

Integrated Planning for a Sustainable Recovery in Ukraine

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Integrated Energy Planning for a Sustainable Recovery in Ukraine

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Current energy context in Ukraine

- **In Ukraine, critical short-term needs need to be balanced with long-term aims.** The direct damage from the war on energy networks up to 2025 is estimated at USD 68 billion; more than 10 billion in the cities we work in. Many Ukrainians faced 18+ hours a day without electricity or heat this winter.
- **The crisis has exposed the vulnerability of centralized energy systems.** Large thermal power plants and combined heat and power plants (CHPs), which are critical to the functioning of major cities and entire regions, have become primary targets for 3/4 of missile strikes
- Power supply interruptions before the war were already highest in the European continent, with inefficient district energy networks and energy management systems.
- Ukraine wants to decarbonise and integrate within the EU. It has already set ambitious clean energy and environmental targets: 35% renewables in its heating networks and 25% in its electricity grids by 2030.

Reaching these goals and rebuilding sustainably will require a shift—not only in technology, but in the structure of Ukraine's energy system.



"The transformation of the market will occur towards a balanced combination of the advantages of "large" and "small" locally-based energy".

Ukraine National Climate and Energy Plan 2024

Supporting a more decentralized, clean and resilient recovery

UNEP and IRENA have launched a multi-year, multi-city, technical assistance programme in Ukraine, with support from the Government of Italy, to support planning that attracts investment into sustainable, local energy systems.



**ASSESSMENTS AND
FEASIBILITY STUDIES
FOR LOCAL CLEAN ENERGY**



**CITY AND REGIONAL
ENERGY MASTERPLANS**

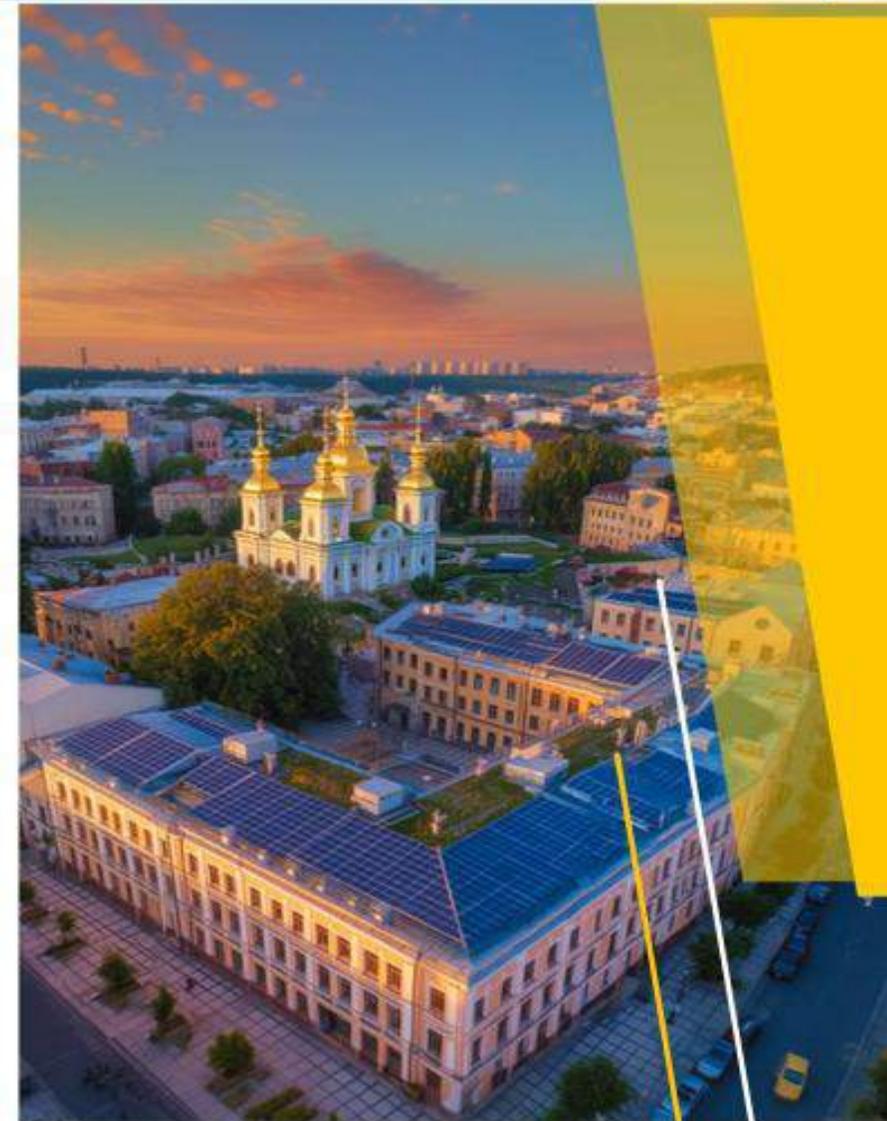


**BUILDING CAPACITIES
FOR LOCAL ENERGY**

UNEP and IRENA's strengths complement each other

- UNEP is strongest at linking across sectors (power, heat, waste, water) and turning cross-sector solutions into investable, city/utility-ready programmes with environmental safeguards and finance pathways
- IRENA is strongest at mapping clean energy resources, system-level analytics, market design for renewables and facilitating projects.

Together, we cover end-to-end for local clean energy projects:



Why cities? Cities are a key entry point to facilitate reconstruction

- Cities are where Ukraine's recovery projects concentrate, and where we can benefit from local knowledge that lacks these capacities
- Where there are hidden potentials for decentralized energy resources, local renewables and improved resilience
- Where we can find opportunities to join up renewables, heat, buildings water and waste infrastructure
- Where planning can turn fragmented aid into a bankable pipeline that delivers faster resilience, lower costs, and EU-aligned recovery.
- Where we can build enduring capacity for continued local renewables and clean energy



Assistance to guide investment decisions towards local renewables, efficiency and integration



UNEP's work

IFIs, donors, developers, investors



- Assessing renewable resources, energy infrastructure and demands
- Mapping links to other infrastructure for efficiency / cost gains
- Zoning, identifying high potential areas and critical infrastructure
- Evaluating different technology combinations
- Initial costing, financing and business models, schedule
- Detailed engineering and technical study
- Full environmental and social assessment
- Bankable business case, full project documentation



Many potential projects

High value projects identified, high bankability potential

Priority investment pipeline created

Supporting local, sustainable energy recovery in Kharkiv: Renewables, efficiency and flexibility

Digitalization of the district
energy network



CAPEX: 16.5 Million EUR
20% energy and cost savings

Reconstruction of district
heating with high efficiency
cogeneration of electricity and
heat



CAPEX: 46.2 Million EUR

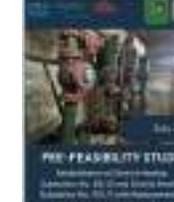


Rehabilitation of boiler houses
with efficiency and renewables



CAPEX: 7.4 Million EUR

Modernization and
rehabilitation of district heating
(efficiency; solar PV; heat
pumps; storage)



CAPEX: 5.6 Million EUR

Supporting local, sustainable energy recovery in Mykolaiv: Integrating renewables into basic urban services

Wastewater modernization
(solar PV, storage, heat
pumps)



30% energy savings

Reconstruction of the water
supply culvert across the Inhul



10% system-wide efficiency savings



Wastewater modernization
(solar PV, storage, heat
pumps)



32% energy savings

Energy efficient, climate-
resilient, zero-spill wastewater
pumping station



28% energy savings