

Efficient Buildings, Resilient Ukraine

A Policy Study under the FELICITYII Programme



On behalf of:



Federal Ministry
for the Environment, Climate Action,
Nature Conservation and Nuclear Safety



of the Federal Republic of Germany

As a federally owned enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

Published by
Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices
Bonn and Eschborn, Germany

Address
Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH
Köthener Str. 2
10963, Berlin, Germany
T +49 61 96 79-0
F +49 61 96 79-11 15
E info@giz.de
I www.giz.de/en

Project description
Financing Energy for Low-carbon Investment Cities Advisory Facility –
Eastern Partnership and Central Asia Countries (FELICITYII)

Project manager
Andre Fabian
andre.fabian@giz.de

Authors
Sacha (Oleksandr) Antonenko, Brussels
Nurshod Saidov, Graefenberg

Contribution
Anja Rosenberg and Borko Raicevic, Vienna
Winfried Damm, Eschborn

Design and layout
Alvira Yertayeva, Astana

Photo credits/sources
Cover page: ©pexels.com
Title page (p.3): ©GIZ

This report was elaborated by the experts of the Save My Energy Bill SRL and INTEGRATION International Management Consultants GmbH within the IKI global project "Financing Energy for Low-carbon Investment Cities Advisory Facility – Eastern Partnership and Central Asia Countries" (FELICITYII). The project is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the International Climate Initiative (IKI) of the Federal Government of Germany. Within the Federal Government, the IKI is anchored in the Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety (BMUKN). Selected individual projects are also the responsibility of the Federal Foreign Office (AA).

The contents of this report are the sole responsibility of the authors and can in no way reflect the official opinion of the GIZ project.

On behalf of
Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety (BMUKN)

Germany 2026



EFFICIENT BUILDINGS, RESILIENT UKRAINE

A Policy Study under the FELICITYII Programme

Authors:

Sacha Antonenko, CEO
SAVE MY ENERGY BILL SRL

Rue de la Colonne, 1A
1080 Molenbeek-Saint-Jean
Belgium
T +32 489 67 47 60
E ceo@savemyenergybill.com
I <https://savemyenergybill.com>



Nurshod Saidov, Principal Consultant
INTEGRATION Environment & Energy GmbH

Bahnhofstrasse 9
D-91322 Graefenberg
Germany
T +49 9192 9959-0
E int-ee@integration.org
I <https://integration.org/environment-energy/>



CONTENTS

List of figures	6
List of tables	6
List of abbreviations	7
EXECUTIVE SUMMARY	10
INTRODUCTION	14
1 ENERGY CONSUMPTION AND TRENDS	15
2 STRATEGIC FRAMEWORK	17
2.1 Nearly Zero Energy Buildings (NZEB) Concept and Plan	18
2.2 Long Term Renovation Strategy until 2050 (LTRS)	18
2.3 National Energy and Climate Plan until 2030 (NECP)	19
2.4 State Program to Support Thermal Modernisation of Buildings until 2030 (TM 2030 Program)	19
3 LEGAL FRAMEWORK	22
3.1 Energy and Climate Governance	22
3.2 Energy Efficiency Laws	22
3.3 Minimum Energy Performance Requirements (MEPR) for New and Renovated Buildings	23
3.4 Energy Performance Certificate (EPC)	23
3.5 Nearly Zero-Energy Buildings (NZEB)	24
3.6 Leading Role of the Public Sector	25
3.7 Major Renovation and Renovation Passports	25
3.8 Ecodesign and Energy Labelling	26
3.9 Energy Services Company (ESCO) and Energy Performance Contracts (EnPCs)	26
3.10 Financial Incentives and Programmes	27
3.11 On-site Solar Energy Installations	28
4 INSTITUTIONAL FRAMEWORK	33
4.1 Governmental Institutions	33
4.2 State Funds	34
4.3 Homeowners' Associations (HOAs)	34
4.4 International Organisations	34

5	NATIONALLY DETERMINED CONTRIBUTION.....	36
	NDC2.0.....	36
	NDC3.0.....	37
6	NATIONAL AND REGIONAL ACTION PLANS.....	38
6.1	National Action Plans.....	38
6.1.1	National Energy and Climate Plan until 2030 (NECP).....	38
6.1.2	Long Term Renovation Strategy until 2050 (LTRS).....	38
6.1.3	State Program to Support Thermal Modernisation of Buildings until 2030 (TM 2030 Program).....	39
6.2	Local Action Plans.....	39
7	ENERGY TARIFFS.....	42
8	NATIONAL-LEVEL ESTIMATES.....	45
8.1	Estimates of the strategic framework.....	45
8.2	National Estimates Benchmarking.....	46
8.2.1	LTRS estimates on the renovation costs.....	46
8.2.2	Other national and international estimates on the renovation costs per square meter.....	47
8.2.3	GIZ/DENA estimates on the renovation costs.....	48
8.2.4	Investment Costs per Ton of CO ₂ Emissions Reduction.....	49
8.2.5	Payback period.....	50
8.3	Circular Economy.....	50
8.4	Multiple Benefits.....	51
9	COUNTRY-SPECIFIC CHAPTER.....	54
9.1	War Impact and Restoration Perspectives.....	54
9.2	European Integration.....	54
	RECOMMENDATIONS.....	57

Annex 1. Average electricity tariffs for households in the EU and Ukraine in the first half of 2025, €/kWh.....	63
--	----

Annex 2. Average electricity tariffs for non-households in the EU and Ukraine in the first half of 2025, €/kWh.....	64
--	----

Annex 3. List of donor-funded projects related to the improvement of energy efficiency (EE) in buildings in Ukraine.....	65
---	----

Annex 4. List of reports and studies related to the improvement of energy efficiency (EE) in buildings in Ukraine (completed during 2015–2025).....	66
--	----

List of figures

Figure 1. Timeline of key strategic documents on energy performance in buildings	17
Figure 2. Average energy tariffs in the EU and Ukraine in the first half of 2025, €/kWh	42

List of tables

Table 1. Key indicators of the housing sector of Ukraine, as of 2023 (unless another period is indicated).....	15
Table 2. LTRS' main strategic indicators.....	18
Table 3. Comparison of 2030 targets of LTRS (ambitious MEPR scenario) and TM 2030 Program.....	20
Table 4. Thermal Modernisation 2030 Program reduction by 2030, mln tonnes of CO ₂ -eq.....	36
Table 5. LTRS GHG reduction by 2050, mln tonnes of CO ₂ -eq.....	36
Table 6. LTRS expected results until 2030	38
Table 7. TM 2030 Program expected results until 2030.....	39
Table 8. Estimates of Ukraine's strategic framework by 2030.....	45
Table 9. Benchmarking of LTRS renovation costs per m2 of heated area, €/m2 (without VAT).....	46
Table 10. Key indicators from ongoing/implemented GIZ/UA and DENA pilot projects.....	48
Table 11. Investment cost benchmarking, €/tCO ₂ e/year.....	49
Table 12. Multiple benefits for the large-scale renovation of residential and public buildings to NZEB requirements.....	55

List of abbreviations

BMZ	German Federal Ministry for Economic Cooperation and Development
CA	Central Asia
CE	circular economy
CMU	Cabinet of Ministers of Ukraine
EaP	Eastern Partnership
EC	European Commission
EE	energy efficiency
EEB Law	Law on Energy Efficiency of Buildings dated (recast) 03.08.2025, No. 2392-IX
EED	Energy Efficiency Directive
EEF	Energy Efficiency Fund
EIB	European Investment Bank
EIF	European Investment Fund
EnC	Energy Community
EnPCs	energy performance contracts
EPBD	Energy Performance of Buildings Directive
EPC	energy performance certificate
ESCO	energy service company
EU	European Union
FEC	final energy consumption
FELICITYII	Financing Energy for Low-Carbon Investment (Cities Advisory Facility Eastern Partnership and Central Asia Program)
GHG	greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GoU	Government of Ukraine
HCA	heat cost allocator
HOA	homeowners' association
HOPE	Housing Repair for People's Empowerment (World Bank Programme)
IDPs	internally displaced persons
IEA	International Energy Agency
IFC	International Finance Corporation
IKI	International Climate Initiative
IPRs	Integrated National Energy and Climate Progress Reports
LTRS	Long Term Renovation Strategy dated 29.12.2023, No. 1228-r
MCTD	Ministry of Communities and Territories Development of Ukraine
MEPR	minimum energy performance requirements
MEPS	minimum energy performance standards
MS	Member State
MVHR	mechanical ventilation with heat recovery

NBRP	National Building Renovation Plan
NDC	Nationally Determined Contribution
NECP	National Energy and Climate Plan dated 25.06.2024, No. 587-r
NEURC	National Energy and Utilities Regulatory Commission
NZEB	nearly zero-energy buildings
NZEB Concept and Plan	National Plan for Increasing the Number of Nearly Zero-Energy Buildings, dated 29.01.2020, No. 88-r
PSO	public service obligations
PV	photovoltaics
RDNA4	Ukraine Fourth Rapid Damage and Needs Assessment Report
SAEE	State Agency on Energy Efficiency and Energy Saving of Ukraine
SFDEET	State Fund for Decarbonisation and Energy Efficiency Transformation
TM 2030 Program	State Targeted Programme to Support Thermal Modernisation of Buildings until 2030
UNDP	United Nations Development Programme
VAT	value-added tax
ZEB	zero-energy buildings

Acknowledgements

This study, designed and developed by the FELICITYII Programme (Financing Energy for Low-Carbon Investment – Cities Advisory Facility, Eastern Partnership and Central Asia Programme), has been created as a cross-sectoral contribution to Ukraine's green recovery and the achievement of its climate targets. It intends to serve as informational foundation and roadmap for implementing necessary reforms in the building energy sector. The FELICITYII Programme would therefore like to express its sincere thanks to Ms. Alona Shkrum, First Deputy Minister for the Development of Communities and Territories, Oleksandr Krasnolutskyi, Deputy Minister of Economy, Environment and Agriculture of Ukraine, and their teams. It is the fruitful partnership with both ministries that has made this study possible.

The authors of this study would like to express their sincere gratitude to Anja Rosenberg, Technical Advisor and Borko Raicevic, Senior Energy Efficiency Expert and Data Analyst at the Energy Community Secretariat, for their valuable contribution to the development of the Policy Study.

Our sincere thanks also go to Winfried Damm, the Head of the District Heating Sector Reform in Ukraine (ReWarm) project at the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), whose technical expertise and suggestions have been instrumental in developing cost-effective and high-impact recommendations. We also gratefully acknowledge the valuable support and collaboration of our dear colleagues Kateryna Stelmakh and Viktoriia Pryimak of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH in Ukraine. Their technical expertise and facilitation have significantly contributed to our work and the preparation of this Policy Study.

EXECUTIVE SUMMARY

1. Energy consumption and trends

Due to the ongoing war, reliable statistical information on energy consumption in buildings is either unavailable or access-restricted. The analysis of the available data indicates the following:

- › Buildings in Ukraine are responsible for about 42% of final energy consumption, which is similar to the European Union (EU) average indicator;
- › Residential buildings are the second largest consumer in Ukraine and account for 33% of total final energy consumption, after the industrial sector (34%);
- › Residential buildings account for over 40% of Ukraine's heat energy consumption, yet less than 25% of such buildings are equipped with heat meters and control systems;
- › Ukraine's population decreased by 27% or 14 mln. since 1991, incl. 6 mln from 1991 to 2014 (-0.24 mln/year before the war) and by 8 mln during 2014-2023 (-1.0 mln/year during the war);
- › During 2014-2025, Russia occupied approximately 20% of Ukrainian territory (incl. all buildings on these territories) and either destroyed or damaged 14% of all existing buildings in Ukraine;
- › 85-90% of the building stock (excluding destroyed and damaged) is highly energy inefficient.

The analysis of the publicly available data also reveals certain inconsistencies and ambiguities concerning the exact time frame and the treatment of temporarily occupied territories.

2. Strategic Framework

The strategic framework on energy performance in buildings in Ukraine is rather complex. Some of the documents were either developed and approved

before Russia's full-scale invasion (i.e. before February 2022) or did not take into account the lack of finances, and the magnitude of damages due to the ongoing war. As a result, the building-related targets envisaged by the State Targeted Programme to Support Thermal Modernisation of Buildings until 2030, adopted in 2025 (TM 2030 Program), are from 3 to 50 times lower than the same targets envisaged by the Long-Term Renovation Strategy, adopted in 2023 (LTRS).

3. Legal framework

While Ukraine's legal framework is mainly based on the EU Acquis, there are multiple differences with the best EU practice:

- › As of December 2025, there are no minimum energy performance requirements (MEPR) for detached or semi-detached residential buildings in Ukraine (unless they are built or renovated using public funds). On the contrary, MEPR are mandatory for all residential buildings in the EU MS.
- › In Ukraine, the energy performance certificate (EPC) scheme is not mandatory for individual residential buildings and existing apartments when they are sold or rented out or when they are undergoing major renovation (the EPC is only mandatory for major renovation using public funds). On the contrary, in the EU MS, the EPC has been mandatory for all residential buildings being sold or rented out for more than 20 years.
- › Ukrainian MEPR and EPC for non-residential buildings are based on heated volume (kWh/(m3.y)) and not per heated area (kWh/(m2.y)) of a building. The use of the heated volume indicator for the EPC and MEPR purposes directly contradicts the requirements of the Energy Performance of Buildings Directive (EPBD).

- › There is a lack of coordination between different policy and legal documents related to nearly zero-energy buildings (NZEB).
- › Ukraine's level of ambition related to the savings to be achieved by the public sector buildings is significantly lower than in the EU due to a lack of financial resources in Ukraine.
- › There is about a 10-year delay concerning the implementation of zero-energy buildings (ZEB) in Ukraine compared to the EU MS.
- › There is, on average, a 5–8-year delay with the transposition of the ecodesign and energy labelling requirements to the UA market.
- › In Ukraine, energy performance contracts (EnPC) are mainly used for low costs and so-called “low-hanging fruit” measures, like the installation of automated control and smart thermostats. In countries with developed ESCO markets, EnPC are used for major renovation.
- › There are loopholes related to the state financial incentives and programmes, which favour partial renovation and lead to the “lock-in” effect that will require new costly renovations in the future.

4. Institutional Framework

The institutional framework on energy performance in buildings in Ukraine is rather complex, with multiple bodies involved in the development of strategic and legislative documents. While the Ministry of Economy, Environment and Agriculture is the main coordinating body for the NECP development, it has a limited technical capacity related to energy efficiency and energy performance in buildings. The overall lack of coordination between different state bodies may also explain why the quantitative targets of the TM 2030 Program are from 3 to 50 times lower than the same targets envisaged by the LTRS.

5. Nationally Determined Contribution

The analysis of publicly available data confirms that the building sector has one of the largest greenhouse gas (GHG) reduction potentials in Ukraine's economy.

At the same time, there is no consistent correlation of the building sector's emissions reduction projections in the strategic framework, the Nationally Determined Contribution 2.0 (NDC2.0) and NDC3.0.

6. National and regional action plans

Ukraine has comprehensive strategic and institutional frameworks for national action plans until 2030, with the National Energy and Climate Plan (NECP) and LTRS generally aligned. This framework is complemented by a relatively new TM 2030 Program, which outlines more realistic, measurable targets compared to the LTRS. At the same time, the TM 2030 Program contains methodological ambiguities or disaggregated figures, which limit the accuracy of planning and further monitoring of achieved results by NGOs and civil society.

7. Energy tariffs

There are significant cross-subsidies for residential consumers in Ukraine. Electricity and natural gas prices for residential consumers in Ukraine were more than twice as low as those for industry in 2025. On the contrary, EU households paid on average 20-30% higher prices than non-households (Annexes 1-2). From an economic point of view, the identified subsidies do not provide real benefits and hinder economic development. The overall impact of reduced energy bills for households is compensated for by higher costs of all other services and products, as well as the reduction of budgetary income due to the losses of stakeholders covering these costs.

Non-cost reflective energy tariffs for households, which are 2-3 times lower than the real costs, increase the payback period of energy efficiency measures, do not stimulate rational use of energy and increase energy dependency of Ukraine. Ukraine's approach of providing subsidised energy tariffs for all households, including wealthy residential consumers, is fundamentally wrong. In the EU, subsidies are provided to vulnerable and energy poor (not all) households.

8. National-level estimates

The two key strategic documents lack overall coordination and are based on different investment cost assumptions. The average investment costs needed to reduce one ton of CO_{2e} of the TM 2030 Program are more than four times lower than those of the LTRS. The LTRS's assumptions on renovation costs per m² in the main text and Annex 3 also vary by four times.

The existing assumptions on the costs of comprehensive renovation are not supported by pilot projects. Thus, it is necessary to design and implement standardised renovation packages, which can be scaled up in the future. German experience also shows that the application of standardised renovation packages can further reduce renovation costs by 20-30%.

As of December 2025, the real costs for the building renovation are no longer cheaper in Ukraine than in the neighbouring EU MS due to war-related factors, like the disruption of the supply chains and a lack of qualified workforce. The payback period for the renovation of residential houses in Ukraine may be from 3 to 8 times longer than in EU MS due to subsidised energy tariffs.

While the circular economy (CE) framework is at an early stage of development in Ukraine, the country faces enormous challenges related to the accumulation and treatment of construction/demolition waste due to the ongoing war, which already caused more than 10 million tons of waste in 2022-2024. The volume of construction/demolition waste continues to grow due to Russia's daily attacks on civilian buildings and infrastructure. At the same time, recent pilot projects illustrate that 90% of demolition waste could be recycled and reused in reconstruction.

9. Country-specific chapter

While further damages and destruction of residential and public buildings depend on the intensity of Russia's attacks on civilian infrastructure and the capacity of Ukrainian military forces to defend against such attacks, the post-war reconstruction of buildings offers multiple benefits for Ukraine. The realistic macroeconomic benefits until 2030 may be estimated

at 75,600 new jobs and €2.73 bn return to Ukraine's economy via taxation.

Ukraine's legislative framework is broadly aligned with the 2018 EPBD. However, if European integration remains one of Ukraine's highest strategic priorities, the GoU is required to transpose and implement the 2024 EPBD, including the integration of ZEB requirements, the establishment of MEPR with clear transition timelines, the development of a unified digital building data register and other recommendations of the European Commission.

Recommendations and Conclusions

The specific recommendations and conclusions in the study are consistently numbered to correspond with the respective chapters throughout the document. For example, the text below corresponds to **Section "8.2.3 GIZ/DENA estimates on the renovation costs."**

Conclusion 8.2.3

It is estimated that the renovation of 61,661 buildings as envisaged by the TM 2030 Program will require at least twice the €4.2 bn investment estimated in the document. However, the estimates should be further validated by pilots.

Recommendation 8.2.3.

