INVESTMENT CATALOGUE

UKRAINIAN CITIES

Ukraine 2024

RAZOM WE STAND

USAID FROM THE AMERICAN PEOPLE

I•S•E

UKRAINE-MOLDOVA AMERICAN ENTERPRISE FUND

ASSOCIATION OF COAL COMMUNITIES OF UKRAINE

In partnership with: USAID Governance and Local Accountability (HOVERLA), ISE Group, Ukraine-Moldova American Enterprise Fund, Association of Coal Communities of Ukraine and Association of Ukrainian Cities

RAZOM WE STAND

Razom We Stand is a high impact advocacy group focusing on efforts to end fossil fuelled conflicts and climate chaos, and drive the clean energy revolution in Ukraine and globally.

Razom We Stand was formed in 2022 as the response to Russian aggression and as a successor to the Stand with Ukraine campaign, which has united more than 860 organizations and groups from 60 countries to fight Russia on the energy front.

We seek to build momentum for redesigning the global economy and major financial mobilization for investments into new clean, smart and efficient energy systems based on renewables.

INTRODUCTORY REMARKS

ALEXANDER ROMANISHYN

Strategy Director, Razom We Stand

Ukrainian cities stand at the forefront of an unprecedented opportunity for transformation and growth, offering a compelling landscape for US investors. From cutting-edge renewable energy solutions to innovative smart city technologies, our urban centers are poised to become beacons of sustainable development and technological advancement in Europe. This catalog showcases the curated investment opportunities across our vibrant cities, each project representing a step towards a more sustainable, resilient, and technologically advanced Ukraine. We invite you to explore these opportunities and join us in building the cities of tomorrow, today.

MAXIM BEVZ

Team Lead on Renewable Energy Campaigns and Green Rebuilding of Ukraine, Razom We Stand

The purpose of developing this investment catalogue was to identify potential energy efficiency projects in urban infrastructure.

Given the constant missile attacks on urban infrastructure, today's situation requires the fastest possible rebuilding of the energy system of Ukrainian cities. Emergency power cuts to utilities, schools, kindergartens and other critical infrastructure facilities negatively affect the quality of services provided and exacerbate the social problems of Ukrainians in cities and towns.

The positive impact of energy efficiency measures such as photovoltaic power plants, heat pumps, decentralised energy sources and energy-efficient lighting has already been felt in many cities. However, these measures are not sufficient for further development and protection. Residents of local communities will be able to evaluate all the steps that cities will take to create investment attractiveness, energy independence and community security.

MAIA GOGOLADZE

USAID HOVERLA Activity Chief of Party

The USAID Governance and Local Accountability (HOVERLA) Activity facilitates the creation of Ukrainian local governance systems and processes that are more self-reliant, accountable to citizens, inclusive, and able to provide services. HOVERLA works with 103 communities in 12 oblasts and collaborates primarily with the Ministry for Communities, Territories and Infrastructure Development of Ukraine to progress and strengthen the decentralization reform. To address the challenges of war, HOVERLA expanded its support to assist partner communities with emergency response, continuation of service delivery, energy security, and reconstruction planning. Additionally, HOVERLA collaborates closely with communities to prepare them for implementing alternative energy projects by providing training, consultations, and assistance in adopting local regulations to establish energy management systems.

ELENA MALITSKAYA

CEO of Think Tank and Ecosystem Builder
ISE Group

The green recovery of Ukrainian cities is a pivotal step in rebuilding a resilient and sustainable future for Ukraine. I firmly believe that innovation, startups, and entrepreneurship are key drivers in this transformation. Our City Accelerator Program in Kyiv exemplifies the potential of fostering collaboration between startups and utility companies to enhance energy efficiency, promote alternative energy sources, and drive digital transformation.

IRYNA OZYMOK

Director,
Local Economic Development Program,
Ukraine-Moldova American Enterprise Fund

Cities and communities in Ukraine are on the frontlines, confronting a range of challenges—from daily Russian attacks to economic and demographic pressures. Despite these adversities, they continue to fight and remain united. However, to achieve economic growth and sustainable development, they need strong partnerships, adequate defense capabilities, and substantial investments.

Ukrainians are renowned for their hard work, entrepreneurial spirit, and commitment to quality in service, education, and innovation. We believe that foreign investment in Ukraine will not only revitalize the economy but also drive global innovation.

ANDRIY TABINSKYY

Executive Director
the Association of Coal Communities of Ukraine

Ukraine's coal-dependent communities are currently presented with a unique opportunity for transformation and sustainable development. Investing in these regions opens the door to the creation of new jobs, the advancement of clean technologies, and the stimulation of the local economy. With international support and state programs for a just transition, these communities have the potential to become hubs of innovation and serve as an example for other regions around the world. Investors who recognize this potential early will have a competitive advantage in developing projects that yield both economic and social benefits.

OKSANA PRODAN

Advisor to the Chairman
of the Association of Cities of Ukraine

All issues of economic development, reconstruction and recovery of Ukraine are implemented at the local level, in cities, settlements and villages. Ukraine's recovery, like our Victory, is possible only in partnership with the democratic world. Therefore, it is important to elaborate the necessary solutions with representatives of local governments, democratic countries and international business. The most powerful and unifying representative of all Ukrainian municipalities is the Association of Ukrainian Cities.

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PARTNERS

USAID GOVERNANCE AND LOCAL ACCOUNTABILITY (HOVERLA)

facilitates the creation of Ukrainian local governance systems and processes that are more self-reliant, accountable to citizens, inclusive, and able to provide services. HOVERLA works with 103 communities in 11 oblasts and collaborates primarily with the Ministry for Restoration to progress and strengthen the decentralization reform. To address the challenges of war, HOVERLA expanded its support to assist partner communities with emergency response, continuation of service delivery, and reconstruction planning.

HOVERLA works to enhance the economic and financial resilience of communities and build their capacity to exercise the powers envisaged by law. With Ukraine's acquisition of EU candidate status and its associated obligations, improving the quality and accessibility of municipal services and ensuring their alignment with European standards has become more important.

HOVERLA fosters citizen participation and engagement in local governance processes in Ukraine. It focuses on raising awareness, developing citizen engagement tools, and building the capacity of civil society organizations to enhance oversight activities.

UKRAINE-MOLDOVA AMERICAN ENTERPRISE FUND (UMAEF, FORMERLY WESTERN NIS ENTERPRISE FUND)

is a $285,000,000 regional fund, a pioneer in Ukraine and Moldova with over 29 years of successful experience in investing in small and medium-sized companies. UMAEF was funded by the U.S. government via the U.S. Agency for International Development (USAID). Since its inception, UMAEF's cumulative investments total over $190,000,000 to 143 companies employing 27,000 people and made it possible to unlock $2,400,000,000 for companies in Ukraine and Moldova. In 2015 UMAEF launched a $170,000,000 legacy program that is focused on direct investing and SME development, local economic development, impact investing, innovation, education and entrepreneurship, and veteran support; and in 2017 launched u.ventures, $25,000,000 investment fund for early-stage technology startups. In 2022 the U.S. government transferred $135,000,000 to UMAEF in new funding for the economic recovery of Ukraine and Moldova. In 2024 the Fund rebranded to Ukraine-Moldova American Enterprise Fund, emphasizing its dedication to Ukraine and Moldova.

ASSOCIATION OF COAL COMMUNITIES OF UKRAINE

is an organization that brings together coal communities across the country with the aim of protecting their interests and promoting sustainable development. ACCU's mission is to promote sustainable development in coal regions, improve the living conditions of local residents, and ensure their prosperity based on the principles of just transition. Among activities are: conducting educational programs and training to enhance the skills of workers in the coal industry; conducting research and analysis to identify the needs and development prospects of coal regions; collaborating with government and non-governmental organizations to implement projects aimed at community development; supporting local initiatives and projects that contribute to improving the socio-economic situation in regions.

ISE GROUP

is a Think Tank and Innovation Ecosystem Builder in the CEE region with offices in Warsaw and Kyiv. We focus on building partnerships between Corporations, Government Agencies, Universities, R&D centers and Start-ups. Our mentors come from the major ecosystems including London, Berlin, Amsterdam, Barcelona, Dublin, Palo-Alto, New-York, Kyiv and Warsaw.

Our special focus is women-led startups and the support of female entrepreneurs - 30% of our startups are run by women.

ASSOCIATION OF UKRAINIAN CITIES

is an all-Ukrainian association of local self-government bodies that represents the position and protects the interests of local self-government, and engages in dialogue with government authorities at all levels on behalf of communities. Established in 1992 on the initiative of city mayors.Member of the Council of European Municipalities and Regions. Participant in the implementation of the decentralization reform in Ukraine. As of 4 December 2023, the AUC includes 1042 territorial communities. Regional offices operate in all regions of Ukraine.

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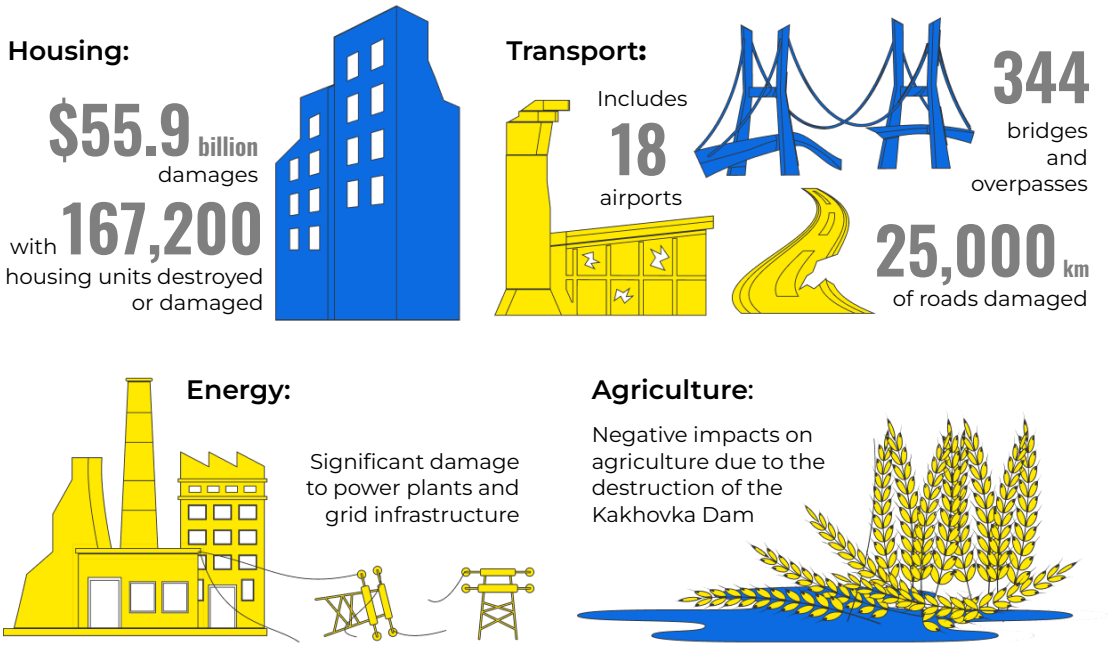
INVESTMENT POTENTIAL OF UKRAINE

According to the Third Rapid Damage and Needs Assessment (RDNA3) report for Ukraine, which covers the period from February 24, 2022 to December 31, 2023, the war has caused significant damage and economic losses:

Direct Damage

The most affected sectors are:



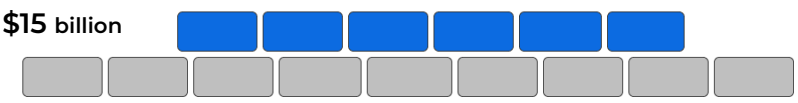
Economic Losses

Direct damage caused to Ukraine's infrastructure during the war has already reached almost **$63 billion.**
Global economic losses are about **$543 billion – 600 billion.**

Reconstruction Needs

The total cost of reconstruction and recovery in Ukraine is estimated at **$486 billion** over the next decade.

