency supply routes and implementing effective communication strategies to inform residents of these plans.

KEY ACTIONS

- Establish a phased evacuation strategy that includes routes, means of transport and designated assembly points.
- Establish a central hub to coordinate evacuation efforts to manage resources and make real-time decisions in during the emergency.
- Educate the public about evacuation plans, emergency procedures and preparedness measures through media campaigns.
- Identify and prepare multiple evacuation routes to avoid bottlenecks and provide redundancy in case some routes are compromised.
- Ensure adequate supplies of food, water, medical supplies, clothing and other necessities.



TACTIC OF EMERGENT PRACTICE

- Damage Assessment
- Shelters
- Food Security

TACTIC OF EMERGENT PRACTICE WAR DAMAGES AND PROCESSES

Despite the ongoing shelling from the Russian-occupied territories, we see that **work is underway in Zaporizhzhia to restore damaged buildings.**

A structural approach is needed: closing existing gaps while making plans: ethics for private households and visualising the damage, as well as improving maintenance of the rest of the building.

Involve residents, owners or other interested users (as far as possible)

Involvement of architects to develop scenarios and plans for urban reconstruction.

Speed of reconstruction (in a sense, this is good for finding donors).



- According to the 2012 estimates, residential buildings take the second place (after industry) in the structure of fuel and energy consumption in Zaporizhzhia. 52% of Zaporizhzhia's housing stock is built in the 1950s and 1970s, with significant heat losses through the building envelope, while space heating accounts for 70% of total consumption.
- The draft Sustainable Energy Development Action Plan for the city of Zaporizhzhia for 2021-2030 envisaged thermal modernisation of 2,418 residential multi-storey buildings in the period 2021-2030, as well as replacement of natural gas in the water supply systems of 590 multi-storey residential buildings by waste heat from ventilation systems and solar energy in the period 2021-2026. Due to the onset of the full-scale invasion, only a small part of the project has been implemented, but energy efficiency is becoming increasingly important today.
- In the reconstruction of damaged buildings, the only known measures so far have been the implementation of thermal modernisation of facades.



