WASH Cluster Ukraine | District Heating Strategic Working Group

Strategic Guidance Note:
District Heating Interventions
2025 - 2026

Purpose of the Document and Acknowledgements

This document serves as a strategic guidance note for WASH Cluster partners and stakeholders engaged in District Heating (DH) humanitarian interventions in Ukraine:

- Humanitarian Aid Organisations
- Donor organizations
- Development organisations and International Financial Institutions
- Governmental Bodies
- District Heating Companies[1] and Local Authorities

It aims to:

- Define priorities and strategic directions for DH-related humanitarian support for the 2025–2026 heating season.
- Ensure alignment with the WASH Cluster Strategy, the Humanitarian Needs and Response Plan (HNRP), national strategies and reconstruction priorities, as well as international commitments of Ukraine.
- Facilitate coordinated planning and decision-making among humanitarian, governmental, and development actors involved in heating-related response and recovery.
- Support advocacy and resource mobilisation by clearly articulating sectoral needs, interdependencies (e.g. with energy systems), and funding priorities.

The document was developed by the District Heating Strategic Working Group of the WASH Cluster, with contributions from the Technical Cell and humanitarian organisations that are partners of the WASH Cluster. Public agencies were consulted to ensure consistency with their priorities.

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[1] All forms of ownership: municipal and private

Contents

Abbreviations and Acronyms

CCCM	Camp Coordination and Camp Management Cluster
CHP	Combined Heat and Power Plant
DH	District Heating
DH SWG	District Heating Strategic Working Group
DENA	German Energy Agency (Deutsche Energie-Agentur)
EBRD	European Bank for Reconstruction and Development
ECG	Energy Coordination Group
EED	EU Energy Efficiency Directive
EIB	European Investment Bank
EU	European Union
ESP	Energy Security Project (USAID)
GIZ	German Agency for International Cooperation
GoU	Government of Ukraine
HNRP	Humanitarian Needs and Response Plan
ICRC	International Committee of the Red Cross
IDPs	Internally Displaced Persons
IFI(s)	International Financial Institution(s)
IHS	Individual Heating Substation
IOM	International Organization for Migration
MW	Megawatt
NDCs	Nationally Determined Contributions
NEFCO	Nordic Environment Finance Corporation
NGO	Non-Governmental Organization
O&M	Operations and Maintenance
PIN	People in Need (international NGO)
RDNA	Rapid Damage and Needs Assessment
RES	Renewable Energy Sources
SDS	Southern Development Strategy (NGO)
SWG	Strategic Working Group
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
UNOPS	United Nations Office for Project Services
USAID	United States Agency for International Development
VAT	Value-Added Tax
WASH	Water, Sanitation and Hygiene (Cluster)
WHO	World Health Organization
WRP	Winter Response Plan

Executive Summary

Ukraine's district heating (DH) system, one of the largest in the world, was already in a state of severe deterioration before the war, with 70 per cent of its assets worn out and in need of replacement. The full-scale invasion has exacerbated these vulnerabilities, resulting in an estimated USD 2.5 billion in damage to infrastructure and leaving utilities struggling to maintain even basic services. Over the next decade, USD 4.3 billion will be required to repair, modernise, and adapt these systems, ensuring they are efficient, resilient, and aligned with Ukraine's energy and climate commitments.

District heating is more than an infrastructure service; it is a lifeline for millions, particularly in Ukraine's northern and eastern regions, where winter temperatures can be extreme. These systems are highly interdependent with water supply, electricity, and fuel networks, meaning that damage to one sector can cascade into widespread heating outages. In the current context, even short interruptions risk forcing families from their homes, increasing mortality and morbidity, and placing further strain on humanitarian systems.

The sector faces overlapping challenges. War damage has been extensive, especially in frontline areas. Financial strain is acute, with frozen tariffs, declining revenues, and rising operational costs undermining the ability of utilities to invest in maintenance or upgrades. Workforce shortages (caused by displacement, mobilisation, and security risks) further reduce operational capacity, while population shifts and outdated, oversized systems hamper planning. Against this backdrop, humanitarian funding is declining, and district heating risks being deprioritised as a non-core activity under the global humanitarian reset.

The needs are urgent and substantial. For the 2025–2026 heating season, USD 37.1 million is required for immediate winterisation activities to support 1.3 million people in need, yet only USD 6.3 million has been secured. This funding gap threatens to leave critical repairs and backup systems unfunded, exposing communities to life-threatening conditions during the winter months.

Addressing these challenges demands coordinated action that bridges the gap between emergency response and long-term development. Immediate efforts must focus on maintaining heating services in conflict-affected areas through rapid repairs, backup power provision, and temporary heating solutions. At the same time, utilities must be supported to stabilise their operations, replenish essential material stockpiles, and plan for systemic modernisation. Investments should prioritise loss reduction, efficiency improvements, and renewable energy integration, while also building the capacity of DH operators to manage modern, resilient systems.

The risks of inaction are severe. Without timely and coordinated intervention, Ukraine could face large-scale winter displacement, escalating humanitarian needs, and

irreversible infrastructure collapse. The financial cost of delayed action will be exponentially higher, as degraded systems become impossible to repair and must be replaced entirely. Conversely, strategic investment now will protect lives, safeguard essential assets, and lay the foundation for an energy-secure, climate-aligned recovery.

This Strategic Guidance Note calls on all stakeholders (government agencies, donors, development partners, international financial institutions, humanitarian organisations, district heating companies, and local authorities) to work towards the shared goal of ensuring reliable and resilient district heating during the war, with a clear pathway towards an efficient, eco-friendly, and demand-adjustable system in the long term. The cost of action today will always be lower than the cost of inaction tomorrow.

1. Background and Context

1.1. State of DH infrastructure before the war and its potential

Ukraine has one of the largest district heating (DH) systems in the world, serving 40% of the population (5.5 million households).[2] It was built mainly between the 1930s and 1990s, with little to no new capacity added since. Originally, it was designed with significant capacity reserves to ensure redundancy and support expected urban growth, which never materialised. By 2021, 70% of DH infrastructure was already worn out,[3] providing clear evidence that renovation and replacement were needed long before the war.

DH companies and combined heat and power plants (CHPs) are the dominant heat generators, providing 61% and 30% of output, respectively. Other units (thermal power plants, recycling, and nuclear plants) contribute insignificantly and have a limited impact on overall heat supply.[4] Fixed high generation capacities and a lack of demand-side regulation have led to rising maintenance costs and poor service quality.

Ukraine has more than 25,000 km of DH pipelines. As of 2020, 9,346 km had been in use for over 25 years; 80% of these networks required renovation. Due to aged pipes and poor insulation, heat losses averaged 13%, reaching up to 40% in some locations. The war has exacerbated pre-existing issues, leakages and pipe ruptures have become even more frequent.