In 2024 alone, Ukraine will need around **$15 billion** for immediate reconstruction priorities, with a funding gap of **$9.5 billion**



The RDNA3 highlights the need for reforms and policies to catalyze private sector involvement, ensure an inclusive and green recovery, and integrate project planning into medium-term budget planning.

Key priorities for recovery and reconstruction based on the results of the RDNA3:

ENERGY

including the rehabilitation and repair of transmission and distribution lines, as wellas the rehabilitation and decentralisation of generating capacity, including the development of renewable energy sources and protection of the electricity grid.

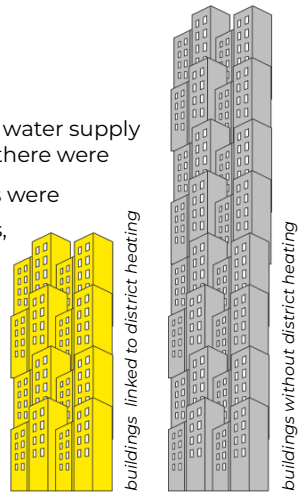
HOUSING AND UTILITIES

including routine repairs and major reconstruction of housing, as well as reconstruction and rehabilitation of district heating, energy efficiency, water supply and sewerage, and waste management services

TRANSPORT

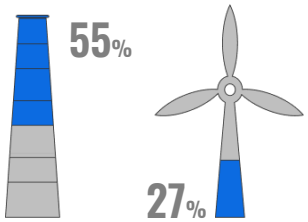
with a focus on domestic and cross-border connectivity, including the repair and reconstruction of roads, railways, bridges, ports, checkpoints and postal services.

Ukraine's energy infrastructure is facing significant difficulties, especially in its heating and water supply systems, which have been severely impacted by the ongoing conflict. Before the invasion, there were **83,590 buildings with central heating in Ukraine**, but only **41%** of residential buildings were connected to hot water supply. Currently, just **18 cities** have operational hot water systems, experiencing an overall deterioration of around **80%**. The situation is even worse in the public sector, where only **16,267** out of **39,376** budgetary buildings are linked to district heating.



The water supply and sewage systems are in critical condition, necessitating considerable investments estimated between **$20 million** and **$100 million** for each regional city with a population of up to **400 thousand**. Many water utilities continue to use outdated Soviet-era technologies, resulting in high energy consumption and water losses of up to **60%**.

Adopting modern demand-side management technologies and alternative energy sources could significantly improve these utilities' efficiency.



In light of these challenges, the Ukrainian government is actively working to foster a more attractive investment environment. In 2023, it launched its Energy Strategy until 2050, which outlines investment opportunities totaling **$383 billion** for new energy capacities. Following this, the National Energy and Climate Plan (NECP) was approved in June 2024, with goals of reducing greenhouse gas emissions by **55%** and achieving **27%** of energy consumption from renewable sources by 2030.

Recent **international agreements** have provided a boost to Ukraine's energy sector, including:

United States:
$824 million
to support energy infrastructure

Germany:
$32,9 million
to enhance the reliability of the energy system

European Union:
Initiation of solar panel supplies

World Bank:
$47 million
grant for thermal equipment in Kharkiv

Additionally, memorandums were signed with several leading companies to focus on:

- Decentralized electricity production
- Increasing the use of renewable energy sources
- Implementing energy-efficient technologies
- Developing smart grids
- Restoring hydroelectric power plants

These initiatives aim to modernize and restore Ukraine's energy infrastructure, improving its reliability and efficiency.

On February 6, 2024, the President of Ukraine enacted the Law of Ukraine 'On Amendments to Certain Legislative Acts of Ukraine to Attract Investments for the Rapid Reconstruction of Ukraine' (Law No. 3563-IX). This law serves as a continuation of the earlier Law No. 2247-IX, enacted on May 12, 2022, which simplified the process for establishing and modifying land designations for various purposes, such as relocating businesses from combat zones, providing temporary housing for internally displaced persons, and developing gas and water supply systems.

Under the new law, local governments can lease land for these purposes without needing to change the land's designated use, provided it remains within the categories outlined by the Land Code. This legislative change is intended to streamline the construction of renewable energy facilities by offering robust support through simplified regulations.

Investments Catalogue

UKRAINIAN CITIES

KYIV OBLAST

KYIV

kyivcity.gov.ua

A brief history of the city during the war

Since the start of the full-scale invasion on February 24th, 2022, the enemy has vowed to destroy Kyiv, launched dozens of missile strikes on the city, and threatened it with nuclear weapons. Yet, as you can see, the capital is still standing.

A key factor in Kyiv's survival has been its UNITY and commitment to digital transformation. Even in the midst of war, the city has continued to pioneer the use of technology to deliver essential services to its residents, fostering online services and digital inclusion so that, regardless of location, citizens can access services and contribute to the city's development. For Kyiv, every resident matters.

The Kyiv Digital App has become a lifeline, providing vital information, resources, and support to millions. From air raid alerts to bomb shelter locations and much more, the app has played a crucial role in ensuring the city's continuity of operations.

Beyond its practical applications, Kyiv's digital expertise is a testament to the city's adaptability and resilience. A strong digital infrastructure is essential for withstanding the disruptions of war, including cyberattacks, power outages, and physical damage. Kyiv's experience demonstrates the vital role that technology can play in maintaining the continuity of essential services, even in the most challenging circumstances.

Available potential - land for businesses and available human potential

Kyiv covers an area of

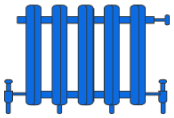
836 sq.km

Population of the city:

2,888,470 people

Briefly about the utility companies

Utility companies include companies in the field of:



heat supply

water supply and sewerage

lighting

Description of each project

INCIDENT COMMAND SYSTEM (ICS) FRAMEWORK DEVELOPMENT AND IMPLEMENTATION

Estimated Budget

$4,000,000

Objective: The objective of the Incident Command System (ICS) Framework Development and Implementation project is to establish a robust and scalable Incident Command System tailored to the specific needs of Kyiv, enhancing the city's emergency response capabilities. The ICS framework will be designed to integrate seamlessly with Kyiv's existing Situational Centre (Command and Control Center - C2), expanding its capabilities to handle a wide range of emergencies, including natural disasters, infrastructure failures, and security threats. This project will also involve international collaboration, drawing on the expertise of top emergency response professionals from the USA, EU, UK, and Australia to ensure best practices and innovative solutions are incorporated. The successful implementation of the ICS framework will significantly elevate public safety and emergency preparedness in Kyiv, serving as a scalable model for other cities in Ukraine and Europe.

KYIV SUSTAINABLE ENERGY BLUEPRINT

Estimated Budget

$3,500,000

Objective: The objective of the Kyiv Sustainable Energy Blueprint Initiative is to develop detailed strategic blueprints that will guide Kyiv's transition to carbon neutrality and sustainable energy infrastructure by 2035. The Strategic Blueprint Development is of high importance as it will outline further investment opportunities and establish rules for market players, ensuring that Kyiv attracts sustainable investments and provides clear guidelines for all stakeholders. The project will focus on creating comprehensive planning documents, including a Carbon Neutral Roadmap, an Electric Vehicle (EV) Network Plan, the SolarSafe Fields Concept, and a Municipal Buildings Retrofit Strategy. Additionally, the project will include capacity-building activities to prepare local stakeholders for developing project proposals that meet the FAST-Infra Label standards

ADVANCED INFRASTRUCTURE ASSESSMENT INITIATIVE USING MUONFLUX TECHNOLOGY

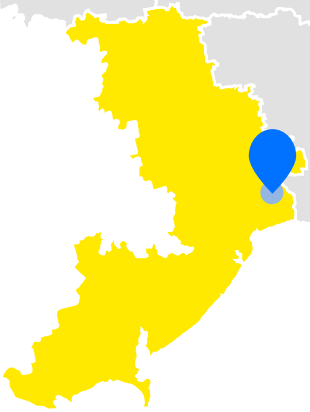
Estimated Budget

$10,000,000

Objective: The primary objective of the Advanced Infrastructure Assessment Initiative is to leverage cutting-edge muonFLUX technology to conduct non-destructive testing (NDT) and structural assessments of critical infrastructure in Kyiv, starting with the City Bridge. This initiative aims to provide highly accurate data that will enable targeted repairs, optimize renovation costs, and ensure the safety and longevity of key infrastructure. Precise assessment is crucial for protecting investment costs and ensuring effective cost management within post-war Kyiv's development. By identifying hidden structural damages and focusing on targeted interventions, the project will contribute to the long-term resilience and sustainability of Kyiv's infrastructure.

ODESA OBLAST

DOBROSLAV COMMUNITY



A brief history of the city during the war

The Dobroslav settlement territorial community was formed in 2020 in accordance with the Law of Ukraine 'On Voluntary Amalgamation of Territorial Communities'.

In cooperation with the U-LEAD with Europe program, the community developed an investment passport and investors were offered 10 vacant communal land plots (total area of 65.6 hectares), 5 vacant privately owned premises, and 8 investment projects.

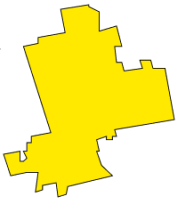
Since the first day of the full-scale war in Ukraine, Dobroslav Village Council has organised volunteer work to collect and distribute aid to the population and the military. In accordance with the Target Programme for Financing Mobilisation Preparation Measures for 2021-2025, the local budget allocated ₴74 million for the needs of the Armed Forces of Ukraine.

In order to increase the level of efficient use of fuel and energy resources in the public sector and reduce the budget expenditures of the Dobroslav territorial community for energy resources by the decision of the Dobroslav Village Council dated 22.04.2024 No. 40/2024-CP 'On the introduction of the energy management system', the Regulations on the **energy management system** were approved. The Head of the Housing and Utilities Department completed the training course 'Certified Energy Manager of the EMS' and received a certificate in energy management. Implementation of the energy management and energy monitoring system was ensured.

dobroslavsrf-gromada.gov.ua

Available potential - land for businesses and available human potential

The community covers an area of



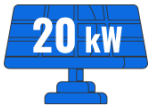
316 sq.km

Population of the community:

15,756 people

For full decentralization and energy independence of the community, the following projects should be implemented:

Installation of a solar power plants to provide power supply to the water treatment plant



Vchytelska Street, Dobroslav Village

$43,322

Hrushevskogo Street, Kremydivka village

$8,081

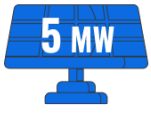
Sonyachna Street, Troyandove Village

$8,081

Central Street, Stari Shchompoly Village

$8,081

capacity

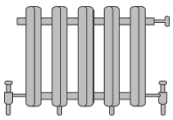


$3,200,000 (₴135,000,000)

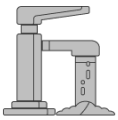
Construction of a municipal solar power plant on the territory of Dobroslav community

Briefly about the utility companies

Utility companies include companies in the field of:



heat supply
(no projects related to the heat and power sector have been developed)



water supply and sewerage

lighting

Description of each project and required investments (USD), including payback period

The most **important for the community is the implementation of water supply and sewerage projects**, including

Overhaul of artesian well and installation of a water tower
Agrarnaya Street, Dobroslav Village
$69,555

Overhaul of water supply system
Kyivska Street, Dobroslav Village
$29,603

Overhaul of artesian well and installation of water tower
28th Brigade Heroes Street, Dobroslav Village
$75,091

Overhaul of artesian well
Stepova Street, Dobroslav Village
$39,712

Overhaul of water supply networks
Zelena Street, Stavky Village
$35,379

Installation of a water tower
Zelena Street, Stavky Village
$28,881

The high level of deterioration of structures and networks leads to frequent accidents, significant water and energy consumption, and destabilises the water supply of settlements. Implementation of projects to develop water supply systems in settlements will restore/improve centralised water supply and provide drinking water to about **6,000 community residents**.