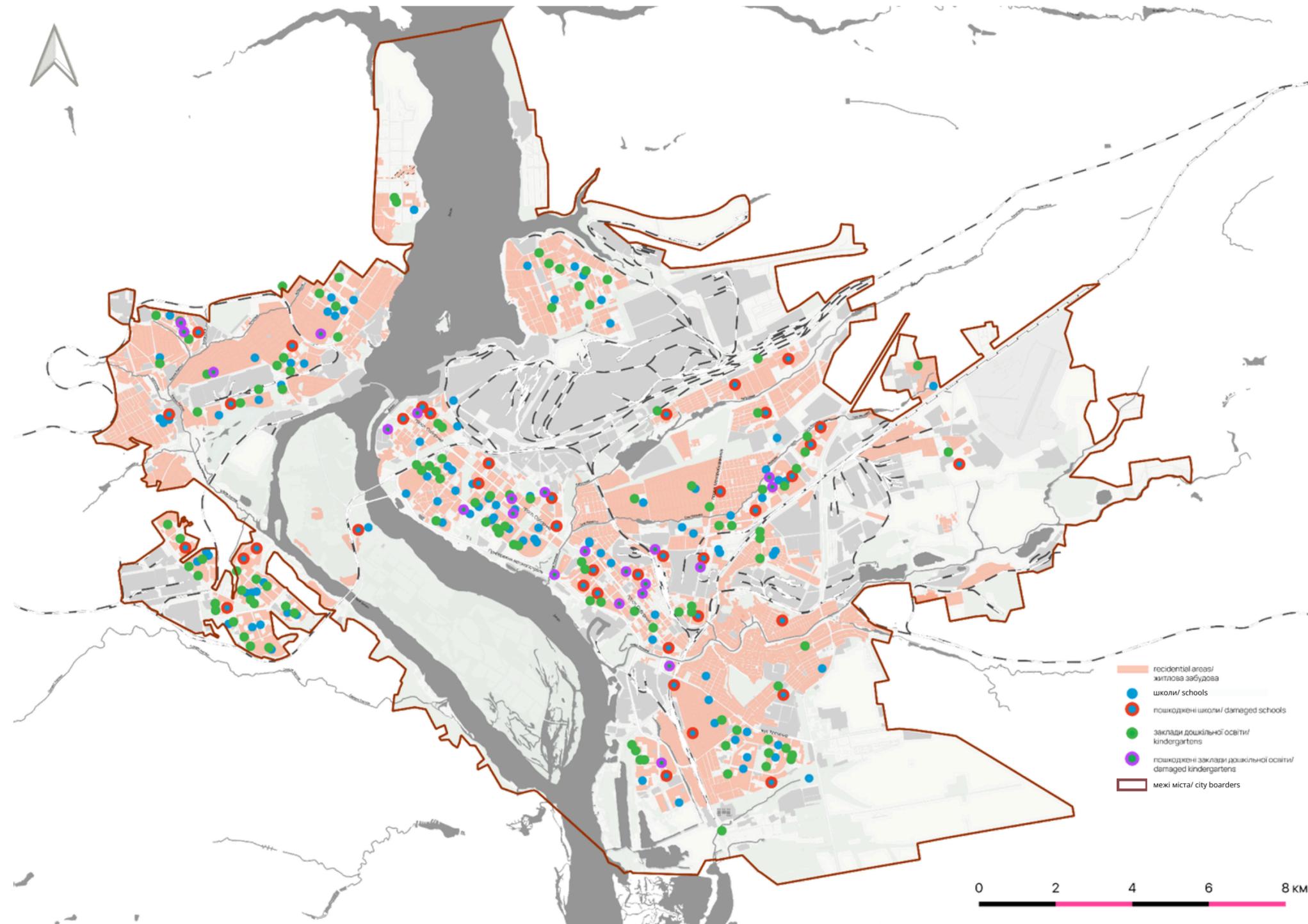
TACTIC OF EMERGENT PRACTICE WAR DAMAGES AND PROCESSES

As a result of Russia's military actions

some schools and pre-schools in Zaporizhzhia have sustained varying degrees of damage*, such as damage to windows and window or door blocks caused by blast waves, etc.

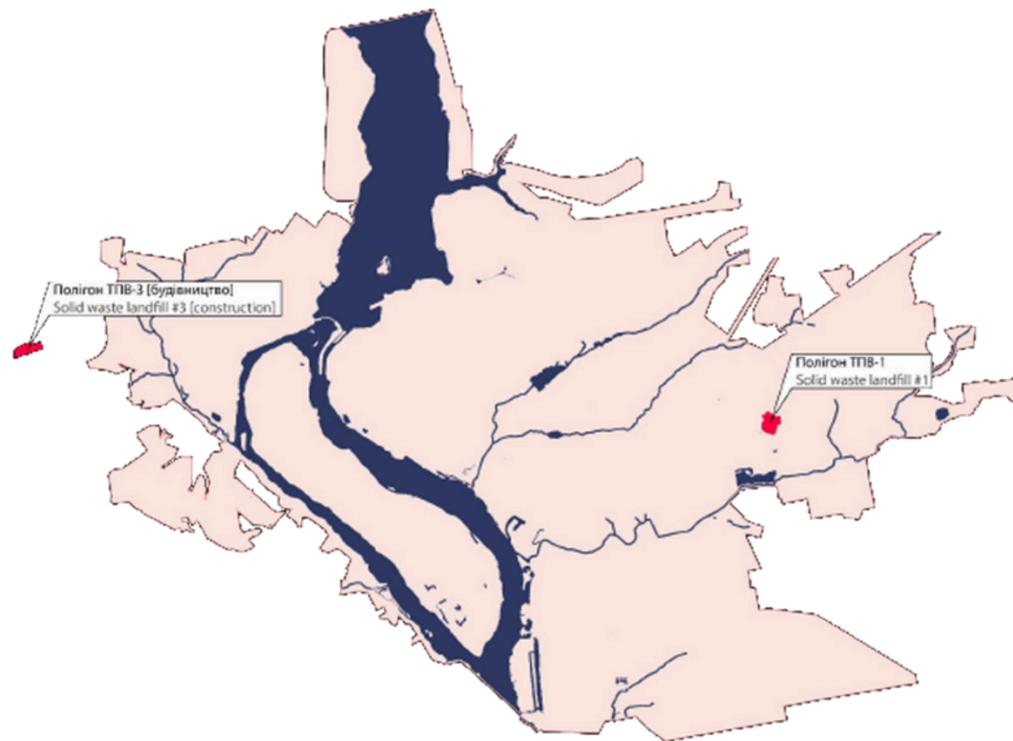
As of April 2024, about 35% of educational institutions were damaged.

*Information on the damage caused by hostilities, terrorist attacks, sabotage, and emergencies, according to the Department of Education and Science of Zaporizhzhia City Council.