To date, most of the DH systems in Ukraine are unregulated 2nd generation systems with all the related drawbacks of poor service quality and lack of efficiency. The transition to automated 3rd generation systems is only slowly progressing.[5] DH infrastructure issues

[2] KeepWarm Project: Improving the performance of District Heating Systems in Central and Eastern Europe, District Heating in Ukraine

[3] State Statistics Service of Ukraine

[4] Ibid

[5] Danfoss, *The development of centralized heat supply is the key to a smart energy system in Ukraine* [website],https://www.danfoss.com/uk-ua/about-danfoss/articles/dhs/modern-district-heating-enables-transition-to-smart-energy-system-in-ukraine/,(accessed 03 May 2023).

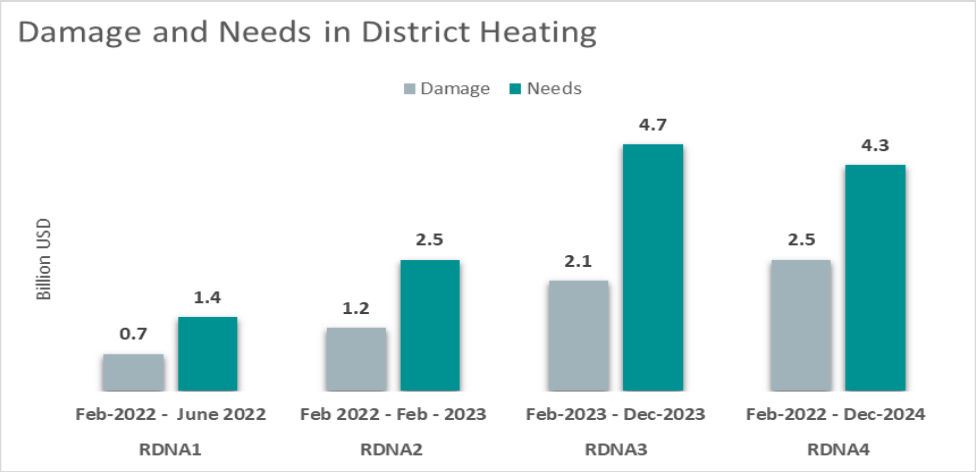
cascade from generation to distribution (pipelines) and extend to consumer infrastructure, which also affects overall system efficiency. On the consumer side, regulation does not reflect actual needs. Individual heating substations (IHS) have been installed in only 10% of residential buildings. Although the Energy Efficiency Fund's program offers significant potential to support the widespread implementation of IHS, it has yet to be operationalised at scale.

Despite outdated infrastructure and pre-war issues, centralised heating remains one of the most efficient and environmentally friendly options for urban heat supply and must be preserved. The current fuel mix can be replaced with cleaner and renewable sources using the same or upgraded generation and distribution systems. Ukraine has a significant potential to increase the share of renewables in the DH sector, for example, by using biomass and biogas instead of coal and natural gas. Currently, the share remains low compared to the European average: less than 10% in Ukraine versus 25% in Europe.[6]

1.2. Impact of conflict and winterisation needs in DH

According to the latest Rapid Damage and Needs Assessment (RDNA 4), the cumulative damage to the district heating (DH) sector over the course of the war is estimated at USD 2.5 billion (Figure 1). As of December 2024, the reconstruction and improvement needs for DH systems over the next decade are estimated at USD 4.3 billion. These needs include not only the repair of damaged infrastructure, but also its modernisation, improved energy efficiency, and the implementation of innovative solutions in central heating.[7]

Figure 1. Damage and Needs in District Heating, billion USD, 2022 - 2024



Source: Rapid Damage and Needs Assessment 1 – 4

[6] Vitalii Khodakivskyi and Dmytro Karpenko, "Assessment of the Efficiency of Cogeneration Implementation in the Context of Modernization and Redundancy of the District Heating System," *Energy: Economics, Technology, Ecology*, National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute," https://orcid.org/0009-0007-3237-3476.

[7] RDNA 4

District heating is a critical infrastructure, vital for millions of people, businesses, and the public sector, and therefore a desired target for Russia. While in areas close to the frontlines, boiler houses and heating pipelines suffer damage from direct or indirect ground attacks, missiles are often launched specifically at large CHPs or boiler houses in various parts of the country. Even though frontline areas are more targeted and vulnerable, district heating is a target for Russia at any point on the map of Ukraine. Attacks typically intensify closer to the beginning of the heating season, in October-November, when it is difficult or even impossible to fix the damage during winter.

DH enterprises, which suffered from chronic underfinancing even before the war, faced much greater financial challenges when the war started. First of all, frozen tariffs for the duration of the war deprived DH operators of the necessary funding for investment and, in some cases, even operational costs. Second, changes in the demographic situation, millions of IDPs, caused a drop in revenues in the oblasts they left. Third, the decrease in household incomes led to delays or non-payment for heating services. As a result of these financial issues, DH companies have no funding not only for the repair of damaged infrastructure but also for regular maintenance.

The main war-related needs in the DH sector are related to the repair of damaged infrastructure, back-up power supply, and back-up decentralised heating solutions. However, due to ageing infrastructure and a lack of financing, DH operators' needs extend beyond urgent repairs to the upgrade of crucial components of the DH system (pumps, valves, pipes), which will keep the system operational under conditions of power cuts and other disruptions in DH operations.

1.3. Intersectoral linkages

The DH system is highly vulnerable, as it relies on multiple other services, including water supply, electricity, gas, and coal. A disruption in any of these can lead to the shutdown of the heating system.

Water

The availability of a reliable water supply and efficient water treatment systems plays a crucial role in the provision of heating services. Water serves as the heat carrier, transferring thermal energy from production facilities to end users. Additionally, some DH companies provide centralised hot water supply to households, a service that is not possible without a functioning central water supply system.

The mere availability of water is not sufficient for the DH system; it must be treated with specific reagents to prevent corrosion of equipment and heating networks. If the local Vodokanal servicing a particular DH company becomes non-operational, switching to an alternative water source is not straightforward. The new source may be unsuitable for use in the DH system or may require additional treatment before it can be used.

Fuel – gas and coal

The DH system uses natural gas and coal as the primary fuel (90% of all types of fuel DH uses), this makes the system much more vulnerable in wartime, since historically the main supplier of gas to Ukraine has been Russia, and the coal deposits are concentrated in the Eastern regions, where territories are temporarily occupied, or battles are going on.

The DH system relies primarily on natural gas and coal, which together account for 90% of all fuel used. This heavy dependence makes the system particularly vulnerable during wartime, as Ukraine has historically imported gas from Russia, and its coal deposits are concentrated in the eastern regions, which are currently under temporary occupation or affected by ongoing fighting. Gas supply systems and sufficient natural gas reserves are essential during extended heating seasons (e.g. in 2025, some DH companies continued heating after the official end of the season due to low temperatures).