IN THE FIELD OF LIGHTING

Modernisation of street lighting systems, installation of LED, energy-saving LED lamps for street lighting
Tsentralna Street, Dobroslav Village
$45,665.13
(replacement of power lines, equipment of facilities using energy and resource-saving technologies)

Modernisation of street lighting systems, installation of LED, energy-saving LED lamps for street lighting
Zakhystnykiv Mariupol Street, Dobroslav Village
$39,349.74

The implementation of the complex of measures will reduce budget expenditures for energy resources consumed.

KHARKIV OBLAST

KRASNOKUTSK COMMUNITY

A brief history of the city during the war

The Krasnokutsk community is one of the territorial communities of Ukraine that became a real refuge for many affected citizens during the full-scale invasion of Russia. Despite the relative proximity to the border with the aggressor country, the population of our community has increased by almost 75% due to the constant arrival of internally displaced persons. This has led to a significant increase in the demand for housing and the satisfaction of vital human needs.

As of August 2024, there are about **20,000 IDPs** in the Krasnokutsk region, who, along with 27,000 local residents, also actively use public utilities. This has increased the burden on all areas of the community. The water supply and sewerage systems are no exception. Due to power outages caused by missile attacks on energy infrastructure, pumping equipment is constantly out of order and the water supply and sewerage system is generally unbalanced. As a result, almost 50,000 people have been left without access to clean drinking water for a long time. And stagnation of sewage in the sewerage system leads to environmental pollution, which negatively affects the region's ecology. To prevent the existing problems, a large number of infrastructure projects need to be implemented.

For **full decentralization and energy independence** of the community, the following installations of cogeneration plants should be implemented:

Krasnokutsk Lyceum No. 1

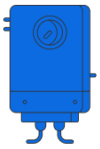
Capacity **45** kW

$55,000

Central District Hospital and Primary Healthcare Centre

Capacity **45** kW

$90,000



Transition from gas to solid fuel boiler houses

Koziyivka and Murafsk lyceums

$50,000

krkut.gov.ua

Available potential - land for businesses and available human potential

The community covers an area of

1,039.4 sq.km

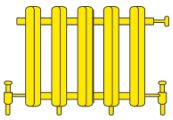
Population of the community:

46,500 people

The **energy management system** on the territory of the Krasnokutsk settlement territorial community of the Bohodukhiv district of Kharkiv region was adopted by the decision of the XXXIX session of the VIII convocation on 25 December 2023.

Briefly about the utility companies

Utility companies include companies in the field of:



heat supply
(no projects related to the heat and power sector have been developed)

water supply and sewerage

lighting

Description of each project and required investments (USD), including payback period

Reconstruction of the water supply and sewerage system in the Krasnokutsk community of Kharkiv region

The aim of the project is to provide comfortable living conditions and meet the vital needs of the local population, including internally displaced persons, through the comprehensive reconstruction of critical infrastructure facilities, namely the water supply and sewage system in the Krasnokutsk community.

Estimated budget

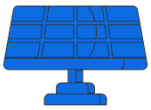
$25,000,000

Project objectives:

- Bringing the system of purification and supply of drinking water to consumers in the Krasnokutsk community to national and international standards;
- Eliminate accidents and reduce drinking water losses in water supply networks;
- Improving the quality of centralised water supply and sewerage services for consumers;
- Improving the reliability of water supply and sewerage systems in the Krasnokutsk community;
- Improving the technical condition of water supply and wastewater facilities through the use of modern energy-efficient technological solutions;
- Ensuring a high level of environmental safety and reducing the negative impact of wastewater on the environment.

Payback period

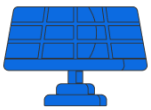
3-5 years



Modernisation of street lighting in settlements by replacing the existing lighting system with modern autonomous LED lamps on solar panels of the AN100 / 300 Ah series.

Estimated budget **$350,000**

Payback period **7-10 years**

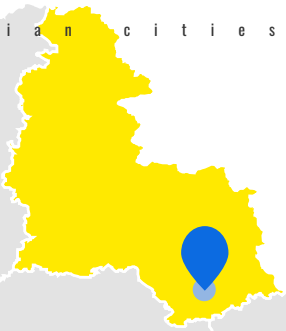


Energy efficiency of educational institutions located in the hromada, including **14 lyceums** and **9 pre-schools**. Among them, there are **5 hub** institutions that need energy modernisation by installing solar power plants with energy saving.

Currently, the amount of investment required is **$670,000**

SUMY OBLAST

TROSTYANETS COMMUNITY



A brief history of the city during the war

Trostyanets is a city in the south of Sumy region, a cultural and tourist centre of the region with huge tourism, historical and cultural potential.

Trostyanets is one of the cities in Ukraine that, before the full-scale military aggression, had been showing positive dynamics in its development.The city was a constant generator of innovative ideas in the area of small town development, promotion of democracy and European governance.

Unfortunately, the military aggression of the Russian Federation has made harsh adjustments to the life of the whole of Ukraine.

The city of Trostyanets is 35 kilometres from the Russian border. That is why our city was occupied from the first days of the war and became the main headquarters of one of the armies of the Russian Federation during the 31 days of occupation, which caused significant damage to the city. Our city is the most affected settlement in the Sumy region. All this time, the Russian invaders were looting businesses and institutions, destroying and damaging critical infrastructure.

A significant part of the city's infrastructure was destroyed by the Russian occupiers: the bus station was completely destroyed, the railway station was heavily damaged, and the city's leading enterprises and institutions, hospital, schools, and municipal infrastructure were damaged.

There were **1,322 private residential buildings** and apartments in various stages of destruction, of which **12 private houses** were completely destroyed and **1,090** were damaged, **120 apartments** in **5 high-rise buildings** were completely destroyed and 100 were damaged. Famous architectural monuments of national and local importance were destroyed and damaged in the city. Almost fifty shops and pharmacies were destroyed and looted. People were on the verge of a humanitarian catastrophe, with no access to food, medicine and basic necessities.

But despite all the horrors of the occupation, the Trostyanets urban territorial community has survived and is taking confident steps to restore its territory every day.

The **estimated cost of investment for full decentralisation and energy independence** of the community is **$184,841,68.26** million according to the calculations of CES Clean energy solutions (Austria) and iC consulenten Ukraine (Ukraine).

The Trostyanets City Council has an energy **management specialist**, which is a structural unit of the Economic Development, Investment Attraction and International Activities Department of the Trostyanets City Council.

trostyanec-gromada.gov.ua

Available potential - land for businesses and available human potential

The community covers an area of

78,865.85 hectares

In 2014, an industrial park was created in Trostyanets on land plots with a total area of

39.95 hectares

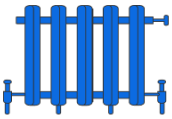
The city has 6 green field land plots for industrial use.

Population of the community:

26,880 people

Briefly about the utility companies

Utility companies include companies in the field of:



heat supply

water supply and sewerage

lighting

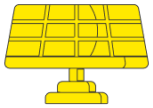
landscaping

public transportation

waste management

Description of each project and required investments (USD), including payback period

IN THE FIELD OF HEAT AND POWER ENGINEERING



Large solar thermal system for heat supply with seasonal accumulation

Required area (collectors + water storage) **7.4** ha

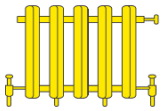
Generation of thermal energy from solar installation **14,451** MWh/year

Volume of long-term water storage in the storage facility **138,509** m^3

Electricity demand for the solar plant **1,897** MWh/year

Capital expenditures, contingencies and consulting **$32,822,001**

Estimated payback period **10** years



Boiler house for heat supply needs

Required area (sustainable forestry for biomass) **682** ha

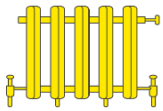
Required area for installation **1.5** ha

Biomass fuel demand **5,995** tonnes/year

Heat generation by the boiler **14,451** MWh/year

Capital expenditures, contingencies and consulting **$16,102,802**

Estimated payback period **10** years



Biogas cogeneration plant

Required area (biogas plant) **1.3** ha

Required reactor volume **28,000** m^3

Electricity supply **10,185** MWh/year

Capital expenditures, contingencies and consulting **$23,555,591**

Required organic input substrate **97,040** tonnes/year

Heat supply **14.454** MWh/year

Biogas production **6,618,132** m^3/year

Estimated payback period **15** years

IN THE FIELD OF WATER SUPPLY AND SEWERAGE:

Construction of an artesian well

Akademika Pogrebnyaka Street, Trostyanets City

Estimated budget **$350,000**

The proposed project includes a full range of works to be carried out for the construction of a deep-water well with a pumping station. The technical part of the project envisages providing water supply to the western part of Trostyanets, which is currently carried out using only one 110 m deep water intake well.

Construction of a water supply system

Western part of Trostyanets City

Estimated budget **$192,680**

The project envisages the construction of the second stage of the **4.650 km** long water supply system in **8 streets** of Trostyanets, Sumy Oblast. **559 residents** will be able to receive quality water supply services.

Construction of a water supply system

Southern part of Trostyanets City

Estimated budget **$290,243**

The project envisages the construction of the 1st stage of the water supply system with a length of **6.986 km** along **9 streets** in Trostyanets. The projected water supply network will be looped at four points, which will allow water to accumulate at the expense of other water intakes in case of water shortage.

Reconstruction of sewage treatment facilities

Bohdana Khmelnytskoho Street, Trostyanets City

Estimated budget **$3,800,000**

The majority of Trostyanets' wastewater treatment facilities were designed, built and equipped between the 1960s and 1980s. Thus, the average age of the wastewater system and equipment is **50 years**. Since its inception, the wastewater treatment plant has undergone only routine maintenance without any major reconstruction.

IN THE FIELD OF LIGHTING:

Replacement and modernisation of electrical cabinets **45 pieces**

Installation of a dispatching system **1 pieces**

Replacement of lighting fixtures (including works) **5,563 pieces**

Laying of street lighting cables **80 km**

Replacement of lighting poles **20 pieces**

Total cost **$2,900,000**

Projects for the installation of solar power plants for community schools, kindergartens and hospital:

45 kW The Secondary School No. 3 **$67,500**

50 kW The Secondary School No. 5 **$75,000**

45 kW The Secondary School No. 2 **$67,500**

35 kW The kindergarten “Kazka” **$52,500**

30 kW The kindergarten “Kalynka” **$45,000**

105 kW The Trostyanets City Hospital **$157,500**

30 kW The kindergarten “Romashka” **$45,000**

Total cost **$510,000,000**

LVIV OBLAST

ZHOVKVA COMMUNITY

zhovkva-rada.gov.ua

A brief history of the city during the war

Since the beginning of the full-scale war, the city has become one of the largest humanitarian hubs in Western Ukraine. Aid arrived here from all over the world and was sent to all combat units of the Ukrainian Armed Forces and frontline/ frontline areas.Our city has also become a second home for 4,150 IDPs. We also became leaders in international cooperation and twin cities.We formed the Lviv agglomeration and became a reliable partner within it.

Today, Zhovkva community is a place where people want to live, work, and make changes.We adopted the Community Development Strategy and the Community Investment Passport. We have established the IDP Council and the Council of Entrepreneurs.

The **energy management system** has been implemented in the city since 2016. The city council has an energy manager in charge of this area. Were winners of the Covenant of Mayors project, which provided **₴1** million for a thermal modernisation project and the conversion of the boiler house from gas to solid fuel.