TACTIC OF EMERGENT PRACTICE WAR DAMAGES AND PROCESSES

As of April 2024, 5,343 tons of building demolition waste was generated in the Zaporizhzhia region, including 2,844.3 tons in the Zaporizhzhia community, but the full amount of waste can be estimated only after the community is completely removed. There is great potential for processing this waste and the possibility of renting the necessary equipment, but currently no producer is considering such processing in the Zaporizhzhya community due to its proximity to the front-line zone (the easternmost region considered is Poltava). In Zaporizhzhia, the solid waste landfill No. 1 and landfill No. 3, which is under construction, are the places where such waste is stored. (1)



Source: <https://1news.zp.ua/u-vogni-bojovih-dij-vijna-zminyue-ekologichnij-stan-dovkillya-zaporizkoi-oblasti/>



TACTIC OF EMERGENT PRACTICE SOIL CONTAMINATION

There is no systematic study of pre-war anthropogenic soil pollution in Zaporizhzhia. The biggest problems were industrial pollution, the lack of a solid waste management strategy, and high levels of soil erosion (1). With regard to post-war pollution, it is currently known that the State Environmental Inspectorate estimates the total damage from soil pollution and land contamination with construction waste and missile and shell fragments in Zaporizhzhia Oblast at UAH 12.23 billion as of 1 August 2023. This primarily concerns heavy metal contamination with copper, nickel, lead, and zinc, and preliminary studies of pollution in the ATO/JFO area show that the dominant range of contaminants may also include arsenic, chromium, cadmium, molybdenum, barium, potassium, magnesium, and tungsten. One of the biggest threats is the spillage of fuels and grease at military equipment destruction sites, which leads to moderately hazardous and extremely hazardous levels of heavy metals and technical acids, respectively, which in turn disrupts the soil's ability to regenerate itself. In addition to chemical contamination, other threats include sinkholes, construction of fortifications, soil compaction, biological degradation due to fires, and violations of water and thermal conditions.

A preliminary assessment of soil conditions can be made by analysing satellite images. Depending on the level of contamination, Ecodia offers the following remediation strategies: conservation, reclamation (phytosanitation, phytoextraction), agro-technical reclamation and cleaning of the territory.(2,3)

Sources:

<https://superagronom.com/karty/karta-gruntiv-ukrainy>

<https://ecoaction.org.ua/wp-content/uploads/2023/03/zabrudnennia-zemel-vid-rosii-summary3.pdf>

<https://1news.zp.ua/rodyuchi-zemli-peretvorili-u-pole-boyu-yak-rosijski-snaryadi-otruiuyut-%d2%91runti-zaporizko%d1%97-oblasti/>

Sinkholes caused by Russian attacks in different settlements of the Ukrainian-controlled territory of Zaporizhzhia region Photo: Zaporizhzhia regional police