Over the years of war, the Government of Ukraine (GoU) has managed to secure sufficient natural gas reserves for the heating season by increasing both domestic production and imports. This has been supported by a decrease in demand, particularly from large industrial enterprises that were previously operating in areas now occupied or located near the frontlines. As a result, Ukraine has been able to get through winter seasons with the available gas. However, in early 2025, Russia began targeting gas infrastructure, leading to a decline in domestic production and a greater reliance on imports, placing additional strain on an already stretched national budget.

Power

Power supply systems are also critical to DH operations, as electricity powers network circulation pumps, water pumps, boilers, and other essential equipment. Power outages caused by attacks can halt the functioning of the DH system or force it to rely on alternative electricity sources. However, even these alternatives are not always sufficient. For example, switching from the central power supply to a generator can cause temporary stoppages and restarts, which may damage the equipment and accelerate wear and tear.

Even though no major power cuts are currently forecasted, energy infrastructure repairs are ongoing, and decentralised power sources are being developed, there is no guarantee that the electricity supply will remain uninterrupted during the heating season, nor that Russia will refrain from targeting power plants as winter approaches. To ensure continuous heating services, DH companies must have alternative power sources, such as generators or cogeneration units, along with auxiliary equipment like soft starters and variable frequency drives to maintain the stable operation of their systems.

2. Strategic Framework

2.1. Objectives and scope of DH humanitarian support

The WASH Cluster has been coordinating assistance to DH companies by WASH partners since 2022, as previously, there was no cluster responsible for this sector. While the Shelter Cluster has played a significant role in winterisation, its function has been targeting the consequences of non-functioning heating systems with no direct support to DH operators, but rather to individuals (mainly IDPs) who suffered. The WASH Cluster stepped up in 2022 to support increased needs in the heating sector, as more and more DH companies were contacting humanitarian partners with requests for assistance related to damage to their assets. The WASH Cluster prioritises projects that:

- ensure immediate restoration of access to heating for conflict-affected populations
- focus on the frontline and recently de-occupied areas
- rehabilitate critical infrastructure damaged by hostilities, such as boiler houses, combined heat and power plants, main pipelines, and pump stations
- strengthen system reliability before winter periods

Since the beginning of the war, WASH Cluster partners have supported district heating companies by procuring and delivering modular boiler houses, either to replace destroyed facilities or to provide backup heating for urban populations. They have also focused on repairing boiler houses and replacing damaged pipes and pumps. In the early years of the war, significant efforts went into supplying generators to keep boiler houses operational.[8] More recently, attention has shifted to cogeneration units, which provide a more sustainable and cleaner, though also more expensive, source of backup power.

According to the WASH Cluster Strategy and Indicators Handbook 2024[9], the humanitarian partners focus on supporting service providers' ability to ensure regular operations and maintenance, and emergency repairs, necessary to maintain service levels related to district heating systems, with a focus on locations within 100km of the contact line and/or receiving large numbers of IDPs (Cluster Objective CO2). The WASH Cluster partners are advised to provide tools and materials to facilitate repairs, and provision of equipment and consumables to ensure continued treatment and restore backup capacities. The Handbook emphasises the importance of ensuring minimum levels of operation during power outages by providing backup energy supply in critical facilities and supporting targeted infrastructure improvements to reduce operating costs and system vulnerabilities.

[8] UN OCHA, Ukraine: Humanitarian Response Plan (February 2023), 15 Feb 2023, https://reliefweb.int/report/ukraine/ukraine-humanitarian-response-plan-february-2023-enuk

[9] WASH Cluster Ukraine, 2024 WASH Cluster strategy & Indicators Handbook, https://drive.google.com/file/d/1vyeBXBSmCGKOzSA7nI6D1AAZJkgjoste/view

As demonstrated by Table 1, the priorities of the WASH Cluster partners' interventions in the DH have been evolving from assistance to restore heating for health and social institutions in 2022 to directly supporting the DH companies in 2023-2025.

Table 1. Evolution of HNRP Priorities for District Heating (2022–2025)

Year	Priorities
2022	● Implement repairs to heating systems in health facilities, schools and kindergartens, and homes for older persons (both humanitarian and early recovery activities).[10]
2023	● Where needed, provide support to service providers for ongoing O&M and infrastructure improvements to maintain or improve service levels related to district heating systems. ● Support for centralised district heating systems in relation to damage repairs and contingency equipment (including mobile boilers and generators)
2024	● Support service providers' ability to ensure regular operations and maintenance, and emergency repairs, necessary to maintain service levels related to district heating systems with a focus on locations within 100km of the front line and/or receiving large numbers of displaced people.[11]
2025	● Rehabilitate and repair district heating systems in emergencies[12]

The plan for 2025–2026 is to ensure that the population has access to basic district heating services, with no specific limitations on the type of equipment provided. However, clear guidance is given on geographical priorities: frontline areas are targeted to reach the most vulnerable populations. According to the HNRP 2025, under Strategic Objective 2: Access to Prioritised Essential Services, humanitarian partners will focus on rehabilitating and repairing district heating systems in emergencies.[13]

[10] UN OCHA, Ukraine - Humanitarian Response Plan 2022, https://reliefweb.int/report/ukraine/ukraine-humanitarian-response-plan-2022-february-2022-enuk?_gl=1*bc9isw*_ga*MjAyNzkyMTc0Ny4xNzMwNDUwMTE4*_ga_E60ZNX2F68*czE3NTI2NTg1MzUkbzEyJGcxJHQxNzUyNjYxMjA3JGozOCRsMCRoMA..

[11] UN OCHA, Ukraine: Humanitarian Response Plan 2024, https://reliefweb.int/report/ukraine/ukraine-humanitarian-needs-and-response-plan-2024-december-2023-enuk

[12] UN OCHA, Ukraine Humanitarian Needs and Response Plan 2025, https://reliefweb.int/report/ukraine/ukraine-humanitarian-needs-and-response-plan-2025-april-2025-enuk

[13] Ibid

2.2. Development/humanitarian nexus

Assistance provided by WASH Cluster partners to DH companies focuses on infrastructure repair and maintenance. In practice, these activities almost always result in upgrades or renovations: when damaged equipment is replaced, resilience and flexibility are also improved (for example, through the installation of frequency converters). This has sparked debate since the beginning of the war about how to categorise such projects. On one hand, they are life-saving humanitarian interventions, ensuring utility services for thousands of urban residents. On the other hand, they resemble development projects, as a leaking pipe may be replaced or new pumps installed to substitute equipment that is still functional but unreliable.

However, WASH Cluster partners usually do not engage in the types of long-term initiatives implemented by organisations outside the Cluster, which have been active in the DH sector for decades. For example, GIZ and USAID have supported communities in developing city-level master plans for district heating with a long-term vision. This approach differs from the work of WASH Cluster partners. In the past, USAID also supplied cogeneration units to DH companies nationwide, regardless of proximity to the frontline or regional fragility. DENA is currently assisting the Government of Ukraine in harmonising national energy and utilities regulations with EU standards.