The existing assumptions on the costs of comprehensive renovation are not supported by pilot projects. Thus, to verify the costs needed for comprehensive renovation, it is necessary to design standardised renovation packages and implement pilot projects. For example, the GoU and the donor community may consider two or more standardised packages for the renovation of an old multi-apartment building connected to the district heating system in Ukraine:

Package 1. Renovation of the heating system, enabling billing based on actual heat and hot water consumption, which is also one of the requirements of the 2023/1791 EED. Thus, this Package must comply with the following provisions (i.e. any partial repairs of a heating system should be avoided):

- Installation of an individual heating point with hydraulic balancing, and automatic temperature control;
- Upgrade to the two-pipe distribution system to allow the regulation of heat consumption;
- Installation of a heat meter for each building and a heat cost allocator (HCA) for each radiator (i.e. when the installation of conventional heat meters in individual apartments is technically and economically unfeasible);
- Make by-passes and thermostats mandatory for each radiator;
- Installation of hot water meters per apartment with an upgrade to a recirculation system to reduce wait times and water waste, as well as to ensure accurate and fair billing of actual consumption.

Package 2. Comprehensive or major renovation to achieve cost-effectively MEPR/NZEB requirements (see Recommendation 3.7. on the definition of major renovation and Renovation Passport above). Thus, this Package must comply with the following provisions (i.e. any partial repairs should be avoided to comply with the EPBD-compliant definition of major renovation):

- All measures identified in Package 1 (see above) on the renovation of the heating system, including the reduced energy demand due to improved performance of a building;
- The renovation of windows, façade, roof and basement insulation must be done together to avoid mould-forming thermal bridges;
- The renovation of multi-apartment buildings should undergo rigorous assessment on safety, load-bearing and thermal bridges of balconies/loggias;
- Improvement of airtightness (e.g. after replacing windows and doors) must be accompanied by the upgrade of the ventilation system.

The comparison of costs, implementation time and achieved savings of the two or more standardised packages may provide decision makers with a solid foundation and fact-based justifications on the renovation strategy. Namely, whether it is better to prioritise the renovation of heating systems only (see Package 1) as a cheaper and faster option or proceed with a comprehensive renovation (see Package 2), which yields higher savings, but is more expensive and may compete for funding with other strategic costs, e.g. defence budget.

INTRODUCTION

This Policy Study (hereinafter “Study”) is produced for the FELICITYII¹ program, implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the European Investment Bank (EIB) on behalf of the International Climate Initiative (IKI). The work has been conducted in close coordination with the Energy Community (EnC) Secretariat. The Study aims to provide decision-makers in Ukraine and other GIZ FELICITYII countries with a concise and data-driven foundation that will enable them to cost-efficiently achieve national and NDC targets related to the improvement of energy efficiency (EE) in buildings. The objectives of the Study are aligned with the 3 main action areas of FELICITYII:

- Regulatory framework and enabling conditions;
- Strengthened financial intermediaries;
- Enhanced project preparation skills.

The Study is developed using the common methodology designed for Ukraine, Uzbekistan, Moldova, Kazakhstan, and other countries in the Eastern Partnership (EaP) and Central Asia (CA) regions. In addition to its main purpose, the Study may be used by decision makers from national governments, international and donor organisations as:

- Baseline analysis for the evaluation/assessment of future reforms in the building sector.
- Comparison tool for benchmarking energy tariffs and minimum energy performance requirements (MEPR) as well as strategic, legal, and institutional frameworks related to the improvement of efficiency of the building sector in EaP, CA and EU countries.

- Single source of reference that includes direct links and references to:
 - legal documents on the national portal, i.e. the use of direct links to the documents on the national legislative portals and modern automatic translation technologies allows for easy and efficient access to the latest updates and revisions of the related legal acts (Chapters 1-9);
 - Donor-funded projects related to the improvement of EE in buildings (Annex 3);
 - Other Reports and Studies related to the Energy Performance in Buildings in Ukraine (Annex 4).

¹ FELICITYII stands for Financing Energy for Low-Carbon Investment – Cities Advisory Facility Eastern Partnership and Central Asia Program

1 ENERGY CONSUMPTION AND TRENDS

As of December 2025, there are no reliable statistics to analyse energy consumption trends, building stock and other corresponding indicators due to the following factors:

- 1) Lack of comparable historic data after Russia's annexation of Crimea and some parts of Donetsk and Luhansk regions in 2014;
- 2) The impact of Russia's full-scale invasion since February 2022, which has resulted in the daily destruction of the energy infrastructure and building

stock, as well as the fleeing of over 8 mln Ukrainians from their homes, which has been the largest displacement in Europe since World War II.²

- 3) Restrictions on access to public information introduced by the Government of Ukraine during wartime.³

Based on publicly available information, Table 1 outlines the key indicators related to the building stock.

Table 1. Key indicators of the housing sector of Ukraine, as of 2023 (unless another period is indicated)

Indicator	Value
Population, as of 01.07.2023 (excluding Crimea and other temporarily occupied territories ⁴), mln people	37.7
Share of buildings (residential and non-residential) in final consumption (2020), %	41.6%
Share of residential buildings in final consumption (2020), %	27.9%
Total floor area of residential buildings ⁵ , mln m ²	1,079.5
...excluding temporarily occupied territories, mln m ²	984.8
Total floor area of damaged/destroyed buildings after 24.02.2022, mln m ²	90
Total number of apartments, mln apartments	19.3
... excluding temporarily occupied territories, mln apartments	17.1
Number of residential buildings (single & multi-apartment buildings, dormitories)	9,154,372
Area of housing stock of apartment buildings, mln m ²	599.4
Number of multi-apartment buildings	181,191
Share of population living in multi-apartment buildings	47.5%
Average number of people living in 1 apartment	2.4

Source: SaveMyEnergyBill, 2025 based on [LTRS 2023](#), [UN Population 2025](#), & [Eurostat, 2025](#), [KSE 2024](#)

² <https://www.rescue.org/eu/article/decade-contrasts-last-ten-years-migration-europe>

³ <https://zakon.rada.gov.ua/laws/show/2115-20#Text>

⁴ <https://unstats.un.org/unsd/demographic-social/products/dyb/documents/metadata/2023/Ukraine-2022-PE-Metadata.pdf>

⁵ According to Annex 2 of the LTRS (the most reliable figures quoted in public documents), available at: https://mtu.gov.ua/files/2.2._%D0%94%D0%BE%D0%B4%D0%B0%D1%82%D0%BE%D0%BA_2.pdf

Conclusions

1.1. The analysis of the publicly available data reveals certain inconsistencies and ambiguities concerning the exact time frame and the treatment of temporarily occupied territories. While the reliable statistical information is either not available or restricted, the detailed analysis of the available data indicates the following:

- Buildings in Ukraine are responsible for about 42% of final energy consumption, which is similar to the EU average indicator;
- Residential buildings are the second largest consumer in Ukraine and account for 33% of total final energy consumption, after the industrial sector (34%);
- Residential buildings account for over 40% of Ukraine's heat energy consumption, yet less than 25% of such buildings are equipped with heat meters and control systems.
- Ukraine's population decreased by 27% or 14 mln. since 1991, incl. 6 mln from 1991 to 2014 (-0.24 mln/year before the war) and by 8 mln during 2014-2023 (-1.0 mln/year during the war);
- During 2014-2025, Russia occupied approximately 20% of Ukrainian territory (with all buildings on these territories) and either destroyed or damaged 14%⁶ of all existing buildings in Ukraine;
- 85-90% of the building stock (excluding destroyed and damaged) is highly energy inefficient.⁷

Recommendations

1.1. Without reliable baseline indicators, it will be impossible to evaluate the success and efficiency of future reforms in Ukraine's housing sector. Thus, a rigorous baseline analysis needs to be implemented after the end of the war and before proceeding with "building back better" reforms.

To improve the reliability of the heat consumption data, priority should be given to 'low-hanging fruit', like installing a heat meter for each multi-apartment building and achieving 100% country-wide measured heat consumption by 2030.

⁶ <https://www.giz.de/sites/default/files/media/pkb-document/2026-03/giz2026-en-felicity-ii-embodied-carbon.pdf>

⁷ Ibid

2 STRATEGIC FRAMEWORK

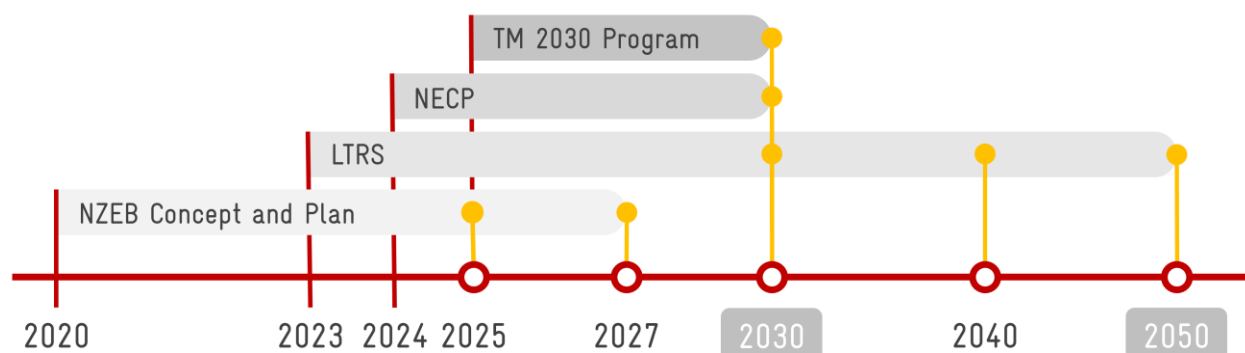
Ukraine has a comprehensive strategic framework on energy performance in buildings, which in general complies with the EnC/EU Acquis and envisages long and medium-term targets via the following key documents (in chronological order of approval):

- 2.1. Concept on the implementation of state policy on energy efficiency of buildings in terms of increasing the number of nearly zero energy buildings and the National Plan for Increasing the Number of nearly zero-energy buildings, dated 29.01.2020, No. 88-r⁸ (NZEB Concept and Plan);
- 2.2. Long Term Renovation Strategy until 2050 (LTRS)⁹, dated 29.12.2023, No. 1228-r;
- 2.3. National Energy and Climate Plan until 2030 (NECP)¹⁰, dated 25.06.2024, No. 587-r;

2.4. State Targeted Programme to Support Thermal Modernisation of Buildings until 2030, dated 14.07.2025, No. 694-r (TM 2030 Program)¹¹ – see Figure 1.

The strategic framework also includes other documents: Energy Strategy until 2050, dated 21.04.2023¹² (restricted); National Energy Efficiency Action Plan for 2021-2023 and until 2030, dated 29.12.2021¹³; Energy Security Strategy, dated 04.08.2021, which do not have specific targets on energy efficiency in buildings or have restricted access and therefore will not be part of this Study.

Figure 1. Timeline of key strategic documents on energy performance in buildings



Source: SaveMyEnergyBill, 2025

⁸ <https://zakon.rada.gov.ua/laws/show/88-2020-%D1%80#n172>

⁹ <https://mtu.gov.ua/documents/2389.html>

¹⁰ <https://me.gov.ua/Documents/Detail?lang=uk-UA&id=17f558a7-b4b4-42ca-b662-2811f42d4a33&title=NatsionalniiPlanZEnergetikiTaKlimatuNaPeriodDo2030-Roku>, a NECP for 2030-2040 should be drafted by 01.01.2028 and adopted by 01.01.2029

¹¹ <https://zakon.rada.gov.ua/laws/show/694-2025-%D1%80#Text>

¹² <https://zakon.rada.gov.ua/laws/show/907-2021-%D1%80#n10>

¹³ <https://zakon.rada.gov.ua/laws/show/1803-2021-%D1%80#Text>

2.1 Nearly Zero Energy Buildings (NZEB) Concept and Plan

The development of the NZEB Concept was required by Article 15 of the Law of Ukraine “On Energy Efficiency of Buildings”. According to the NZEB Concept, it is planned that:

- by December 31, 2025, all new state and public buildings must comply with NZEB requirements (i.e. comply with MEPR in force at the date of the start of construction);
- by December 31, 2027, all new buildings put into operation must comply with NZEB requirements (i.e. comply with MEPR in force at the date of the start of construction).

The interim target of the NZEB Plan also envisaged the reduction of final energy consumption in residential and public buildings by 1% annually during 2020-2025.

2.2 Long Term Renovation Strategy until 2050 (LTRS)

The development of the LTRS was required by Article 15¹ of the Law of Ukraine “On Energy Efficiency of Buildings”.¹⁴ LTRS is a long-term strategic document, which defines specific actions and building-related targets until 2030, 2040 and 2050. The document takes into account the consequences of the war and Ukraine’s commitments to achieve climate neutrality by 2050. The LTRS’ main strategic milestones and targets are summarised in Table 2.

Taking into account that the document was adopted in 2023, the LTRS does not take into account the provisions of the 2024 EPBD, in particular, the requirements for the National Building Renovation Plan development, annual reduction of operational GHG, energy poverty, vulnerable households, etc.

Table 2. LTRS’ main strategic indicators

Indicator	2030	2040	2050
% of the total floor area of buildings owned and occupied by the central government, which is renovated each year to meet at least the MEPR	1%	2%	3%
Reduction of final energy consumption in the buildings (residential and public), compared to the 2012 baseline	10%	30%	40%
Share of residential and public buildings that meet MEPR	36%	71%	90%
Share of NZEB (residential and public)	10%	25%	40%
Cumulative investments attracted to energy efficiency of buildings, € bn	87	150	214
Volume of qualified personnel in the field of EE in buildings, thousands	100	150	164.6

Source: SaveMyEnergyBill, 2025 based on [LTRS 2023](https://zakon.rada.gov.ua/laws/show/2118-19#Text)

¹⁴ <https://zakon.rada.gov.ua/laws/show/2118-19#Text>

2.3 National Energy and Climate Plan until 2030 (NECP)

The development of the NECP was required by Article 10 of the Law of Ukraine “On the basic principles of state climate policy”¹⁵ and in compliance with EU Regulation 2018/1999. The NECP is the main strategic document until 2030, which unifies and integrates all energy and climate policies, including those defined in sectoral strategic documents. The NECP limits primary energy consumption to 71.22 Mtoe and final energy consumption to 42.17 Mtoe in 2030. It should also be noted that the NECP, officially published on the Ministry of Economy’s website¹⁶, includes two contradictory targets on energy savings in buildings owned and occupied by central government authorities until 2030, namely:

- Executive summary (Section 1.1.ii of the NECP) envisages the target of at least 21.4 toe/year (0.249 GWh/year);
- Overview table with key objectives, policies and measures of the plan (Section 1.1.iii of the NECP) stipulates at least 24.9 GWh/year (2,141 toe/year, or about 100 times higher than the same target in Section 1.1.ii of the NECP).

The NECP also refers to other building-related targets and measures envisaged by the LTRS and NZEB Concept (see above). Among other provisions, the NECP refers to the NZEB Concept (see Section 2.1 above) and envisages the requirements for the primary energy demand of NZEB:

- 46-92 kWh/(m².y) for residential buildings (depending on climate zones and number of stories);
- 21-33 kWh/(m³.y) for public buildings (depending on climate zones and number of stories);
- 33-35 kWh/(m³.y) for educational and healthcare facilities (depending on climate zones only).

¹⁵ <https://zakon.rada.gov.ua/laws/show/3991-20#Text>

¹⁶ <https://me.gov.ua/Documents/Detail?lang=uk-UA&id=17f558a7-b4b4-42ca-b662-2811f42d4a33&title=NatsionalniiPlanZEnergetikiTaKlimatuNaPeriodDo2030-Roku>

¹⁷ https://www.energy-community.org/dam/jcr:0eeab2d2-7112-46b5-ab16-f3430bf7f005/CELEX_32022R2299_EN_TXT.pdf

¹⁸ <https://zakon.rada.gov.ua/laws/show/1228-2023-%D1%80#Text>

Following the NECP adoption, Ukraine submitted the first-cycle Integrated National Energy and Climate Progress Report in 2025, which entailed the data and information required by the Commission Implementing Regulation (EU) 2022/2299.¹⁷ Integrated progress reports are due every two years. They are meant to shed light on the progress towards achieving energy efficiency targets, including targets for primary and final energy consumption, long-term renovation, energy performance, energy efficiency obligation schemes etc.

2.4 State Program to Support Thermal Modernisation of Buildings until 2030 (TM 2030 Program)

The TM 2030 Program was adopted in 2025 in accordance with the **Concept on the State Targeted Programme to Support Thermal Modernisation of Buildings until 2030**. The latter was approved together with the LTRS by the same CMU Order dated No. 1228-r¹⁸ in 2023 (see above).

The TM 2030 Program is the latest strategic document, which envisages how the building-related targets can be implemented in practice. Among other aspects, the TM 2030 Program prioritises war-damaged buildings and social infrastructure, introduces organisational, financial and technical tools to increase renovation rates, and promotes modern design standards, energy management and digital monitoring. The Program also stipulates detailed measures to improve energy efficiency in buildings and the amount of funding required, in particular from the state budget. The total estimated financing of the Programme amounts to €4.2 bn, including € 1.20 bn from the state budget, €0.90 bn from local budgets, and €2.09 bn from other sources.

Conclusions

2.1. The strategic framework on energy performance in buildings in Ukraine is rather complex. Some of the documents were either developed and approved before Russia's full-scale invasion (i.e. before February 2022) or did not take into account the lack of finances, and the magnitude of damages due to the ongoing war. As a result, the in-depth comparison of building-related targets envisaged by the LTRS (adopted in 2023) and TM 2030 Program (adopted in 2025) shows that the latter covers only 2-30% of the quantitative targets envisaged by the LTRS (Table 3).

The NECP includes two contradictory targets on energy savings in buildings owned and occupied by central government authorities until 2030. The deeper analysis indicates that the target should be 21.4 toe/year (0.249 GWh/year, and not 24.9 GWh/year), and the error is most probably related to using an incorrect conversion factor. However, as of December 2025, or 1.5 years after the NECP adoption, the issue has neither been corrected nor clarified by the Government of Ukraine (GoU).

While the qualitative measures across the strategic documents on energy performance in buildings are well-aligned, consistent and mutually supportive, there are still some further issues related to the definition of quantitative indicators. For example, the NECP specifies NZEB requirements (see Section 2.3.) with references to the NZEB Concept. At the same time, the NZEB Concept and Plan do not quantify the same NZEB indicators expressed in kWh/(m².y) and kWh/(m³.y).

Table 3. Comparison of 2030 targets of LTRS (ambitious MEPR scenario) and TM 2030 Program

Indicator	Unit	LTRS (2023)	TM 2030 Program (2025)	% of LTRS targets covered by the TM 2030 Program
Buildings thermally modernised	unit	3,276,244	61,661	2%
Annual natural gas savings	bn m ³	3.5	0.5	14%
Annual heat energy savings	GWh	66,726	16,807	25%
Annual electricity savings	GWh	2,867	866.3	30%
Total estimated financing	€ bn	87.5	4.2	5%

Source: SaveMyEnergyBill, 2025 based on [LTRS 2023](#), [NECP 2024](#) and [TM 2030 Program 2025](#)

Recommendations

2.1. Update the strategic framework on energy performance in buildings, considering the results of the NZEB plan implementation in 2020-2025 and the new TM 2030 Program targets adopted in 2025. Further update the LTRS and NECP buildings-related targets and introduce new zero-emission buildings requirements, taking into account the consistency of the quantitative indicators, the requirements of the revised Energy Performance of Buildings Directive (EPBD) EU/2024/1275¹⁹, and the latest consequences of the war.

