

Ukraine Investment Forum 2.0 Energy Workshop

Monday, 15 April 2024

Powering Ukraine

Opportunities for collaboration between the Danish and Ukrainian energy sector and energy industry

PROGRAMME

Current Needs and Priorities in Energy in Ukraine

Shurma Rostyslav, Deputy Head of the Office of the President of Ukraine

Current Situation of Ukraine's Energy Sector

Nicolaj Lomholt Svensson, Energy Councillor, Royal Danish Embassy in Ukraine

EU Support for Ukraine's Energy Sector

Lis Rosenholm, Former Ambassador, Seconded Expert to Ukraine Directorate, European Commission's Directorate-General for Neighbourhood and Enlargement Negotiations (DG NEAR)

Our Current Approach and Activities in Ukraine

Rikke Skou Melsen, Senior Public Affairs Manager, Danfoss

Questions, Answers, Debate

Moderator: Hans Peter Slente, Senior Advisor, DI Energy



**MINISTRY OF FOREIGN AFFAIRS
OF DENMARK**

Ukraine's energy sector is under attack

green & decentralised solutions wanted

DI Ukraine Investment Forum 2.0

Copenhagen, 15 April 2024



Dniprovska Hydro Power Plant, Zaporizhzhia, March 2024

Ukraine-Denmark energy partnership programme

- UDEPP was established in 2014 following Russia's unprovoked and unjustified attack on Crimea, Donetsk and Luhansk
- Anchored in Ukrainian ministries of energy and restoration/infrastructure, and in the Danish Energy Agency
- Aim is through a government-to-government approach to ensure solutions for an independent and sustainable energy sector in Ukraine
- COVID-19 and Russia's full-scale invasion attempt over the past years has been challenging but ways have been found to adapt and move forward

Focus areas within UDEPP



Long-term energy planning and modelling



Power market integration



Energy efficiency



District heating



Wind generation (offshore and onshore)

NEW

Biogas & green gas systems



Ukraine's energy sector is under attack

Three overall phases:

- 1) Feb-March 2022 attempt to force blackout and occupy nuclear facilities
- 2) Winter campaign 2022-23 extensively targeting specially transmission infrastructure
- 3) Ongoing massive attacks since 22 March mainly targeting generation, but also transmission and gas storage



Wanted: New decentralised & resilient system - an Opportunity for green solutions & EU-integration

- Balancing short-term energy needs with long-term goals is very difficult due to uncertainties
- Immediate recovery in the energy sector is imperative, especially preparation for next winter season in large cities such as Kharkiv
- But the war risks also present an opportunity to rebuild greener and support EU-integration
- Ukraine wants a decentralised and resilient energy system to replace existing, as huge Soviet-era power plants are “easy targets”
- Denmark has a lot to offer in this field, e.g.:
 - Renewable generation and integration
 - Efficient technology and system solutions



What can the Embassy & Trade Council offer?

- Embassy in Kyiv and new Embassy Office in Mykolaiv are fully operational
- Synergy to new sector cooperation in the fields of agriculture and environment/water
- Dedicated trade and finance team (EIFO & IFU)
- Extensive network with Ukrainian decision makers – both public and private
- Assist in gathering information about markets
- Find and engage customers and finding local distributors and partners
- Semi-professional facilities for video conferences and can invite, moderate and provide translation if needed
- Contact: ievamb@um.dk



Tiligul Wind Farm, Mykolaiv Oblast



**MINISTRY OF FOREIGN AFFAIRS
OF DENMARK**

Дякую за увагу!

Thank you for your attention!

Upcoming activities

23 August

Green Energy Export Day – latest news from the market

13-14 November

Rebuild Ukraine – Trade Fair in Warsaw

Tak for i dag

REBUILD
UKRAINE

ENGINEERING
TOMORROW

Danfoss

MODERNIZATION, RECONSTRUCTION AND SUSTAINABLE DEVELOPMENT OF CITIES

25 років
Danfoss в Україні

DISTRICT HEATING SYSTEMS. HEAT SOURCES

CHALLENGE:

Destroyed and ineffective heat sources

PURPOSE:

Preservation of district heating systems and sources diversification



SOLUTIONS

Development of district heating according to the modern 4G principles and approaches.

Transition from a highly centralized to a decentralized model.



TECHNICAL INSTRUCTION:

- The strategic planning of district heating should include: energy modeling (implemented at the country level, region and community levels), demand mapping, integration into building modernization plans and vice versa, planning and identification of the available resources and sources;
- Identify the main control points and collect the output data: heat supply zones, loads characteristics, annual heat needs, generation capacity, annual working profile, characteristics of the heating network available, heat production costs, building modernization level, current system equipment level and local heat sources available;
- District heating is a complex infrastructure. A plan for financing, project implementation, a description of the planned financing sources and key stages should be provided;
- Use different type of sources to diversify the resources.



SOLUTION 1

Large-capacity heat pumps

RESULT

- Restoration of heat supply in cities with destroyed heat sources and replacement of ineffective ones;
- Reducing dependence on fossil fuels and decreasing their imports, thus increasing energy independence and security;
- Promoting the use of the locally produced renewable energy (e.g. the use of waste heat from wastewater treatment plants, excess heat from the industrial sector or data centers);
- Combining renewable heat sources with renewable electric energy sources can play an important role for the energy system and result in the lower heat costs.



SOLUTION 2

Surplus heat of industrial processes

RESULT

- Decentralization and increasing the efficiency of district heating sector;
- Reducing dependence on fossil fuels and decreasing their imports, thus increasing energy independence and security;
- Cooperation between the industrial sector and the district heating companies. As a result, for the industrial sector, this is an additional source of income, which can become an important factor of ensuring the competitiveness of industrial products;
- Surplus heat will be used in technological processes instead of being lost. This also becomes unavailable with individual heating systems.





SOLUTION 3

Engine power plants

RESULT

- Flexible generation with operation of gas piston units;
- The unit can use both natural gas and, in the future, 100% synthetic and carbon-neutral methane and methanol, as well as mixtures of hydrogen and natural gas;
- Highly effective cogeneration, which is one of the elements of both effective district heating systems and the energy system as a whole;
- Relatively low costs and handleability;
- Reliability of heat supply and sustainability of the electrical network;
- Quick response to daily and seasonal demand fluctuations.



SOLUTION 4

Combined Cycle Gas Turbine (CCGT)

RESULT

- High fuel efficiency (up to 60%);
- CCGT can use both natural gas and, in the future, 100% synthetic and carbon-neutral methane and methanol, as well as mixtures of hydrogen and natural gas;
- Highly effective cogeneration, which is one of the elements of both effective district heating systems and the energy system as a whole
- Reliability of heat supply and sustainability of the electrical network;
- Steam and gas stations provide the best economic performance at base load, when the system is operating at or near full load.





SOLUTION 5

Waste-to-Energy CHP plant

RESULT

- Reducing dependence on fossil fuels and decreasing their imports, thus increasing energy independence and security;
- Creation of new jobs in the cycle of waste sorting, transportation and incineration;
- Collecting money for budgets of cities from sale of thermal and electric energy;
- Reducing the amount of waste in landfills;
- Flexible generation is used in the energy system operation.