Table 1. Projects implemented by the WASH Cluster partners and development organisations

WASH Cluster partners	Development organisations/IFIs
Emergency boiler house repairs in war-affected cities by UNICEF, IOM, UNOPS, ICRC, PIN, SDS	**Strategic DH sector reform** support (tariffs, business models, legal frameworks) by USAID, GIZ, EBRD.
Provision of modular/mobile boiler houses to municipalities (UNOPS, UNICEF), often co-funded by the World Bank or EU.	**Financing of infrastructure modernisation** (pipelines, pumps, CHPs) through EIB, EBRD, NEFCO, World Bank.
Distribution of power generators for boiler houses, water utilities, and hospitals to maintain heat supply during blackouts (UNOPS, UNICEF, PIN, ICRC, Medair).	**Grants and loans for green recovery projects**, including energy efficiency retrofits and decentralised energy systems (NEFCO, EBRD, EIB).
Rapid repair and replacement of damaged district heating infrastructure components (pipes, pumps, power cables, frequency converters, ultrasonic meters, control cabinets) via emergency procurement (IOM, PIN, SDS).	**Procurement of cogeneration (CHP) units** to improve efficiency and grid independence, led by USAID ESP (in the past).
Procurement of co-generation units	**Capacity-building of utility staff and local authorities** (training on lifecycle investment planning, asset management) by GIZ, DENA, USAID.
Ad hoc infrastructure assessments and minor upgrades, typically focused on restoring basic services quickly after attacks.	**National strategy development** (e.g. district heating decarbonization plans, transition strategies) supported by GIZ, UNDP, World Bank.

The key difference between humanitarian and development organisations in Ukraine during the war lies in their focus. Humanitarian actors prioritise urgent repairs, mobile heating, and emergency energy supply. Their goal is immediate service restoration and survival during conflict. Development organisations and IFIs, on the other hand, concentrate on long-term structural improvements, financial viability, and policy reform to build resilient, efficient, and modern district heating systems.

In practice, the line between their activities is not always clear. Both groups often work on repair and rehabilitation of damaged infrastructure, although they tend to stay closer to their respective mandates. For example, humanitarian partners generally do not engage in capacity building or regulatory advisory.

Before the war, strong development partners were already active in the district heating sector. With extensive damage caused by hostilities, however, the need emerged for immediate assistance, fast procurement and delivery, and a focus on IDPs and frontline areas. WASH Cluster partners filled this gap, as they are able to operate near the frontline, focus on the most vulnerable populations, and deliver solutions more quickly. Smaller local NGOs, also part of the WASH Cluster, concentrated on small-scale projects in remote settlements, which typically fall outside the interest of large IFIs and development organisations that favour national-scale projects.

2.3. Humanitarian reset and transition plan

Reduced funding for the humanitarian sector has pushed clusters to adopt a new approach based on the principles of the humanitarian reset.[14] As part of this shift, non-core activities are being phased out to make clusters more agile, inclusive, and cost-effective. In the 2025 HNRP, district heating is classified as a non-life-saving activity. This creates a risk that the WASH Cluster will no longer support the DH during the 2026–2027 heating season

Despite the current trend of deprioritising non-core activities, the DH SWG stresses that district heating is a lifesaving service, especially in frontline oblasts. Scaling back this support could leave large segments of the population without access to basic heating. In a country with harsh winters, this may trigger further displacement as people move to areas with functional systems. If timely emergency support is not provided to DH operators, the burden on the Shelter and CCCM Clusters will grow substantially. They would need to cover the gap by supplying individual heating appliances, blankets, and warm clothing, and by establishing additional collective centres.

Inadequate access to heating often forces people to rely on inefficient, unsafe, or even illegal alternatives. Examples include unsafe electric heaters that add pressure to an

[14] UNOCHA, *Humanitarian Reset*, 11 March 2025. Available at: https://www.unocha.org/news/humanitarian-reset-0

already unstable electricity grid, explosive gas appliances, and widespread use of wood stoves, which leads to deforestation as trees are cut for fuel. These coping strategies not only pose safety and environmental risks but also worsen Ukraine's overall risk profile. The INFORM Risk Index 2023 already classifies the country as highly disaster-prone.

Although the risks of deprioritising district heating are high, there is a real possibility that it will no longer be prioritised by the WASH Cluster. To preserve progress, the Cluster is preparing a smooth transition of coordination functions to public agencies and local authorities. This handover will be essential if district heating falls outside the WASH Cluster mandate or if the cluster system itself is phased out after the war.

At the national level, the Ministry for Development of Communities and Territories will remain the lead actor for policy and strategy and will, by default, take part in the handover. At the operational level, however, the State Agency for Restoration and Infrastructure Development is the most appropriate body to assume coordination of support to recovery projects over the long term.

2.4. Alignment with national strategies, policies, and international agreements

Even though humanitarian projects are designed to address immediate and urgent needs rather than long-term strategic goals, it is still crucial to take national priorities into account when choosing solutions for district heating (DH) issues caused by the war. The equipment supplied to DH companies will serve for many years and should therefore align both with Ukraine's key strategic goals and with the companies' own strategic plans.

District heating is part of the wider energy sector, and its objectives are typically reflected in energy strategies. However, power generation and transmission are considered more critical nationwide issues compared to heat supply. As a result, strategic documents focus mainly on the power sector and devote very limited attention to heating.

At present, the overarching strategic document is the National Economic Strategy through 2030. According to this strategy, Ukraine must ensure:

- decarbonisation of the heat supply system
- transition to renewable sources and diversification of the energy mix
- energy efficiency of heating networks and buildings
- smart metering and digital management systems

The National Energy Strategy 2030 envisions the development of local heat supply systems based on economically justified assessments of local fuel potential, supply logistics, and both regional and national energy infrastructure. It also highlights the need to improve the efficiency of existing district heating systems. The forthcoming National

Energy Strategy 2050, although not yet published, foresees investment in high-efficiency cogeneration and a greater use of biomass and its derivatives in the energy sector.

There are several other legislative and strategic documents, such as the Concept for the Implementation of State Policy in the Field of Heat Supply and the National Plan for Reducing Emissions from Large Combustion Plants, which emphasise alternative energy sources for thermal energy production, increased energy efficiency, and reduced emissions (a more detailed overview of secondary legislation and strategic documents is provided in Annex 1).