Given the major contribution of buildings to final energy consumption (see Chapter 1), the updated strategic framework should also strive for the enforcement of the EU-promoted energy efficiency first²⁰ and Build Back Better principles. Highly efficient, newly built and renovated buildings will reduce the sector's energy demand and prevent costs otherwise arising for the reconstruction, refurbishment and/or expansion of energy supply infrastructure. Thus, while updating the strategic framework, the additional investments needed to increase energy efficiency should be transparently compared to the avoided energy supply cost.²¹

If the additional investments needed to achieve NZEB are lower than the avoided energy supply costs, the strategic framework should explicitly promote comprehensive refurbishment (i.e. renovation to MEPR/NZEB which avoids any partial repairs and prevents “lock-in” effects in the future). The specific examples, opportunities and further recommendations related to the implementation of the Build Back Better principle in Ukraine can also be found in a dedicated study for Ukraine²² and in other reports listed in Annex 4.

¹⁹ https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401275&pk_keyword=Energy&pk_content=Directive

²⁰ https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-first_en

²¹ ‘Energy efficiency first’ means taking utmost account in energy planning, and in policy and investment decisions, of alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient, see more at <https://energycoalition.eu/energy-efficiency/energy-efficiency-first-principle/>

²² <https://www.bpice.eu/wp-content/uploads/2024/02/FINAL-Reconstruction-of-Ukraine.pdf>

3 LEGAL FRAMEWORK

In 2025, the Energy Community (EnC) Secretariat assessed Ukraine's legal framework on energy performance in buildings as 94% compliant with the EU Acquis.²³ As of December 2025, the primary driving force for continuing energy efficiency reforms in buildings remains Ukraine's strategic objective of accession to the EU and aligning its legislative framework with EU Directives and Regulations. This chapter provides a concise overview of the key elements of the corresponding legal framework. While the limitations on the use of construction and insulation materials are also part of Ukraine's legal framework, this area is not covered by the Study as it primarily relates to fire-safety and structural requirements of buildings and not to energy efficiency.

3.1 Energy and Climate Governance

The European Commission introduced National Energy and Climate Plans (NECPs) in the EU as an “essential strategic planning tool to deliver a fair, resilient, and climate-neutral Europe, and to steer the much-needed investments for the climate and energy transition, helping to mobilise private and public spending. <...> The NECPs enable each EU country to outline precise actions and policies to achieve the 2030 climate and energy targets”²⁴ including targets for decarbonization and energy efficiency. As NECPs are meant to create a robust framework integrating and aligning different objectives and action towards decarbonization, energy efficiency, energy security, an internal energy market and research, innovation and competitiveness, they necessitate coordinated efforts across government departments and ministries.

After the NECP's adoption, Integrated National Energy and Climate Progress Reports (IPRs) need to be submitted every 2 years.

Under the umbrella of the Energy Community, Ukraine has the obligation to transpose and implement the Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action as the legal base for binding national energy efficiency targets, NECPs and IPRs. Respective provisions are partly transposed via the CMU Resolution dated 02.01.2026 No. 3²⁵, adopting the NECP preparation procedure/order and via related laws (see Section 3.2 below).

3.2 Energy Efficiency Laws

There are three key laws related to energy performance in buildings in Ukraine:

- Law “On Energy Efficiency of Buildings” (EEB Law)²⁶ that envisages MEPR (see Section 3.3), EPC Scheme (Section 3.4), NZEB (Section 3.5), and the leading role of public services (Section 3.6);
- Law “On Energy Efficiency” (EE Law)²⁷ adopting the 2030 energy efficiency target in line with Ministerial Council Decision 2022/02/EnC-MC²⁸ limiting primary energy consumption to 91.47 Mtoe and final energy consumption to 50.45 Mtoe in 2030. The Law also defines the main provisions on ecodesign and energy labelling (Section 3.8) and ESCO (Section 3.9).

²³ https://www.energy-community.org/dam/jcr:ee52fae5-11ae-49f5-b731-3f82f9178e73/ECS_IR2025.pdf

²⁴ https://commission.europa.eu/energy-climate-change-environment/implementation-eu-countries/energy-and-climate-governance-and-reporting/national-energy-and-climate-plans_en

²⁵ <https://zakon.rada.gov.ua/laws/show/3-2026-%D0%BF#Text>

²⁶ <https://zakon.rada.gov.ua/laws/show/2118-19>

²⁷ <https://zakon.rada.gov.ua/laws/show/1818-20#Text>

²⁸ https://www.energy-community.org/dam/jcr:018c5d99-efa4-4fc2-ac58-9ecbdb53acc0/Decision_02-2022-MC_CEP_2030targets_15122022.pdf

- Law “On basic principles of state climate policy”²⁹ adopting NECP definition, obligations for its development and integrated climate reporting.

3.3 Minimum Energy Performance Requirements (MEPR) for New and Renovated Buildings

MEPR is one of the most cost-effective policy instruments to improve the efficiency of the building sector. While the renovation of existing buildings requires significant financial resources, the strengthening of energy performance at the design stage is significantly cheaper than retrofitting a building later. The stringent MEPR also have multiple benefits, from lower energy bills for owners to the reduced energy dependency of the country, new jobs and the creation of demand for energy-efficient construction (e.g. insulation) materials. It should also be highlighted that the MEPR are equally applied for new and renovated buildings. Thus, depending on the condition of old buildings, it may be economically, technically, and climate-wise feasible to demolish them and build new buildings that comply with modern energy performance requirements.

MEPR for buildings in Ukraine are envisaged by Article 6 of the EEB Law. In 2020, the Ministry of Community and Territory Development of Ukraine (MCDT) issued its Order No. 260³⁰, approving the following MEPR (for heating and cooling only) per heated area (kWh/m²) and heated volume (kWh/m³) per year:

- Residential: 65-120 kWh/(m².y) (depending on climate zones and number of stories);
- Other building types: 20-123 ³¹ kWh/(m³.y) (depending on climate zones and form factor).

In addition to the MEPR, all new and renovated buildings in Ukraine should also comply with national building codes and corresponding standards (e.g. DBN B.2.5-67:2013 “Heating, Ventilation and Air Conditioning”, etc.). It should also be noted that the MEPR are not mandatory for individual residential buildings in Ukraine.

All new and retrofitted buildings should also comply with the requirements for class “C” of the energy performance certificate, which are calculated in accordance with the Methodology for Determining the Energy Efficiency of buildings.³² See section below.

3.4 Energy Performance Certificate (EPC)

Since 2002, EPC has been used in the EU to stimulate the application of even more stringent MEPR for new buildings (i.e., to exceed the MEPR), raise awareness among the population about the performance of public buildings, collect reliable statistical data and inform potential buyers/tenants of the building's efficiency.

EPC scheme and related energy audits in Ukraine are defined by Articles 7, 8, 9, 11, 13, 12¹ and 14 of the EEB Law. Namely, Articles 7 and 8 require the issuance of the EPC for the following buildings:

- newly constructed, reconstructed or buildings undergoing major renovation;
- buildings undergoing thermal or energy efficiency modernisation;
- state-owned or municipal buildings, occupied by executive or local authorities, as well as municipal buildings frequently visited by citizens with more than 250 m² of heated area;
- buildings which are sold or rented out (NB: but only in case the EPC is already available).

²⁹ <https://zakon.rada.gov.ua/laws/show/3991-20#Text>

³⁰ <https://zakon.rada.gov.ua/laws/show/z1257-20#Text>

³¹ The highest value of 123 kWh/(m³.y) is calculated for a 1-story hotel (using a corresponding formula)

³² <https://zakon.rada.gov.ua/laws/show/z0822-18#n224>

To implement the requirement of the EEB Law, the MCTD adopted the following key Orders in 2018:

- No. 169 on the Methodology for Determining the Energy Efficiency of Buildings;³³
- No. 172 on the Procedure for Conducting EPC and the EPC Template;³⁴
- No. 173 on the Methodology for Inspecting Building Engineering Systems;³⁵
- No. 276 on the Procedure for EPC Independent Monitoring.³⁶

While the EPC scheme in Ukraine officially became operational in 2019, the GoU continues its improvement to ensure compliance with the EU Acquis. Namely, the CMU approved the following key Resolutions in 2024:

- No. 40 on the Procedures for Certification of experts issuing EPC;³⁷
- No. 1254 on the National EPC Database.³⁸

The information on issued energy performance certificates for buildings is publicly available on the Portal of the Unified State Electronic System in the construction sector. The same portal contains information on certified specialists in auditing the energy efficiency of buildings, reports on inspecting engineering systems and energy certificates monitoring. The main responsible body for developing and maintaining the National EPC Database is the MCTD. According to the Portal, as of 01/12/2025, there were 24,148 issued EPCs and 1,903 certified specialists.³⁹

Article 25¹(2) of the Law “On Advertising”⁴⁰ requires that, if the EPC is available, the real estate advertisements must include information about the class of building performance. However, since the EPC is not mandatory for selling or renting out existing apartments or individual residential buildings in Ukraine, the requirement of the Law is only applied when the EPC is mandated (e.g. for newly constructed multi-apartment buildings, individual buildings renovated with public funds, non-residential buildings etc.).

3.5 Nearly Zero-Energy Buildings (NZEB)

The NZEB concept is another form of strengthened MEPR that was introduced in the EU in 2010. Namely, the NZEB was introduced by the 2010 EPBD, which recast the original 2002 Directive, requiring that new buildings occupied and owned by public authorities must be NZEB by 31.12.2018 and for all new buildings by 31.12.2020.⁴¹ Similar deadlines for NZEB in Ukraine are 31.12.2025 and 31.12.2027, respectively (Section 2.1.)

The Ukrainian NZEB requirements were defined in 2025 by the MCTD Order No. 168⁴² and envisaged the minimum criteria for:

- level of insulation for building envelope (i.e. 100 mm for floor, 200mm – for walls, 300-400mm for roofs, except for vacuum-insulated panels or other insulators with extremely low conductivity;
- U-value for windows – 0.9-1.4 W/(m²K) and thermal bridges for windows 0.15-0.3 W/(mK);

³³ <https://zakon.rada.gov.ua/laws/show/z0822-18>

³⁴ <https://zakon.rada.gov.ua/laws/show/z0825-18>

³⁵ <https://zakon.rada.gov.ua/laws/show/z0826-18#Text>

³⁶ <https://zakon.rada.gov.ua/laws/show/z1323-18#Text>

³⁷ <https://zakon.rada.gov.ua/go/40-2024-%D0%BF>

³⁸ <https://zakon.rada.gov.ua/laws/show/1254-2024-%D0%BF#Text>

³⁹ <https://e-construction.gov.ua/reestri>

⁴⁰ <https://zakon.rada.gov.ua/laws/show/270/96-%D0%B2%D1%80#Text>

⁴¹ <https://eur-lex.europa.eu/eli/dir/2010/31/oj/eng>

⁴² <https://zakon.rada.gov.ua/laws/show/z0284-25#Text>

- airtightness of 1.0 or 2.0 $\text{m}^3/(\text{h} \cdot \text{m}^2)$ at a pressure difference of 50 Pascals (q50) for new and renovated buildings, respectively;
- Area for PV or solar heaters – minimum 2 m^2 (depending on the area, number of stories, etc.);
- Share of RES (heat pump) for heating and cooling - 53-57% depending on the climate zone;
- Other requirements: mechanical ventilation with a heat recovery (MVHR); automation and control system; heat pumps, window blinds to mitigate overheating in summer.

All new and retrofitted NZEB must comply with the requirements for classes “A” and “B” of the EPC, respectively. Thus, taking into account the deadlines envisaged by the NZEB Concept (see Section 2.1), all new public buildings must be NZEB and must have class “A” starting from 01.01.2026.

3.6 Leading Role of the Public Sector

The EU Acquis envisages that the central and local governments should have the leading role in promoting renovations and the highest standards of energy performance in buildings. For example, the 2024 EPBD envisages that all new buildings owned by public bodies should be zero-emission (ZEB) by 01.01.2028, whereas the same requirements for private buildings enter into force two years later, i.e. 01.01.2030. Considering that the ZEB concept has not been transposed in the Ukrainian legislative framework yet, the NZEB Concept envisages a leading role for the public sector in NZEB implementation (Section 2.1).

The revised Energy Efficiency Directive (EED)⁴³ also envisages a new annual energy consumption reduction target of at least 1.9% for the public sector. In addition, at least 3% of all public buildings with a total useful floor area of more than 250 m^2 should be renovated annually.

In Ukraine, the leading role of the public sector in Ukraine is defined by Article 15² of the EEB Law. Namely, the EEB Law requires that a minimum of 1% of all public buildings with a total floor area of more than 250 m^2 should be renovated to meet the MEPR. To ensure the implementation of the Law, the MCTD issued the following Orders in 2024:

- No. 276, on the Calculation of the Target Indicator of Energy Savings in Public Buildings;⁴⁴
- No. 1196 on the Monitoring of Achieving the Target Indicator.⁴⁵

3.7 Major Renovation and Renovation Passports

There is no single and harmonised definition of major renovation in the EU. According to the 2024 EPBD, an EU MS may choose to define the ‘major renovation’ using the two options:

- the total cost of the renovation relating to the building envelope or the technical building systems is higher than 25% of the value of the building, excluding the value of the land;
- more than 25% of the surface of the building envelope undergoes renovation.

Considering that it is more cost-effective to improve the energy performance of the building as part of the ongoing major renovation, the EPBD further requires that all buildings undergoing major renovation must comply with the MEPR. For example, the implementation of EE improvements during a planned façade renovation may only be a fraction of the costs compared to the investments needed to add the insulation layer at a later stage (i.e. which once again would require the renovation of the façade). It should also be noted that in some cases, it may be economically, technically and climate-wise feasible to demolish old buildings and build new ones, rather than proceed with major renovation projects.

⁴³ <https://eur-lex.europa.eu/eli/dir/2023/1791/oj/eng>

⁴⁴ <https://zakon.rada.gov.ua/laws/show/z1342-24#n14>

⁴⁵ <https://zakon.rada.gov.ua/laws/show/z1802-24#n14>

Taking into account that one-step deep renovation can be more cost-effective and result in fewer emissions than staged renovation, all EU MS shall introduce a scheme for Renovation Passports by 29 May 2026. Among other aspects, the Renovation Passports should include:

- steps for a staged deep renovation (MEPR-NZEB-ZEB);
- estimated costs, time, savings and payback period with and without any available financial support.

The Ukrainian legislative framework is rather ambiguous about the achievement of MEPR during the major renovation. On the one hand, Article 6(4) of the EEB Law explicitly requires that MEPR must be respected for new buildings, renovation and major renovation projects and that only overall isolation of the thermal envelope is accepted (i.e. no partial isolation of the building envelope is allowed).

On the other hand, the EEB Law also stipulates multiple exclusions. Namely, Article 2(2) excludes the renovation of individual residential buildings from MEPR, and Article 6(1) envisages the development of the list of major renovation work excluded from the MEPR obligations. The latter was approved by the CMU Resolution No. 1068 in 2023 and includes an exhaustive list of 163 measures for which MEPR do not apply.⁴⁶ There is also no quantitative, but qualitative definition of major renovation in Ukraine.⁴⁷

As of December 2025, the Renovation Passports obligations were not part of Ukraine's legislative framework.

3.8 Ecodesign and Energy Labelling

Ecodesign is one of the most cost-effective policy instruments to improve the efficiency of appliances used in buildings. According to the European Commission, the ecodesign and energy labelling can save an EU household up to €1,800 per year.⁴⁸ Namely, the Ecodesign does not allow the sales of inefficient appliances on the EU market, whereas Energy Labelling further promotes the sales of even more efficient devices.

Ecodesign and energy labelling in Ukraine are envisaged by Article 8 of the EE Law. The requirements of the EU Directive 2009/125/EC on establishing an ecodesign framework were transposed into the Ukrainian framework in 2018 by the Resolution of the Cabinet of Ministers No. 804.⁴⁹ Similar to the EU framework, specific ecodesign requirements for each appliance group are enforced by dedicated technical regulations and standards.

3.9 Energy Services Company (ESCO) and Energy Performance Contracts (EnPCs)

The ESCO scheme can bring multiple benefits for building owners, like guaranteed energy savings and financing of energy efficiency measures through future savings. At the same time, EU MS are still facing multiple challenges related to the scheme⁵⁰. While the main challenge for EU MS was the generation and sustaining of verified savings, the main barrier for EaP countries is related to the limitations of the budgetary framework, which does not allow the use of achieved energy savings to pay back the initial EE investments.

The ESCO scheme in Ukraine is envisaged by Article 17 of the EE Law. The main achievement of the GoU related to the ESCO is that the UA Budget Code

⁴⁶ <https://zakon.rada.gov.ua/laws/show/1068-2023-%D0%BF#n8>

⁴⁷ https://dbn.co.ua/load/zakony/rozjasnennja_potochnogo_kapitalnogo_remontu/22-1-0-1830#

⁴⁸ https://energy.ec.europa.eu/news/energy-efficient-products-commission-moves-improve-quality-information-consumers-and-companies-2024-04-02_en

⁴⁹ <https://zakon.rada.gov.ua/laws/show/en/804-2018-%D0%BF/conv#n14>

⁵⁰ <https://build-up.ec.europa.eu/en/resources-and-tools/publications/energy-service-companies-escos-navigating-challenges-and>

allows public bodies to make long-term commitments for energy services.

The EnPCs are concluded according to public procurement procedures through the Prozorro public-purchase system.⁵¹ The main criterion for public ESCO tenders is the EnPC efficiency, which is defined as the difference between the total value of the discounted annual energy savings and annual payments to the ESCO company over 20 years. To facilitate ESCO business, in 2018, the CMU by its Order No. 845 approved a model EnPC,⁵² which is still used as a guideline for budget institutions and investors. The main disadvantage of the Ukrainian ESCO scheme is that it favours partial solutions with a fast pay-back period. Thus, it leads to the “lock-in” effect that will require new costly renovations in the future.

3.10 Financial Incentives and Programmes

According to the best EU practice, providing financial incentives to facilitate the achievement of state targets on building renovation may not only bring environmental benefits, but also multiple socio-economic advantages. Therefore, Article 22 of the Energy Efficiency Directive (EED) envisages the introduction of fiscal incentives, access to finance, grants, subsidies and other instruments and policies to promote the efficient use of energy.