Name of the project	Project description	Actuality (why we need it, impact)	Origin	Category	Financial size	Timing	Location	Ro3kvit comments (Internal)
MUNICIPAL GEOGRAPHIC INFORMATION SYSTEM (EMGIS)	The complex of the Geographic Information System and the geoportal of the city of Kryvyi Rih, which is a single environment of a set of interconnected functional subsystems and modules that automate the processes of collecting, storing, recording, updating and using data on property and other objects of the city territory and are intended to meet the information needs of local governments and the city community.	Update digital information, having data in the real time, working with data	Ro3kvit	COMMUNITY & AUTHORITY	S	MID		
RECONSTRUCTION OF THE MEMORIAL BOULEVARD "ALLEY OF GLORY" AT THE CENTRAL CEMETERY IN KRYVYI RIH. KRYVYI RIH	Renovating the park is a society commit to those who fought for the country. The renovations should be a part of KR program of support of defenders families.	Part of a comprehensive program of support for defenders of Ukraine and their families in Kryvyi Rih in 2024-2028.	Municipality	COMMUNITY & AUTHORITY	S	MID		
CREATE AN ACTIVE URBAN PLATFORM FOR PUBLIC PARTICIPATORY EVENTS	<p>Create a modern platform where local NGOs, activists, and artists could provide events, realize grants, and develop the community. It could be a few diverse spaces for different uses in different locations to cover all of the city's needs. Provide regular public participation events to collect data about the actual needs of citizens, like public hearings, workshops, questionnaires, etc.</p>	<p>Impact on community well-being</p> <p>"Provide participation in urban issues: today activists and NGOs face challenges when trying to communicate with the municipality. This includes providing input on urban issues, increasing trust levels, and improving understanding of residents' needs.</p> <p>Participation and communication: the urban resilience strategies and projects will be developed as much as possible for and with local society, local stakeholders and local governments.</p>	Ro3kvit	COMMUNITY & AUTHORITY	M	MID	Location study needed. (could be one of the abandoned cultural centers) Combine with a Media platform	
EMPOWER YOUTH DECISION-MAKING CAMPAIGN	Initiative for increasing awareness and inclusiveness of young people in the decision-making process. Empower youth to decide on how to use some part of the municipal budget each year. Youth come up with ideas; they determine priorities for spending budget and they decide in a democratic manner which projects to implement.	Social inclusion of children and young people at the policymaking and city administration. Showing them that their opinions and ideas matter. Offering a sense of belonging and inclusiveness in social activities	Ro3kvit	COMMUNITY & AUTHORITY	XS	MID	No need in specific location	
IMPLEMENT PUBLIC BUDGET VOTING PLATFORM	Citizens decide by transparent voting which projects to implement with part of the city's funds. This will lead to better projects corresponding to the needs of communities.	Decentralization, transparent process, active NGOs	Ro3kvit	COMMUNITY & AUTHORITY	XS	SHORT	Online platform	
INSTALLING MEMORIAL NOTICE OF UKRAINIAN HEROES	Placing memorial boards as a tribute to the Ukrainian heroes at schools, houses where they live.	Mental identity, recognition of their act as defending the country, growing patriotism in the society.	Municipality	CULTURE	S	SHORT		Think of alternative methods of memorializing.
INDUSTRIAL TOURISM ROUTE DEVELOPMENT	Create a route for visitors with public access to key industrial complexes Including Landhills and cuerees in collaboration with local researchers. transforming some of abanded industrial heritage into public spaces for cultural events and exhibitions.	Ease industrial conversion to cultural and educational function. For local people - a new working place and a reason to be proud of the city. Attractiveness of the city for visitors, use of existing abandoned industrial buildings	Ro3kvit	CULTURE	XL	LONG	Location study needed	
INCREASE HYDROLOGICAL CONDITION OF INGULETS RIVER	To ensure drinking water supply and meet the needs of the population with water of proper quality city should increase its water content by continuously supplying water through the Dnipro-Ingulets Canal. Additionally, water management system should be implemented to prevent water drainage into the river.	water surply, ecology, water safety measures, preserving drinking water after Khakhovka destruction Alignment with sustainable development	Municipality	ECOLOGY	L	SHORT		
RESTORING THE ENVIRONMENT AND NATURAL RESOURCES AFTER CONTAMINATIONS	Violations in the field of environmental protection and bringing Russia to justice, since the beginning of the full-scale invasion, 4 losses in the amount of UAH 206,857.35 thousand have been accrued in Kryvyi Rih. The main violations that were recorded are: contamination/pollution of land/soil; air pollution; pollution of water resources.	Cleaning contaminations, water, air polutions caused by russian terrorists	Municipality	ECOLOGY	S	SHORT		