Ukraine's major international commitments in the energy sector, including district heating, are set out in the Association Agreement with the EU and in the Paris Agreement. The Association Agreement primarily focuses on electricity and gas infrastructure that can be integrated with EU networks. However, one of its core principles, which is also relevant to district heating, is the promotion of energy efficiency and the use of renewable energy sources. Ukraine is also required to align its legislation with several EU Directives that are highly relevant to district heating, including:

- Directive 2004/8/EC on the promotion of cogeneration
    - Promote high-efficiency cogeneration.
    - Report on CHP status and remove barriers to integration of cogeneration and district heating
- EU Energy Efficiency Directive (EED) & Article 14. Under EED Article 14 ("Heating and Cooling"), Ukraine must:
    - Conduct comprehensive assessments of its heating and cooling needs.
    - Implement an action plan to enhance efficiency in district heating systems

Check Annex 1 for more details on the implementation of the EU legislation in Ukraine.

Under the Paris Agreement of the United Nations Framework Convention on Climate Change, Ukraine has committed to reducing greenhouse gas emissions. Improving energy efficiency and increasing the share of renewable sources in the district heating sector will help the country meet its Nationally Determined Contributions (NDCs).

3. Priority Areas for Humanitarian Interventions

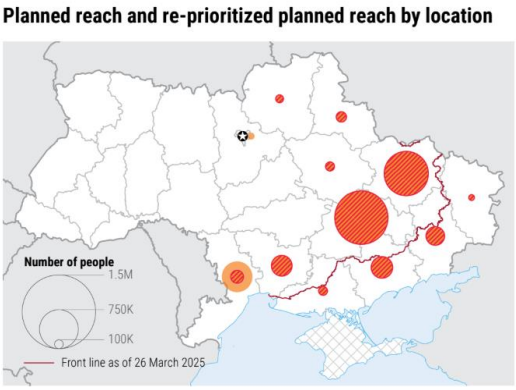
3.1. Geographic targeting

In line with the Re-Prioritised Humanitarian Needs and Response Plan (HNRP) 2025, WASH Cluster actors focus their district heating emergency activities on the locations most affected by hostilities and the most vulnerable populations. These are primarily regions in the East, North-East, and South, close to the frontline. The Technical Cell (TechCell) of the WASH Cluster supports these activities by collecting and analysing data

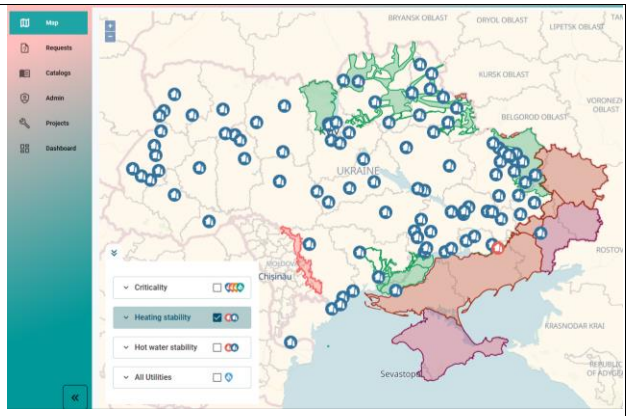
on DH utilities across Ukraine to identify urgent needs, with particular attention to frontline regions.

Humanitarian interventions carried out by partner organisations are documented by the WASH Cluster. Coordination is ensured through:

- collecting information on needs
- notifying partner organisations about the urgent requirement
- disseminating information on intervention
- organising regular coordination meetings



2025 Re-Prioritised HNRP Ukraine, WASH



WASH Cluster Tech Cell: Recording of the situation and needs of DH utilities countrywide

3.2. Infrastructure repair and rehabilitation

Emergency repair of DH systems covers a wide range of needs, from damaged buildings, chimneys, and boiler houses to destroyed technical equipment such as substations or pump stations, as well as leaking pipes. In almost all locations, networks require urgent pipe repairs, often not only due to war damage but also because of ageing infrastructure and years of insufficient maintenance. Pumping and water treatment equipment are also in high demand, as many existing systems can no longer ensure adequate water quality, which has further deteriorated as a result of the war.

The WASH Cluster Technical Cell collects information from DH utilities across the country on urgent needs as well as short-, medium-, and long-term requirements, and makes this information available to partner organisations. Urgent requests typically include protective equipment for personnel, tools and emergency vehicles, pipe network elements (such as pipes, fittings, and welding material), valves, water treatment systems, and boiler and pumping equipment, including control and power electronics.

Example: Kryvyi Rih

Since the destruction of the Kakhovka dam, the city of Kryvyi Rih has had to rely on new water sources, including the Inhulets River. However, this river flows through industrial mining areas and is heavily contaminated with minerals. As a result, the DH utility Kryvyi Rih Teplomerezha has faced severe corrosion and mineral deposits in heat exchangers and pipes. Equipment that normally lasts 15–20 years, such as heat exchangers, now requires replacement after only three years, while pipelines last just three to five years. The underlying issue is the deteriorated water quality and the fact that existing treatment systems were never designed to handle such high levels of salts and minerals. Consequently, seven boiler houses urgently require upgraded or expanded water treatment facilities, in addition to the ongoing replacement of heat exchangers and pipes.

3.2.1 Material supply versus workforce

Repairing DH networks requires both materials and a workforce. Under humanitarian aid rules, organisations typically provide materials and tools, while utilities supply the labour. However, this often results in incomplete projects, with kilometres of pipes left unused due to workforce shortages within the utilities. Good practice is to plan projects realistically, bring in contractors when necessary, and ensure appropriate supervision of the work.

3.2.2 Immediate repair versus rehabilitation and modernisation

Infrastructure repair is most effective when guided by a mid- to long-term modernisation plan. Many DH networks were originally designed for growing cities and industries, and are now significantly oversized. Replacing damaged assets with identical equipment (‘1:1 replacement’) is often costly and inefficient. Pumps are frequently larger than required and consume excess energy, while boiler houses were built to supply heat to industrial areas that no longer exist.

When these systems were first designed, power supply was abundant; today, high energy prices and frequent outages make oversized assets unsustainable. Good practice is to assess both immediate needs and long-term concepts as the basis for planning interventions. Temporary fixes may keep the system operational for one winter season, while heat supply schemes, roadmaps, or concept studies are prepared for sustainable modernisation.

3.3. Temporary heating solutions and backup systems

Modular boiler houses are prefabricated, compact heating systems that include all essential equipment (control system, water treatment unit, pumps, and boiler) within a

small footprint. They are used both to replace destroyed boiler houses and to provide backup heating for hospitals, schools, and residential areas. Because they can be delivered and installed quickly, modular boiler houses can serve as temporary, backup, or even permanent solutions. To reduce dependence on imported natural gas, they can be designed to operate on solid fuel, which humanitarian partners may also supply in emergencies.

As of June 2025, the WASH Cluster Technical Cell database recorded 146 requests for modular boiler houses from DH utilities across Ukraine. Most requests (116) are for gas-fuelled units. However, in frontline regions such as Zaporizhzhia and Kharkiv, concerns over potential gas supply disruptions have led utilities to request alternative-fuel systems. Even in Vinnytsia, Kyiv, and Lviv regions, some utilities have opted for solid fuel systems.