The Ukrainian legislative framework envisages the key financial instruments and programmes related to the improvement of the energy performance of buildings are implemented via the Energy Efficiency Fund (EEF, see Section 4.2). The programmes provided by EEF are exclusively designed for the Associations of Co-owners of Apartment Buildings, i.e. Homeowners' Associations (HOAs). Since its creation in 2017, the

EEF has launched multiple programmes targeting the HOAs:

“Energodim” Program was launched in 2019 with the co-funding of EU and Germany’s International Climate Initiative (IKI) and in cooperation with the International Finance Corporation (IFC) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). While providing the funding, the IKI and the EU originally pursued the Savings to Investment principle (S2I Principle),⁵³ i.e. achieved savings in the state budget are in turn reinvested in further energy efficiency measures. With the beginning of the full-scale war, the S2I Principle was partially abandoned due to urgent repair needs. The Program provides the reimbursement of energy efficiency measures ranging from 40% to 70% and enables HOAs to finance the installation of individual heating substations, balancing of the building’s hydraulic system, insulation of pipelines in unheated areas, thermal insulation of walls, roofs, and basement ceilings, and replacement of doors and windows in common areas.

“VidnovyDIM” Program was launched in 2022 with the EU support and has aimed at the restoration of residential buildings damaged by the Ukrainian-Russian war. The Program provides the financing of up to 100% of works and materials related to the restoration of damaged buildings, but cannot exceed UAH 10 mln (~€190,000) per project.

“GreenDIM” Program was launched in 2024 to promote the use of RES in multi-apartment buildings. Under the Program, the EEF provides grants covering up to 70% of the costs related to the installation of PVs and heat pumps, as well as conducting energy audits and issuing the EPC.

In June 2025, the EU committed an additional €18 mln to strengthen the EEF’s programmes targeting homeowners’ associations and the restoration of war-damaged buildings.⁵⁴ The European Investment Bank

⁵¹ <https://prozorro.gov.ua/en>

⁵² <https://zakon.rada.gov.ua/laws/show/845-2015-%D0%BF#Text>

⁵³ <https://www.international-climate-initiative.com/en/project/supporting-the-national-energy-efficiency-fund-and-the-climate-friendly-reform-agenda-s2i-in-ukraine-18-i-241-ukr-g-s2i-energy-efficiency-fund/#>

⁵⁴ https://www.eeas.europa.eu/delegations/ukraine/eu-and-germany-boost-ukraine%E2%80%99s-energy-efficiency-%E2%82%AC18m-financial-support_en

(EIB) and the European Investment Fund (EIF) also launched a broader €600 mln package, of which €250 mln is dedicated to municipal loans promoting decentralised heating, renewable energy deployment, and energy-efficiency improvements in public buildings.

In addition to the EEF's projects, multiple donor-funded programmes aim to provide financial and technical support for the actual implementation of the Build Back Better principle in Ukraine:

World Bank Housing Repair for People's Empowerment (HOPE) program provides funding to repair homes damaged by Russian aggression, supporting the government's eRestoration program. With significant backing, including \$84 mln in additional funding in May 2025,⁵⁵ it helps over 100,000 households with repairs. The project aims to enable citizens to return to liberated areas.

EIB programme titled “Ukraine Social Housing Reconstruction” provides up to €600 mln to cities affected by war or hosting large numbers of internally displaced persons (IDPs), for the construction of publicly owned, affordable, energy-efficient, and financially sustainable housing.⁵⁶

The EU4Reconstruction programme, launched by the EU, Denmark, Germany, France and Lithuania in November 2025, provides €37 mln to strengthen the governance and accountability of Ukraine's reconstruction, and ensure sound and transparent public investment aligned with EU standards.⁵⁷

The List of current donor-funded projects related to the improvement of EE in buildings in Ukraine is provided in Annex 3.

3.11 On-site Solar Energy Installations

Article 10(3) of the revised EPBD EU/2024/1275,⁵⁸ mandates MS to ensure the deployment of suitable solar energy installations, if technically suitable and economically and functionally feasible, including on all existing public buildings with a useful floor area larger than 250 m² by 31 December 2030.

As of December 2025, the requirements of the revised EPBD are not directly transposed into the national legal framework. However, due to persistent attacks on the energy infrastructure and the destruction of a significant share of generation capacities, the on-site RES generation requirements become critical for strengthening the resilience of both the energy system and local communities. Therefore, the Government adopted Resolution dated 7 July 2024 No. 510-r⁵⁹, which under paragraph 1¹ established a requirement to ensure the mandatory installation of PV systems with energy storage on all public and administrative buildings by 31 December 2025.

By Resolution dated 18 July 2024 No. 713-r⁶⁰, the CMU approved the Distributed Generation Development Strategy until 2035 and endorsed the Operational Plan for its implementation for 2024–2026. Measure 35 of the Operational Plan mandates local authorities to take measures ensuring the mandatory installation of RES facilities and energy storage systems in public and administrative buildings, including healthcare and educational institutions.

As of December 2025, the installation of PV systems with energy storage in public and administrative buildings is being carried out primarily through international assistance projects, such as the “Ray of Hope” project for hospitals under the Energy Community Support Fund,⁶¹ “Renewables for Resilient Ukraine” project commissioned by the Federal Ministry for Economic Affairs and Climate

⁵⁵ <https://documents1.worldbank.org/curated/en/099043025120032753/pdf/BOSIB-38e377f4-d38f-4bf6-b9dd-3e9798a03d5b.pdf>

⁵⁶ <https://www.eib.org/en/projects/all/20230998>

⁵⁷ <https://euneighbourseast.eu/news/latest-news/team-europe-launches-e37-million-eu4reconstruction-programme-to-support-inclusive-reconstruction-in-ukraine/>

⁵⁸ https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401275&pk

⁵⁹ <https://zakon.rada.gov.ua/laws/show/510-2024-%D1%80#Text>

⁶⁰ <https://zakon.rada.gov.ua/laws/show/713-2024-%D1%80#Text>

⁶¹ <https://www.energy-community.org/Ukraine/Fund/ray.html>

Action of Germany under the IKI implementing instrument and implemented by GIZ Ukraine,⁶² UNDP Renewable Energy Solutions Programme⁶³ and others.

The Distributed Generation Strategy also envisages that by the end of 2026, the GoU should make a decision on the formal transposition of Article 10(3) of EPBD EU/2024/1275, while Measure 37 of the Operational Plan stipulates that the MCTD, SAEE, and the Ministry of Energy should develop corresponding proposals for the legal framework by 30 September 2025. However, as of December 2025, no information on such legislative initiatives is publicly available.

Articles 10(2) and 17 of the revised EPBD EU/2024/1275, also require the simplification of permitting for on-site RES generation. In this context, the Ministry of Energy developed, and the GoU approved and registered in Parliament, Draft Law No. 14271⁶⁴, which provides for the transposition of the provisions of Directive (EU) 2018/2001, including those on permit-granting procedures, as required under the Ukraine Facility.

Furthermore, by Resolution dated 28 January 2026 No. 77,⁶⁵ the GoU simplified the procedure for installing PV modules on rooftops and facades, exempting such installations from any permitting or registration requirements under construction legislation. Henceforth, starting from 28 January 2026, on-site solar-energy installations in buildings in Ukraine no longer require notification, declaration, permit, or certificate of readiness.

Conclusions

3.1. Ukraine's Energy and climate governance is implemented in accordance with the country's commitments under the EnC Treaty and in close cooperation with the EnC Secretariat.

3.2. Ukraine has a comprehensive legal framework on energy performance in buildings that comprises all modern measures and instruments to support the improvement of energy efficiency in buildings.

3.3 While Ukraine's MEPR are mainly based on the requirements of the EPBD, as of December 2025, there are two key differences with the best EU practice:

- Article 2(2.1) of the EEB Law, in addition to other exceptions, envisages that MEPR should not be applied to individual residential buildings. However, EPBD envisages that MEPR should be mandatory for all stand-alone buildings with a total useful floor area above 50 m².
- Ukrainian MEPR indicators for non-residential buildings are expressed per heated volume (kWh/(m³.y)) and not per heated area (kWh/(m².y)) as envisaged by the EPBD.

In practice, it means that EU MS may decide not to apply MEPR for small stand-alone buildings (<50 m²), like holiday cabins, bungalows, weekend cottages, isolated kiosks or very small commercial units standing alone. In Ukraine, MEPR are also not mandatory for stand-alone buildings with a total heated area less than 50 m².

However, the same derogations from the MEPR are applied for individual residential buildings, meaning that any size detached or semi-detached residential buildings in Ukraine can still be built without achieving the minimum energy performance requirements.

⁶² <https://www.kmu.gov.ua/en/news/ukraina-ta-nimechchyna-zapuskaiut-spilnyi-proekt-z-osnashchennia-objektiv-krytychnoi-infrastruktury-vidnovliuvannyi-dzherelamy-enerhii>

⁶³ <https://www.undp.org/ukraine/press-releases/development-ministry-undp-ukraine-sign-eur-165m-deal-renewable-energy-social-sector-buildings>

⁶⁴ <https://itd.rada.gov.ua/billinfo/Bills/Card/59237>

⁶⁵ <https://zakon.rada.gov.ua/laws/show/77-2026-%D0%BF#n2>

Thus, as of December 2025, there are no minimum energy efficiency requirements for detached or semi-detached residential buildings in Ukraine, unless they are built or renovated using public money. This is one of the most significant loopholes in Ukraine's legal framework and should be urgently addressed to ensure compliance with EU practice.

3.4. As of December 2025, there are three key differences between the EPC framework in Ukraine and the EU:

- In EU MS, the EPC is mandatory for selling, renting or major renovation of all buildings. In Ukraine, the EPC scheme is not mandatory for individual residential buildings and existing apartments when they are sold or rented out or when they are undergoing major renovation using their own funds (the EPC is only mandatory for major renovation using public funds).
- There is no consistent correlation between the EPC, MEPR and NZEB in Ukraine. On the contrary, Article 4 and Annex 1 of the EPBD require the MS to adopt a consistent methodology for MEPR and EPC using a numeric indicator of primary energy use per unit of reference floor area per year, in kWh/(m².y).
- Ukrainian EPC for non-residential buildings is based on heated volume (kWh/(m³.y)) and not per heated area (kWh/(m².y)) of a building, as envisaged by the EPBD.

In practice, the lack of mandatory EPC for selling or renting a residential building or an apartment in Ukraine is not only non-compliance with the EPBD but is a missed opportunity to raise awareness among potential buyers/tenants of the building's efficiency and collect reliable statistical data.

The expression of the EPC scale using heated volume (kWh/(m³.y)) for non-residential buildings may have its own benefits (e.g. Ukrainian building codes historically used energy indicators per heated volume), and disadvantages for Ukraine (e.g. impossible to compare the efficiency of similar-sized residential and non-residential buildings or benchmark Ukraine's indicators with EU MS).

However, the use of the heated volume indicator for the EPC and MEPR purposes directly contradicts the requirements of the EPBD.

3.5. As of December 2025, there is still a lack of coordination between different policy instruments related to NZEB. Namely, the Ukrainian framework stipulates different indicators for NZEB as follows:

- NECP (section 2.3) – envisages some indicators in kWh/(m².y) and kWh/(m³.y);
- EPC (section 3.4) – based on volume values for non-residential buildings kWh/(m³.y) but without references to NECP values;
- MCTD Order No. 168 on NZEB requirements – other indicators (like mm of insulation – see above).

At the same time, the best EU practice illustrates that the MEPR and NZEB in EU MS should be expressed using a common indicator in kWh/(m².y) and are aligned with the EPC.

3.6. The main difference between the EU and Ukraine is the level of ambition related to the savings to be achieved by the public sector buildings due to a lack of financial resources in Ukraine. There is also about a 10-year delay with regard to the implementation of ZEB in Ukraine.

3.7. The Ukrainian legislative framework has many loopholes related to the MEPR for buildings undergoing major renovation. As of December 2025, there is neither an EPBD-compliant definition of major renovation nor passport obligations in Ukraine.

While Article 6(4) of the EEB, does not allow partial isolation of the building envelope, it still has multiple loopholes. For example, the renovation of windows does not require the renovation of the façade to avoid thermal bridges; the issue of thermal bridges is still not regulated for buildings with balconies/loggias, partial repairs and isolated technical upgrades of the heating system without enabling billing based on actual heat and hot water consumption (see Recommendation 8.2.3 below), are still allowed, etc.

3.8. While the legislative framework on ecodesign and energy labelling in Ukraine is based on the corresponding EU Acquis, there is, on average, a 5-8 year delay with the transposition of the latest EU requirements to the UA market. For example, the EU started replacing the current energy label with energy classes from A+++ to D with a new scale from A to G in 2019,⁶⁶ whereas this process started in Ukraine in 2025.⁶⁷ The key difference is in the approval process. Once ecodesign and energy labelling regulations are adopted in the EU, they become mandatory in all EU MS and do not require the transposition into the national legislative framework. However, for Ukraine, the same regulations need to be further translated into the Ukrainian language, undergo internal bureaucratic procedures and be approved by the GoU.

3.9. As of December 2025, the main difference between the EU and Ukraine is the depth of renovation using the ESCO scheme. In countries with developed ESCO markets, like Sweden, the EnPC are used for major renovation. In Ukraine, the ESCO scheme is mainly used for low costs and so-called “low-hanging fruit” measures, like the installation of automated control and smart thermostats.

3.10. The international donor support remains crucial to expand Ukraine’s reconstruction and energy-efficiency initiatives. Considering remaining loopholes related to the MEPR for buildings, the lack of coordination between different policy instruments related to NZEB and other potential framework gaps or challenges, donor support needs strong guidance and coordination to ensure that actions are fully aligned with binding obligations and targets. Below are some examples of the identified loopholes:

Example 1: While the measures implemented under the “Energodim” Program comply with the existing legal framework, the high co-financing requirement imposed on homeowners reduces the scale and quality of work, favouring cheaper, partial solutions over major renovation packages. This approach typically yields only one-third of the potential energy savings

compared to deep renovation⁶⁸, and leads to the “lock-in” effect that will require new costly renovations in the future. Consequently, the program design risks systematically overlooking significant opportunities for achieving higher and more sustained energy efficiency improvements.

Example 2: The EEF operates multiple programs which target different areas of renovation and lacks integrated solutions. Namely, VidnovyDIM focuses on structural repairs and restoration, and EnergoDIM targets deep thermal modernisation and energy system upgrades. While both programs are essential components of building renovation, applying them sequentially to the same building leads to inefficiencies and missed opportunities for integrated solutions.⁶⁹

3.11. De jure, Ukraine has not transposed the EPBD EU/2024/1275 requirements on mandatory solar energy installation in buildings. However, due to persistent attacks on the energy infrastructure, the on-site RES generation requirements become critical for strengthening the resilience of the energy system. De facto, as of January 2026, the GoU adopted a range of strategic and regulatory decisions to accelerate and facilitate the on-site solar energy installations in buildings.

Recommendations

3.1. While developing a draft NECP for 2030-2040, (see Chapter 2), more efforts should be devoted to ensuring the consistency of Ukraine’s Strategic and legislative frameworks on energy performance in buildings.

3.2. While Ukraine’s legal framework on energy performance in buildings is 94% compliant with the EnC Acquis (based on 2010 recast and 2018 EPBD amendments), it still requires important amendments to ensure alignment with new EU Acquis (2024 recast EPBD), as well as monitoring and enforcement efforts to ensure sustainable development in the future.

⁶⁶ https://energy-efficient-products.ec.europa.eu/ecodesign-and-energy-label/understanding-energy-label_en

⁶⁷ <https://sace.gov.ua/news/novi-tekhnichni-rehlamenty-v-sferi-enerhetychnoho-markuvannia-ta-ekodyzainu-nabuly-chynnosti-v-ukraini>

⁶⁸ Ukrainian Pilot on War - Damaged Multi - Family Buildings Must Use Comprehensive Thermal Renovation, IWO, 2026

⁶⁹ Ibid

A comprehensive gap analysis comparing the provisions already transposed with the strengthened and newly introduced requirements of the 2024 recast EPBD may be required to identify all elements needed for full transposition and effective implementation. The recommendations on the harmonisation of Ukraine's district heating legislation with the EU acquis can also be found in a dedicated report⁷⁰ and other studies listed in Annex 4.

3.3. MEPR should be mandatory for individual residential buildings, while the MEPR for non-residential buildings should be based on the common EU indicators in kWh/(m².y).

3.4. The EPC should be fully implemented and mandatory for all residential buildings and apartments when they are sold, rented out or undergoing major renovation.

3.5. The MEPR, EPC and NZEB should be based on common indicators expressed in kWh/(m².y).

3.6. The level of ambition related to the renovation of public buildings is significantly lower than in the EU MS and is not sufficient to contribute adequately to the climate neutrality of Ukraine by 2050. However, taking into account the lack of finances and the daily destruction of public buildings during the ongoing war, it is recommended to enhance the leading role of the public sector when the war is over.

3.7. Introduce the EPBD-compliant definition of major renovation in the Ukrainian legal framework. Based on the analysis of the legislative framework, *“more than 25 % of the surface of the building envelope undergoes renovation”* may be the most relevant definition for major renovation in Ukraine. The MEPR should also be mandatory for major renovation of individual residential buildings. The introduction of the Renovation Passports requirements will facilitate the justified decision on whether to proceed with the renovation of damaged buildings to MEPR or NZEB requirements.

3.8. The delay between the adoption/strengthening of EU Regulations on ecodesign and energy labelling should be reduced from 5-8 years to a maximum period of 1 year.

3.9. The successful implementation of the ESCO scheme in Ukraine should also be applied/promoted for deep renovation projects.

3.10. While the donor support for the renovation of existing buildings remains crucial, more efforts should be devoted to strengthening/enforcing MEPR/NZEB for renovated and new buildings to achieve multiple economic benefits (see Table 12). The renovation of buildings to MEPR/NZEB requirements will prevent “lock-in” effects and provide multiple co-benefits for Ukraine's economy and households. Thus, to ensure higher efficiency of the donor support and to yield maximum tangible results for all parties, better coordination is needed between:

- › Funding volumes;
- › Elimination of gaps and loopholes;
- › Improvement of practical implementation mechanisms that would enable high-quality and ambitious refurbishment (i.e. avoiding any partial repairs that would require costly upgrades later on);
- › Development of standardised deep renovation packages, their further validation via pilot testing and scaling them up across the country.

The initial S2I Principle, which was originally pursued by the EU and IKI for the creation of the “Energodim” Program should be revived and implemented throughout all EEf's activities.

3.11. Ensure the full transposition of all EPBD EU/2024/1275 requirements concerning on-site solar energy installations in public buildings, while enforcing the energy efficiency first principle (see Recommendation 2.1.). Strengthen the financial and institutional capacity of local communities to enable the scaling-up of relevant projects.