Name of the project	Project description	Actuality (why we need it, impact)	Origin	Category	Financial size	Timing	Location	Ro3kvit comments (internal)
LOW-MAINTENANCE LANDSCAPE CITY PROGRAM	Develop a naturalization program to deal with a significant number of "Empty" vacant lands and big city parks. Stop cutting grass ...and other guide tools on how to maintain big territories reasonably.	Decrease maintenance costs Ecological benefits: Planted trees, shrubs, and forbs in the naturalized area help to absorb rainwater and therefore reduce the risk of flooding by decreasing stormwater runoff. Plants also help to filter water and improve quality. Vegetation in these areas also sequester carbon from the atmosphere, provide shade, and reduce the urban heat island effect. If native fruit-bearing trees and shrubs are included in this type of NBS, they can provide food for the local community. Educational benefits Naturalization enhances ecological knowledge and can be improved through partnerships with local school groups. Recreational benefits Naturalizing parks allows for recreation near nature, promoting mental health and diversifying recreational spaces.	Ro3kvit	ECOLOGY	S	LONG	Most of the city's green areas	
CREATE A RAINWATER COLLECTING NETWORK	Capturing rainwater from roofs and stormwater from the site, buildings can supplement their water supply for non-potable uses such as irrigation. Cleaning of sewage pipes and creation of a unified network that would collect water from the city into special reservoirs and reuse it for the needs of the city, enterprises, and industry. Abandoned quarries can serve as reservoirs as well	After the explosion of the Kakhovka hydroelectric power station, KR faced a water deficit. The state partially covered the infrastructure issues, and now the Karrachunivske reservoir supplies water to the city. However, the issue of smart water use is very relevant as water is a limited resource. Alignment with sustainable development	Ro3kvit	ECOLOGY	XL	LONG	All the city	
INDUSTRIAL LANDS RECLAMATION	Develop a Pilot project where post-industrial land is carefully reclaimed and restored by contouring and grading the surfaces to blend with the surrounding terrain. Using the special plants around industry landfills that stop the dust	A significant number of degraded soils and landfills in KR have no renovation program for it. Reduce the impact of emissions and heat islands on city life. Improve air quality and mitigate stormwater runoff. Soil renovation can enhance an ecosystem's ability to cope with extreme weather events and pest outbreaks. - Alignment with sustainable development - Economic feasibility - Impact on community well-being	Ro3kvit	ECOLOGY	XXL	LONG		
CONVERTE VACANT LAND AREAS INTO PRODUCTIVE ACTIVE URBAN SPACES (CREATE 1 COMMUNITY GARDEN AS A PILOT)	Vacant land can be converted into green infrastructures such as temporary or permanent community gardens, urban farmland, Community Forests, Greenhouses	A significant number of empty spaces that are now in the urban fabric don't serve a specific purpose or are maintained. Urban agriculture or community gardens can generate new social networks or the basis for local economies. Socializing for different ages, healing (rehabilitative) influence. Greenhouse gardening is a suitable activity for the aging population. A variety of landscapes becomes a special city identity. - Alignment with sustainable development - Impact on community well-being	Ro3kvit	ECOLOGY	XXL	LONG		
RECYCLE THE REMAINS OF DESTROYED BUILDINGS	Using remains during new construction. (underground shelters, roads, pedestrian paths...)	Waste management: Circularity in Construction	Ro3kvit	ECOLOGY	M	SHORT		
CREATION OF THE "KRIVBAS" INDUSTRIAL PARK	Creation of an industrial park to support relocated enterprises and provide employment opportunities. This project stimulates economic development, reduces unemployment, and encourages investment. Estimated Cost: €3.334 million	Economic development, job creation, attraction of investment,	Municipality	ECONOMY	L	LONG	all the city	we have large doubts
CREATION OF THE "PHOENIX" TECHNOPARK	Establishment of a technology park to foster innovation and cooperation among startups, researchers, and innovators. This project enhances the city's intellectual capital, supports long-term economic sustainability, and reduces labor migration. Estimated Cost: €3.612 million	Innovation growth, economic diversification, enhanced intellectual capital.	Municipality	ECONOMY	L	LONG		we have large doubts