SOLUTION 6

Fossil fuel and biomass heat only boiler (HOB)

RESULT

- Use as peak and reserve sources;
- Ease of operation and comprehensibility of the technology;
- Quick recovery of damaged equipment;
- Low installation cost and availability of components on the market;
- Possible synergy with other more efficient technologies, such as CCGT and heat pumps.



DISTRICT HEATING SYSTEMS. HEAT ACCUMULATION

CHALLENGE:

Highly centralized sources without heat accumulation

PURPOSE:

Heat accumulation

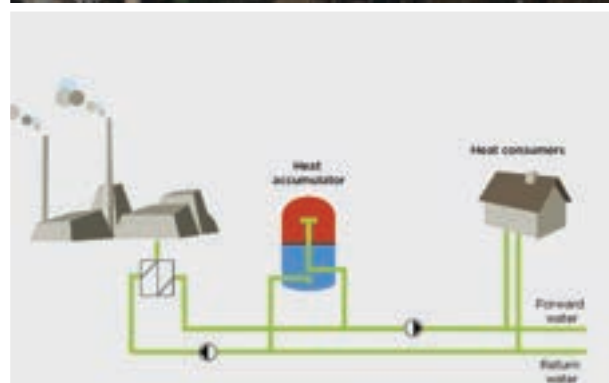


SOLUTION

Short-term heat accumulation systems (High-temperature thermal storage)

RESULT

- Increased efficiency of cogeneration systems.
- Installation of heat accumulators that can be used to store excess heat produced during off-peak load periods for heat supply during peak demand periods;
- Separation of heat generation from demand, thus increasing the operational flexibility of thermal power plants;
- Ensuring maximum electricity generation in periods when heat demand is not high;
- Increased dynamics of thermal power plants, the possibility of optimal operation in the energy market with a high share of renewable energy sources



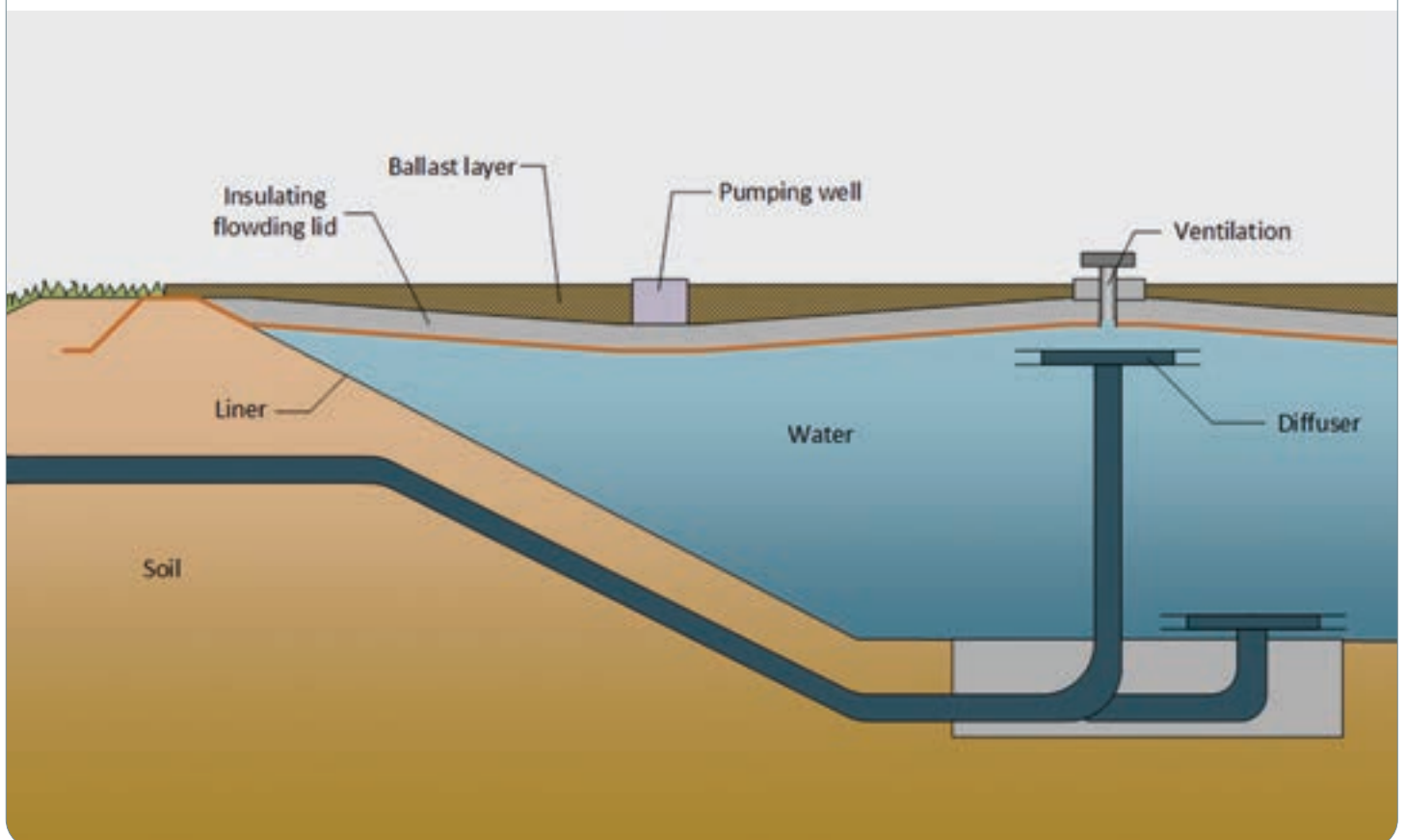


SOLUTION

Long-term heat accumulation systems (seasonal thermal energy storage or STES)

RESULT

- In energy systems in which the price of electricity fluctuates, accumulators can have available capacity from September to May, which can store heat from electric boilers, heat pumps and gas CHP without additional costs;
- Possibility of inclusion of large solar stations in the system;
- Transfer of excess thermal energy produced in summer to winter, when demand is high and supply is low;
- Different generation types can be connected to the system.



DISTRICT HEATING SYSTEMS. HEATING NETWORKS

CHALLENGE:

Destroyed heating networks in settlements affected by hostilities

PURPOSE:

Preservation of district heating, elimination of damages and increase in the overall efficiency



SOLUTIONS

Examination of pipelines using thermographic diagnostics.

Replacement of damaged sections.

RESULT

- Channelless installation is possible to reduce labor time;
- Increasing the number of sites with digital monitoring of pre-insulated heating systems;
- Reduction of losses by 5-7%.

Cost (pipes/m + cost of 1 km of trench + joints):

- A pair of pre-insulated steel pipes with traditional insulation – about 31,000 euro (DN80/160 – losses of 198 MWh/year)
- Double pipes – pre-insulated – about 41,000 euro (2xDN80/280 – losses of 86 MWh/year)
- A pair of pre-insulated steel pipes with diffuse barrier – about 37,000 euro (DN80/180 – losses of 135 MWh/year)





SOLUTION 1

Thermographic systems make it possible to identify and localize pipeline insulation defects and heat leaks.