⁷⁰ <https://rewarm.nlu.org.ua/s/rewarmEN/item/1102> and <https://rewarm.nlu.org.ua/s/rewarmEN/item/1100>

4 INSTITUTIONAL FRAMEWORK

4.1 Governmental Institutions

The Verkhovna Rada of Ukraine (the Parliament)

is the only body that adopts the laws of Ukraine. The Parliament acts in accordance with the Law “On the Rules of Procedure of the Verkhovna Rada of Ukraine”.⁷¹ Verkhovna Rada consists of Parliament Committees, which act according to the Law “On the Committees of the Verkhovna Rada of Ukraine”.⁷² The Committees of the Verkhovna Rada of Ukraine on Energy, Housing and Communal Services are responsible in particular for energy efficiency in buildings.

The Cabinet of Ministers of Ukraine (CMU) is a collegial, supreme executive body of Ukraine, responsible for adopting resolutions and orders, prepared by the Ministries and other central executive bodies. The CMU acts according to the Law “On the Cabinet of Ministers of Ukraine”.⁷³

The Ministry for Development of Communities and Territories (MCDT) is the central executive body, coordinated by the CMU, which ensures the formation and implementation of state policy, in particular, in the field of ensuring energy efficiency, construction, and state regional policy. The MCDT’s responsibilities are defined by the CMU Resolution dated 30.06.2015, No. 460.⁷⁴ The Ministry is responsible for implementing the following policies and instruments related to the improvement of energy efficiency in buildings:

- methodology for developing local energy plans;
- MEPR for buildings, requirements for NZEB and procedure for EPC;
- national database of energy and operational characteristics of buildings;

- LTRS and State Targeted Economic Program to Support Thermal Modernisation of Buildings;
- coordinates activities of central and local executive authorities to ensure the exemplary role of government buildings and others.

The State Agency on Energy Efficiency and Energy Saving (SAEE) is a central executive body, coordinated by CMU, which ensures the implementation of state policy in the field of energy efficiency. The SAEE’s responsibilities are defined by the CMU Resolution dated 26.11.2014, No. 676.⁷⁵ The Agency is responsible for implementing the following policies and instruments related to buildings:

- ensures creation, operation and monitoring of energy audit and energy management systems;
- creates conditions for ESCO market development;
- develops methodological recommendations and awareness raising on energy efficiency of buildings;
- ensures the functioning of the ecodesign and energy labelling;
- ensures functioning of EPC scheme for buildings and independent audit of energy certificates;
- develops Action Plans (incl. local energy plans) and monitors their implementation; calculates national EE targets and monitors their achievement; monitors implementation of LTRS, and others.

⁷¹ <https://zakon.rada.gov.ua/laws/show/1861-17#Text>

⁷² <https://zakon.rada.gov.ua/laws/show/116/95-%E2%F0#Text>

⁷³ <https://zakon.rada.gov.ua/laws/show/794-18#Text>

⁷⁴ <https://zakon.rada.gov.ua/laws/show/460-2015-%D0%BF#Text>

⁷⁵ <https://zakon.rada.gov.ua/laws/show/676-2014-%D0%BF#Text>

The Ministry of Economy, Environment and Agriculture is a central executive body, coordinated by CMU. According to the CMU Resolution dated 21.07.2025 No. 903.⁷⁶ The Ministry is responsible for the development of NECP and NDC.

Local self-government bodies, in accordance with the EE Law:

- develop and approve local energy plans and medium-term target programs;
- adopt decisions on the implementation of energy management systems within the respective territorial communities;
- have the right to establish local target funds to provide financial support for local energy plans, medium-term programs, and energy-efficiency measures, and to monitor the use of such funds;
- implement energy-efficiency measures in their settlements and oversee their implementation when financed from local budgets;
- carry out monitoring of the results of these measures.

4.2 State Funds

Energy Efficiency Fund (EEF) is a state fund which supports the implementation of projects for thermal modernisation of buildings in the residential sector. The EEF was created according to the Law “On Energy Efficiency Fund”⁷⁷ and the CMU Resolution No. 1099 dated 20.12.2017.⁷⁸ The governing bodies of EEF are the Supervisory Board and the Management Board. The Supervisory Board is the highest management body of EEF and acts according to the CMU Resolution dated 28.02.2018, No. 142.⁷⁹ The Management Boards is the executive body that operates the EFF and acts according to the rules

adopted by the Supervisory Board. The EEF provides grants exclusively to condominiums. Since its creation in 2017, the EEF has launched multiple programmes targeting the HOAs (see Section 3.10).

State Fund for Decarbonisation and Energy Efficiency Transformation or JSC “Decarbonization Fund of Ukraine” (SFDEET) is a separate fund within the State Budget of Ukraine, which was created in 2023 in accordance with the amendments to the Budget Code of Ukraine (Article 24⁶).⁸⁰ The Budget Code envisages the following sources for the SFDEET: CO₂ emissions tax (i.e. environmental tax), state borrowings and other sources. The use of the SFDEET’s resources is regulated by the CMU Resolution No. 761.⁸¹ The SFDEET acts according to its statute adopted by the SAE Order dated 14.02.2024 No 14-24.⁸² In 2024-2025 SFDEET supported 53 projects, including 27 – ESCO, 20 – renewables, 6 – other.⁸³

4.3 Homeowners’ Associations (HOAs)

HOAs are the Associations of Co-owners of Apartment Buildings in Ukraine. The creation of an HOA in Ukraine is not mandatory. According to the State Statistics Service of Ukraine,⁸⁴ as of 01.01.2024, there were 39,709 HOAs in Ukraine, or approximately 22% of all existing multi-apartment buildings had their HOAs.

4.4 International Organisations

Ukraine has been the **Energy Community (EnC)** Contracting Party since 01.02.2011. EnC Treaty serves as the main institutional framework for aligning the country’s energy and climate policies with those of the EU.

⁷⁶ <https://zakon.rada.gov.ua/laws/show/903-2025-%D0%BF>

⁷⁷ <https://zakon.rada.gov.ua/laws/show/2095-19#Text>

⁷⁸ <https://zakon.rada.gov.ua/laws/show/1099-2017-%D0%BF#Text>

⁷⁹ <https://zakon.rada.gov.ua/laws/show/142-2018-%D0%BF#n8>

⁸⁰ <https://zakon.rada.gov.ua/laws/show/2456-17#Text>

⁸¹ <https://zakon.rada.gov.ua/laws/show/761-2024-%D0%BF#Text>

⁸² <https://fdu.com.ua/norm-documents>

⁸³ <https://fdu.com.ua/activity>

⁸⁴ https://www.ukrstat.gov.ua/edrpy/ukr/EDRPU_2024/ks_opfg/ks_opfg_s_0124_ue.xls

Within this cooperation, Ukraine has undertaken commitments to implement key EU Acquis. The EnC Secretariat provides continuous technical assistance, monitoring, and policy guidance to support Ukraine in the transposition and enforcement of the UA Acquis, in particular the preparation of legislation, NECP and LTRS.

Ukraine has been an Association country of the **International Energy Agency (IEA)** since 2022, and the IEA works closely with the GoU on key energy sector challenges, including resilience and energy efficiency. The IEA is supporting Ukraine with analysis and policy recommendations to enhance energy efficiency in building reconstruction, aiding recovery and long-term resilience.

Ukraine cooperates with the **United Nations Development Programme (UNDP)** on improving energy efficiency in public and residential buildings. UNDP has implemented projects such as “Removing Barriers to Increase Investment in Energy Efficiency in Public Buildings in Ukraine through the ESCO Modality”, which supported municipalities in introducing ESCO contracts and energy management systems. After 2022, UNDP launched the “Green Energy Recovery Programme in Ukraine” and, together with the European Investment Bank (EIB), assists in rebuilding and modernising damaged public buildings using energy-efficient technologies. These initiatives provide technical assistance and financing mechanisms that strengthen Ukraine’s institutional capacity and reduce energy consumption in the building sector.

Conclusions

4.1. The institutional framework on energy performance in buildings in Ukraine is rather complex, with multiple bodies involved in the development of strategic and legislative documents. While the Ministry of Economy, Environment and Agriculture is the main coordinating body for the NECP development, it has a limited technical capacity related to energy efficiency and energy performance in buildings. The limited technical expertise of the Ministry may also explain why the NECP sets two contradictory targets (i.e. most probably due to using an incorrect GWh-toe conversion factor) for energy savings in central government-owned and occupied buildings (see Section 2.3).

The overall lack of coordination between different state bodies may also explain why the quantitative targets of the TM 2030 Program, adopted in 2025, are from 3 to 50 times lower than the same targets envisaged by the LTRS, adopted in 2023 (see Table 3 above). The labour shortages due to the displacement of the qualified Ukrainian workforce (see Section 9.1.) may also be another reason for the limited administrative capacity of the key state bodies. This finding is also supported by the European Commission (EC) assessment (Ukraine Report 2025),⁸⁵ which states that “*Limited administrative capacity remains a major barrier to advance on legislation and ensure adequate enforcement*”.

Recommendations

4.1. More efforts should be devoted to the improvement of coordination between different state bodies. A more effective distribution of tasks and attracting highly qualified staff are needed for the development, implementation and monitoring of results of energy efficiency policies.

⁸⁵ https://enlargement.ec.europa.eu/ukraine-report-2025_en

5 NATIONALLY DETERMINED CONTRIBUTION

Like all other countries, Ukraine faces the global challenges of climate change, environmental pollution, and biodiversity loss. Recognising the need to combat climate change, Ukraine was among the first European countries to ratify the Paris Agreement. The Law of Ukraine “On the Ratification of the Paris Agreement” was adopted on 14 July 2016.⁸⁶ The obligation to develop and submit Nationally Determined Contributions (NDCs) is defined by Article 9 of the Law of Ukraine “On basic principles of state climate policy”.⁸⁷

NDC2.0

The Updated NDC of Ukraine (NDC2.0) to the Paris Agreement, approved by CMU Order dated 30 July 2021 No. 860-r⁸⁸, established the national target of reducing greenhouse gas (GHG) emissions by 35% in 2030 from 1990 level. An in-depth NDC2.0 analysis

indicates that GHG emissions from the buildings sector amounted to 28 mln tonnes of CO₂-eq in 2018, of which 89% originated from residential buildings and 11% from public and commercial buildings. Thus, the NDC2.0 envisaged the reduction of GHG emissions from buildings by 25% compared to 1990 levels or at the level of 25 mln tonnes of CO₂-eq by 2030. According to NDC2.0. Analytical Report, the annual investments needed to reach this target were estimated at €1.3 bn.⁸⁹

Additional national strategic documents provide more detailed estimates of mitigation potential in the buildings sector (see Chapter 2). The TM 2030 Program (Annex III) estimates that the implementation of energy-efficiency measures in buildings may result in a cumulative reduction of 5.5 million tonnes of CO₂-eq by 2030, with the annual distribution defined in Table 4.

Table 4. Thermal Modernisation 2030 Program reduction by 2030, mln tonnes of CO₂-eq

Cumulative	2025	2026	2027	2028	2029	2030
5.5	0	0.056	0.121	0.962	1.853	2.634

Source: SaveMyEnergyBill, 2025 based on [TM 2030 Program 2025](#)

The LTRS (Annex VII) similarly provides projections of the mitigation potential of the building stock under the Base and Ambitious scenarios.

Table 5. LTRS GHG reduction by 2050, mln tonnes of CO₂-eq

Scenario	2030	2040	2050
Base	4.5	11.6	18.6
Ambitious (MEPR)	13.1	28.8	41.8

Source: SaveMyEnergyBill, 2025 based on [LTRS 2023](#)

⁸⁶ <https://zakon.rada.gov.ua/rada/card/1469-19>

⁸⁷ <https://zakon.rada.gov.ua/laws/show/3991-20#>

⁸⁸ <https://zakon.rada.gov.ua/laws/show/868-2021-%D1%80#Text>

⁸⁹ <https://mepr.gov.ua/wp-content/uploads/2023/07/Analitchnyi-oglyad-NVV-lypen-2021.pdf>

The above estimates demonstrate both the scale of emissions generated by buildings and the substantial contribution that renovation and efficiency improvements can make toward achieving national decarbonisation objectives.

NDC3.0

A new updated NDC (NDC3.0) was adopted by the CMU Order dated 29 October 2025 No. 1172-r⁹⁰ and published in UNFCCC website at the beginning of 2026.⁹¹ Contrary to NDC2.0, which was supported by a detailed Analytical Report⁹², NDC3.0 does not include detailed information on the building sector's emissions. Thus, in practice, the sector's contribution continues to rely on the parameters outlined in NDC2.0, the TM 2030 Program, and LTRS (see above).

Conclusions

5.1. The analysis of publicly available data confirms that the building sector has one of the largest and most cost-effective GHG reduction potentials in Ukraine's economy. Thus, the renovation of the existing building stock, expansion of NZEB standards, strengthening of MEPR, and the improvement of the enforcement mechanisms directly support national climate objectives and long-term alignment of Ukraine with the EU climate framework. At the same time, there is no consistent correlation of the building sector's emissions reduction projections in the strategic framework. The key documents provide different estimates of the GHG reduction from buildings as follows:

- NDC2.0: 3 mln tonnes of CO₂-eq during 2018-2030;
- TM 2030 Program: 2.634 mln tonnes of CO₂-eq during 2026-2030;

- LTRS: 4.5-13.1 mln tonnes of CO₂-eq during 2026-2030 depending on scenario;
- NECP: no GHG reduction data, but final energy consumption savings;
- NDC3.0: no quantitative indicators on the building sector's emissions reduction.

Recommendations

5.1. Ensure the compliance and better coordination of the GHG mitigation potential projection in the buildings sector. This can be achieved via defining and publishing measurable indicators, including detailed estimates of mitigation potential in the buildings sector, using different instruments and policy measures outlined in the NECP. Transparent and publicly accessible GHG indicators are necessary to monitor progress, evaluate the impact of renovation policies, and support evidence-based climate planning and decision-making process.

Taking into account that the EU's NDC is based on EU MSs' NECPs, the Ministry of Economy, Environment and Agriculture (see Chapter 4) may streamline the process and use the EU experience of deriving the NDCs from NECPs rather than developing the two documents (NDC and NECP) in parallel.

⁹⁰<https://zakon.rada.gov.ua/laws/show/1172-2025-%D1%80#Text>

⁹¹ <https://unfccc.int/sites/default/files/2025-11/2%20%D0%9D%D0%92%D0%922%20%D0%BF%D1%80%D0%BE%D1%94%D0%BA%D1%82%20%28%D0%B7%D0%BC%D1%96%D0%BD%D0%B5%D0%BD%D0%B0%20%D1%86%D1%96%D0%BB%D1%8C%20%20%D0%B7%D0%B2%D1%96%D1%82%29%20.pdf>

⁹² <https://mepr.gov.ua/wp-content/uploads/2023/07/Analitichnyi-oglyad-NVV-lypen-2021.pdf>

6 NATIONAL AND REGIONAL ACTION PLANS

There are two layers of action plans in Ukraine:

- 6.1. The national action plans, which are part of the strategic framework of the country (see Chapter 2)
- 6.2. Local energy plans, which are a relatively new policy instrument introduced in 2023.

6.1 National Action Plans

6.1.1 National Energy and Climate Plan until 2030 (NECP)

As outlined in Section 2.3, the NECP is the main strategic document until 2030, which unifies and integrates all energy and climate policies defined in sectoral strategic documents. Concerning energy efficiency in buildings, NECP defines specific targets for the following existing policies and measures:

- Energy Efficiency Fund (PM_EE_WEM_01),
- State Fund for Decarbonization and Energy Efficiency Transformation (PM_EE_WEM_02),
- ESCO in the public sector (PM_EE_WEM_03),
- MEPR (PM_EE_WEM_04),

- EPC (PM_EE_WEM_05),
- Exemplary role of public buildings (PM_EE_WEM_06),
- National database of energy and operational characteristics of buildings (PM_EE_WEM_07),
- Energy management in central government authorities (PM_EE_WEM_08),
- Energy management in local authorities (PM_EE_WEM_09),
- Local energy plans (PM_EE_WEM_10);
- Energy efficiency fund program “GreenDIM” (PM_D_WEM_07)
- TM 2030 Program (PM_EE_WAM_02),
- NZEB (PM_EE_WAM_03).

6.1.2 Long Term Renovation Strategy until 2050 (LTRS)

While LTRS is a long-term strategic document, it also defines specific actions and building-related targets until 2030 (Table 6). The Table below provides a more detailed breakdown of the LTRS 2030 targets outlined in Table 3 (See Chapter 2 above).

Table 6. LTRS expected results until 2030

Name	Units	Total	Residential buildings		Non-residential buildings	
			individual	multi-apartment	public	other
Buildings thermally modernised (completely or partially)	unit	3,276,244	3,088,352	97,916	15,784	74,192
Area of modernised buildings	mln m ²	606.8	220.6	260	59.4	66.8
Annual natural gas savings (natural gas equivalent)*	bn m ³	3.5 (11.71)	2.5 (8.37)	0.71 (2.36)	0.17 (0.58)	0.12 (0.40)
Annual heat energy savings	GWh	66,726	31,606	22,595	7,389	5,136
Annual electricity savings	GWh	2,867	247	453	1,062	1,105
Annual savings	€ mln	2,939.6	1,022.2	939.2	580.3	397.9

* Annual savings of natural gas in accordance with its share in the generation (30%) of thermal energy (and the estimated volume of energy savings in natural gas equivalent). Source: SaveMyEnergyBill, 2025, based on [LTRS 2023](#) and [NECP 2024](#)

Table 7. TM 2030 Program expected results until 2030

Indicator	Total	Residential buildings		Public buildings	
		individual	multi-apartment	state-owned	local
Buildings thermally modernised	61,661	51,276	5,875	10	4,500
Constructed or reconstructed to NZEB requirements	22			10	12
Damaged during the war and modernised to NZEB	941	941			
Engineering systems modernised	588		588		
Heat pumps installed	9,485		9,025	10	450
Solar PV installed	9,485		9,025	10	450
Energy-efficient cooling installed	46,625	46,170		5	450
Energy-efficient lightning installed	92,800	46,170	46,170	10	450
EPC certificates issued	2,200			1,000	1,200
Energy Management system implemented	1,150			150	1,000
Energy Management system implemented and certified	115			15	100
Heat metering installed	500			500	

Source: SaveMyEnergyBill, 2025 based on [TM 2030 Program](#)

6.1.3 State Program to Support Thermal Modernisation of Buildings until 2030 (TM 2030 Program)

The Table above provides a detailed breakdown of the TM 2030 Program expected results outlined in Table 3 (See Chapter 2 above).

6.2 Local Action Plans

Article 6 of the EE Law envisages the following types of action plans at the sub-national level:

- Municipal energy plans – are to be developed and approved for each territorial community by the village, settlement, city council, as well as by Kyiv and Sevastopol (i.e. these are the two cities in Ukraine with a special status, where the latter is temporarily occupied);

- Regional energy plans - are to be developed by each of 25 Ukrainian regions by the local state administration and approved by the regional council (i.e. there are 24 regions in Ukraine and the Autonomous Republic of Crimea (temporarily occupied)).