For **full decentralisation and energy** independence of the community should be installed cogeneration stations - there are appropriate land plots with the necessary characteristics.

Available potential - land for businesses and available human potential

The community covers an area of

454.4 sq.km

The territory is home to large enterprises with Italian, Estonian and Polish investments, which export their products to the EU, the US and Canada. We are currently designing land plots of **60 hectares and 30 hectares** for industry in good locations, with communications, existing infrastructure, and a railway/euro gauge. These plots can be used for industrial parks or individual production facilities. We are already actively negotiating with Polish and German companies on some of them, and we have had some success - a memorandum of understanding has been signed with the Polish pharmaceutical company Biofarm.

Population of the community:

35,000 people

Briefly about the utility companies

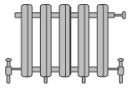
Utility companies include companies in the field of:

heat supply
('Zhovkvateploenergo')

water supply and sewerage
('Zhovkva Production Department of Water Supply and Sewerage')

lighting

In 2023, consumed:



Heat and power

Electricity: **405,500** kW

Gas: **1,309,550** m^3

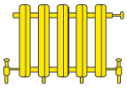
Alternative sources: **1,109** tonnes

Water utility

Electricity: **385,000** kW

Description of each project and required investments (USD), including payback period

IN THE FIELD OF HEAT AND POWER ENGINEERING

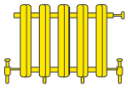


Conversion of a boiler house from gas to solid fuel

We have three boiler houses in the city, two of which have been fully converted from gas to solid fuel.

Estimated cost **$300,000**

Payback period **8** years



Installation of heat pumps

We plan to install heat pumps in **18 schools** and **15 kindergartens**.

Estimated cost **$2,000,000**

Payback period **6** years

IN THE FIELD OF WATER SUPPLY AND SEWERAGE

Construction of the second branch of the water supply system (from the water intake to the city)

Estimated cost **$500,000**

Payback period **3** years

Reconstruction and modernisation of the Zhovkva wastewater treatment plant

Estimated cost **$3,500,000**

Payback period **7** years

Installation of a water pumping station for the needs of the Vodokanal **$54,777.64**

20.22 tonnes per year and energy savings consumption of **39.64 MWh**.

IN THE FIELD OF LIGHTING

Comprehensive replacement of outdated lighting systems in the streets of the city and villages

Estimated cost **$1,500,000** Payback period **10** years

ZHYTOMYR OBLAST

ZHYTOMYR

A brief history of the city during the war

The U-LEAD with Europe Programme has a regional office in Zhytomyr Oblast, which provides support for implementing reforms. The programme promotes the creation of a transparent, accountable, and effective local governance system in Ukraine.

In 2023, the Zhytomyr City Council began developing the Environmental Strategy of the Zhytomyr City Territorial Community until 2030+ with financial support from the governments of Germany and Switzerland. The strategy will cover the areas of air, water and land protection, green building, climate change adaptation and waste management.

Since the beginning of the war, under the Business Relocation Programme, 7 companies have been relocated or partially relocated from areas close to or in the combat zone to Zhytomyr Oblast, including SUN-LED LLC, a company producing electric lighting equipment, and UNITLAB LLC, a company producing 3D printers. Its facilities were moved from Kramatorsk, Donetsk Oblast, to Zhytomyr.

zt-rada.gov.ua

Available potential - land for businesses and available human potential

The city covers an area of

65 sq.km

Population of the city:

261,600 people

Briefly about the utility companies

Utility companies include companies in the field of:

heat supply
(Zhytomyr-teplokomunenergo)

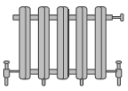
water supply and sewerage
(Zhytomyrvodokanal)

lighting

Utility company in the field of water supply (Zhytomyrvodokanal) serves about **250,500** people (**105,000** subscribers)

Some of the pumping equipment has traces of constant repairs, vibration of the casing, significant wear of the impellers and other parts of the pumps, as well as low efficiency and inefficient hydraulic performance. The energy efficiency measures implemented include the replacement of worn-out obsolete pumping equipment, installation of a control cabinet, installation of flow meters, replacement of worn-out steel pipes, installation of modern energy-efficient pumping equipment and replacement of pipelines with polyethylene and polypropylene pipelines with the installation of new shut-off and control valves.

In 2016-2023, the Company replaced equipment at the GCS, the second lift station, the first lift station, and partially at the CNS and the CPS.



Utility company in the field of heat supply (Zhytomyrteplokomunenergo) in 2023 consumed:

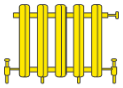
Electricity **15,863,968** kW Gas **51,721,142** m^3

The company is constantly implementing investment projects to maintain the existing heat supply system with its fundamental technical re-equipment, modernisation and improvement based on the principle of economic feasibility and energy efficiency.

The main goal is to reduce energy costs in the city's heat supply sector and, accordingly, to reduce emissions of air pollutants (CO_2, NOx, etc.) and diversify energy sources.

Description of each project and required investments (USD), including payback period

IN THE FIELD OF HEAT AND POWER ENGINEERING



Construction of a combined heat and power plant

New construction of a CHP plant operating on solid renewable fuel (SRF) with an admixture of wood chips, with an electric capacity of **9.9 to 13.1 MW** and heat production from **0 to 22 MW**

at the address: Zhytomyr

Total cost **$73,751.28 (₴3,044,554)** Payback period **7.2** years

The purpose of the CHPP is combined heat and power generation.

IN THE FIELD OF WATER SUPPLY AND SEWERAGE

Reconstruction of water treatment facilities

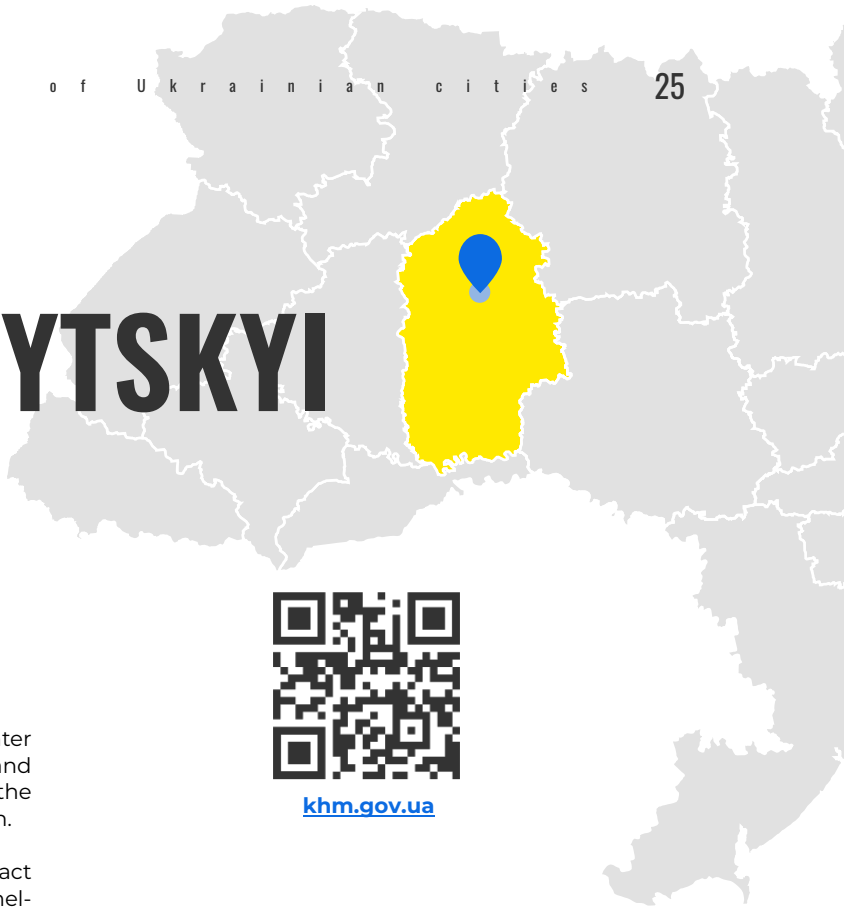
The city is supplied with water from the Otsechne reservoir, which was built in 1965. During its operation, significant silt and sediment deposits have accumulated in the reservoir bed. The shallow water areas of the reservoir are heavily overgrown with reeds.

The situation is further complicated by the several-fold increase in manganese content in water from **0.3 mg/l to 4.0 mg/l**. The problem is that the water treatment plant, which was designed in the 60s of the last century and completed in the 80s, is designed to treat river water of the quality that existed at that time.

Total cost

$9,200,000

(₴380,000,000)



KHMELNYTSKYI OBLAST

KHMELNYTSKYI

A brief history of the city during the war

The city of Khmelnytskyi is the administrative center of the Khmelnytskyi city territorial community and Khmelnytskyi region and, at the same time, the largest economic and cultural center of the region.

The full-scale invasion has had a significant impact on the socio-economic situation in the Khmelnytskyi city community, which has become a refuge for thousands of internally displaced persons. Based on the official information of the Verkhovna Rada of Ukraine, Khmelnytskyi region is one of the regions that has received the largest number of internally displaced persons.As of 2024, more than **35,000 IDPs** live in the community. This has significantly increased the burden on the entire infrastructure of the Khmelnytskyi City Territorial Community.

Given the difficult situation in Ukraine's energy system, the Khmelnytskyi City Territorial Community's current priorities are projects related to energy efficiency and energy independence.

khm.gov.ua

Available potential - land for businesses and available human potential

The city covers an area of

90 sq.km

Population of the city:

266,000 people

Briefly about the utility companies

Utility companies include companies in the field of:

heat supply
(Khmelnytsk teplokomunenergo)

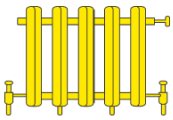
water supply and sewerage
(Khmelnytskvodokanal)

lighting
(Misksvitlo)

Utility company in the field of heat supply (Khmelnytskeplokomunenergo) constantly upgrades networks and equipment, replacing and upgrading it with modern energy-efficient equipment.

Utility company in the field of water supply and sewerage (Khmelnytskvodokanal) raised NEFCO loan and grant funds to finance the investment project 'Improving the energy efficiency of water supply and water treatment systems: Reconstruction of Sewage Pumping Stations No. 2, 7, 12 in Khmelnytskyi' in the amount of **$1,205,108.17**. The implementation period is **2021-2024**.

Description of each project and required investments (USD), including payback period



Energy island: Building energy-independent clusters based on a district heating system

Prerequisites:

- City and company experience not only in heat supply but also in electricity supply;
- Integration of heat networks and experience in electricity transmission between boiler houses;
- Saved hot water supply and year-round demand for both heat and electricity;
- Developed heat supply scheme.

Project: boiler houses (large and medium capacity), district heating plants (providing heating) and WPS and SPS (Vodokanal facilities) are connected into one network - ensuring resilience and independence during attacks on energy infrastructure and protection against blackouts in the city power grid

In terms of heat, the island has actually been created. It is necessary to create an electricity island:

2 scenarios are considered:

1. Connection to existing networks

Amount of investment:

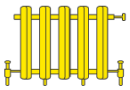
underway

2. construction of entirely new lines

Amount of investment:

$7,000,000

Scenario 2 is a priority, as it ensures reliability, quality of the system as a whole, and the payback and efficiency of other projects to be implemented in the city.



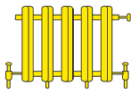
Biofuel/RDF Cogeneration
(CHP on RDF)

Project parameters:

Capital investment	$24,500,000		
Electric power	3.5 MWh	Annual cost savings	$3,000,000
Heat capacity	11 MWh	Payback period	8.2 years

Impact on the city:

- Increased energy security of the city;
- Recycling of waste (RDF) from the waste processing plant under construction;
- Reducing the city's dependence on gas.