Good practice: Modular boiler houses are well-suited for emergency heating. Partner organisations should support DH utilities in choosing the most appropriate fuel type, balancing costs, risks, and supply dependencies, particularly for gas.

Examples of recent support include:

- provision of modular boiler houses for hospitals by WHO[15];
- delivery of 48 mobile boiler houses between February and April 2023 by the USAID Energy Security Project to enhance Ukraine's heating infrastructure resilience;
- delivery of six mobile boiler houses to Mykolaiv in 2024 by UNOPS, funded by Denmark

3.4. Power supply backup systems

DH systems require continuous electricity for control systems, water treatment, and pumping equipment. A power outage can quickly disable the entire network, which must run continuously. For this reason, DH utilities request backup systems such as diesel generators or cogeneration plants. These requests are documented in the WASH Cluster Technical Cell platform, and many aid organisations have already supplied fuel, generators, or cogeneration plants.

Diesel generators are a quick solution and easy to install, but they are very costly in the long term because of fuel expenses. Cogeneration plants are considerably more expensive to procure, install, and connect to the gas and power grids. However, once operational, they are more efficient and cheaper to run than diesel generators.

[15] WHO: Emergency Situation Report, Country Office Ukraine, Issue No. 76, 21 June 2024

Experience shows that DH utilities prefer cogeneration plants, since they generally have access to gas and can substantially reduce their electricity bills. Yet, some donated cogeneration plants remain idle because utilities cannot afford the high connection costs.

Good practice: A realistic financial plan between the DH utility and the aid organisation should cover all stages of backup power projects: procurement, installation, connection, and operation and maintenance. This ensures that donations result in effective aid for the population. Regular follow-up on implementation is highly recommended.

As noted in Section 3.2.2 ("Immediate repair versus rehabilitation and modernisation"), power supply must be part of a broader DH roadmap. So far, most DH utilities have not considered renewable energy as an option for backup power. This contrasts with water utilities, which increasingly integrate solar power into their systems. For stronger energy security and financial as well as environmental sustainability, renewable energy sources should be included in both short-term emergency measures and mid- to long-term DH planning. A pilot project could demonstrate the benefits and pave the way for wider adoption.

3.5. Challenges and Recommendations for District Heating Recovery

The district heating (DH) sector in Ukraine faces a number of operational, financial, and planning challenges which directly affect both emergency repairs and long-term modernisation. The issues described below are based on the experience of WASH Cluster partners and DH operators, and are accompanied by recommendations and examples of good practice.

Workforce

The war has significantly reduced the workforce of DH utilities, making large repair and rehabilitation projects difficult or even impossible without contractors. Technical staff in frontline areas are under particular pressure: access to assets is restricted, while the number of available staff is shrinking.

Good practice: Realistic project planning should identify potential workforce shortages early, allowing mitigation measures such as hiring contractors to be included. Close monitoring of implementation against project milestones is also recommended for partner organisations.

Planning uncertainty due to war

Many DH utilities state that there were mid- to long-term plans for modernisation of the DH network before the war started, but that these plans could not be followed anymore.

District heating companies in the near frontline regions have to deal with a changing number of residents and the related uncertainty of the number of users and of income. Central DH systems cannot easily adapt to significant changes in the number of users. In some places where boiler houses were designed for a larger number of residents or additional industrial users, DH utilities may shut down a boiler house and install a modular boiler house instead to meet the actual demand more efficiently and economically.

Good practice: Many partner organisations support scenarios, concept studies, feasibility studies or roadmap development by financing experts. There is a strong relation between Humanitarian Aid on infrastructure and Development: Emergency Aid on infrastructure, which takes mid- to long-term effects into consideration, provides immediate help and supports future development at the same time. Emergency Aid, which takes into account the long-term costs of O&M, serves the people in need immediately and enables future development at the same time.

Training and capacity building

DH utilities are in urgent need of training for their personnel. Requests include first aid, welding, and other vocational and technical courses. The lack of training on modern district heating technologies and management systems is a major constraint for both effective emergency aid and long-term modernisation.

Good practice: The WASH sector offers several useful examples of capacity building. UNICEF and SDS have trained Vodokanals in water treatment and management, methods for connecting pipes, cooperation with government agencies, and the use of alternative power sources. The Red Cross has organised first aid training courses for utility staff. Similar approaches should be extended to DH operators to strengthen their technical and operational capacity.

Financial sustainability and tariff systems

Current tariff systems do not allow either adequate emergency response or sustainable development and modernisation of DH systems.

On the cost side, a holistic view is required. This includes accounting for investment costs, depreciation, and operation and maintenance, as well as planning for replacement and modernisation. Because of limited financial resources, decisions on infrastructure repairs and upgrades are often short-sighted, particularly when equipment is donated and appears “free.” This neglects long-term O&M obligations and sustainability. For example, diesel generators can be installed quickly and are useful in emergencies, but they are expensive to operate. Cogeneration plants are more costly to procure and install, but their operation is far more economical. Measures to reduce losses, improve energy efficiency, and expand the use of renewable energy systems lead to the most significant and lasting cost reductions.

On the income side, tariff systems need reform. Sustainable DH requires tariffs that cover costs while ensuring reliable, high-quality service to end users. Tariff-setting is not only the economic foundation of DH utilities but also a politically sensitive issue, requiring commitment from government and policymakers.

Good practice: Many partner organisations assess the financial sustainability of their interventions by analysing the economic efficiency of operation and maintenance. When DH companies co-finance investments or installation costs, feasibility must be carefully evaluated to ensure long-term viability.

Need for mid- to long-term planning

As with water supply, sustainable heating solutions require large-scale infrastructure, supported by proper operation and maintenance, asset management, investment, and long-term planning. This makes it difficult to clearly separate emergency aid from development activities.

One widely accepted principle is that emergency aid is most effective when aligned with a mid- to long-term development plan. Even short-term solutions should be assessed in terms of their longer-term effects.

Good practice: Donors should request mid- to long-term plans from DH utilities and provide support for the development of DH schemes and roadmaps. This will help set priorities and ensure that immediate emergency measures also contribute to sustainable outcomes.

4. Advocacy and Funding Priorities

4.1. Funding gaps and financial needs estimation

According to RDNA4, which covers the period from 2022 to December 2024, 4.3 billion USD is needed for short-term repair and long-term recovery and reconstruction of the district heating sector. The estimation of the needs takes into account the *build back better* principle. According to the report, ¾ of the needs in the energy sector could be covered by private investment; however, to enable it, a conducive regulatory environment has to be created. The RDNA estimation covers long-term recovery and development of the sector with a decade-long perspective; it shows the overall picture and scale of damage.