RESULT

- Combination of visual and thermographic examination can reveal a number of potentially dangerous problems;
- Repair of damages in places inaccessible for visual examination;
- Precision. Numerous points that can be used for design and calculations;
- Employees of an enterprise can take specialized courses and purchase the necessary equipment to be used on a permanent basis;
- Estimated training cost is €1,000.
Equipment cost is €10,000 - €50,000.



SOLUTION 2

Installation of double pre-insulated steel pipes with a diffusion barrier or two-pipe systems. Systems with emergency alarm elements.

RESULT

- Modernization of the above-ground heating network section, where priority is given to double pre-insulated pipes or, if possible, replacement with an underground one;
- Possibility of changing the method of installation of individual sections is determined by the heat supply scheme or a previously developed plan for the modernization of the network section;
- Increasing the number of sites with digital monitoring of pre-insulated heating systems;
- Reduction of losses by 7-9%.



CHALLENGE:

Leaky or non-operating shut-off valves. It is not always possible to disconnect a specific consumer, which leads to the disconnection of a group or a network section.

PURPOSE:

Disconnection of buildings and structures, if necessary, segmentation of the network. Ensuring tightness.



SOLUTION 1

Determining the current condition and critical points where replacement is required.

RESULT

- Enabling blocking of the damaged area or disconnection of a consumer;
- High reliability of modern shut-off devices;
- The optimal flow design reduces the pressure drop through the ball valve compared to old valves;
- Reduction of pumping costs;
- Lower operating costs;
- Energy saving



SOLUTION 2

"Hot" inserts of shut-off valves are intended for expansion of district heating systems without interrupting system operation.

RESULT

- Enabling the temporary disconnection of engineering systems from the heat supply of damaged buildings;
- Possibility of connecting new and reconstructed buildings;
- Connection of restored buildings without disruption of heat supply to other consumers;
- No need to disconnect other consumers frequently;
- Quick installation of valves and connection of new consumers without stopping the system or its part;
- No need to drain the treated water;
- No difficulties with the air entering the heating system and heating network.



CHALLENGE:

Lack of data on the real-time network condition, hydraulic modes and data on the best connection points of new sources.

PURPOSE:

Creation of conditions for stable operation of heating systems.

**SOLUTION 1**

Implementation of a thermohydraulic modeling tool for district heating systems to support planning, design and operation processes.

RESULT

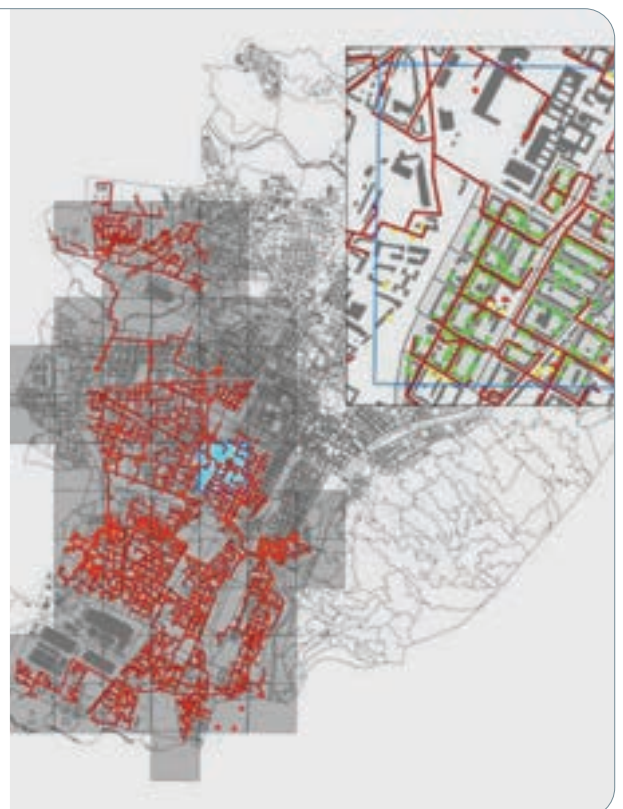
- Modeling of hydraulic and temperature conditions;
- Optimization of hydraulic conditions in the network;
- Optimization of network expansion, repair and new connections;
- Development of emergency plans;
- Network operation database.
- For damaged systems, it is recommended to carry out this work simultaneously with thermographic control.

**SOLUTION 2**

Simultaneously with thermal imaging surveys of the heating network and/or visual surveys, software thermohydraulic complexes with GIS tools should be implemented.

RESULT

- Calculation of optimal hydraulic parameters and their application;
- Overview of temperature, flow and pressure at any point in the network;
- Review of the composition of production sources at any point in the network;
- Modeling future conditions based on the weather forecast;
- What-if analysis for daily operational issues and critical events;
- Planning interventions with effective implementation and quality of services;
- Cost of 75 MW: 40,800 euro



DISTRICT HEATING STATIONS AND INDIVIDUAL HEATING STATIONS

CHALLENGE:

Damaged engineering systems, regulation system mixing units and regulation systems in buildings.

PURPOSE:

Reconstruction of buildings and damaged input units with installation of modern standardized heating plants.



SOLUTION

Standardized, modern individual heating stations.

RECOMMENDATIONS:

- Assess the condition of the existing heat supply units and regulation units in the building;
- If the existing heat supply unit is damaged, replace it (if possible) with a standardized modern individual heating stations;
- Ensure the necessary stock of standard regulation systems in the amount determined by the heat supply utilities of the region;
- An “independent” connection scheme is the priority;
- In case of damage of the district heating group station (CTP), modernization is carried out in case of technical necessity or the impossibility of operating the system without the CTP.

The need for modernization of the CTP should be determined by the heat supply scheme.





SOLUTION

**Modernization of individual heating stations,
modernization of district heating group stations (if
transition from CTP to IHS is possible)****РЕЗУЛЬТАТ:**

- Reduction of thermal energy consumption by the building;
- Reduction of the level of relative losses in the building by responding to demand;
- Ensuring the best parameters of the heat carrier;
- Protection of internal heat consumption systems from hydraulic failures (dependent scheme) in the heat supply system;
- Modernization of IHS is the priority. Modernization of CTP, if there is a possibility of transition to IHS, should not be carried out, since it is an element of outdated district heating systems, which creates difficulties in further modernization of the system.



DISTRICT WATER SUPPLY

CHALLENGE:

Damage to elements of the cold water supply system, inefficient use of electric energy by pumping stations, hydraulic imbalance.

PURPOSE:

Restoration and modernization of cold water supply systems



SOLUTION 1

Installation of frequency converters in pumping stations

RECOMMENDATIONS:

- Adapting the pressure to the actual demand using frequency converters and booster pumping stations makes it possible to achieve electricity savings of 25–40%;
- Reducing the risk of water hammer effect;
- Reducing the number of new pipe breaks by 40–55%;
- Reducing water leakage by 30–40% through new damages;
- Decrease of maintenance costs and expensive repairs;
- Increase of the network service life.





SOLUTION 2

Replacement of shut-off valves in main areas to ensure 100% tightness for quick repair work

RESULT

- Low flow loss;
- Full tightness when the tap is closed;
- No maintenance required;
- Long service life;
- Possibility of installation in any mounting position;
- Easy and quick closing/opening;
- Quick disconnection of damaged sections of the water supply network or buildings.