Construction of a heat pump on wastewater and integration into the heat supply and hot water system

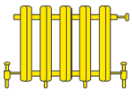
Zarichanska street

Project parameters:

Thermal capacity	1 MWh	Capital investment	$1,200,000
Payback period	8 years	Annual cost savings	$150,000

Impact on the city:

- Transition to clean energy;
- Maximum use of electricity generated from own sources and at a lower cost than on the market;
- Reducing the city's dependence on gas.



Construction of a heat pump on wastewater and integration into the heat supply system

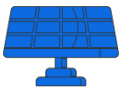
180 Chornovola Street

Project parameters:

Thermal capacity	0.5 MWh	Capital investment	$600,000
Payback period	6.7 years	Annual cost savings	$90,000

Impact on the city:

- Transition to clean energy;
- Maximum use of electricity generated from own sources and at a lower cost than on the market;
- Reducing the city's dependence on gas
- Reduction of heat loss in the networks to which consumers are connected



Solar power plant with a storage system on a site near the boiler house

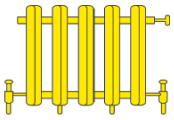
Mayborsky Street

Project parameters:

Power plant capacity	1 MWh	Capital investment	$900,000
Payback period	6 years	Annual cost savings	$150,000

Impact on the heat supply system:

- The main source for heat pumps, which will allow to provide hot water supply with clean energy in summer.



Comprehensive thermal modernisation of public sector facilities (buildings of schools, kindergartens, hospitals and other public institutions in the city)

Prerequisites:

Most of the city's public buildings do not meet modern energy efficiency requirements (are in poor condition), primarily school and pre-school educational institutions, healthcare, cultural and sports facilities.

The project envisages comprehensive thermal modernisation of public buildings in the city (insulation of external enclosing structures (walls, facades, roofs), replacement of entrance windows and doors, modernisation of heating systems (with installation of IHS and transition to a 2-pipe system), modernisation of ventilation systems (installation of energy-efficient ventilation systems with recovery)). The planned measures will reduce energy consumption by approximately 50%. It is planned to carry out comprehensive thermal modernisation of about 150 buildings. The programme will cover all existing facilities in the city.

Impact: reduction of CO_2 emissions, reduction of energy consumption (electricity and heat) by 50%, improvement of the quality of people's stay in the premises of the facilities.

Capital investment

approx. **$200,000,000**

MYKOLAIV OBLAST

MYKOLAIV

A brief history of the city during the war

The scale of destruction in the region over the past 2.5 years is enormous. As a result of hostilities, 2044 housing facilities have been damaged or destroyed, including 974 multi-storey and 1070 individual residential buildings. More than 45% of the city's social infrastructure is destroyed or damaged, as well as 44% of the population's life support infrastructure facilities. According to the research of Kyiv School of Economy the monetary losses of damaged objects are **$950,619,000**. If we talk about housing and communal services, we are talking about 2,848 facilities. These include electrical substations, heat supply and gas supply. In the Mykolaiv region, **27** out of **52 communities** are now directly covered by international cooperation. During the time of the Russian invasion, Mykolaiv has signed partnerships with twenty European cities. Moreover, the city has signed a partnership with the Kingdom of Denmark which takes the patronage over the city's recovery. All the partners support Mykolaiv and send to the city different humanitarian aid.

Mykolaiv has a wide range of industrial sectors, including logistics, machine building, food industry, IT. 'Mykolaiv is an excellent candidate for industrial development and innovation, as it has over 200 years of shipbuilding history, excellent ship-building engineers, and all the necessary technologies to develop a smart city.

mkrada.gov.ua

Available potential - land for businesses and available human potential

The city covers an area of

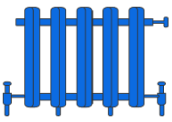
259.8 sq.km

Population of the city:

432,200 people

Briefly about the utility companies

Utility companies include companies in the field of:



heat supply
(Mykolaivoblteploenergo in 2023 launched cogeneration units with a total capacity of **5.5 MW** at three facilities. Mykolaivoblenergo has **4 plots** for solar power plants with a total area of **31.7 hectares**)

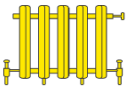
water supply and sewerage
(Mykolaivvodokanal)

lighting
(Hosprozrakhunkova dil'nytsya mekhanizatsiyi budivnytstva)

Description of each project and required investments (USD), including payback period

IN THE FIELD OF HEAT SUPPLY

$86,200,000 (₴3,600,000,000) of initial investment is required to upgrade the main equipment that was destroyed.

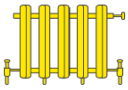


Construction of a block-modular boiler house

Thermal capacity **4 MW**

Estimated cost

$981,072 (₴40,500,000)

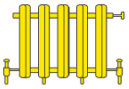


Construction of a block-modular boiler house

Thermal capacity **7 MW**

Estimated cost

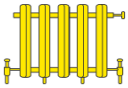
$981,072 (₴40,500,000)



Installation of cogeneration units at the facilities of Mykolaivoblteploenergo

Estimated cost

$35,223.77 (₴1,400,000)



Purchase of 5 block-modular gas boilers

Thermal capacity **14 MW**

Estimated cost

$347,762.18 (₴14,375,000)

IN THE FIELD OF OF WATER SUPPLY

New WTP. Restoration of drinking water supply system. Sustainable drinking water supply. Decrease of NRW. Improvement of the quality of the drinking water

Estimated cost

$126,000,000 (₴5,222,700,000)

New water intake. Alternative source of the raw water. Safety of the water supply system for the city

Estimated cost

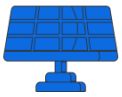
$120,000,000 (₴4,980,000,000)

Restoration of Zhovtneve Reservour. Collect and preserve water for further supply. Added purification of raw water

Estimated cost

$58,400,000 (₴2,420,680,000)

IN THE FIELD OF LIGHTING

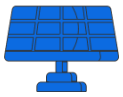


New construction of three solar power plants

Capacity **9.9 MW**

Estimated cost

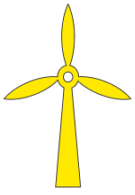
$8,550,000 (₴352,000,000)



Installation of solar panels on the roofs of central heating stations of 34 facilities

Estimated cost

$987,039.78 (₴40,800,000)



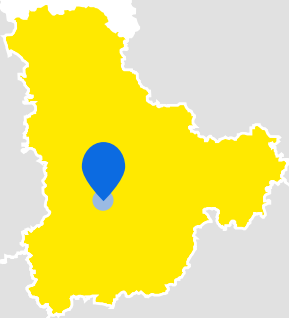
New construction of a wind power plant by the Mykolaivoblteploenergo

Capacity **12 MW**

Estimated cost **$19,500,000 (₴804,200,000)**

KYIV OBLAST

VASYLKIV COMMUNITY



A brief history of the city during the war

Vasylkiv community has become one of the symbols of Kyiv region's resilience during the full-scale Russian invasion. This small community, located 30 kilometers south of the capital, found itself in the path of Russian forces attempting to encircle Kyiv. A military airfield located within the community's territory was a strategic target for the Russians.Vasylkiv defenders inflicted significant losses on the Russian occupiers. Thanks to their actions, the enemy failed to capture the city. The defense of Vasylkiv played a crucial role in the overall defense of Kyiv and forced Russian troops to change their plans.

Vasylkiv Community actively develops cooperation with international partners, which contributes to the rapid recovery and development of the community after the difficult trials of war.

Our friends and partners are located in Poland, Lithuania, Georgia, and since 2024, in Sweden (Sundbyberg) and Estonia (Tartu Municipality). Together with international organizations such as USAID, U-LEAD, UNICEF, IOM, and UNHCR, we are implementing a number of important social projects.

Among our joint achievements is improving energy efficiency through implementing projects to insulate and modernize social institutions and residential buildings to reduce energy consumption and save residents' money.

vasylkivrada.gov.ua

Available potential - land for businesses and available human potential

The community covers an area of

356.97 sq.km

Population of the community:

50,000 people

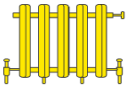
(**45,864** local residents and **3,917** internally displaced persons)

Briefly about the utility companies

Utility companies are presented by Municipal enterprise ‘Combine of municipal enterprises of Vasylkiv’. The company has implemented the following energy efficiency projects - replacement of street lighting with LED lights and lamps. Energy-efficient pumps were also installed at the wells.

Description of each project and required investments (USD), including payback period

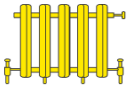
IN THE FIELD OF HEAT SUPPLY



Installation of 13 new Colvi boilers at 10 boiler houses

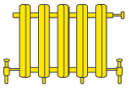
$484,480 (₴20,000,000)

Projects for installation at **8 (11 boilers)** boiler houses have already been developed, estimated at **₴13,000,000**



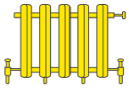
Installing 5 cogeneration units with a capacity of 1 mW each is being considered (The projects have not been developed yet)

$6,000,000 (₴246,000,000)



Installation of commercial metering units

$193,792 (₴8,000,000)



Restoration of 4 boiler houses damaged during the shelling in 2022

$605,600 (₴25,000,000)

IN THE FIELD OF WATER SUPPLY AND SEWAGE

Construction of a pressure collector (water supply system)

Kashtanova (Traktorna)-Soborna Street, Part II in Vasylkiv, Vasylkiv District

Correction. The project includes the construction of a pumping station of the second part and an iron removal station.

The implementation of the Project will be a significant progressive step in the development of the water supply system in Vasylkiv, and will improve the quality of these services for consumers. The capacity of the water supply system is **250 m³/hour**

Estimated cost

$2,500,000 (₴104,000,000)

Construction of clean water reservoirs 2*3,000 m³

Territory of the site of the Municipal Enterprise 'Combine of municipal enterprises of Vasylkiv on Soborna Street in Vasylkiv, Obukhiv distric

Clean water reservoirs are one of the main structures in the water supply system, which guarantee the preservation of water reserves and ensure its uniform supply to consumers in the required quantity throughout the day, as well as are intended to preserve water reserves for firefighting needs. In view of the above, the problem of providing the population with quality drinking water is a pressing issue.

Estimated cost

$3,900,000 (₴160,000,000)

Increase of capacities 'Reconstruction of the water supply system using the latest technologies and installation of equipment for purification and deironing of drinking water at the sites of water intake wells

Estimated cost

$1,900,000 (₴75,000,000)

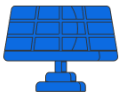
Installation of commercial metering water meters

Estimated cost

$143,450 (₴7,200,000)

IN THE FIELD OF LIGHTING

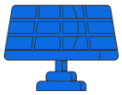
Construction of a roof solar power plant (SPP) for the needs of:



The critical infrastructure facility of the municipal enterprise "Combine of municipal enterprises of the city of Vasylkiv"

Gogol street 32, Vasylkiv City

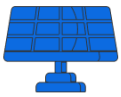
$98,860 (₴4,070,070)



A modular town of internally displaced persons (for 352 people)

Volodymirska street 156 D, Vasylkiv City

$490,992 (₴20,213,810)



Construction of a roof solar power plant (SPP) for its own needs
on the roofs of the administrative building of the "Point of Invincibility"

Pokrovska street 4, Vasylkiv City

$50,990 (₴2,099,213)

Performance of works for replacement of old lamps with new LED ones, replacement of existing wire with SIW (self-supporting insulated wire), replacement of metal brackets, replacement of mains supports, arrangement of protective grounding circuits, installation of external lighting accounting and remote control system, disposal of dismantled lamps for overhaul of street lighting networks and the city of Vasilkov.