The more urgent financial needs are reflected in the recent Winter Response Plan (WRP) 2025–2026[16], as a subset of both HNRPs, which indicates that 37.1 million USD are needed to support 1.3 million people in need. Only 6.3 million USD of funding is available to the WASH Cluster partners for winterisation activities as of mid-2025. The majority of

[16] Winter Response Plan (WRP) 2025-2026: https://humanitarianaction.info/document/ukraine-winter-response-plan-october-2025-march-2026

the WASH Cluster partners participating in the last DH SWG stressed that the lack of funding is the main issue preventing them from scaling the projects.

As per the Humanitarian Coordinator's decision, beyond the support to energy co-generation, even the provision of generators is no longer included in the WRP, and should now be coordinated through other forums with recovery and development actors. However, by realism, after bilateral advocacy undertaken by the WASH Cluster supported by the Energy Coordination Group (ECG meeting held on 2 July 2025), last resort backup power solutions, such as generators or solar units were kept in the WRP under the HNRP Strategic Priority (SP) 1 "Supporting the Most Vulnerable Who Remain Close to the Frontline" and SP 3 "Emergency Response to Airstrikes".

Moreover, the impact of cutting funds by the US Government for the energy sector in Ukraine is felt across the country. The USAID Energy Security Project was the largest one, with a significant contribution to the DH sector by providing cogeneration units, special transport vehicles, and other equipment needed by DH companies during the war. Even though the project was not focused specifically on frontline areas or fragile populations, its impact on the overall needs is significant. Those needs, which were supposed to be covered by USAID, remain unmet.

The funding gaps estimated in RDNA 4 and WRP 2025–2026 do not include the liquidity needs of the DH operators, which are severe during this war. Even though it may seem that the DH companies are for-profit enterprises and do not need assistance from humanitarian actors, this is not the case in Ukraine. The frozen tariffs and lack of compensation for costs related to them by the GoU put enormous pressure on the DH companies. In addition to regular maintenance and repair of damage, the DH operators must keep a stock of materials for urgent repairs. This ensures fast repair of pipe ruptures and boiler houses if there is damage. No humanitarian organisation will be able to procure and deliver materials and equipment in a day or even a week. For effective work, DH companies must renew their stock, which depletes quickly these days. Therefore, any assistance to DH companies is appreciated and valued, as it helps them save funds for survival and keeping operational.

4.2. Key asks for stakeholders in the district heating sector

The recovery and resilience of Ukraine's district heating (DH) systems cannot be achieved by a single actor. The scale of damage, combined with pre-war infrastructure degradation, calls for a coordinated approach that bridges emergency humanitarian response with long-term recovery and modernisation. This requires joint effort from donors, government agencies, development partners and international financial institutions (IFIs), and humanitarian actors.

Donors: Sustained and Flexible Investment in District Heating

Donors play a decisive role in enabling both emergency action and the preparation of long-term investments. Funding must move beyond one-off procurements to multi-year,

flexible arrangements that can adapt to changing front-line realities while laying the groundwork for system modernisation.

Priority donor actions include:

- Ensuring adequate and timely winterisation funding, particularly for frontline and recently liberated areas, as well as other parts of the country, where attacks have occurred and where DH outages directly threaten lives.
- Recognising long procurement and installation lead times and the short inter-season window for major DH works when structuring funding.
- Accounting for the risks of inaction when requests involve replacing obsolete equipment or procuring backup units, which may not appear urgent but whose absence can lead to emergencies.
- Financing complementary infrastructure (electricity backup, water treatment, fuel storage) is essential to DH operations, recognising interdependencies with power, water, and gas systems.
- Requiring realistic and workforce-aware project plans, ensuring that material deliveries are matched with adequate labour capacity, whether internal or contracted.
- Prioritising energy-efficient and renewable solutions, where feasible, when addressing district heating challenges

Government Agencies: Policy Reform and Coordination Leadership

Government agencies hold the levers for sector-wide transformation through tariff reform, policy alignment, and coordination leadership. Without addressing systemic issues, external funding will remain fragmented and reactive.

Priority government actions include:

- Ensuring sustainable, predictable financing for DH operators that covers operations, maintenance, and planned modernisation; incentivises efficiency, renewable integration, and sound asset management.
- Embedding DH modernisation in national strategies, in line with Ukraine's commitments under the EU Association Agreement and the Paris Agreement.
- Leading the transition of DH coordination from the WASH Cluster to national institutions (e.g., Ministry for Communities and Territories Development, State Restoration Agency) when appropriate, ensuring institutional memory is preserved.

- Facilitating open access to/exchange of infrastructure data on damage, needs, and investment priorities to inform and align donor and partner interventions.
- Incentivise the provision of humanitarian assistance in the form of equipment and repairs to district heating companies by simplifying regulatory procedures and ensuring tax exemption (VAT). (Ministry of Finance)

District Heating Companies and Local Authorities: Operational Readiness and Strategic Alignment

District heating companies and local authorities are at the forefront of service delivery and emergency response. Their ability to maintain operations under wartime conditions, while preparing for long-term modernisation, is critical to safeguarding urban heating services. Effective coordination with humanitarian and development partners, sound technical planning, and proactive resource management are essential to ensuring system reliability and resilience.

Priority actions for DH companies and local authorities include:

- Maintaining and regularly updating assessments of infrastructure condition, damage, and urgent needs, and sharing these with donors and partners to guide prioritisation of support.
- Keeping stockpiles of essential materials and spare parts to enable rapid repairs without delays caused by external procurement timelines.
- Integrating mid- to long-term modernisation goals into emergency repair projects, guided by heat supply schemes and roadmaps to ensure compatibility with future upgrades.
- Investing in capacity building and staff training on modern DH technologies, safety, and management systems, in collaboration with humanitarian and development actors.
- Planning realistically for workforce requirements, including the engagement of contractors where internal capacity is insufficient to meet project timelines.

Development Partners and International Financial Institutions (IFIs): Bridging the Humanitarian–Development Divide

Development partners and IFIs have the resources and technical capacity to deliver large-scale, transformative projects. However, their long planning horizons and focus on structural reforms can leave critical gaps in the short term. Coordination with humanitarian actors is essential to ensure that immediate repairs support, rather than contradict, long-term goals.

Priority IFI and development partner actions include:

- Blending grants and concessional loans to make large-scale rehabilitation projects financially viable for municipalities struggling with frozen tariffs and reduced revenues.
- Financing energy-efficient, demand-adjustable systems, smart metering, and digital controls that align with Ukraine's climate goals and EU obligations.
- Coordinating closely with WASH Cluster partners to:
    - Identify opportunities where humanitarian interventions can stabilise systems until long-term projects are implemented.
    - Ensure technical compatibility of emergency repairs with future modernisation works.
    - Leverage humanitarian assessments for investment planning and geographic prioritisation.
- Supporting municipalities in heat supply scheme development, feasibility studies, investment roadmaps, mid- and long-term strategies development, which also serve as a framework for humanitarian partners to align short-term support.
- Funding capacity-building programmes for municipal utilities on lifecycle asset management, energy efficiency, renewable integration, and project management, ensuring human capital readiness for sustained operations.