Name of the project	Project description	Actuality (why we need it, impact)	Origin	Category	Financial size	Timing	Location	Ro3kvit comments (internal)
RENOVATION OF ABANDONED BUILDING FOR IDPS, HOUSING	A practical approach to sustainable renovation, focusing on improving the energy performance and environmental quality of old buildings with intention to give other functions: such as science campus, housing for IDP, student housing, work space, parks.	Abandoned buildings potential for renovation, IDP housing.	Ro3kvit	ECONOMY	XL	LONG		
CONSTRUCTION OF CRISIS HOUSING FUND. RESTORATION AND THERMAL MODERNIZATION OF PRESERVED PARTS OF DESTROYED RESIDENTIAL BUILDINGS	Construction of 8 buildings with 1500 apartments to provide temporary housing for residents of destroyed buildings. Includes thermal modernization of the preserved parts of destroyed residential buildings. Estimated Cost: €31.75 million	Provides temporary housing for residents whose homes were destroyed, ensuring safety and stability for affected families. This project will help reduce homelessness and improve living conditions.	Municipality	HOUSING/RESIDENTIAL	L	SHORT		Is there a need for new construction, when so many abandoned buildings throughout the city could be renovated and used ?
CONSTRUCTION OF HOUSING FOR IDPs	Reconstruction of two dormitories to provide housing for approximately 500 families of internally displaced persons. This project improves living conditions and integrates displaced individuals into the local community, supporting social cohesion and stability. Estimated Cost: €2.2 million	Social integration, enhanced community support, reduced pressure on existing housing. Focus on renovations of dormitories building ready to accommodate IDPs.	Municipality	HOUSING/RESIDENTIAL	S	SHORT		we have large doubts
CITY FACADES RENOVATION PROGRAM	Develop programs that stimulate maintenance companies, OSBB, and owners of commercial buildings to make renovations. Provide City Code for facade insulation and design rules to be guided with while implementation	energy-saving solution; aesthetic quality improvement - creates more attractive city for residents	Ro3kvit	HOUSING/RESIDENTIAL	L	MID	All the city	
MODERNISATION OF OLD HOUSING STOCK	Complex Modernization and insulation program to diversify the housing stock through the renovation of facades, elevators addition, and replanning of apartments (combining and enlarging them). Equipped with independent power supply and heating units. Start with the pilot project to test and show the impact first	Old housing fund in bad condition. It does not meet modern requirements of heat regulation and lifestyle. The population decline allows for a reevaluation of the number of apartments into fewer high-quality units	Ro3kvit	HOUSING/RESIDENTIAL	M	LONG		
QUALITY OF NEIGHBOURHOODS	The programming will be adaptable, allowing for modifications over time to align with the changing desires and requirements of the residents. Latest districts are lack of social, marker organized functions as these districts do not have a discernable center to build around the functions. These districts are 5-i Zarichnyi Microdistrict, Soniachnyi Microdistrict, Skhidnyi 3 Microdistrict, Skhidnyi-1 Microdistrict, 7-i Zarichnyi Microdistrict, and etc. Short term: fill the emptiness in neighborhoods with public functions, creating extra functions than housing. Long term: creating communal space with gardens, sport areas, recreation space and vendor areas that correspond with communities values.	Emphasising on the plinth to bolster the districts supporting small business, creating visual comfort, changing chaotic selling within districts from food pavilions. Also redesign the space in between making distinction between public and private (internal space, space between houses).	Ro3kvit	ECONOMY	XL	LONG		
REPAIR OF SIDEWALKS FOR UNIVERSAL ACCESSIBILITY	Repair of sidewalks in order to eliminate obstacles to the movement of residents with reduced mobility on the main streets of the city.	Enhancing Accessibility and Safety of City Streets for all users	Ro3kvit	MOBILITY	M	SHORT		
CREATE ALTERNATIVE PEDESTRIAN PATHWAYS	Create an alternative pedestrian network to navigate through the city safer and off the noisy highways	Increase the quality of pedestrian mobility; Activate connectivity between neighbourhoods	Ro3kvit	MOBILITY	L	MID		
CREATE CYCLING "SUPERHIGHWAYS"	Create a network of cycling infrastructure for long-distance commuters to travel across the city on interconnected routes.	Solution for power cuts and expensive petrol. Improves general health state of citizens	Ro3kvit	MOBILITY	XL	LONG		
MODERNISE & EXTEND HIGH SPEED-TRAM LINE AND STATIONS	A project that can improve people's lives in many aspects: in the city's everyday life, in the security sector, in the tourism sector. The project can be implemented in stages. - Repair the existing tracks - Adapt stations for comfort being as in shelters - Purchase new carriages - Extend the high-speed tram line to Ternivskiy district	Mobility, interconnection for the whole city, connecting most of districts, shortening the commuting time	Ro3kvit	MOBILITY	XL	LONG	Ternivskiy District; existing stations	
INITIATE TEMPORARY BIKE LANES	Set temporary bicycle lanes and safety restrictors on the road surface. Using part of the existing road network. No need to build new infrastructure. Cheap test how it works with low efforts using tactical urbanism methods	Popularizing bike usage as transportation. Can help demonstrate the potential impact before more permanent infrastructure changes.	Ro3kvit	MOBILITY	XS	SHORT		