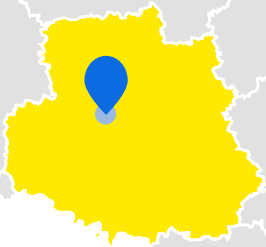
Estimated cost

$648,000 (₴26,677,692)

There are potentially **14 schools** and **11 kindergartens** to install hybrid solar stations and next for providing microgrids.

VINNYTSIA OBLAST

VINNYTSIA



A brief history of the city during the war

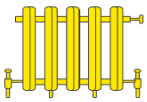
In 2011, the Concept of Energy Management System Implementation in Vinnytsia was approved, which is coordinated by the Energy Management and Barrier-Free Division, which is part of the City Council's Department of Recovery and Development.

The main function of the energy management system is to exercise the powers of the executive bodies of Vinnytsia City Council in the field of energy efficiency and energy saving and to help increase the energy independence of the Vinnytsia City Territorial Community.

In October 2023, the construction of a rooftop solar power plant was completed at the tram depot of KP VTK for its own electricity consumption with a total area of **1,150 m²**.

In June 2023, the Programme for the Construction of Solar Power Plants for Self-Consumption of Electricity by Communal Property Objects of Vinnytsia City Council for 2023-2027 was approved. As part of this programme, the company has already completed the installation of rooftop solar power plants at three medical facilities.

The amount of investment needed for decentralised energy supply in the city:



Vinnytsia City Heat and Power

$38,700,000 (₴1,600,000,000)

Vinnytsiaoblvodokana

$4,400,000 (₴180,000,000)

City Lightening

$708,363.86 (₴29,000,000)

vmr.gov.ua

Available potential - land for businesses and available human potential

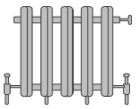
The city covers an area of

113.2 sq.km

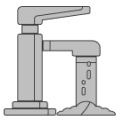
Population of the city:

370,700 people

Briefly about the utility companies



in the field of heat supply (Vinnytsia City Heating and Power Company). Company implemented a huge number of projects on the reconstruction of heat supply systems in compliance with the fundamental principles of modernisation and reconstruction of heat and power equipment at boiler houses

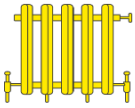


in the field of water supply and sewerage (Vinnytsiaoblvodokanal). No implemented energy efficiency measures. In 2023 conducted an energy audit.

in the field of lighting (Misksvitlo). Dozens of energy efficiency measures: replaced **920 sodium lamps** with LED lamps and **25 km** of cable networks (NEFCO programme). (2019-2021) Implemented a project to modernise the monitoring and management system for the city's street lighting facilities. In 2023, **7,000 outdated lamps** were replaced with modern LED lamps, and energy savings increased by more than **50%**.

Description of each project and required investments (USD), including payback period

IN THE FIELD OF HEAT SUPPLY

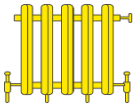


Construction of a 3 MW boiler house using alternative fuel (biomass)

According to the Heat Supply Scheme of Vinnytsia by 2030, there is a need to build a **3 MW** boiler house using alternative fuel with the reconstruction of the neighbourhood (replacement of **2 km** of heating networks in two-pipe calculation and installation of **56 IHS**)

Estimated cost

$3,900,000



Construction of a 4 MW boiler house using alternative fuel (biomass)

With the reconstruction of the neighbourhood (replacement of 1 km of heating networks in two-pipe calculation and installation of **20 IHS**.

Estimated cost

$4,500,000

Installation of 4 MW solar panels in Vinnytsia.

To provide alternative renewable electricity to the main and auxiliary equipment at boiler houses and district heating plants. It is planned to install solar panels at 57 facilities of the enterprise with a total area of **23,400 m²** and a total capacity of **4 MW**.

Estimated cost

$4,100,000

IN THE FIELD OF WATER SUPPLY AND SEWAGE

Construction of a new water treatment plant

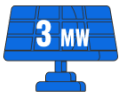
Estimated cost **$40,000,000**

Construction **36-48 month**

Reconstruction of sewage treatment facilities with heat recovery for the district heating system of Vinnytsia

Estimated cost

$24,000,000



Construction of solar power plants

At water and sewerage facilities with a total electrical capacity of **3 MW** - the implementation of this project will reduce electricity consumption and ensure the sustainability of the facilities.

Installation of 3 frequency converters and partial reconstruction of the electrical par

At the water treatment and water supply pumping stations to ensure their operation from cogeneration units via cable lines of Vinnytsia City Heating Company during blackouts.

Installation of a block-modular pumping station with a water treatment system

R. Skaletskoho Street, Vinnytsia City

Implementation of technical solutions for water purification in Vinnytsia with a total filtration volume of **120 m³**

Estimated cost **$470,100**

IN THE FIELD OF LIGHTING

Replacement of sodium lamps with LED lamps

The implementation of this project will reduce electricity consumption.

5,000 units

Installation of 30 solar panels on pedestrian crossings

After the replacement of the lamps, electricity consumption will be reduced by 50% (in terms of the specified number of lamps).

Payback period **2-3 years**

Two solar power plants are planned to be installed on the buildings of Vinnytsia City Clinical Hospital No. 1 by the end of 2024.

VOLYN' OBLAST

NOVOVOLYNSK

nov-rada.gov.ua

A brief history of the city during the war

Since the beginning of Russia's full-scale invasion of Ukraine, the Novovolynsk city territorial community has become a reliable rear for the Ukrainian army and economy. The city of Novovolynsk has sheltered more than **10,000** internally displaced persons, relocated more than 10 enterprises to its territory and is one of the leading providers of assistance to the Armed Forces of Ukraine.

In order to ensure proper living conditions for internally displaced persons, in 2022 the community was able to find partners for the construction of two apartment buildings for IDPs, which will provide 104 apartments for displaced persons upon completion in 2025.

To develop its business infrastructure, in 2022 Novovolynsk opened the first industrial park "NOVO" in Volyn oblast and by the end of 2024, a business support center is to be launched in partnership with DAI Global LLC. In addition, the city pays considerable attention to socially important projects: in 2024, in partnership with UNICEF, a project was implemented to create the Youth Centre 4.0, and in 2024, a project supported by the International Renaissance Foundation is being implemented to provide assistance and social and psychological support to veterans, military personnel and their families.

As of 2024, the total cost of the calculated project initiatives to improve the energy efficiency sector of the community is **₴4,928,900,000.**

Available potential - land for businesses and available human potential

The city covers an area of

20 sq.km

Population of the city:

57,400 people

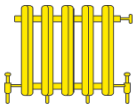
Briefly about the utility companies

in the field of heat supply (Novovolynskteplocomunenergo). In 2022-2023 implemented the project 'Promoting Energy Efficiency and Implementation of the EU Energy Efficiency Directive in Ukraine (FEER)'. Under the project, 4 Kalvis 950M solid fuel boilers were installed at boiler houses in Novovolynsk. The total project budget was **$109,555.28.**

in the field of water supply and sewerage (Novovolynskvodokanal). In 2019, Novovolynsk-vodokanal implemented the World Bank project 'Comprehensive Modernisation of Water Supply and Sewerage Systems in the City of Novovolynsk'. Under the project, 24 km of pipes were replaced with a total cost of **$5,600,000**, and some equipment was replaced with energy-efficient equipment worth **$860,000**.

Description of each project and required investments (USD), including payback period

IN THE FIELD OF HEAT SUPPLY

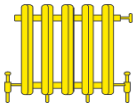


Reconstruction of heating networks with replacement of pipes in boiler houses 26 (new) and 26 (old) in Novovolynsk

The project envisages the reconstruction of heating networks with the replacement of pipes with pre-insulated polyurethane foam for a total length of 10 km in boiler houses 26 (new) and 26 (old) in Novovolynsk.

Total cost

$1,400,000



Reconstruction of boiler houses in Novovolynsk with the introduction of renewable energy sources in the form of cogeneration units.

The project envisages the reconstruction of the boiler house of the 26th quarter and the boiler house on Kaurkova Street in Novovolynsk, with the installation of a 250 kW cogeneration unit at each.

Total cost

$560,000

IN THE FIELD OF WATER SUPPLY AND SEWAGE

Development of the project design and implementation of measures to ensure the uninterrupted operation of water supply and sewage systems

Purchase and installation of diesel generators at pumping stations No. 1, 3, 5; sewage treatment plant in Novovolynsk

The project envisages the installation of diesel generators with a capacity of: PPS No. 1 **100 kW** PPS No. 2 **120 kW** PPS No. 5 **220 kW**

and sewage treatment plant in Novovolynsk **360-380 kW**

which will ensure the uninterrupted operation of water supply and sewage systems

Total cost **$135,000**

New construction of 2 drinking water treatment stations

in the locations of water intakes in Novovolynsk

If the project is implemented, it will be possible to reduce the level of water consumption in the network; reduce the overall level of morbidity; A fund for the restoration of the facilities of the Novovolynsk- vodokanal was created.

Total cost **$6,600,000**

Modernisation of sewage treatment facilities in Novovolynsk and Blahodatne using modern wastewater treatment technologies.

Implementation of the project to reconstruct the treatment facilities will enable better and more modern wastewater treatment and reduce the negative impact on the environment, in particular on the waters of the Western Bug River basin.

Total cost: *Novovolynsk* **$3,600,00** *Blagodatne* **$2,700,00**

IN THE FIELD OF LIGHTING

Projects of solar power plants for lyceums and pre-schools in the Novovolynsk city territorial community and the city of Novovolynsk.

Increasing the level of energy efficiency and energy security through the introduction of renewable energy sources in the form of solar power plants at the facility

Novovolynsk Lyceum No. 2

Project will save **20,500** kWh per year

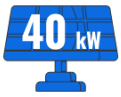
Total cost **$25,000**

capacity

Novovolynsk Lyceum No. 3

Project will save **20,500** kWh per year

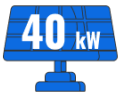
Total cost **$25,000**



Novovolynsk Lyceum No. 6

Project will save **41,000** kWh per year

Total cost **$50,000**



Novovolynsk pre-school educational institution No. 4

Project will save **41,000** kWh per year

Total cost **$50,000**

Novovolynsk pre-school educational institution No. 5

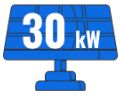
Project will save **30,700** kWh per year

Total cost **$37,500**

Novovolynsk pre-school educational institution No. 8

Project will save **15,400** kWh per year

Total cost **$18,500**



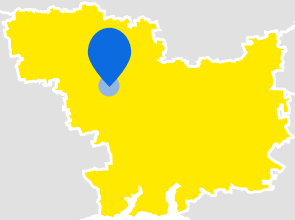
Novovolynsk pre-school educational institution No. 9

Project will save **30,700** kWh per year

Total cost **$37,500**

MYKOLAYIV OBLAST

VOZNESENSK



A brief history of the city during the war

Since the beginning of the full-scale Russian invasion, Voznesensk has been a strategic point that the Russian military planned to capture.

The Voznesensk community suffered visible destruction during the war, but is now far from the front line and has a chance for sustainable development.

In April 2023, Voznesensk became one of 18 cities across Ukraine to receive funds for urban renewal from the United Nations Development Programme.

Later in December, the city authorities announced that they planned to open a Recovery Office in the building of the Voznesensk Executive Committee.

In May 2024, a new municipal enterprise, the Community Development Centre, was established in the city.

voz.gov.ua

Available potential - land for businesses and available human potential

The city covers an area of

23 sq.km

Population of the city:

42,300 people

Briefly about the utility companies

in the field of heat supply (Municipal enterprise 'Teplo-Service' of Voznesensk City Council).

in the field of water supply and sewerage (Water supply in Voznesensk). In 2018-2020, work was carried out under the project 'Reconstruction of water intake facilities to increase the water supply of Voznesensk' to replace electrical equipment with less energy-intensive equipment.

in the field of lighting. Construction of a cogeneration plant based on a Jenbaher cogeneration module with an electric capacity of **1,067 kW** and a thermal capacity of **657 kW** and construction of a solar power plant with **246 panels** with a capacity of 150 kW, as well as the installation of a photovoltaic power plant with an energy capacity of 150 kW.