SOLUTION 3

Installation of a pressure reducing regulator where the pressure remains too high in the water supply network. For hydraulic balancing of these areas.

RESULT

- Reduction and maintenance of constant pressure, regardless of water consumption;
- Increasing the service life of elements of the entire system;
- Elimination of acoustic discomfort;
- Maintaining the pressure at the level acceptable for consumers;
- No pressure drops and water hammer effects;
- Stable water supply system operation.



RESIDENTIAL BUILDINGS

CHALLENGE:

Damaged windows, insulation system of enclosures, heating system (pipes, radiators, individual heating plant, etc.)

PURPOSE:

In a short time, provide housing for citizens who have lost homes and restore social infrastructure



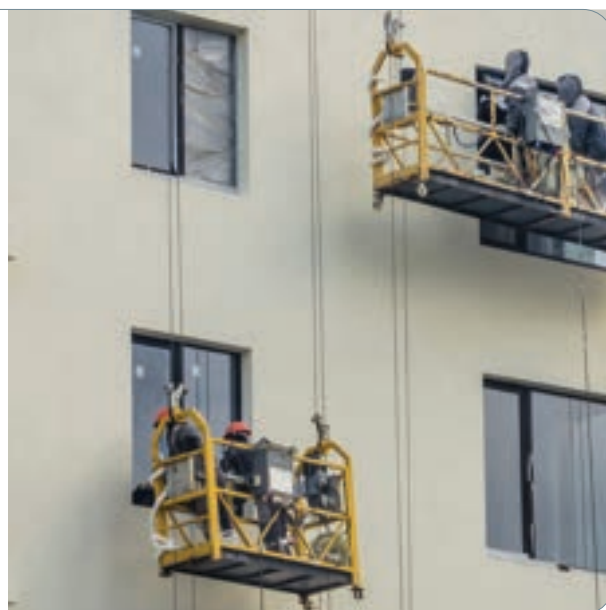
SOLUTIONS

Replacement of damaged windows

Restoration of the damaged insulation system of enclosures

RESULTS:

- Approximate cost of glazing is from €150 per meter
- Approximate cost of insulation is from €50 per meter



It is necessary to perform reconstruction at the building level, not at the damaged spot



SOLUTION

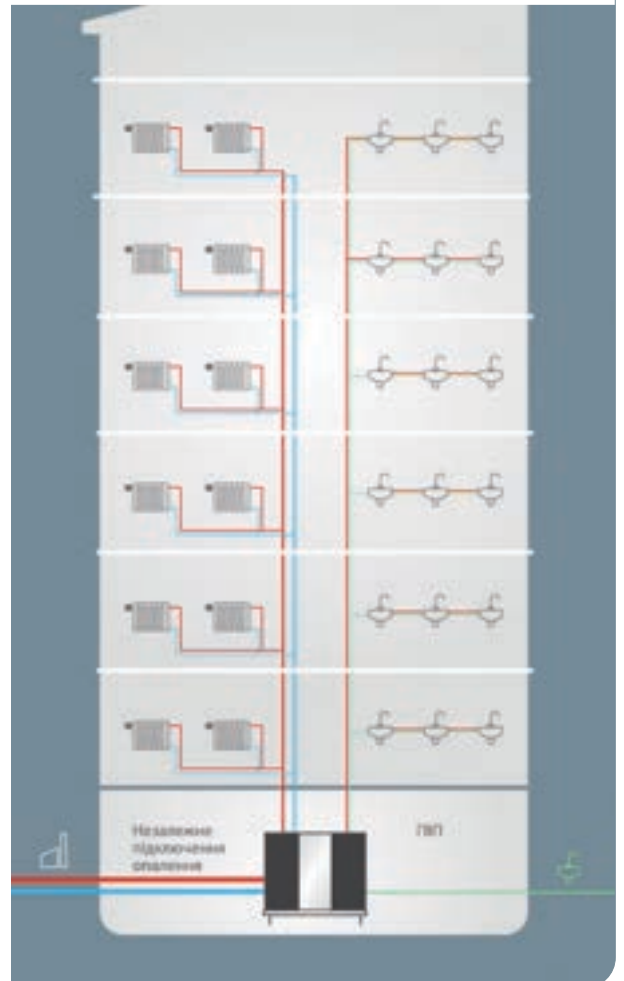
Designing a two-pipe system instead of the available one-pipe system should be considered if possible.

If there is no such possibility, the available one-pipe heating system should be reconstructed:

- Reconstruction of existing individual heating stations or installation of new ones;
- Replacement and insulation of pipes;
- Installation of automatic balancing valves;
- Replacement of heating system radiators;
- Installation of radiator thermostats;
- Implementation of individual heat metering.

RESULT

- 25–40% reduction in energy consumption
- Equipment cost is from 50 € per meter
- Term of execution is 3 to 9 months
- Achieving by building “C” energy efficiency class



The heating system design project should be developed.

The complete set should correspond to the specification of the design project documentation.

Settings of all automatic control valves should be made according to the design project.

After installation and adjustment, a service maintenance contract should be concluded.

PUBLIC BUILDINGS

CHALLENGE:

Damaged heating systems (pipes, radiators, individual heating plant, etc.), hot and cold-water supply system and engineering systems

PURPOSE:

Provide heating and water supply in buildings, improve energy efficiency



SOLUTIONS FOR HEATING SYSTEM

Designing a two-pipe system instead of the available one-pipe system should be considered if possible.

If there is no such possibility, the available one-pipe heating system should be reconstructed:

- Reconstruction of existing individual heating plants or installation of new ones;
- Replacement and insulation of pipes;
- Installation of automatic balancing valves;
- Replacement of heating system radiators;
- Installation of radiator thermostats;

RESULTS:

- 25–40% reduction in energy consumption
- Equipment cost is from 40 € per meter
- Term of execution is 3 - 9 months
- Achieving by building "C" energy efficiency class





SOLUTIONS FOR HOT AND COLD WATER SUPPLY SYSTEM

- Replacement and insulation of pipes
- Installation of frequency converters at pumping stations

District hot water supply

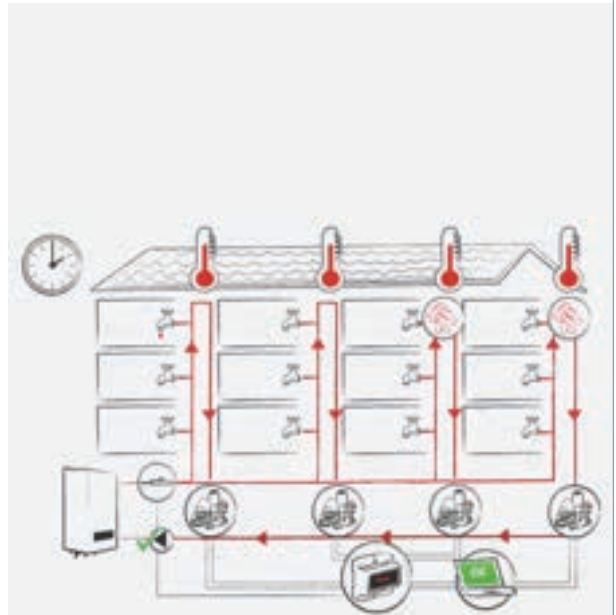
- It should be restored where possible
- Reconstruction of existing individual heating station or installation of new ones
- Installation of automatic thermostatic balancing valves on recirculation systems
- Installation of pressure regulators

Cold water supply:

- Installation of pressure regulators

RESULT

- 15–40% reduction in energy consumption
- Equipment cost is from 10 € per meter
- Term of execution is 3 - 6 months



SOLUTIONS FOR ENGINEERING SYSTEMS

- Installing security systems – snow melting on roofs and stairs
- Installing systems ensuring microclimate and comfort – warm floors, walls
- Installing air quality assurance systems (recuperation)

RESULT

- Public buildings as an example/showcase of an energy efficiency approach
- Term of execution is 3 - 9 months
- Achieving by building "A" or "B" energy efficiency class





SOLUTIONS FOR HEATING SYSTEM

Designing a two-pipe system instead of the available one-pipe system should be considered if possible.