WASH Cluster Partners and Humanitarian Organisations: Maintaining Emergency Readiness while Enabling Sustainable Outcomes

Humanitarian actors, especially WASH Cluster partners, have unique access and flexibility to work in high-risk, frontline, and small-town contexts. Their interventions are often the first line of defence against heating outages. However, these efforts must be designed to fit into a broader modernisation path to avoid locking in outdated technologies.

Priority humanitarian partner actions include:

- Maintaining rapid repair capacity and winterisation readiness, especially in frontline regions.
- Designing emergency repairs with long-term compatibility in mind, using equipment and materials that match modernisation plans.
- Assess the district heating (DH) company's capacity to operate and maintain the supplied equipment thoroughly. Where feasible, procure the equipment together with at least one year of maintenance services.

- Proactively sharing technical lessons learned and cost-effectiveness data from emergency interventions to inform investment prioritisation by IFIs and development partners.
- Strengthening coordination mechanisms with development actors to ensure complementary rather than duplicative projects.
- Supporting technical and safety training for DH utility staff, with a focus on modern equipment operation, emergency response, and occupational safety.

4.3. Risks of Inaction

With extensive damage to DH infrastructure, severe shortages in financial resources, and significantly worn-out assets, DH operators require support not only during the war but also in the post-war period for recovery and modernisation projects. The stakes are high: failure to act will have immediate humanitarian consequences and long-term economic and social costs.

During the war, the possible consequences of damage to DH assets cannot be underestimated. In Ukraine's cold climate, particularly in the North and East, the disconnection of citizens from central heating can result in thousands of people being exposed to life-threatening health risks and forced displacement. These risks are not limited to direct attacks. They also stem from prolonged power outages, interdependencies with vulnerable water and electricity networks, and the inability of DH companies to replace old, inefficient equipment in time.

The global humanitarian reset and the significant decrease in available funding have created a real risk that district heating will be deprioritised as a non-core humanitarian activity. If this happens, the sector must not be abandoned. Disengagement now will almost certainly lead to far higher costs later, both financially and in human suffering, if equipment failures or system breakdowns cause widespread heating loss during the winter.

The consequences of inaction will cascade:

- **Humanitarian:** increased mortality and morbidity, further displacement, and unsafe coping strategies such as the use of dangerous, inefficient heating methods.
- **Economic:** soaring emergency response costs for humanitarian clusters, municipalities, and the state.
- **Infrastructure:** accelerated degradation of already fragile systems, making future recovery exponentially more expensive.

Support to DH companies must therefore be structured, sustained, and coordinated among all parties, such as government agencies, humanitarian clusters, development partners, donors, and IFIs. All stakeholders must work towards a single goal: reliable and resilient district heating during the war, with a clear pathway to an efficient, eco-friendly, and demand-adjustable system in the long term.

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Annex 1. Strategic and planning documents at the national and international levels

Document name	Relevance for district heating
National Economic Strategy until 2030	• Decarbonization of the heating system • Transition to renewable sources and diversification of the energy balance • Energy efficiency of heating networks and buildings • Intelligent accounting and digital management systems
National Energy Strategy 2030	It envisages the development of local heating systems based on economically sound assessments of local fuel potential, supply logistics, and regional and national energy infrastructure. It also emphasises the need to improve the efficiency of existing district heating systems.
National Energy Strategy until 2050	• investments in high-efficiency cogeneration • increasing the use of biomass and its derivatives in the energy sector
Concept of implementation of state policy in the field of heat supply	• increasing the share of alternative energy sources in thermal energy production to 40% by 2035.
National Energy Efficiency Action Plan for the period up to 2030	• Transition to renewable thermal energy sources • Increasing the share of "green" thermal energy • Full commercial metering of thermal energy and hot/cold water • Expanding incentives in the heating sector • Development of modern regulatory legal acts • Flexible generation capacity planning • Integration with European directives

National Energy and Climate Plan for the period up to 2030	● Reducing greenhouse gas emissions by 65 % compared with the level of 1990 ● Achievements: 27 % share of renewable sources of energy in the general final energy consumption ● Provision 35 % RES in heating and cooling, 25 – 25.4 % in electricity and 14 % in transport ● Deepening diversification of energy sources – no more than 30 % of one supplier ● Primary energy consumption is no more than 72.224 million tons of equivalent; final energy consumption is no more than 42.168 million tons of equivalent. ● Full integration of electricity and gas markets with European ones ● Implementation of "smart metering" of electricity and "smart grids" ● Climate neutrality of the energy sector by 2050, of the entire economy by 2060
National Plan for Reducing Emissions from Large Combustion Plants	● Ensuring the reduction of emissions of sulfur dioxide, nitrogen oxides and dust to the limit values established by EU Directive 2010/75 ● Gradual achievement of European emission standards by the end of the plan period (2033) ● Involvement of operators of large installations (≥ 50 MW) in planned events with modernisation equipment ● Installation of dust filters, sulfur and nitrogen purification equipment at thermal power plants, CHP plants and boiler houses ● Reduction of dust emissions by ≈20 times, sulfur dioxide by ≈ 40 times and nitrogen oxides by ≈ 4 times by the period action plan ● Implementation of a gradual transition mechanism (derogation from immediate compliance with the norms from 2018) ● Establishing a coordination role for the Ministry of Energy and monitoring implementation through the Energy Community
International treaties	
Paris Agreement	Ukraine has committed to reducing greenhouse gas emissions. By increasing energy efficiency and the share of renewable sources in the district heating sector, Ukraine is strengthening compliance with its Nationally Determined Contributions (NDCs).

Association Agreement with the EU and Directives	
Association Agreement	It primarily focuses on electricity and gas infrastructure that can be integrated with EU networks. However, the main principle of cooperation in the energy sector, which also applies to district heating, is to promote energy efficiency and the use of renewable energy sources.
Directive 2004/8/EC on the promotion of cogeneration	Goals: ● Promote highly efficient cogeneration. ● Report on the status of CHP plants and the removal of obstacles to the integration of cogeneration and district heating
EU Energy Efficiency Directive	Goals: ● Conduct a comprehensive assessment of heating and cooling needs. ● Implement an action plan to improve the efficiency of district heating systems.
Energy Community Treaty	Joining the Energy Community ensures : ● Implementation and expansion by Ukraine of the European Union regulatory framework on energy, environment, competition and renewable energy sources; ● participation of Ukraine in the development, together with the Contracting Parties, of a regulatory system that will promote the effective functioning of the markets for energy products and materials for the transportation of which networks are used, and the creation of a single mechanism for cross-border transmission and/or) transportation of energy products and materials for the transportation of which networks are used; ● creation of a single regional market for energy products and materials transported by networks, without internal borders, including coordination of mutual assistance in the event of serious disruptions in the functioning of energy networks or external damage.