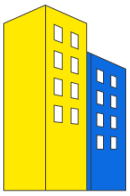
Description of each project and required investments (USD), including payback period

Construction of a composting plant with a capacity of 6,000 tonnes per year on a 5-hectare plot of land using the aerobic composting method

As part of an inter-municipal partnership, the construction of a composting station and the purchase of equipment for aerobic processing of organic waste into high-quality compost material.

Total cost

$3,200,000 (₴130,000,000)



The project 'Reconstruction of a non-residential building of the Young Technicians' Station with a superstructure for a 24-apartment residential building

A **60 kW** solar power plant is to be installed on the roof to provide the institution with electricity. It is also planned to connect to the centralised drainage system.

Total cost

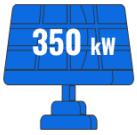
$1,800,000 (₴72,000,000)

Construction of a river port on the Southern Bug River

The project involves the construction of a grain river sweat terminal.

Total cost

$15,700,000 (₴645,000,000)



Installation of additional solar power plants with a total capacity of 350 kW

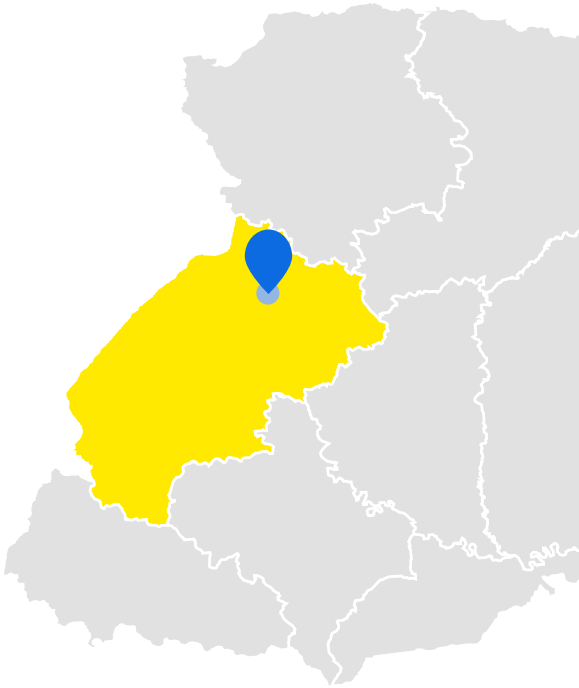
The project will provide the community's rural areas with drinking water, implement water supply and sewage systems, and install solar power plants to improve the efficiency of electricity consumption.

Total cost

$485,799.24 (₴20,000,000)

CHERVONOHRAD DISTRICT. LVIV OBLAST

DOBROTVIR VILLAGE COUNCIL



A brief history of the city during the war

In the context of the war and the constant threat of attacks on the energy sector, we pay special attention to the issue of distributed generation in cities that are dependent on fossil coal or thermal power plants. We cooperate with the central government, raise funds from international donors, and learn from the experience of communities that have already successfully implemented distributed generation.

$3,700,000 (₴150,000,000) should be raised for hromada's decentralised energy supply.

dobrotvirska-gromada.gov.ua

Briefly about the utility companies

Utility companies include companies in the field of:

heat supply

water supply and sewerage

lighting

Available potential - land for businesses and available human potential

The community covers an area of

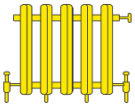
206.4 sq.km

Population of the community:

12,210 people

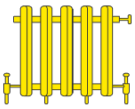
Description of each project and required investments (USD), including payback period

IN THE FIELD OF HEAT SUPPLY



Construction of a block modular boiler house and cogeneration units for the backup heat supply system

Dobrotvir Village



Decentralisation of the heat supply system with switching to alternative sources

Dobrotvir Village

Main purpose is to ensure stable and reliable heat and hot water supply for the residents of Dobrotvir village by decentralising the heat supply system and switching to alternative energy sources.

The necessary equipment to provide the community with alternative heat sources:

- Modular gas boilers
- Container-type gas piston cogeneration units
- Boiler houses on wooden pellets

Total cost **$3,500,000 (₴144,600,000)**

LVIV OBLAST

BELZ TERRITORIAL COMMUNITY

belztg.gov.ua

A brief history of the city during the war

Alternative energy sources are not used on an industrial scale in the Belz community, although the community has a great development potential (availability of land plots, favourable climatic conditions).

To meet the energy needs of the community's population, mainly coal is used to heat social infrastructure institutions, which, in addition to the activities of the Stepova mine, has a major impact on the environmental situation in the community.

Community understands the need to develop options for replacing it with alternative sources (rooftop solar panels) to save energy consumption and ensure the environmental sustainability of the community.

Briefly about the utility companies

Utility companies include companies in the field of:

heat supply

water supply and sewerage

lighting

Available potential - land for businesses and available human potential

The community covers an area of

461.5 sq.km

On the territory of the Belz City Territorial Community, there are plots in the village of Hlukhiv with an area of **37.5 hectares** and in the city of Belz with an area of 8 hectares for solar and wind energy. Available land area of **50 hectares** in Vaniv village with a detailed plan of the territory for solar panels.

Population of the community:

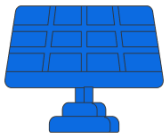
14,827 people

Description of each project and required investments (USD), including payback period

Project 'Improvement of the quality of the natural environment in the border area of the Bełżec Commune and the City of Bełz'

It is planned to build a sewage treatment plant with a maximum capacity of **500 m**, a new section of the sewerage network of **200 metres** long, which will connect the planned sewage treatment plant with the existing sewerage network of **1,600 metres** in length (but not used) in the city of Bielz

Total cost **$3,060,000**



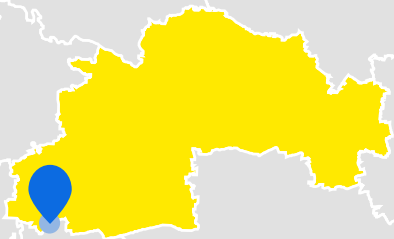
Implementation of energy projects on the territory of the community using renewable energy sources (solar, wind)

Expected Installation of rooftop solar panels in at least two community social infrastructure institutions

Total cost **$29,133.16 (₴1,200,000)**

KRYVYI RIH DISTRICT. DNIPROPETROVSK REGION

ZELENODOLSK COMMUNITY



A brief history of the city during the war

For 8 months of 2022, the Zelenodolsk city territorial community was a shield of the Dnipropetrovs'k region, the offensive of enemy troops stopped, and for 8 months we suffered from constant shelling, which damaged residential buildings, schools, kindergartens, hospitals, and critical infrastructure.

The situation was aggravated by the destruction of the Kakhovka hydroelectric power plant dam by the russian army, which provided drinking water to most of the settlements in the Zelenodolsk community.

The power generating company, which is the main taxpayer in the community and the only provider of heating services for Zelenodolsk, suffered significant damage.

But despite the daily challenges of war, we are doing everything we can to ensure the stable functioning of the community, gradually planning the way to rebuild and striving for development. One of the main priorities of the community is to attract investment, cooperate internationally, and implement development projects.

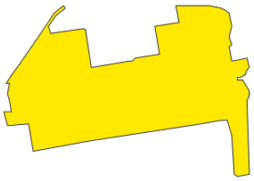
zelenodolsk.otg.dp.gov.ua

dream.gov.ua

Available potential - land for businesses and available human potential

The city covers an area of

311.9 sq.km

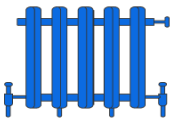


Population of the city:

17,941 people

Briefly about the utility companies

Utility companies include companies in the field of:



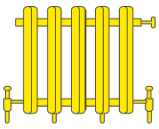
heat supply

water supply and sewerage (Zelenodolsk City Vodokanal)

lighting

Description of each project and required investments (USD), including payback period

IN THE FIELD OF HEAT SUPPLY



Construction of an alternative heat supply system

Zelenodolsk City

Implementation period **2025-2027**

Expected capacity **26.9 MW/26.9 MW**

Estimated cost

$3,100,000 (₴123,900,000)

IN THE SPHERE OF WATER SUPPLY AND SEWAGE

New construction of a 15 km long water distribution pipeline

Velyka Kostromka Village

Estimated cost **$473,413.79 (₴19,500,000)**

Implementation period **2024-2025**

Reconstruction of water treatment facilities

Zelenodolsk City

Estimated cost **$364,164.45 (₴15,000,000)**

Implementation period **2024-2025**

Overhaul of the distribution pipeline in the village

Maryanske Village

Estimated cost **$606,940.75 (₴25,000,000)**

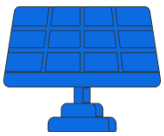
Implementation period **2024-2026**

Reconstruction of biological treatment plants (BTP)

Zelenodolsk City

Estimated cost **$728,328.90 (₴30,000,000)**

Implementation period **2025-2026**



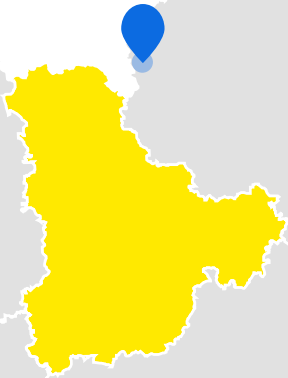
Installation of solar panels to ensure energy autonomy of buildings of public utilities and institutions

Estimated cost **$2,400,000 (₴100,000,000)**

Implementation period **2025-2030**

VYSHGOROD DISTRICT. KYIV OBLAST

SLAVUTYCH CITY COUNCIL



A brief history of the city during the war

Since 2015, a citywide energy management system has been operating in the city, using an automated energy monitoring system to record and analyze energy consumption in all municipal buildings. The Declaration of Energy Policy of the Slavutych City Territorial Community for the period up to 2027 and the Regulation on the Energy Management System were approved. The Energy Efficiency Sector of the Department for Housing and Communal Services, Tariff Setting, Energy Efficiency and Energy Saving of the Executive Committee of Slavutych City Council coordinates the effective operation of the energy management system.

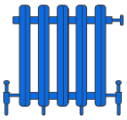
The total amount of money needed for decentralised energy supply to the city is as follows:

Housing and Communal Services

$68,900,000 (₴2,850,000,000)

Slavutych Vodokanal

$4,100,000 (₴167,000,000)



Slavutych Heating Networks

$870,917.45 (₴36,000,000)

e-slavutych.gov.ua

Available potential - land for businesses and available human potential

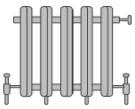
The city covers an area

20.33 sq.km

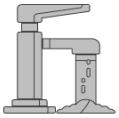
Population of the city:

25,700 people

Briefly about the utility companies



in the field of heat supply (Housing and Communal Services Department). Overhaul of the central city boiler house (2024), where new network pumps were installed using a cascade operation scheme with a 380V power supply and frequency control of the electric motor speed was installed.Installation of a commercial hot water metering unit in an apartment building (2023).

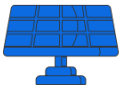


in the field of water supply and sewerage (Slavutych-Vodokanal). In 2019, a complete modernisation of the pumping equipment at the main sewage treatment plant (MSTP) of the KOS was implemented. At the water intake facilities submersible pumps are replaced with more energy-efficient ones (every year).

in the field of lighting (Slavutych-Teplomerezhi).