If there is no such possibility, the available one-pipe heating system should be reconstructed:

- Reconstruction of existing individual heating station or installation of new ones;
- Replacement and insulation of pipes;
- Installation of automatic balancing valves;
- Replacement of heating system radiators;
- Installation of radiator thermostats;

RESULTS

- 25–40% reduction in energy consumption
- Equipment cost is from 45 € per meter
- Term of execution is 3 - 9 months
- Achieving by building "C" energy efficiency class





SOLUTIONS FOR ENGINEERING SYSTEMS

- Installation of snow melting and de-icing systems where required by building standards (roofs, entrance groups, ramps).
- Installation of climate systems (HVAC) where required by building standards.
- Installation of supply and exhaust units with recuperation.

RESULT

- Public buildings as an example/showcase of an energy efficiency approach
- Term of execution is 3 - 9 months
- Achieving by building "A" or "B" energy efficiency class



PRESCHOOL EDUCATIONAL INSTITUTIONS



SOLUTIONS FOR HEATING SYSTEM

Designing a two-pipe system instead of the available one-pipe system should be considered if possible.

If there is no such possibility, the available one-pipe heating system should be reconstructed:

- Reconstruction of existing individual heating station or installation of new ones;
- Replacement and insulation of pipes;
- Installation of automatic balancing valves;
- Replacement of heating system radiators;
- Installation of radiator thermostats;

RESULTS

- 25–40% reduction in energy consumption
- Equipment cost is from 45 € per meter
- Term of execution is 3 - 9 months
- Achieving by building "C" energy efficiency class





SOLUTIONS FOR ENGINEERING SYSTEMS

- Installation of snow melting and de-icing systems where required by building standards (roofs, entrance groups, pathways).
- Installation of underfloor heating (water or electric) in playrooms.
- Reconstruction of the hot water supply system
- Installation of climate systems (HVAC) where required by building standards.
- Installation of supply and exhaust units with recuperation.





SOLUTIONS FOR HEATING SYSTEM

Designing a two-pipe system instead of the available one-pipe system should be considered if possible.

If there is no such possibility, the available one-pipe heating system should be reconstructed:

- Reconstruction of existing individual heating station or installation of new ones;
- Replacement and insulation of pipes;
- Installation of automatic balancing valves;
- Replacement of heating system radiators;
- Installation of radiator thermostats;

RESULTS

- 25–40% reduction in energy consumption
- Equipment cost is from 45 € per meter
- Term of execution is 3 - 9 months
- Achieving by building "C" energy efficiency class





SOLUTIONS FOR ENGINEERING SYSTEMS

- Installation of snow melting and de-icing systems where required by building standards (roofs, entrance groups, ramps).
- Installation of underfloor heating or warm walls in rooms with special requirements for cleanliness.
- Installation of the hot water supply system.
- Installation of climate systems (HVAC) where required by building standards.
- Installation of supply and exhaust units with recuperation.
- Installation of cooling systems with the possibility of disposal of waste heat.





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REBUILD
UKRAINE

ENGINEERING
TOMORROW



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A NEW UKRAINE FACILITY

Recovery, Reconstruction, Modernisation of Ukraine

#StandWithUkraine

March 2024

The European Union stands united in its unwavering support of Ukraine in the face of Russia’s unprovoked and unjustified aggression and the illegal annexation of Ukrainian territory by the Russian Federation.

The EU is committed to help Ukraine resist this aggression and to play a **major role in Ukraine’s recovery, reconstruction and modernisation** towards a green, digital, and inclusive economy.

The EU is equally engaged in supporting reforms that will **foster Ukraine’s EU accession path**.

The Ukraine Facility, which entered into force on 1 March 2024, is the EU’s tool for these efforts.

Work is ongoing on the use of proceeds from Russian sovereign assets for Ukraine’s recovery and reconstruction.



€50 billion

2024 - 2027

€17 billion

in grants

€33 billion

in loans

The first €4.5 billion tranche under the Ukraine Facility has been paid in March 2024.

MAIN BENEFITS

The new Ukraine Facility will:



Support recovery, reconstruction & modernisation



Support Ukraine’s reforms on the way to EU accession



Support Ukraine’s financing needs for the administration to deliver uninterrupted public services (schools, hospitals, social benefits, etc.)



Mobilise investments in Ukraine’s private sector for economic recovery and reconstruction



Broaden support to Ukrainian society, including helping address the social consequences of the war

STRUCTURE OF THE NEW UKRAINE FACILITY

- **In partnership with** EU Member States & European Financial institutions (Team Europe), and other International Financial Institutions
- **In coordination with** the Multi-Agency Donor Coordination Platform
- **Key stakeholders:** Local authorities, Civil Society, Private Sector

Pillar 1 Ukraine Plan	Pillar 2 Ukraine Investment Framework	Pillar 3 Assistance programmes
<p>Support to Ukraine through the Ukraine Plan (grants and loans)</p> <p>Support to reforms needed for the EU accession, for recovery, reconstruction and modernisation, also supporting urgent financial needs</p>	<p>De-risking mechanism available to investors through International Financial Institutions to scale up investments and crowd in new investors</p> <p>Support to the Ukrainian private sector</p>	<p>Technical assistance to the Government (EU acquis, structural reforms)</p> <p>Capacity building of the authorities at national, regional and local level</p> <p>Support to civil society</p>

IN PARTNERSHIP WITH THE GOVERNMENT OF UKRAINE

STRONG SAFEGUARDS

The Facility is equipped with a robust framework for **audit and control**.

A dedicated independent **Audit Board** will scrutinise the use of the funds.