Article 6.5 of the EE Law explicitly requires the official adoption of local energy plans as the main prerequisite for obtaining state funding for building-related measures. The local plans' measures are to be defined considering the NECP and must be developed in accordance with the Methodology adopted by the MCDT Order dated 21.12.2023 No. 1163.⁹³ The latter further envisages that the public and residential buildings are the key sectors of the local plans.

The SAEE (see Chapter 4) coordinates and supports local authorities in developing and implementing local energy plans, including guiding data collection and analysis, preparation of the plans, and dissemination of best practices. According to SAEE, as of

⁹³<https://zakon.rada.gov.ua/laws/show/z0245-24#Text>

December 2025, only 50 out of more than 1,400 municipalities in Ukraine had approved their local energy plans.⁹⁴ At the same time, the TM 2030 Program envisages that there should be:

- 300 local energy plans developed by 2026;
- 700 plans by 2027;
- 1,500 plans by 2028.

Conclusions

6.1.1. Ukraine has comprehensive strategic and institutional frameworks for national action plans until 2030, with the NECP and LTRS generally aligned. This framework is complemented by a relatively new TM 2030 Program, which outlines more realistic, measurable targets compared to the LTRS (see Table 3 above). At the same time, the TM 2030 Program contains methodological ambiguities - such as whether 46,170 energy-efficient lighting installations represent a combined or disaggregated figure, and, for example, whether the selected 450 local public buildings should be modernised considering all selected measures (i.e. heat pumps, PV, energy-efficient cooling and lighting) or different measures may be applied for different buildings (see Table 7 above). The identified ambiguity limits the accuracy of planning and further monitoring of achieved results (including independent monitoring by NGOs and civil society).

6.1.2. Taking into account that buildings account for over 40% of Ukraine's heat energy consumption, yet less than 25% of such buildings are equipped with heat meters and control systems (see Chapter 1), it is not clear why ensuring 100% metered consumption of heat was not envisaged by the TM 2030 Program. Given the importance of measured consumption for establishing a baseline and evaluating future savings, it is unclear why the TM 2030 Program includes installing only 500 heat meters in public buildings and does not target 100% metered heat consumption across all state-owned and local buildings by 2030.

It should also be noted that the installation of heat meters does not solve the issue of the lack of regulation of heat consumption (i.e. most dwellers of multi-apartment buildings in Ukraine regulate the temperature by opening windows during the wintertime - see Section 8.2.3 for more details). Thus, a more comprehensive approach for ensuring 100% metered heat consumption of multi-apartment buildings in Ukraine is needed.

6.2. Ukraine has a comprehensive legislative and institutional framework for the development of local energy plans. At the same time, the TM 2030 Program set an ambitious target of developing 250 plans in 2026, 400 plans in 2027 and 700 plans in 2028. It is also unclear why the TM 2030 Program envisions 1,500 plans by the end of 2028, given that there are only 1,469 territorial communities in Ukraine (i.e., 1,470 communities excluding the Chornobyl Exclusion Zone).⁹⁵

Recommendations

6.1.1. Given the data availability on the actual impact of war on building damages/destructions, institutional capacity and renovation priorities, all National Action Plans (LTRS, NECP, TM 2030 Program) should be updated and synchronised, ensuring internal consistency of key indicators. To strengthen the coherence and potential monitoring of achieved targets, the TM 2030 Program quantitative indicators should be provided with explicit clarification on whether reported figures represent cumulative or separate targets per measure.

6.1.2. Prioritise the installation of heat meters in all public and multi-apartment buildings (i.e. at least one heat meter per multi-apartment building). Introduce a new target of 100% metered heat consumption for all public and multi-apartment buildings to all National Action Plans.

Since the installation of heat meters does not solve the issue of the lack of regulation of heat consumption, consider the possibility of introducing and scaling up

⁹⁴<https://sace.gov.ua/news/lyshe-blyzko-50-iz-ponad-1400-hromad-v-ukraini-zatverdily-vlasni-munitsypalni-enerhetychni-plany-mep>

⁹⁵ <https://decentralization.ua/newgromada>

a new state programme envisaging the following measures (see Section 8.2.3 for more details):

- › Installation of an individual heating point with hydraulic balancing, and automatic temperature control;
- › Upgrade to the two-pipe distribution system to allow the regulation of heat consumption;
- › Installation of a heat meter for each building and a heat cost allocator (HCA) for each radiator (i.e. when the installation of conventional heat meters in individual apartments is technically and economically unfeasible);
- › Make by-passes and thermostats mandatory for each radiator.

6.1.3. Future updates of Ukraine's national action plans should be aligned with local energy plans indicators. As municipalities are responsible for the majority of public buildings, utility services and housing-management policies, the local plans should provide the most accurate picture of actual needs and renovation capacities of Ukraine's territorial communities. Integrating local-level data into national documents will ensure coherence between national and regional policy, improve the achievability of targets and strengthen the overall effectiveness of action plans implementation.

6.2.1. The local energy plans incentive measures (i.e. the adoption of local energy plans as the main prerequisite for obtaining state funding) should be reinforced by mandatory requirements. For example, the GoU can set official deadlines for developing regional and municipal energy plans and impose sanctions for municipalities not meeting the set deadlines. The deadlines for adopting local plans should be aligned with the targets of the TM 2030 Program (i.e. 1,500 plans by 2028) and should take into account the SAEF's capacity to efficiently process, evaluate and monitor the local energy plans.

6.2.2. Further incentivise the development of local energy plans via the preferential financing for municipal energy-efficiency projects, e.g. via the Decarbonisation Fund that becomes available only for communities with an approved local energy plan.

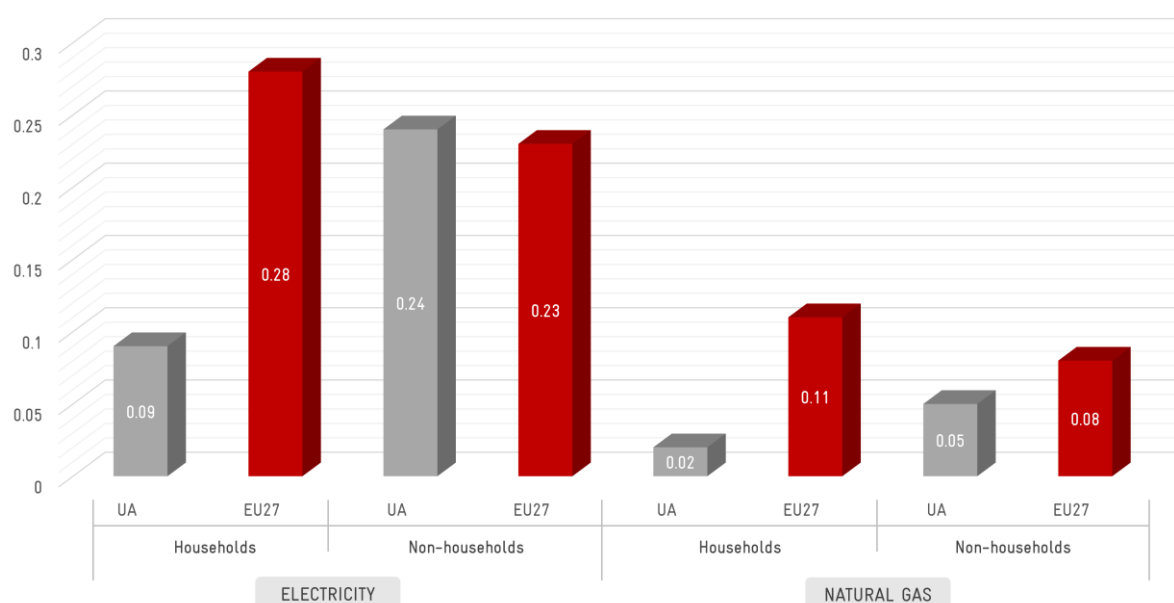
7 ENERGY TARIFFS

Although Ukraine established an Energy Regulator to ensure the independence of energy tariffs from political cycles back in 1994,⁹⁶ energy prices for households over the past 30 years have remained quite political. As a part of the latest reforms and even before the full-scale invasion, the Government of Ukraine (GoU) introduced certain public service obligations (PSOs) related to keeping electricity and natural gas prices ‘affordable’ for residential consumers.⁹⁷ During the war, the GoU extended these PSOs and adopted a Law introducing a moratorium⁹⁸ on the residential tariff increase for:

- distribution of natural gas,
- generation, transmission and supply of heat;
- supply of hot water.

In addition to the tariff increase moratorium, the Law also prohibits the utilities from taking actions to force a household consumer to pay the debt for the above services (i.e. filing lawsuits, taking measures to terminate gas supply, etc.) during wartime and for four months after the end of the martial law. Figure 2 illustrates the benchmarking of average electricity and natural gas tariffs in the EU and Ukraine, while Annexes 1-2 provide a more detailed comparison using the Eurostat methodology depending on the consumed electricity.

Figure 2. Average energy tariffs in the EU and Ukraine in the first half of 2025, €/kWh⁹⁹



Source: SaveMyEnergyBill, 2025 based on NEURC 2025, NEURC,2025 monitoring report & Eurostat, 2025

⁹⁶ <https://zakon.rada.gov.ua/laws/show/738/94#Text>

⁹⁷ Electricity - <https://zakon.rada.gov.ua/laws/show/483-2019-%D0%BF#Text>,
Natural gas - <https://zakon.rada.gov.ua/laws/show/222-2022-%D0%BF#n10>

⁹⁸ <https://zakon.rada.gov.ua/laws/show/2479-20#Text>

⁹⁹ UAH-EUR exchange rate as of 30.06.2025; Bands: Households: 2,500-4,999 kWh/year (electricity), 20-199 GJ/year(natural gas); non-households: 500-1,999 MWh /year (electricity), 10,000-99,999 GJ/year(natural gas)

The analysis of Figure 2 illustrates significant subsidies for residential consumers in Ukraine. For example, the electricity and natural gas prices for residential consumers in Ukraine were more than twice as low as those for industry in the first half of 2025. On the contrary, EU households paid on average 20-30% higher prices than non-households for the same volumes (i.e., the costs are normally lower for large/wholesale consumers compared to small residential clients – see Annexes 1-2). The difference between the subsidised and real energy tariffs is covered by different stakeholders in Ukraine:

- Electricity: Energoatom and Ukrhydroenergo;
- Natural gas: Naftogas;
- Heat and hot water: State and local budgets.

It should also be noted that Ukraine's political instruments to keep residential energy tariffs significantly below the cost-reflective value contradict the EU Acquis and do not fulfil its role of protecting vulnerable consumers. Taking into account that subsidies are provided to all households, the main benefiting party of these instruments are wealthy households whose consumption is significantly higher than the energy consumption of energy-poor consumers in Ukraine. Therefore, the GoU and the European Commission agreed to develop a Roadmap on the gradual post-war liberalisation of the energy market and the adequate protection of vulnerable consumers after the liberalisation of household prices as a part of the Ukraine Facility.¹⁰⁰

Conclusions

7.1. From an economic point of view, the identified subsidies do not provide any real benefits but hinder economic development. The overall impact of reduced energy bills for households is compensated for by higher costs of all other services and products, as well as the reduction of budgetary income due to the losses of stakeholders covering these costs.

Non-cost reflective energy tariffs for households, which are 2-3 times lower than the real costs, increase the payback period of energy efficiency measures, do not stimulate rational use of energy and increase energy dependency of Ukraine.

Ukraine's approach of providing subsidised energy tariffs for all households, including wealthy residential consumers, is fundamentally wrong. Only vulnerable households should be provided with such subsidies.

As of December 2025, there are no publicly available studies and benchmarks of end-user energy tariffs in Ukraine and EU countries. Moreover, there are also numerous misconceptions in Ukrainian media (e.g. electricity tariffs in Ukraine are higher than in the EU, etc.).¹⁰¹ Taking into account that the issues of the affordability and security of supply have become even more sensitive during wartime, more efforts should be devoted to awareness raising on this issue.

Recommendations

7.1. Enhance the awareness raising of residential consumers on the real electricity costs and the consequences of subsidised electricity tariffs, i.e. longer payback period of EE projects, increased energy dependency of Ukraine, lost opportunities for developing a market for EE products and creating new jobs, etc.

Taking into account the temporary nature of subsidised energy tariffs, i.e. during the war and four months after the end of the martial law, equally apply actual (subsidised) tariffs and cost-reflective energy prices for calculating the payback and other financial indicators of energy efficiency in building projects.

Regularly publish the benchmarking of average EU and Ukraine electricity, natural gas and district heating tariffs (using the Eurostat methodology – see Annexes 1 and 2) on the NEURC and energy utilities' websites.

¹⁰⁰ https://commission.europa.eu/topics/eu-solidarity-ukraine/eu-assistance-ukraine/ukraine-facility_en

¹⁰¹ <https://www.ukrinform.ua/rubric-economy/3887808-tarifi-na-elektroenergiu-v-ukraini-ta-es-hto-platit-bilse.html>

Proceed with the implementation of a tariff reform during the spring-summer season (i.e. after the end of the heating season). Although Ukraine's energy supply security faces unprecedented wartime pressures, a carefully designed and socially equitable energy tariff reform should be a prerequisite for long-term resilience and the improvement of the country's energy independence. The additional revenues from the tariff reforms should be directed towards improving the resilience of the energy system during the next heating season.

Introduce the definition of “energy poverty” and prioritise the energy efficiency renovation programmes for vulnerable consumers in accordance with the 2023 EED.¹⁰² The acceptance of the tariff reform during the war should be mitigated by the transparency, efficacy and simplicity of the support mechanisms aimed at protecting vulnerable households. Facilitate the development of the Ukraine Facility Roadmap on the gradual post-war liberalisation of the energy market.

¹⁰² <https://eur-lex.europa.eu/eli/dir/2023/1791/oj/eng>

8 NATIONAL-LEVEL ESTIMATES

Considering the lack of reliable data, the analysis of national-level estimates is based on the calculation of key indicators within a strategic framework and their benchmarking with national and international data.

8.1 Estimates of the strategic framework

The analysis provided in Chapter 2 already identified that the TM 2030 Program covers from 2% to 30% of the quantitative targets envisaged by the LTRS (see Table 3). Thus, Table 8 provides the results of the in-depth analysis and compares the key national estimates used for developing both documents.

Table 8. Estimates of Ukraine's strategic framework by 2030

Indicator	Unit	LTRS (base, MEPR)	LTRS (ambitious, MEPR)	LTRS (ambitious, NZEB)	TM 2030 Program
Buildings renovated	units	970,178	3,276,244	3,276,244	61,661
Area of renovated buildings	mln m ²	246.7	606.7	606.7	25.4*
Area of buildings renovated to NZEB	mln m ²	0	0	606.7	0.1*
Emission reduction in 2030	mln tCO _{2e}	4.5	13.1	15.6**	2.6
Annual savings of final energy consumption (FEC)	mln toe/ year	0.28	0.74	0.88	0.25***
Average annual energy savings rate to FEC of buildings (2016-2018 baseline)	%	1.31%	3.46%	4.11%	1.14%
Total estimated financing****	€ bn	25.5	66.8	87.5	4.2
Renovation cost	€/m ²	103	110	144	166
Investment costs	€/tCO _{2e} /year	5,673	5,101	5,617	1,615

* The area was estimated using the average area of private and public buildings based on Annex 3 data of the LTRS.

** The emission reduction was estimated using available data from other LTRS scenarios

*** The annual savings of final energy consumption (FEC) were estimated using Annex 3 of the TM 2030 Program

**** Figures in the main text and Annex 3 of the LTRS are different (€ 25.529 vs 26.629; 66.825 vs 68.376; 87.508 vs 90.354 bn)

Source: SaveMyEnergyBill, 2025 based on [LTRS 2023](#), [NECP 2024](#) and [TM 2030 Program 2025](#)

The analysis of Table 8 illustrates as follows:

- The LTRS does not specify whether the planned renovated area refers to the total or heated area;
- The LTRS base scenarios envisage the renovation of buildings to MEPR only. The LTRS ambitious NZEB scenario envisages that all selected buildings will be renovated to NZEB, which will increase the total renovation costs by 31% or from €66.8 to €87.5 bn;
- The TM 2030 Program foresees the renovation of only 0.4% of all renovation area (or 0.1 out of 25.4 mln m²) to NZEB;
- The average annual energy saving rates of LTRS and the TM 2030 Program (1.14%-4.11%) are

higher than the 2018 EED requirements (0.8%), which Ukraine has to implement as a part of the EnC Acquis¹⁰³. However, the same indicators for the TM 2030 Program and the LTRS base MEPR scenario are lower than the average annual energy savings rate of 1.49% set by Article 8 of the 2023 EED;¹⁰⁴

- The average renovation costs of the two LTRS base scenarios are rather similar (103 & 110 €/m²). The renovation cost of the LTRS ambitious NZEB scenario (144 €/m²) is significantly underestimated and even lower than the same indicator for the TM 2030 Program (166 €/m²);
- Both strategic documents are based on different investment cost assumptions. The average investment costs needed to reduce one ton of CO₂e of the TM 2030 Program are more than four

times lower than those of the LTRS (1,615 vs 5,101-5,673 €/tCO₂e/year);

- There is a difference between the estimated financing in the main text and Annex 3 of the LTRS. Namely, the LTRS renovation costs of 103-144 €/m² are 4 times lower than the indicator of 466-619 €/m² estimated in Annex 3 of the same document (see more details below).

8.2 National Estimates Benchmarking

8.2.1 LTRS estimates on the renovation costs

Table 9 summarises the renovation costs per m² which are estimated in Annex 3 of the LTRS.

Table 9. Benchmarking of LTRS renovation costs per m² of heated area, €/m² (without VAT)

N	Measure	Residential		Non-residential	
		MEPR	NZEB	MEPR	NZEB
1	External walls Insulation	45	60	45	60
2	Roof insulation	50	65	50	65
3	Basement insulation	40	55	40	55
4	EE windows and doors	140	220	140	220
1-4	Total measures applied to all buildings	275	400	275	400
5	EE of lighting	2		3	
6	Solar PV installation	90		90	
7	Solar water heater installation	3		3	
8	EE of the boiler house (DH substitution)	5		5	
9	Individual heating point installation	6		6	
10	Heating networks upgrade	10		5	
11	EE ventilation system	N/A		32	
12	Heat pump installation	75		75	
5-12	Total optional measures depending on the building type	191		219	
	GRAND TOTAL	466	591	494	619

Source: SaveMyEnergyBill, 2025, based on Annex 3 of [LTRS 2023](#)

¹⁰³ <https://www.energy-community.org/topics/efficiency/EED.html>

¹⁰⁴ https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-targets_en

Based on the data provided in Table 9, the following conclusions can be drawn:

- The key difference between the LTRS's estimates for residential and non-residential buildings is that the measure 11 "EE ventilation system" is not envisaged for residential buildings. Adding this measure to residential buildings will result in only 4 €/m² or less than 1% difference between LTRS's renovation cost estimates for residential and non-residential buildings.
- The exclusion of the installation of the EE ventilation systems in renovated residential buildings is a missed opportunity for the Ukrainian household and economy (e.g. lack of demand for mechanical ventilation with a heat recovery (MVHR) produced by Ukrainian factories¹⁰⁵). Moreover, such exclusion contradicts the legislative framework as the MVHR is one of the requirements of the NZEB in Ukraine (see Section 3.5).
- The list of LTRS measures does not include the improvement of airtightness, which is one of the cheapest and most cost-effective measures for improving the energy performance of buildings.¹⁰⁶ The achievement of a level of airtightness of 2.0 m³/(h · m²) at q50 is also one of the NZEB requirements for renovated buildings in Ukraine (see Section 3.5).
- The calculated renovation costs of 103-144 €/m², which were used to estimate the LTRS total investment needs of €25.5-87.5 bn (see Table 8) are more than 4 times lower than the estimates outlined in Annex 3 of the same strategic document (466-619 €/m²).