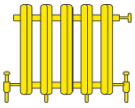
Description of each project and required investments (USD), including payback period

IN THE FIELD OF HEAT SUPPLY



Installation of a 1.8 MW solar power plant with a 1 MW battery

Total cost **$30,482.11 (₴1,260,000)**



Reconstruction of intra-quarter heating networks, intra-building heating and hot water supply systems of multi-storey buildings

Chernihiv quarter of Slavutych

With the replacement of heating networks from 4-pipe to 2-pipe pre-insulated pipelines, installation of new thermomechanical equipment (TME), installation of metering devices, installation of SCADA system, replacement of shut-off and control valves and thermal modernisation of all shut-off and control valves.

Payback period **25** years

Total cost **$2,900,000 (₴120,000,000)**

IN THE SPHERE OF WATER SUPPLY AND SEWAGE

Reconstruction of water supply inlets of residential buildings in Slavutych, Kyiv region, in terms of equipping inlets with commercial metering units

Equipping drinking water consumers with metering units will save up to 3/4 of unaccounted for water consumption in the respective in-building systems.

Total cost

$191,118 (₴7,900,000)

Construction of a solar hybrid power plant on the land plot of the municipal enterprise Slavutych-Vodokanal

By installing a renewable energy source (solar power plant) at a critical infrastructure facility (water supply system of Slavutych), this facility will be able to generate its own electricity, reduce dependence on the electricity supplier, cut electricity costs and create an energy security front for Slavutych residents in case of force majeure.

Total cost

$72,576.45 (₴3,000,000)

Reconstruction of sewage treatment facilities

The physical-chemical method of treatment is used at the sewage treatment plant, which is based on the treatment of wastewater with chemicals and subsequent discharge of treated wastewater into the Dnipro River.

An alternative option for municipal wastewater treatment is the use of nitri-denitrification biotechnology, which provides comprehensive treatment of wastewater from organic contaminants and nitrogen and phosphorus compounds.

Total cost

$2,200,00 (₴90,000,000)

IN THE SPHERE OF LIGHTING

Introduction of dispatching on 10 kV power lines

$145,152.91 (₴6,000,000)

Installation of equipment for monitoring performance indicators at transformer substations

$ 48,384 (₴2,000,000)

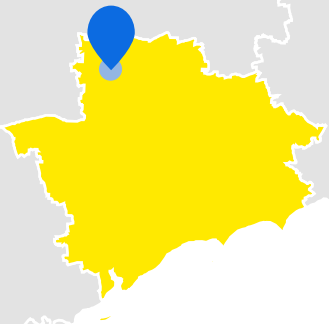
Development of power supply to new buildings
(residential buildings, cottages)

Slavutych, Dobryninsky and Chernihiv neighborhoods

$580,611 (₴24,000,000)

ZAPORIZHZHYA OBLAST

ZAPORIZHZHYA



A brief history of the city during the war

Zaporizhzhia is a large industrial city located on the banks of the Dnipro River in southern Ukraine and consists of 7 large districts. The city's economy was based on industry - mainly metallurgy (all types), machine building (cars, helicopters, engines, etc.) and energy (there are 2 hydroelectric power plants in the city centre). With the beginning of the full-scale invasion, the city turned into a logistics hub that received people fleeing the war from the South and East of Ukraine (for a while it became the only corridor for evacuation), helped with the evacuation of people from Mariupol, and became the basis for building defences in the South of Ukraine. City dormitories, schools and kindergartens turned into temporary shelters for IDPs, and the railway station became the main hub for evacuation.

As the intensity of the Russian offensive decreased, life in the city gradually began to stabilise: large enterprises that had lost logistics routes and markets were reoriented to military needs, medium-sized businesses relocated to other regions, and evacuated businesses, as well as educational institutions and municipal services of the evacuated communities, were deployed in Zaporizhzhia. Subsequently, the city's energy sector and water supply suffered significant losses due to constant shelling. The 2 existing hydroelectric power plants were completely destroyed, large substations were put out of action, and the water level in the Dnipro dropped by 6+ metres.

Due to the full-scale Russian invasion of Zaporizhzhia, the population structure of the city has changed dramatically - some local residents have temporarily or permanently left the city (up to 15%), while approximately **200,000 IDPs** have remained and are living in Zaporizhzhia. This has greatly changed the balance of the population, destroyed many social ties, and, coupled with the logistical constraints caused by the hostilities, has also greatly changed the structure of business and employment, respectively.

zp.gov.ua

Available potential - land for businesses and available human potential

The city covers an area of

330 sq. km

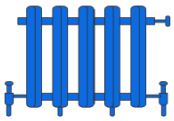
Land for business in Zaporizhzhia is available, but in very limited quantities, more often these are existing industrial facilities, buildings, premises owned by the community and/or the state and available for privatization.

Population of the city:

800,000 people

Briefly about the utility companies

Utility companies include companies in the field of:



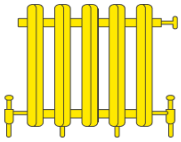
heat supply

water supply and sewerage

lighting

Description of each project and required investments (USD), including payback period

IN THE SPHERE OF HEAT SUPPLY



Installation of cogeneration units at municipal boiler houses and critical infrastructure

Cogeneration - the diversification of heat and electricity supply has become a challenge, which was partially resolved in 2023 with the installation of cogeneration units in the city's hospitals.

One solution could be to install cogeneration units at municipal boiler houses and critical infrastructure (about 24 sites in total).

24 facilities * (**$350,000** per **1** cogeneration unit) + **$200,000** (installation) = **$14,400,000**

24 objects * **4.5** mW = **108** mW (approximately 70% of the total consumption by municipal services)

Payback period **8-10** years

IN THE SPHERE OF WATER SUPPLY

InRenovation of wastewater treatment plantsstallation of cogeneration units at municipal boiler houses and critical infrastructure

There are 2 large wastewater treatment plants in Zaporizhzhia that serve the entire city, including industrial enterprises. Both plants need reconstruction, and Vodokanal is gradually renovating the Left Bank plant with the assistance of international partners.

As of now, we need to start reconstructing the Right Bank Water Treatment Plant, which serves about **300,000 residents**.

Approximate requested capacity of wastewater: **40,000** m^3/day

Estimated cost: **$5,900,000**

Payback period: **10-12** years

IN THE SPHERE OF LIGHTING

Replacement of all street lighting in Zaporizhzhia from sodium and halogen to LED

The project is designed to replace **45,238 street lamps**.

Estimated cost: **$3,600,000**

Payback period: **4.3** years

DONETSK OBLAST

MARIUPOL

A brief history of the city during the war

The city of Mariupol is currently occupied by Russian troops.

Until 2022, Mariupol was one of the most important centres of Ukrainian metallurgy and a major seaport. The city's industrial production accounted for more than 50% of the regional figure, and industrial enterprises were the backbone of the city's economy.

The hostilities in the city in the spring of 2022 and its subsequent occupation radically destroyed most of the industrial, transport, residential and communal infrastructure. The result of such barbaric actions was the almost complete destruction of the city's infrastructure, historical and cultural monuments.Significant destruction of the housing stock was accompanied by the deaths of residents.About 300,000 residents fled to government-controlled territory and abroad.Residents who left the city continue to take an active part in the city's recovery after de-occupation.

Currently, the Mariupol City Council is back in the government-controlled territory of Ukraine and supports 190,000 Mariupol residents who are in the government-controlled territory. As of now, we have 34 IDP support centres with more than 60,000 registered residents, including 2 social housing facilities for comfortable living of 300 families.

Before the war Mariupol has received an international certificate of energy management system implementation. The audit for the international standard ISO 50001:2018 'Energy management systems - Requirements with guidance for use' was conducted by specialists from TMS LLC, the representative of the German certification concern TÜV SÜD in Ukraine.

Since the occupation of Mariupol, its revival and post-war reconstruction have been actively discussed at various levels. The city is developing multidisciplinary recovery programmes with the involvement of experts, citizens, business representatives and municipalities from other cities.

Available potential - land for businesses and available human potential

Before the war, the city's economy was based on industrial enterprises, which were significantly damaged during the hostilities. Residents of the city who will return after its de-occupation will need, among other things, jobs. Due to its geographical location, labour force, port, etc., the city has economic prospects in various industries, both basic and those that were just beginning to develop before the war.

Currently, a Fast recovery plan has been developed for the first 2 years after de-occupation and the Concept of the economy until 2040 is being developed.

The area of the territorial community is

377.2 sq. km

The total area of industrial territory is **28.72 sq. km**, including the area of industrial territories with the potential for reuse - **18.67 sq. km**

540,000 residents

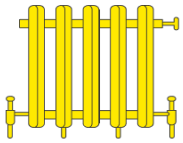
(including **100,000 IDPs** from Donetsk Oblast)

According to our estimates, the city's population will reach **250,000** immediately after de-occupation and **400,000** within five years.

Description of each project and required investments (USD), including payback period

These projects were developed for implementation after the de-occupation of the city.

IN THE SPHERE OF HEAT SUPPLY



Restoring heat supply to Mariupol

Project objective

- Restoration of heat supply after the de-occupation of the city for **250,000 residents**.
- Designing a new general scheme of heat supply, taking into account the new architectural plan for the city development.
- Construction of a new heat supply system and networks for **400,000 residents.**

Total cost

$510,000,000

Payback period

up to **10** years

In the first two years after de-occupation:

Purchase of specialised vehicles, **35 units** **$5,200,000**

Installation of block-modular boiler houses, **120 units** **$60,000,000**

Installation of individual heating boilers, **7,106 units** **$10,000,000**

By 2030:

Design of a new general scheme of heat supply **$2,000,000**

Construction of a new heat supply system according to the general scheme **$433,000,000**

IN THE SPHERE OF WATER SUPPLY AND SEWAGE

Rehabilitation of water supply and sewage facilities

Project objective

- Restoration of water supply and sewerage after the de-occupation of the city for **250,000 residents**
- Designing a new water supply and sewerage system, taking into account the new architectural plan for the development of the city for **400,000 inhabitants**
- Construction of a new water supply and sewerage system (**400,000 inhabitants**)

Total cost

$233,000,000

Payback period

up to **8** years

In the first two years after de-occupation:

Purchase of specialised vehicles, **86 units** **$12,000,000**

Repair of sewage pumping stations, **15 units** **$10,000,000**

Repair of water pumping stations, **55 units** **$7,000,000**

Restoration of water supply and sewerage networks, **65 km** **$2,000,000**

By 2030:

Design of a new water supply and sewerage system (taking into account the new architectural plan) **$2,000,000**

Construction of a new water supply and wastewater disposal system **$200,000,000**

IN THE SPHERE OF LIGHTING

Restoration of street lighting

Project objective

- Restoration of transport, networks and street lighting infrastructure after the de-occupation of the city
- Design of a new street lighting system, taking into account the new architectural plan of the city development and transition to LED lights
- Construction of a new street lighting system

Total cost

$32,500,000

Payback period

up to **10** years

In the first two years after de-occupation:

Purchase of specialised vehicles, **35 units** **$1,300,000**

Repair and rehabilitation of **30 km** of power lines **$1,200,000**

Purchase of lamps, **3,000 units** **$900,000**

Restoration of the external lighting control system

Lighting control system, **282 units** **$600,000**

By 2030:

design of a new outdoor lighting system (taking into account the new architectural plan) **$500,000**

Construction of a new outdoor lighting system for the city **$28,000,000**

IN THE CONTEXT OF THE TEMPORARY OCCUPATION, THE CITY IS LOOKING FOR PARTNERS TO IMPLEMENT TWO MAJOR PROJECTS

The Mariupol Reborn Academy project

where local government representatives will be trained to create community recovery plans and respond to current challenges in advance

The project “Creation of social housing”

In 2024-2025, city council plans to jointly implement a social project to create **6 social housing** facilities for **560 families**

The cost of the project to repair and equip these facilities is **$14,000,000**