European Commission: ec.europa.eu/neighbourhood-enlargement/ukraine | twitter.com/eu_near
European External Action Service: eas.europa.eu/delegations/ukraine | twitter.com/eu_eas

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RESTORATION
AGENCY:
RESULTS 2023
PLANS 2024

STRUCTURE



STATE ROAD AGENCY

construction, repair, and maintenance of roads and bridges

+



STATE AGENCY OF INFRASTRUCTURE PROJECTS

building, reconstructing, and modernising infrastructure for aviation, maritime, and river transport



RESTORATION AGENCY

Reliable partner for implementing significant nationwide restoration and construction projects

Central Office

190
Employees

24 Regional Services

1210
Employees

PROJECT
MANAGEMENT
UNIT

Capacity
Building Office

RESPONSIBILITY AREAS



Significant infrastructure projects



Transport infrastructure



Logistics and border control checkpoints



Frontline infrastructure



Reconstruction of damaged and **destroyed cities and villages**



Housing and **social infrastructure** renewal

CRITICAL INFRASTRUCTURE. ENERGY OBJECTS PROTECTION

LEVEL I

**PASSIVE PROTECTION.
BIG-BAGS AND
GABIONS**



21 regions

- **73** objects of energy infrastructure
- **30** objects of gas infrastructure



Full readiness

103 objects under protection

Project value

46.6 EUR mln



LEVEL II

**PROTECTION FROM
DRONES AND SHELL
FRAGMENTS**



14 regions

- **22** substations
- **43** substation components



Completion term –
May 2024

16 ready

Project value

0.5 EUR bn



0.2 EUR bn

Funded

0.3 EUR bn

Required

Fund for the Elimination of Consequences of Armed Aggression

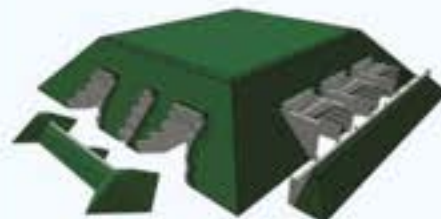
LEVEL III

**PROTECTION FROM
MISSILES**



14 regions

- **22** substations



In case of stable financing, the missile defence system works will be completed **within 12 months**

Required

2.2 EUR bn

Fund for the Elimination of Consequences of Armed Aggression

CRITICAL INFRASTRUCTURE: EXPERIMENT ON MISSILE DEFENCE SYSTEM EFFICIENCY (LEVEL III)

At a closed military range, **a test was conducted on a model structure, reduced to one-sixth of its original size.** There were six explosions stimulating direct hits by various types of cruise and aeroballistic missiles, including those launched from air, land, and sea

Based on results of the experiment, **adjustments were made to the design solutions**

Experts and scientists from the United States, the United Kingdom, Japan, and Germany were invited to participate in the experiment. In total, more than 30 leading scientists, experts and consultants were involved



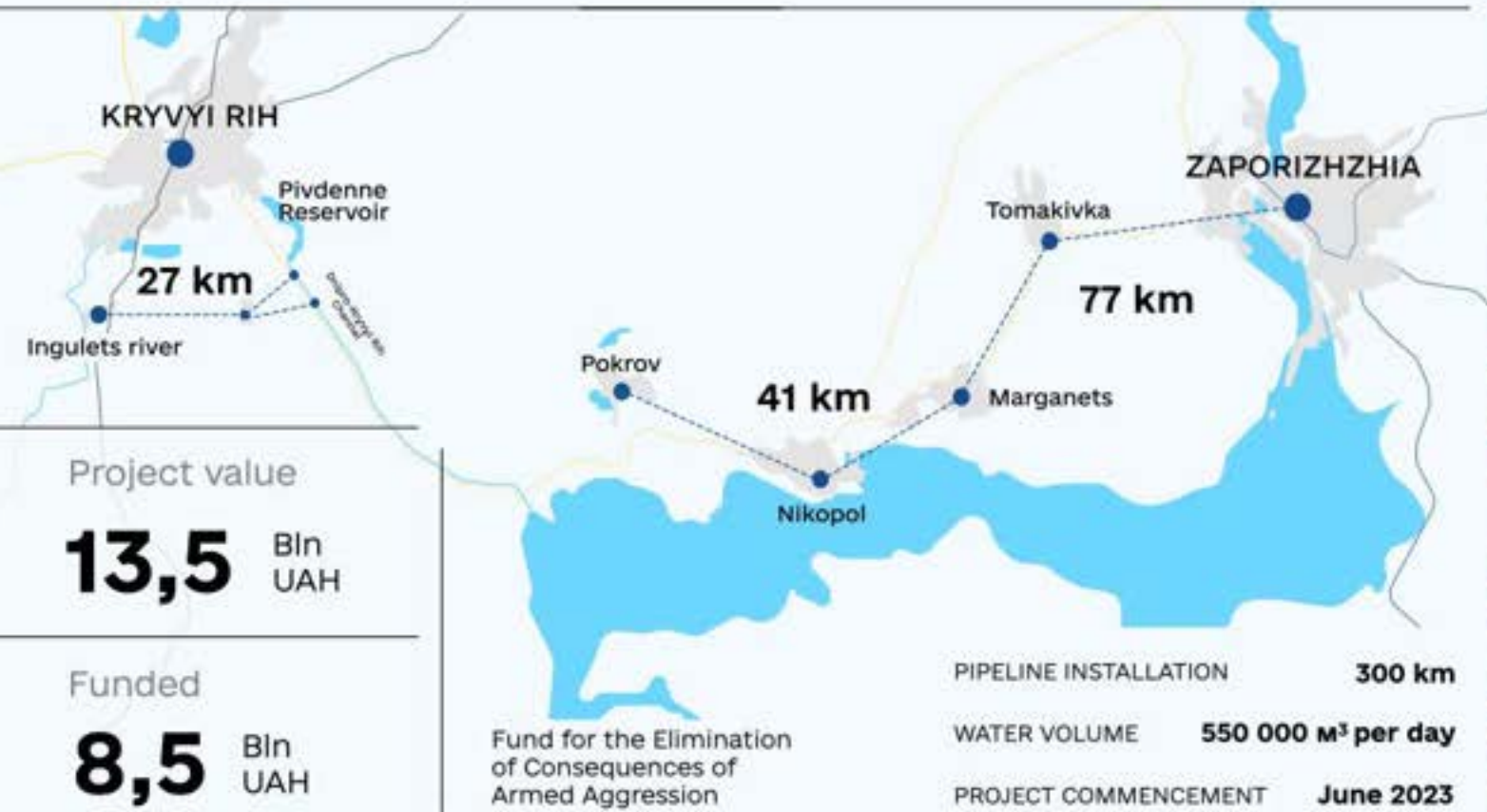
TEST RESULTS

- **The structure has withstood simulated damage** from the most dangerous types of missiles
- **No primary or secondary fragments impacted transformer chambers**, which remained undamaged
- **The structure is resistant** to excessive pressure at the front of an airborne impact wave
- **The correctness and reliability** of experimental results and theoretical calculation approaches were confirmed

100%

EXPERIMENT RESULTS
PROVE HIGH STRENGTH AND
STABILITY OF THE STRUCTURE

CRITICAL INFRASTRUCTURE. WATER MAIN CONSTRUCTION



FOR EACH SECTION OF THE PIPELINE

Engineering consulting and **independent technical supervision**

The comprehensive technical audit of the project documentation includes an evaluation of:

- **The quality** of the project's budget section
- **The rationality** of planned expenses
- **The volume** of water consumption