8.2.2 Other national and international estimates on the renovation costs per square meter

In addition to the LTRS, there are also some other estimates and data from the recently completed GIZ/EU projects related to the renovation costs. The analytical review of Ukraine's NDC.2.0, developed by the Ministry of Ecology and Environmental Protection in July 2021 (the Ministry of Economy, Environment and Agriculture since 2025) refers to an EnC study estimating the renovation costs at **100 €/m²** to achieve 61% of energy savings.¹⁰⁷ The referred costs are very similar to the LTRS base and ambitious MEPR scenarios (i.e. 103-110 €/m² – see Table 8 above).

According to a Ukrainian company implementing the renovation projects, the cost of 100 €/m² refers to the building renovation projects implemented in 2016-2017 (i.e. before introducing the new MEPR in 2020 – see Section 3.3).¹⁰⁸ As of 2025, the real renovation costs increased to **300 €/m²** due to strengthened MEPR, lack of skilled labour and other new requirements (anti-lightning equipment installation, construction of shelters), as well as disrupted supply chain and other war-related factors (see Chapter 9.1).¹⁰⁹

The identified costs of **300 €/m²** to comply with the MEPR are rather similar to the LTRS estimates. For example, the exclusion of optional measures #6 (PV) and #12 (heat pump) from Table 9 will reduce the estimated costs to **301 €/m²** for residential and to **329 €/m²** for non-residential buildings.

According to the recent study,¹¹⁰ estimated average costs for a deep energy renovation in Germany in 2024 were €19,000 for a 70m² apartment and €45,000 for a 130m² house, which can be translated into the following investment costs:

- **271 €/m²** for an average apartment;
- **346 €/m²** for an average house in Germany.

¹⁰⁵ <https://ventilation-system.com/about/>

¹⁰⁶ <https://www.pbctoday.co.uk/news/energy-news/rethinking-airtightness-and-insulation-for-energy-efficient-homes/146908/>

¹⁰⁷ <https://mepr.gov.ua/wp-content/uploads/2023/07/Analichnyj-oglyad-NVV-lypen-2021.pdf>

¹⁰⁸ <https://interfax.com.ua/news/economic/1084885.html?utm>

¹⁰⁹ Ibid

¹¹⁰ https://www.bruegel.org/system/files/2024-07/PB%2012%202024_0.pdf

German experience also shows that the application of standardised renovation packages can reduce renovation costs by 20-30%, as scaling them up leads to improved efficiency of the process.¹¹¹

8.2.3 GIZ/DENA estimates on the renovation costs

While there are no results of GIZ pilots in Ukraine, the analysis of the investment costs from recently implemented or planned GIZ/EU pilots in Moldova, Kazakhstan and Uzbekistan is illustrated in Table 10.

Table 10. Key indicators from ongoing/implemented GIZ/UA and DENA pilot projects

Indicator	MD (8 schools)	KZ (5-story apartment building in Kokshetau)	UZ (5-story apartment building in Nukus)
Implementation status	Completed in 2020-22	ongoing	ongoing
Total (heated) floor area, m ²	5,502 (N/A)	5829 (4,495)	4,295 (4,559)
Investment costs, €/m ²	338 (total area)	150-240 (heated area)	95-160 (heated area)
Energy savings	37% (real)	35-50% (expected)	70-85% (expected)

Source: SaveMyEnergyBill, 2025 based on the project data provided by GIZ & DENA

The results of the analysis of the planned and completed GIZ pilots can be summarised as follows:

- The real costs of the Moldovan pilot are comparable to the average renovation costs of 300 €/m² identified above. However, the lack of technical details on implemented measures and installed PV capacities, as well as the absence of information on the heated area do not allow for a detailed comparison.
- Considering that real investment costs and achieved savings may significantly differ from the planned indicators, the data from UZ and KZ should be reassessed after the completion of both projects, the verification of real achieved savings and other benefits.

Considering the absence of pilot projects in Ukraine and the lack of technical details about the above GIZ/DENA projects, it is impossible to evaluate the real cost of the comprehensive renovation (i.e. the renovation which avoids any partial repairs and prevents “lock-in” effects in the future - see Recommendation 3.7).

German experience illustrates that systematic preparation, standardised renovation packages, and early pilot testing can dramatically accelerate refurbishment at scale.¹¹² Based on Lithuanian and East Germany experience, the IWO study also recommends the GoU not to proceed with the partial repairs projects that will lock in inefficiency, waste public funds, and require costly reintervention.

According to the Study, partial repairs, such as installing an individual heating point, pumps, or balancing systems, typically achieve around one-third of potential savings and fail to address the fundamental inefficiencies of the building envelope, including poor insulation, air leakage, and outdated ventilation systems. Without comprehensive intervention targeting the entire building envelope and its systems, energy savings remain limited and short-lived. Thus, deep renovation, which integrates thermal insulation of walls, roofs, windows, and ventilation improvements, is essential to achieve substantial energy reductions in the range of 60-85%.

¹¹¹ Ukrainian Pilot on War - Damaged Multi - Family Buildings Must Use Comprehensive Thermal Renovation, IWO, 2026

¹¹² Ibid

The repairs of the heating systems of multi-apartment buildings in Ukraine should include the mandatory measures allowing for billing based on actual heat consumption. In fact, the majority of Ukraine's multi-family building stock has a vertical heating distribution system, which has the following key problems:

- It does not allow the regulation of heat consumption (i.e. dwellers regulate the temperature by opening windows during the wintertime), and residents cannot influence their heat bills even if they want to decrease the internal temperature in their apartment.
- The installation of conventional heat meters per apartment is technically unfeasible (i.e. it requires changing the heating system from vertical to horizontal, or installing multiple heat meters per apartment, which is not economically and technically feasible).

It should also be highlighted that the 2023/1791 EED,¹¹³ which is not yet part of the EnC Acquis,¹¹⁴ mandates stricter requirements for billing based on reliable, accurate and actual consumption, especially for heating and hot water in multi-apartment buildings. Therefore, adding the newest EED's requirements to the standardised renovation packages in Ukraine will mitigate the risk of the “lock-in” effect that will require new costly renovations in the future.

Thus, the renovation of the heating system of a multi-apartment building should include the following provisions (i.e. any partial repairs of a heating system should be avoided):

- Installation of an individual heating point with hydraulic balancing, and automatic temperature control;
- Upgrade to the two-pipe distribution system to allow the regulation of heat consumption;
- Installation of a heat meter for each building and a heat cost allocator (HCA) for each radiator (i.e. when the installation of conventional heat meters in individual apartments is technically and economically unfeasible);
- Make by-passes and thermostats mandatory for each radiator;
- Installation of hot water meters per apartment with a simultaneous upgrade to a recirculation system to reduce wait times and water waste, as well as to ensure accurate and fair billing of actual consumption.

8.2.4 Investment Costs per Ton of CO₂ Emissions Reduction

There are no publicly available data on the actual investment costs per ton of CO₂ emissions reduction in Ukraine. However, the national estimates of Table 8 were compared with the data from the GIZ pilot project on the renovation of 8 educational facilities in neighbouring Moldova, implemented in 2020-2022 (Table 11).

Table 11. Investment cost benchmarking, €/tCO_{2e}/year

TM 2030 Program	LTRS	GIZ MD Pilot (dispersion)	GIZ MD Pilot (average)
1,615	5,101 – 5,673	11,165 – 137,355	29,711

Source: SaveMyEnergyBill, 2025 based on [LTRS 2023](#), [TM 2030 Program 2025](#) & GIZ MD, 2025

¹¹³ <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32023L1791>

¹¹⁴ <https://www.energy-community.org/topics/efficiency/EED.html>

While the average investment costs of the MD pilot project are from 5 to 18 times higher than the national estimates, it should also be noted that the MD project includes additional measures, like PV installation, electrical networks, lighting, etc. Though it is necessary to benchmark only comparable indicators, the MD experience illustrates that the building renovation projects are not explicitly limited to the renovation of the building's external envelope and involve multiple other measures, like the upgrade of the heating system, electrical network, anti-lighting equipment, etc. Therefore, there is a very high probability that the real financing of building renovation in Ukraine will be significantly higher than the estimates outlined in Table 8.

8.2.5 Payback period

Annex 3 of the LTRS estimates simple payback periods for the following Scenarios:

- 17.5 for non-residential buildings renovated to MEPR
- 27.8 years for residential buildings renovated to NZEB requirements.

The LTRS recognises that energy tariffs for households are not cost-reflective, but does not specify the exact tariffs which were used for the calculations of the payback period. It is also not clear why the LTRS provides the results for the selected types of buildings only and does not compare payback periods for the same type of buildings according to different scenarios.

8.3 Circular Economy

The LTRS provides some references to the circular economy (CE), but neither specifies details nor estimates of how the CE principles will be integrated in the renovation of existing buildings.

The Recent UNIDO Study ¹¹⁵ highlights that the construction sector represents a massive challenge for

Ukraine's CE as Russia's attacks already resulted in more than 10 million tons of construction/demolition waste in 2022-2024. Unfortunately, the amount of waste and the challenge for the Ukrainian economy continue to grow with new daily destruction (see Section 9.1).

While the UNIDO Study proposes specific actions to facilitate the post-war supply chain innovation, the recent FELICITYII Study ¹¹⁶ prioritises the development of scalable circular solutions via pilots targeting the commercial viability of the CE and involving small and medium businesses, which dominate the construction sector in Ukraine (i.e. large businesses represent only ~4% of sales of residential and non-residential businesses). For example, the results of a pilot Circularity Project in Hostomel (Kyiv region) illustrate that 90% of demolition waste could be recycled and reused in reconstruction. The FELICITYII renovation pilots in Mykolaiv and Kryvyi Rih (Dnipropetrovsk region) also envisage the use of recycled materials and solutions.¹¹⁷ Provided such pilots are scaled up and economically viable, they can offer sustainable solutions for the accumulated demolition waste and supply low-carbon construction materials for the post-war reconstruction.

The latter FELICITYII Study and the New European Bauhaus Investment Guidelines ¹¹⁸ also outline the importance of the use of nature-based construction materials, which are locally available, such as local soils, straw and wood. The use of locally available nature-based materials and systems for buildings and landscape renovation provides multiple benefits, including very low embodied carbon, minimal industrial processing, and strong climatic responsiveness.

¹¹⁵ https://www.eu4environment.org/app/uploads/2024/07/Towards-the-Circular-Economy-Ukraine_ENG_online.pdf

¹¹⁶ <https://www.giz.de/sites/default/files/media/pkb-document/2026-03/giz2026-en-felicity-ii-embodied-carbon.pdf>

¹¹⁷ Ibid

¹¹⁸ <https://new-european-bauhaus.europa.eu/system/files/2024-07/NEB%20Investment%20Guidelines.pdf>

8.4 Multiple Benefits

In addition to energy and climate, the LTRS estimates the following macroeconomic benefits until 2050:

- 164,000 new jobs (as per the main text or 40,000-90,000 new jobs per year according to Annex 7);
- €5.6 bn of new market for insulation and energy efficiency equipment and related services;
- €1.5 bn of new tax income;
- Achieving Ukraine's energy independence in 2031-2040;
- Reduction of sick leaves by 11% and costs of medicines by 20% because of a better microclimate.

According to an EU study,¹¹⁹ every €1 million invested in building renovation creates, on average, 18 jobs. The experience from Spain also confirms that for each €1 of public money spent on energy renovation, the Spanish government gets €0.62 in return within one year, mainly via taxation.¹²⁰

Conclusions

8.1. While the strategic framework envisages annual energy saving rates above 0.8% of FEC in accordance with the EnC Acquis, the LTRS contains multiple discrepancies between different parts of the document. The investment costs assumptions of the TM 2030 Program are more than 4 times lower than those of the LTRS.

8.2.1. The LTRS renovation costs of 103-144 €/m² are 4 times lower than the indicator of 466-619 €/m² estimated in Annex 3 of the same document.

8.2.2. Based on the national and international data, the average renovation costs of 300 €/m² (of heated area) to meet the current MEPR in Ukraine may be a more realistic indicator as compared to the renovation cost of 103-166 €/m² which were used for estimating the total financing needs of the strategic framework.

German experience also shows that the application of standardised renovation packages can reduce renovation costs by 20-30%.

8.2.3. It is estimated that the renovation of 61,661 buildings as envisaged by the TM 2030 Program will require at least twice the €4.2 bn investment estimated in the document. However, the estimates should be further validated by pilots.

8.2.4. The average investment costs per ton of CO₂ emissions reduction of the MD pilot project are from 5 to 18 times higher than Ukraine's national estimates. The MD experience illustrates that the renovation projects do not always yield planned savings and involve additional measures, significantly increasing investment costs. The national estimates can only be validated via pilot projects, which have not yet been implemented in Ukraine.

8.2.5. The results of the payback period analysis can be summarised as follows:

- The LTRS estimates the payback period from 17.5 to 27.8 years for some specific building renovation scenarios, but lacks transparency and technical details of the estimates.
- The payback period for the renovation of individual houses in Ukraine may be from 3 to 8 times longer than in EU MS due to subsidised energy tariffs for residential consumers (see Chapter 7).
- As of December 2025, the real costs for the building renovation are no longer cheaper in Ukraine than in the neighbouring EU MS due to war-related factors, like the disruption of the supply chains and a lack of qualified workforce (see Section 9.1).
- Depending on the project, HOAs may benefit from the shortest payback period due to the targeted financial assistance provided for the renovation of multi-apartment buildings (see Section 3.10).

¹¹⁹ <https://www.renovate-europe.eu/2020/06/10/building-renovation-a-kick-starter-for-the-eu-economy/>

¹²⁰ Ibid

8.3. While the circular economy framework is at an early stage in Ukraine, the country faces an enormous challenge related to the accumulation and treatment of construction/demolition waste due to the ongoing war. For example, the ongoing war already caused more than 10 million tons of waste in 2022-2024, and its volume continues to grow due to Russia's daily attacks on civilian buildings and infrastructure. At the same time, recent pilot projects illustrate that 90% of demolition waste could be recycled and reused in reconstruction. The use of nature-based construction materials in buildings and landscape renovation offers multiple benefits, including very low embodied carbon, minimal industrial processing, and strong climatic responsiveness.

8.4. Extrapolating EU experience to the TM 2030 Program estimates, the realistic macroeconomic benefits until 2030 may be estimated at 75,600 new jobs and €2.73 bn return to Ukraine's economy via taxation.

Recommendations

8.1. Update the strategic framework and key indicators on financing needs, renovation and investment costs. The updated strategic framework should include clear and transparent financial estimates that can be easily used by NGOs and international stakeholders to verify cost-efficiency and achieved results.

8.2.1. The LTRS' estimates on renovation costs per m² of heated area and the cost-effective selection of optional measures (see Table 9) should be supported and validated through pilot projects. While designing renovation projects, the highest priority should be given to comprehensive refurbishment to NZEB requirements (as opposed to individual measures leading to "lock-in" effects – see Recommendation 3.10). In the long term, deep renovation to NZEB provides multiple socio-economic benefits (see Table 12) as well as ensures compliance with evolving standards, thereby future-proofing the investment and supporting sustainable urban development.¹²¹

8.2.2. As the renovation costs significantly depend on the selection of measures, the design of the pilot projects to validate the costs should be based on three fundamental pillars:

- › Being cost-effective;
- › Achieving the maximum possible reduction of energy demand of a building (i.e. energy efficiency first principle, as opposed to giving priority to on-site RES generation);
- › Development of standardised renovation packages that can be efficiently scaled up.

Ideally, the results of the pilot projects should inform the GoU and donor community on how to design future state programmes.

8.2.3. The existing assumptions on the costs of comprehensive renovation are not supported by pilot projects. Thus, to verify the costs needed for comprehensive renovation, it is necessary to design standardised renovation packages and implement pilot projects. For example, the GoU and the donor community may consider two or more standardised packages for the renovation of an old multi-apartment building connected to the district heating system in Ukraine:

Package 1. Renovation of the heating system, enabling billing based on actual heat and hot water consumption, which is also one of the requirements of the 2023/1791 EED. Thus, this Package must comply with the following provisions (i.e. any partial repairs of a heating system should be avoided):

- › Installation of an individual heating point with hydraulic balancing, and automatic temperature control;
- › Upgrade to the two-pipe distribution system to allow the regulation of heat consumption;
- › Installation of a heat meter for each building and a heat cost allocator (HCA) for each radiator (i.e. when the installation of conventional heat meters

¹²¹ Ukrainian Pilot on War - Damaged Multi - Family Buildings Must Use Comprehensive Thermal Renovation, IWO, 2026

in individual apartments is technically and economically unfeasible);

- › Make by-passes and thermostats mandatory for each radiator;
- › Installation of hot water meters per apartment with an upgrade to a recirculation system to reduce wait times and water waste, as well as to ensure accurate and fair billing of actual consumption.

Package 2. Comprehensive or major renovation to achieve cost-effectively MEPR/NZEB requirements (see Recommendation 3.7. on the definition of major renovation and Renovation Passport above). Thus, this Package must comply with the following provisions (i.e. any partial repairs should be avoided to comply with the EPBD-compliant definition of major renovation):

- › All measures identified in Package 1 (see above) on the renovation of the heating system, including the reduced energy demand due to improved performance of a building;
- › The renovation of windows, façade, roof and basement insulation must be done together to avoid mould-forming thermal bridges;
- › The renovation of multi-apartment buildings should undergo rigorous assessment on safety, load-bearing and thermal bridges of balconies/loggias;
- › Improvement of airtightness (e.g. after replacing windows and doors) must be accompanied by the upgrade of the ventilation system.

The comparison of costs, implementation time and achieved savings of the two or more standardised packages may provide decision makers with a solid foundation and fact-based justifications on the renovation strategy. Namely, whether it is better to prioritise the renovation of heating systems only

(see Package 1) as a cheaper and faster option or proceed with a comprehensive renovation (see Package 2), which yields higher savings, but is more expensive and may compete for funding with other strategic costs, e.g. defence budget.