Tr	Name of the project	Project description	Tr	Actuality (why we need it, impact)	Origin	Category	Financial size	Timing	Location	Ro3kvit comments (internal)
	CREATE PUBLIC SPACE LIKE A "THIRD PLACE" FOR ONE OF THE NEIGHBORHOODS	public space project (like multi-scene in the park) provides an opportunity to hold thematic events (film screenings, festivals, workshops, meetings, etc.), to unite the community to make joint decisions and to become initiators of changes in one's city. Organizing fairs, exhibiting and selling their goods, making photo shoots, and spending their free time in the park with children.		Impact on community well-being: Implement inclusivity in public spaces offering a sense of belonging and inclusiveness in social activities without the strict policies or exclusivity of clubs or organizations.	Ro3kvit	MULTIPLE	S	MID	Could be one of the public parks. Location study needed	https://misto-sad.com.ua/en/projects/square_21
	DUAL PURPOSE BUS STOPS SHELTERS "ART SHELTER"	use shelters at bus stops as information points for public and cultural initiatives or small public art galleries. Invite artists to create their own exhibitions/interventions connected to current social topics		Attract the attention t of citizens and create a dual-use function for shelters that are not being used by citizens now. Informs and raises interest in the cultural life of the city.	Ro3kvit	MULTIPLE	S	MID		
	ACQUISITION OF BURNERS FOR BOILERS	Acquisition of burners for boilers to reduce dependency on Russian gas and emissions of harmful gases. Estimated Cost: €6.65 million		Reliable heating supply for residents, especially during winter, and contributes to environmental protection and energy efficiency.	Municipality	SAFETY	L			
	THERMAL MODERNIZATION OF COMMUNAL FACILITIES (EDUCATIONAL AND HEALTH CENTERS)	Thermal modernization of communal facilities to enhance energy efficiency in 36 educational institutions and 10 healthcare institutions. Lower energy consumption, cost savings, improved environmental impact, better facility operations. Saving up to 40% heating.		Energy efficiency of communal facilities, supporting resilience	Municipality	SAFETY	L	MID		
	CENTRALIZED WATER SUPPLY WITH RESILIENCE TO BLACKOUTS	Ensuring the resilience of centralized water supply to blackouts by building a decentralized solar power plant. Estimated Cost: €6.774 million		A reliable water supply, even during power outages, and promotes environmental sustainability.	Municipality	SAFETY	M			
	CENTRAL HEATING. INSTALLATION OF BLOCK BOILER HOUSES	Installation of block boiler houses on municipal property to reduce dependency on energy resources and ensure reliable heating. This project enhances the efficiency of the heating system and reduces environmental impact. Estimated Cost: €4.525 million		Reliable heating, reduced energy dependency, cost savings, environmental benefits.	Municipality	SAFETY	M	SHORT		
	REPLACEMENT OF HEATING NETWORKS	Replacement of worn-out heating networks to reduce energy losses and budget expenses. Estimated Cost: €44.7 million		Providing the essential for the city: heating. Evoiding freezing the cental system.	Municipality	SAFETY	XL	MID		
	RESTORATION OF WATER SUPPLY AND SEWAGE NETWORKS	Restoration of water supply and sewage networks damaged by the destruction of the Kakhovka dam. This project ensures a reliable water supply and efficient sewage system, crucial for public health and hygiene. Estimated Cost: €126.3 million		Improved public health, reliable water and sewage systems, reduced water scarcity risk, long-term infrastructure resilience.	Municipality	SAFETY	XL	SHORT		
	INSTALLATION OF DRINKING WATER WELLS, COMBINED WITH COMFORTABLE OUTDOOR PUBLIC SPACES -THE MEETING POINTS	1. Conduct research and plan a possible network of drinking water wells 2. Design an adaptive project including a pump station and landscaping project for it 3. Implement 1st pilot project in a chosen neighborhood		Emergency needs Provide free drinking water for citizens in their daily lives, and critical situations, regardless of logistical or infrastructural challenges. Impact on community well-being Enhance the convenience of moving around the city and outdoor activities.	Ro3kvit	SAFETY	L	MID		
	POWER STATIONS IN THE NEIGHBOURHOODS	Independent power supply inside the neighborhoods. Generation of renewable energy in places close to consumption. Maximally using existing rooftops and empty spaces around the districts.		Integrated safety planning reduces dependence on large power networks	Ro3kvit	SAFETY	L	MID	All the city	
	BRING DUAL PURPOSE FOR UNDERGROUND SHELTERS	1. Developing Scenarios with citizens of the related area on how shelters can get alternative usage. 2. Design and Implement it in a participatory way together with locals		- Impact on community well-being; - Raise awareness about shelter location and willingness to use it. - Gives those spaces future prosperity to be used after the war	Ro3kvit	SAFETY	L	SHORT		
	RENOVATION OF 7 EXISTING HUBS, INCREASING ENERGY EFFICIENCY	Renovate IDP hubs that have been created by the municipality. Renovation of those hubs will increase quality and comfort for IDPs. Increasing energy efficiency, and replacing windows, and facade insulation will reduce heat leaks. Additionally, adding functions (beds, kitchen, and first aid) to those hubs will assist during an emergency time.		Supporting IDP hubs, energy independence, adding emergency functions for communities, acting as a shelter for emergency winter time	Ro3kvit	SAFETY	M	SHORT	«ЯМаріуполь», «З Бахмутом у серці», Координаційний центр підтримки внутрішньо переміщених осіб Бахмутського району «Бахмутський район єднає» Гуманітарний ХАБ Херсонської області в Кривому Розі», Новокаховська міська військова адміністрація», «Пліч-о-пліч» Волноваського району», Попаснянська міська військова адміністрація Северодонецького району Луганської області»	