145 km

WATER PIPELINE

TO PROVIDE

1,5 mln

people with fresh water

SOCIAL RECONSTRUCTION

WORK HAS COMMENCED



352
Objects



292 Housing

31 Social Infrastructure

16 Streets and roads

8 Administrative buildings

5 Housing and communal services



87
Tenders



75
Contracts



Total contracts signed

3,8 Bln UAH

Fund for the Elimination of
Consequences of Armed Aggression



BRIDGES, OVERPASSES, AND FLYOVERS

154 DESTROYED/DAMAGED
Bridges due to the military aggression
of the Russian Federation



330 REPAIRED
Bridges during 2022-2023

118 DESTROYED
AND DAMAGED

■ **28** Fully restored

■ **90** Passage ensured

212 IN A STATE OF
EMERGENCY

For export, military logistics, evacuation of the injured

■ **61** Fully restored

■ **151** Passage ensured

Partner countries that provided artificial bridges and structures



LOGISTICS: FRONT-LINE AND DE-OCCUPIED TERRITORIES

RESTORED

1 294

km of roads

proper passage
(evacuation and
logistics routes)



RESTORED

89 bridges

that were damaged
as a result of
combat actions

Partner countries that provided
artificial bridges and structures



EXPORT/LOGISTICS. PROGRESS IN 5 MONTHS

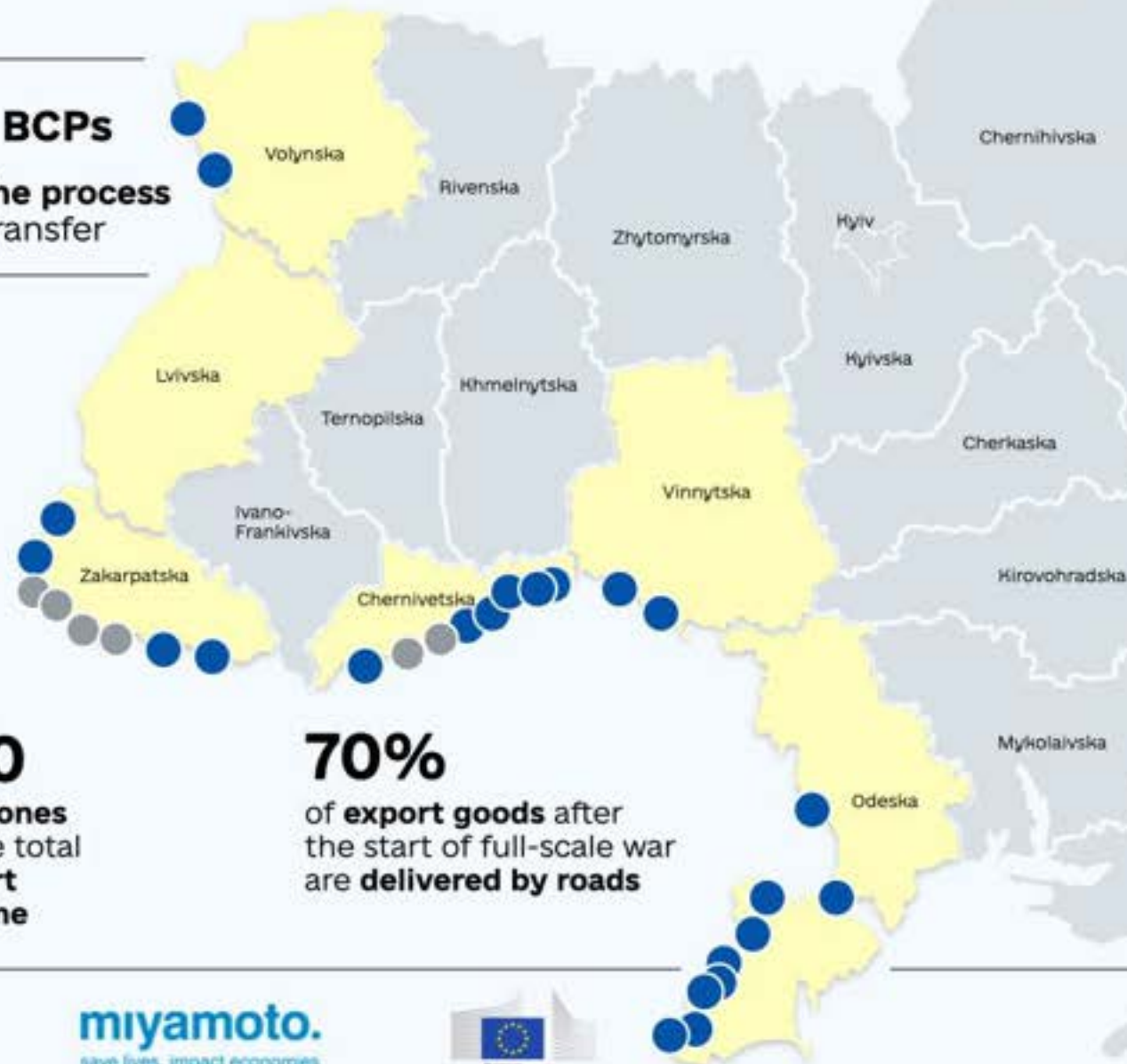
29 BCPs under the management of the Agency

23 BCPs transferred from the state customs service

6 BCPs in the process of transfer

19 Contracts concluded for maintenance

11 BCPs repairs have begun



100 mln tones of the total export volume

70% of export goods after the start of full-scale war are delivered by roads

Partners



Generators



Road signs, lighting, modular sanitation facilities, modular structures for customs and passport control



Design, expansion of checkpoints



Service areas, expansion of the road junction between Ukraine and Romania

PUBLIC PROCUREMENT

Adopted standardized procurement methodology for civil construction



- Eliminated bias for fair company treatment
- Enhanced contract execution efficiency
- All project budget documents fully disclosed
- Set unified contractor selection criteria

PROZORRO AWARDS 2023
FOR TRANSPARENT APPROACHES
TO RECOVERY PROCUREMENT



RECONSTRUCTION OF SOCIAL INFRASTRUCTURE AND HOUSING



Number of objects

251



Total sum of contracts

3,05 bln UAH



Average number of bidders

2,9

twice others' state customers



Savings generated

↓ **260** mln UAH

Adopted monitoring and analysis for procurement operations



- Expert verification of tender documents for unbiased criteria
- Assessing procurement efficiency, budget analysis, and method enhancement

Industry engagement: 20+ meetings

Kharkiv, Sumy, Odesa, Dnipro

- Launched industry consultations
- Engaged with more than 500 designers, builders, and engineering companies

Procurement Certification by the Royal Institute of Procurement & Supply (CIPS)



European Bank
for Reconstruction and Development

- Performed a diagnostic of the procurement system
- Received a report and developed a plan for the next steps

ANTICORRUPTION EFFORT

CORRUPTION RISK ASSESSMENT CONDUCTED FOR THE AGENCY AND SERVICES



RISKS IDENTIFIED

38 within the Agency

70 in the Services



18 have been minimised



15 have been minimised



ESTABLISHED THE TRANSPARENCY AND ACCOUNTABILITY COUNCIL

Strengthening public oversight of the Agency's activities



#USAID_Взаємодія



AntAC



SIGNED A MEMORANDUM WITH THE NATIONAL ANTI-CORRUPTION BUREAU (NABU)

Focused on preventing and combating criminal corruption offenses



ISO 37001 CERTIFICATION: ANTI-BRIBERY MANAGEMENT SYSTEM

Completed: audit of corruption prevention systems

Upcoming: defining policies for the implementation of anti-corruption programs

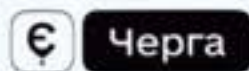


DIGITALIZATION AND INNOVATIVE DEVELOPMENT

THE AGENCY ACTS AS THE TECHNICAL ADMINISTRATOR OF NATIONWIDE SYSTEMS



State Electronic Ecosystem: A unified digital route for all reconstruction projects



Electronic border crossing system



GIS



Regional Development Geoinformation System

WEIGH-IN-MOTION (WIM) SYSTEMS

- 52 operational units
- 10 units restored

E-ROAD

- Implemented a construction **monitoring module** for reconstruction projects
- Implemented a procurement **analysis module**
- Processed **11,000 user applications**
- Compiled a database of **329 scientific works**



GIS FOR REGIONAL DEVELOPMENT (ГІС РР)

A unified geoinformation database for collecting, processing, and visualizing information on roads and related structures

ROAD GEO-CALCULATOR KM+

A unified tool including geospatial coordinates, length, and road maintenance details

ELECTRONIC DOCUMENT MANAGEMENT SYSTEM

Implemented in all Restoration Services

HEAVY VEHICLE PERMIT SYSTEM

for the transit of heavy and large-sized vehicles

AUTOMATED ELECTRONIC BRIDGE MANAGEMENT SYSTEM

Continuously updated with new data

VIDEO SURVEILLANCE AND ANALYTICS SYSTEM

Established a unified processing center

A RELIABLE TEAM DRIVING COMPLEX RESTORATION AND CONSTRUCTION PROJECTS IN UKRAINE



Primary Goal

TRANSFORMING INTO A TRANSPARENT, EFFICIENT, AND ACCOUNTABLE ENTITY **THROUGH**

- **STREAMLINING** AGENCY OPERATIONS
- REFORMING **RESTORATION SERVICES**
- **ESTABLISHING CPO:** CENTRALIZED PROCUREMENT ORGANIZATION
- **DEVELOPING PMU:** PROJECT MANAGEMENT UNIT

TRANSFORMATION OF THE AGENCY AND SERVICES: IMPLEMENTING INTERCONNECTED PROJECTS



PRIORITY:
NATIONAL
INFRASTRUCTURE
PROJECTS

RESULTS

- **EFFICIENCY AND TRANSPARENCY OF OPERATIONS**
- **CLEAR DISTRIBUTION OF FUNCTIONS**
- **CONTROL MECHANISMS**

PROJECT MANAGEMENT UNIT

THE AGENCY PROPOSES TO ITS PARTNERS THE **IMPLEMENTATION OF A FINANCING MECHANISM** FOR STATE-OWNED ENTERPRISES (SOES) **THROUGH THE REIMBURSEMENT OF OPERATIONAL EXPENSES** USING LOAN OR GRANT FUNDS

25
experts

(not civil servants) with experience in implementing international projects

* plan to increase to **55 experts** in 2024

PROJECT MANAGEMENT AND IMPLEMENTATION

involves coordinating projects in line with guidelines from International Financial Organizations (IFIs) and strategic objectives

It's about ensuring projects align with broader financial and developmental goals

CUSTOMER FUNCTION IN CONSTRUCTION

This role is about managing construction projects with a focus on adhering to quality standards and technical requirements

Funded from the State Budget

2008 – 2022

IMPLEMENTED PROJECTS → **4,0** bln euro



1,1 bln euro



1,2 bln euro



1,5 bln euro



0,2 bln euro

Traditionally, the PMU has been funded solely by the Agency with funds from the State budget, which limits its opportunities for institutional development

This year, the funding has not been defined



TRANSFORMATION ACTION PLAN

OPTIMIZING THE OPERATIONAL MODEL

- **Revise organizational structure**, enhance processes, and establish key performance indicators.
- **Implement control mechanisms** in line with EU Pillars and international standards.
- **Update internal regulations and policies**, execute legal compliance.
- Standardize the **reporting system**.
- Develop a **communication strategy**



Target: 12 months

TRANSFORMING AND REDUCING THE NUMBER OF SERVICES

- **Establish 4-6 regional services** out of 24
- **Create a standard operational model for services** structure, processes, controls, regulations, personnel, IT
- **Organize the transition of personnel** to consolidated services
- Propose **amendments to current legislation**



Target: 18 months

CENTRALIZED PROCUREMENT ORGANIZATION

- **Develop an operational model** structure, processes, controls, regulations, personnel, IT
- Set up a **separate legal entity**
- Organize **recruitment and staff development**
- Propose **amendments to digital legislation**
- Build **institutional capacity**



Target: 12-24 months

DEVELOPING AN IT STRATEGY: HUMAN RESOURCES, ASSET MANAGEMENT, AND BUDGET PLANNING

CORE IT APPLICATION SUITE

INTERNAL PORTAL

- Internal communication
- Data exchange
- Knowledge management

ERP

- Asset management
- Material management
- Human resources management
- Basic operations
- Financial and accounting cycle
- Administrative management
- Integration with other systems

ANALYTICS SYSTEM

- Data collection and integration
- Data processing and management
- Analysis of key performance indicators
- Reporting

DOCUMENT MANAGEMENT SYSTEM

- Process automation for document handling
- Electronic document circulation
- Document change history tracking

PROJECT MANAGEMENT SYSTEM

- Project planning
- Task management
- Resource management
- Time and expense tracking

ACTION PLAN

PROJECT FOR IT STRATEGY

- **Define requirements for the automation** of key process groups and data management
- **Analyze the current IT architecture** and functionality, conduct a GAP analysis
- Assess aspects of **information security and regulatory compliance**
- **Develop a digital IT architecture** and data management
- **Construct a digital operational model of IT** and data management frameworks
- **Create a roadmap** for IT strategy implementation



Target: 5 months

 Agency
for Restoration

 MINISTRY FOR
RESTORATION
Communities, Territories and
Infrastructure Development of Ukraine

 USAID
FROM THE AMERICAN PEOPLE

 UKaid

 EURASIA
FOUNDATION

#USAID_
Взаємодія

 European
Commission



THANK YOU



 EUACI

 European
Investment Bank

 THE
WORLD
BANK

 European Bank
for Reconstruction and Development

 IB Bank

OPEN
CONTRACTING
PARTNERSHIP

U LEAD
з Європою



 IOM
UN MIGRATION

 UK Export
Finance

 UNODC

 UN
DP

 Foreign, Commonwealth
& Development Office

 Infrastructure
and Projects
Authority

 JICA

 KOICA
Korea International
Cooperation Agency

 GOVERNANCE



 BRDO

 Deloitte.

 pwc

 EY

 IDLO

 CPVA

20 metų
pasiekimų darbai

 KPMG

 ESTDEV
From the people of Estonia

 RISE

 STATE
WATCH

Zaha Hadid
Architects

 miyamoto.
save lives. impact economies

 giz
Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

 Central Finance and
Contracting Agency
Republic of Latvia

 AECOM

 @egis