Tr	Name of the project	Project description	Tr	Actuality (why we need it, impact)	Origin	Category	Financial size	Timing	Location	Ro3kvit comments (Internal)
	INSTALLATION OF SOLAR PANEL SYSTEMS AT SCHOOLS	Independent power supply at municipal schools. The program ensures continuous operation of schools, preventing disruptions in education due to power outages. Students can attend classes regularly, maintaining the consistency of their learning experience.		Increasing energy independence of schools, creating non destructive study process	Ro3kvit	SAFETY	XL	SHORT		
	INSTALLATION OF FIRST AID KIT AND SOS BUTTONS IN PUBLIC SPACES.	Equip parks, streets, and bus stops with first aid kits and SOS buttons in public spaces. Implement Informing and training programs on how to use it properly		Emergency needs Quick access to necessary equipment in case of attacks & other emergencies. Ability to call for help in times of danger.	Ro3kvit	SAFETY	XS	SHORT		
	FIRST AID MEDICAL TRAINING PROGRAMS FOR CITIZENS	-		Gives first aid skills that are critical in current war conditions.	Ro3kvit	SAFETY	XS	SHORT		
	CREATE "RECOVERY MANUAL"	Creating a methodology for the municipality of making decisions in a spatial war question. It could be a manual with instructions what to provide in a short/mid/long term for resolving the damages effects.		reality of war and damages, quick reaction on damages	Ro3kvit	SAFETY	XS	SHORT	municipality	
	CREATION OF A MODERN CHILDREN'S HOSPITAL	Establishment of a modern children's hospital to provide specialized medical care. This project enhances the local healthcare infrastructure and supports the well-being of families and the future generation. €28.7 million		Enhanced healthcare for children, improved medical facilities, better health outcomes, community well-being.	Municipality	SOCIAL	L	MID		
	CREATION OF A MEDICAL REHABILITATION COMPLEX FOR MILITARY PERSONNEL	Creation of a rehabilitation medical complex for military personnel using radon water and mud therapy. Estimated Cost: €21.2 million		This project contributes to the well-being and recovery of local heroes, creates jobs, and enhances the local healthcare infrastructure.	Municipality	SOCIAL	M	SHORT		
	RESTORATION OF DAMAGED EDUCATIONAL INSTITUTIONS	Restoration of 76 damaged educational institutions and construction of 40 protective structures. Estimated Cost: €15 million		Continuity of education for children, enhances safety, and provides a conducive learning environment, promoting social stability and growth.	Municipality	SOCIAL	M	SHORT		
	TRANSFORM A USED CAREER INTO A SAFE PUBLIC SPACE FOR RECREATION	Design and implement inclusive landscape revitalization of flooded granite quarry to reclaim it as an outdoor recreation place and a new 'urban wilderness' Ensure secure access to clean water		The reclaimed quarry can satisfy urban dwellers' innate need for outdoor recreational spaces and natural or wilderness areas.	Ro3kvit	SOCIAL	M	MID		
	MODERNISE MEDICINE ESTABLISHMENTS	Modernise and adapt existing hospitals and clinics to meet modern standarts. As the war is continuing, making hospitals, rehabilitation center prepare to face challenges. This requires a preliminary expert assessment of the condition of the facilities.		There are 14 medical institutions in the city. The municipality notes that the vast majority are technically outdated and inconvenient for visitors. In the context of the war and the migration of IDPs to the city, hospitals need to be changed	Ro3kvit	SOCIAL	M	SHORT	(14) medical institutions	
	RENOVATION OF ABANDONED BUILDINGS FOR PUBLIC FUNCTIONS	Revitalise abandoned buildings with multifunctional public spaces and housing market. Taking back culture palaces to the original social function. THE key factor for renovations : a. public connections, b. walking distance,		Activate abandoned buildings, attracts IT + Creative cluster, culture hubs, production areas, creative space	Ro3kvit	SOCIAL	M	MID	All city	
	SCHOOLS AS COMMUNITY CENTRES AND PUBLIC SPACES	The initiative promotes the idea of an open-access school dedicated both to the students and the rest of the community, where both processes complement and develop one another in symbioses, enriching architecture and changing schools and neighborhoods for the better. Use existing infrastructure to create an active public core of Neighbourhood. communities can benefit from more social activities that address all ages. As such, giving schools 24-hour open access can deeply benefit society a whole.		Supporting neighbourhoods, building communities, diversifying public schools, creating more connections within the communities	Ro3kvit	SOCIAL	M	MID		
	VETERANS' HEADQUARTER "VETERAN HUB"	Public space for veterans and their families for implementation of different social, educational, and cultural projects, support in developing small businesses and other initiatives https://www.instagram.com/veteran_hub/		Impact on community well-being Veterans and their families can gather here to socialize, and get legal advice or psychological support. Offer job opportunities for veterans to support each other	Ro3kvit	SOCIAL	S	SHORT	One of the abandoned cultural centers ?	
	REHAB GARDENS	strengthen rehabilitation medical complex by creating Rehab Gardens with different surfaces to practice walking for those who had low body injuries.		Rehabilitation, mental health, recreation areas for healing, part of extensive city park network	Ro3kvit	SOCIAL	S	SHORT		