8.2.4. The TM 2030 Program overestimates the potential CO₂ reduction compared to the planned investment volume. It is projected that achieving a 2.6 million tonnes of CO₂-eq reduction in 2030 would require a minimum of four times the investment than the €4.2 bn estimated in the document. The estimated investment costs per ton of CO₂ emissions reduction should be further benchmarked with similar EU indicators and validated through the results of the completed pilot projects (e.g. with the support of GIZ/FELICITYII).

8.2.5. The benchmarking of the payback period in Ukraine and other countries may be part of future GIZ projects, as it requires a detailed analysis of differences in MEPR and NZEB standards (i.e. which are defined by national governments), related renovation costs, energy tariffs and financial incentives.

8.3. Ukraine requires further assistance related to the implementation of the circular economy (CE) framework, enhancing the economic viability and scaling up pilots related to the efficient recycling of demolition waste. The specific recommendations and further actions related to the implementation of the CE framework in Ukraine can be found in dedicated studies¹²² listed in Annex 4.

8.4. Achieving energy independence, economic prosperity, and compliance with the EU acquis (see Section 9.2.) should be considered as key incentives for the GoU to implement building renovation projects. However, the estimated return of investments into the economy can only be achieved if the GoU continues to increase transparency and eradicate corruption, especially for the state-funded renovation projects.

¹²² https://www.eu4environment.org/app/uploads/2024/07/Towards-the-Circular-Economy-Ukraine_ENG_online.pdf & <https://www.giz.de/sites/default/files/media/pkb-document/2026-03/giz2026-en-felicity-ii-embodied-carbon.pdf>

9 COUNTRY-SPECIFIC CHAPTER

9.1 War Impact and Restoration Perspectives

Russia's full-scale invasion has had profound and multidimensional impacts on Ukraine's building stock, energy consumption patterns and renovation needs. According to the Ukraine Fourth Rapid Damage and Needs Assessment Report (RDNA4),¹²³ Russia has either damaged or destroyed:

- 13% of the total housing stock, affecting over 2.5 million households;
- Over 10% of educational infrastructure;
- 16.2% or 1,603 health care facilities;
- 5,483 cultural and tourism assets.

The above figures illustrate that the destruction of residential and public infrastructure has reached an unprecedented scale. Therefore, it requires not only large-scale reconstruction but the development of temporary settlements for the largest displacement in Europe since World War II (see Chapter 1) and the efficient restoration of critical services. It should also be noted that the displacement of over 8 mln Ukrainians fleeing their homes has reshaped regional demographic patterns. For example, some regions face a decline in population and energy demand, while others witness sharp increases in population density, higher electricity and heat loads and fast-growing needs for local infrastructure development. As a consequence, some buildings operate below their designed occupancy levels, while others function at persistently high loads. Damage to electricity, natural gas and heat networks has forced households and institutions to adopt temporary solutions such as solid-fuel stoves, electric heaters and backup generators, distorting normal consumption patterns.

Labour shortages due to the displacement of the qualified Ukrainian workforce and disrupted supply chains due to Russia's attacks also have a significant impact on the regional construction markets, increasing costs and duration of renovation projects. Frontline areas face the greatest constraints due to security risks and depopulation, while larger urban centres experience material shortages and rising labour costs. These factors further contribute to regional imbalances in implementing high-quality renovation projects.

9.2 European Integration

European integration remains one of Ukraine's highest strategic priorities, and the energy performance in buildings constitutes an essential component of Chapter 15. Energy of the EU accession negotiations. According to the European Commission (EC) assessment (Ukraine Report 2025)¹²⁴ under Chapter 15, Ukraine demonstrates a good level of preparation in the energy sector and maintains steady alignment with EU legislation. At the same time, the Commission identifies several priority recommendations relevant to the building sector and its supporting systems. These include:

- adopting legislation to improve RES permitting and efficiency in district heating;
- cancelling the moratorium on raising heat and hot water tariffs;
- adopting a programme to modernise heat-generating enterprises;
- setting MEPR with clear transition timelines.

¹²³ <https://openknowledge.worldbank.org/server/api/core/bitstreams/96bd9c94-c327-49b4-8aff-fe125686f04e/content>

¹²⁴ https://enlargement.ec.europa.eu/ukraine-report-2025_en

According to the EC, limited administrative capacity remains a major barrier to advancing legislation and ensuring adequate enforcement. The EC also recommend the EEF (see Section 4.2.) to sustain state funding beyond 2026, modernise district heating, improve energy use in public buildings, and strengthen public procurement standards.

Conclusions

9.1. While further damages and destruction of residential and public buildings depend on the intensity of Russia's attacks on civilian infrastructure and the capacity of Ukrainian military forces to defend against such attacks, the post-war reconstruction of buildings offers multiple benefits for Ukraine. In fact, the effect of large-scale renovation of residential and public buildings to NZEB requirements can be divided into macroeconomic and private co-benefits (Table 12).

Table 12. Multiple benefits for the large-scale renovation of residential and public buildings to NZEB requirements

Macroeconomic co-benefits	Private co-benefits
ECONOMIC BENEFITS:	ECONOMIC BENEFITS:
- Lower energy cost;	- Reduced energy bills;
- New business opportunities, enhanced demand for insulation and other EE materials	- Reduced exposure to energy price fluctuations
- Reduce energy demand and thus prevent investments otherwise needed for the reconstruction, refurbishment and/or expansion of energy supply infrastructure.	- Higher real estate value, better mortgage conditions, higher rental potential, lower property tax, lower frequency and severity of repairs, etc.
- New employment and green jobs	BUILDING QUALITY BENEFITS
- Improved productivity and wide application of new and modern EE and RES technologies	- Physical and technical improvements to the building, increased building lifespan
- Subsidies to cover energy costs avoided	- Ease of use and control by the user
ENVIRONMENTAL BENEFITS	- Aesthetics and architectural integration
- Reduction of air pollution	- Useful building areas
- Construction and demolition waste reduction	- No moisture-related damage & mould growth
SOCIAL BENEFITS	USER WELL-BEING BENEFITS
- Improved social welfare and energy poverty alleviation	- Improved indoor comfort, Natural lighting and contact with the outside environment
- Increased comfort and reduced future renovation needs	- Improved indoor air quality; Reduction of Internal and external noise
- Reduced mortality & morbidity rates	- Ease of installation and reduced annoyance
ENERGY SECURITY BENEFITS	ENERGY SECURITY BENEFITS
- Improved energy security and reduced energy dependency	- Low impact on thermal comfort in case of blackouts or new Russia's attacks
- Potential disconnection from natural gas and district heating networks due to decreased demand	- Low energy demand that can be provided by batteries

Source: SaveMyEnergyBill, 2025 based on IWO, 2026, [EESC 2022](#)

9.2. Ukraine’s legislative framework is broadly aligned with the 2018 EPBD. However, if European integration remains one of Ukraine’s highest strategic priorities, the GoU is required to transpose and implement the 2024 EPBD, including the integration of ZEB requirements, the establishment of MEPR with clear transition timelines, the development of a unified digital building data register and other recommendations of the European Commission.

Recommendations

9.1. While emergency repairs below MEPR requirements may be a faster and cheaper option for the GoU, it will require costly upgrades later. As outlined in Chapter 3, the enforcement of MEPR/NZEB at the design stage (both for new buildings and major renovation projects) is significantly cheaper than retrofitting a building later. Foremost, highly efficient newly built and renovated buildings will reduce the building sector’s significant energy demand and thus prevent cost otherwise arising for the reconstruction, refurbishment and/or expansion of energy supply infrastructure. Thus, all new and renovated buildings should comply with MEPR/NZEB requirements that will prevent “lock-in” effects and provide multiple co-benefits for Ukraine’s economy and households. The renovation of buildings to MEPR/NZEB requirements should not be considered as an EE measure but as a critical component of a cost-effective, resilient and sustainable future of Ukraine. The decision to renovate the damaged buildings to MEPR or NZEB requirements should be justified using the introduction of the Renovation Passports (see Recommendation 3.7. above).

9.2. Strengthen the administrative capacity and prioritise the implementation of recommendations outlined in the 2025 EC’s assessment.¹²⁵

¹²⁵ https://enlargement.ec.europa.eu/ukraine-report-2025_en

RECOMMENDATIONS

1. ENERGY CONSUMPTION AND TRENDS

1.1. Without reliable baseline indicators, it will be impossible to evaluate the success and efficiency of future reforms in Ukraine's housing sector. Thus, a rigorous baseline analysis needs to be implemented after the end of the war and before proceeding with “building back better” reforms.

To improve the reliability of the heat consumption data, priority should be given to ‘low-hanging fruit’, like installing a heat meter for each multi-apartment building and achieving 100% country-wide measured heat consumption by 2030.

2. STRATEGIC FRAMEWORK

2.1. Update the strategic framework on energy performance in buildings, considering the results of the NZEB plan implementation in 2020-2025 and the new TM 2030 Program targets adopted in 2025. Further update the LTRS and NECP buildings-related targets and introduce new zero-emission buildings requirements, taking into account the consistency of the quantitative indicators, the requirements of the revised Energy Performance of Buildings Directive (EPBD) EU/2024/1275¹²⁶, and the latest consequences of the war.

Given the major contribution of buildings to final energy consumption (see Chapter 1), the updated strategic framework should also strive for the enforcement of the EU-promoted energy efficiency first¹²⁷ and Build Back Better principles. Highly efficient, newly built and renovated buildings will reduce the sector's energy demand and prevent costs otherwise arising for the reconstruction, refurbishment and/or expansion of energy supply

infrastructure. Thus, while updating the strategic framework, the additional investments needed to increase energy efficiency should be transparently compared to the avoided energy supply cost.¹²⁸ If the additional investments needed to achieve NZEB are lower than the avoided energy supply costs, the strategic framework should explicitly promote comprehensive refurbishment (i.e. renovation to MEPR/NZEB which avoids any partial repairs and prevents “lock-in” effects in the future). The specific examples, opportunities and further recommendations related to the implementation of the Build Back Better principle in Ukraine can also be found in a dedicated study for Ukraine¹²⁹ and in other reports listed in Annex 4.

3. LEGAL FRAMEWORK

3.1. While developing a draft NECP for 2030-2040, (see Chapter 2), more efforts should be devoted to ensuring the consistency of Ukraine's Strategic and legislative frameworks on energy performance in buildings.

3.2. While Ukraine's legal framework on energy performance in buildings is 94% compliant with the EnC Acquis (based on 2010 recast and 2018 EPBD amendments), it still requires important amendments to ensure alignment with new EU Acquis (2024 recast EPBD), as well as monitoring and enforcement efforts to ensure sustainable development in the future. A comprehensive gap analysis comparing the provisions already transposed with the strengthened and newly introduced requirements of the 2024 recast EPBD may be required to identify all elements needed for full transposition and effective implementation. The recommendations on the harmonisation of

¹²⁶ https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401275&pk_keyword=Energy&pk_content=Directive

¹²⁷ https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-first_en

¹²⁸ ‘Energy efficiency first’ means taking utmost account in energy planning, and in policy and investment decisions, of alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient, see more at <https://energycoalition.eu/energy-efficiency/energy-efficiency-first-principle/>

¹²⁹ <https://www.bpie.eu/wp-content/uploads/2024/02/FINAL-Reconstruction-of-Ukraine.pdf>

Ukraine's district heating legislation with the EU acquis can also be found in a dedicated report¹³⁰ and other studies listed in Annex 4.

3.3. MEPR should be mandatory for individual residential buildings, while the MEPR for non-residential buildings should be based on the common EU indicators in kWh/(m².y).

3.4. The EPC should be fully implemented and mandatory for all residential buildings and apartments when they are sold, rented out or undergoing major renovation.

3.5. The MEPR, EPC and NZEB should be based on common indicators expressed in kWh/(m².y).

3.6. The level of ambition related to the renovation of public buildings is significantly lower than in the EU MS and is not sufficient to contribute adequately to the climate neutrality of Ukraine by 2050. However, taking into account the lack of finances and the daily destruction of public buildings during the ongoing war, it is recommended to enhance the leading role of the public sector when the war is over.

3.7. Introduce the EPBD-compliant definition of major renovation in the Ukrainian legal framework. Based on the analysis of the legislative framework, *“more than 25 % of the surface of the building envelope undergoes renovation”* may be the most relevant definition for major renovation in Ukraine. The MEPR should also be mandatory for major renovation of individual residential buildings. The introduction of the Renovation Passports requirements will facilitate the justified decision on whether to proceed with the renovation of damaged buildings to MEPR or NZEB requirements.

3.8. The delay between the adoption/strengthening of EU Regulations on ecodesign and energy labelling should be reduced from 5-8 years to a maximum period of 1 year.

3.9. The successful implementation of the ESCO scheme in Ukraine should also be applied/promoted for deep renovation projects.

3.10. While the donor support for the renovation of existing buildings remains crucial, more efforts should be devoted to strengthening/enforcing MEPR/NZEB for renovated and new buildings to achieve multiple economic benefits (see Table 12). The renovation of buildings to MEPR/NZEB requirements will prevent “lock-in” effects and provide multiple co-benefits for Ukraine's economy and households. Thus, to ensure higher efficiency of the donor support and to yield maximum tangible results for all parties, better coordination is needed between:

- › Funding volumes;
- › Elimination of gaps and loopholes;
- › Improvement of practical implementation mechanisms that would enable high-quality and ambitious refurbishment (i.e. avoiding any partial repairs that would require costly upgrades later on);
- › Development of standardised deep renovation packages, their further validation via pilot testing and scaling them up across the country.

The initial S2I Principle, which was originally pursued by the EU and IKI for the creation of the “Energodim” Program should be revived and implemented throughout all EEf's activities.

3.11. Ensure the full transposition of all EPBD EU/2024/1275 requirements concerning on-site solar energy installations in public buildings, while enforcing the energy efficiency first principle (see Recommendation 2.1.). Strengthen the financial and institutional capacity of local communities to enable the scaling-up of relevant projects.

¹³⁰ <https://rewarm.nlu.org.ua/s/rewarmEN/item/1102> and <https://rewarm.nlu.org.ua/s/rewarmEN/item/1100>

4. INSTITUTIONAL FRAMEWORK

4.1. More efforts should be devoted to the improvement of coordination between different state bodies. A more effective distribution of tasks and attracting highly qualified staff are needed for the development, implementation and monitoring of results of energy efficiency policies.

5. NATIONALLY DETERMINED CONTRIBUTION

5.1. Ensure the compliance and better coordination of the GHG mitigation potential projection in the buildings sector. This can be achieved via defining and publishing measurable indicators, including detailed estimates of mitigation potential in the buildings sector, using different instruments and policy measures outlined in the NECP. Transparent and publicly accessible GHG indicators are necessary to monitor progress, evaluate the impact of renovation policies, and support evidence-based climate planning and decision-making process.

Taking into account that the EU's NDC is based on EU MSs' NECPs, the Ministry of Economy, Environment and Agriculture (see Chapter 4) may streamline the process and use the EU experience of deriving the NDCs from NECPs rather than developing the two documents (NDC and NECP) in parallel.

6. NATIONAL AND REGIONAL ACTION PLANS

6.1.1. Given the data availability on the actual impact of war on building damages/destructions, institutional capacity and renovation priorities, all National Action Plans (LTRS, NECP, TM 2030 Program) should be updated and synchronised, ensuring internal consistency of key indicators. To strengthen the coherence and potential monitoring of achieved targets, the TM 2030 Program quantitative indicators should be provided with explicit clarification on whether reported figures represent cumulative or separate targets per measure.

6.1.2. Prioritise the installation of heat meters in all public and multi-apartment buildings (i.e. at least one heat meter per multi-apartment building). Introduce a new target of 100% metered heat consumption for all public and multi-apartment buildings to all National Action Plans.

Since the installation of heat meters does not solve the issue of the lack of regulation of heat consumption, consider the possibility of introducing and scaling up a new state programme envisaging the following measures (see Section 8.2.3 for more details):

- › Installation of an individual heating point with hydraulic balancing, and automatic temperature control;
- › Upgrade to the two-pipe distribution system to allow the regulation of heat consumption;
- › Installation of a heat meter for each building and a heat cost allocator (HCA) for each radiator (i.e. when the installation of conventional heat meters in individual apartments is technically and economically unfeasible);
- › Make by-passes and thermostats mandatory for each radiator.

6.1.3. Future updates of Ukraine's national action plans should be aligned with local energy plans indicators. As municipalities are responsible for the majority of public buildings, utility services and housing-management policies, the local plans should provide the most accurate picture of actual needs and renovation capacities of Ukraine's territorial communities. Integrating local-level data into national documents will ensure coherence between national and regional policy, improve the achievability of targets and strengthen the overall effectiveness of action plans implementation.

6.2.1. The local energy plans incentive measures (i.e. the adoption of local energy plans as the main prerequisite for obtaining state funding) should be reinforced by mandatory requirements. For example, the GoU can set official deadlines for developing regional and municipal energy plans and impose sanctions for municipalities not meeting the set deadlines. The deadlines for adopting local plans

should be aligned with the targets of the TM 2030 Program (i.e. 1,500 plans by 2028) and should take into account the SAEE's capacity to efficiently process, evaluate and monitor the local energy plans.

6.2.2. Further incentivise the development of local energy plans via the preferential financing for municipal energy-efficiency projects, e.g. via the Decarbonisation Fund that becomes available only for communities with an approved local energy plan.

7. ENERGY TARIFFS

7.1. Enhance the awareness raising of residential consumers on the real electricity costs and the consequences of subsidised electricity tariffs, i.e. longer payback period of EE projects, increased energy dependency of Ukraine, lost opportunities for developing a market for EE products and creating new jobs, etc.

Taking into account the temporary nature of subsidised energy tariffs, i.e. during the war and four months after the end of the martial law, equally apply actual (subsidised) tariffs and cost-reflective energy prices for calculating the payback and other financial indicators of energy efficiency in building projects.

Regularly publish the benchmarking of average EU and Ukraine electricity, natural gas and district heating tariffs (using the Eurostat methodology – see Annexes 1 and 2) on the NEURC and energy utilities' websites.

Proceed with the implementation of a tariff reform during the spring-summer season (i.e. after the end of the heating season). Although Ukraine's energy supply security faces unprecedented wartime pressures, a carefully designed and socially equitable energy tariff reform should be a prerequisite for long-term resilience and the improvement of the country's energy independence. The additional revenues from the tariff reforms should be directed towards improving the resilience of the energy system during the next heating season.

Introduce the definition of “energy poverty” and prioritise the energy efficiency renovation programmes for vulnerable consumers in accordance with the 2023 EED.¹³¹ The acceptance of the tariff reform during the war should be mitigated by the transparency, efficacy and simplicity of the support mechanisms aimed at protecting vulnerable households. Facilitate the development of the Ukraine Facility Roadmap on the gradual post-war liberalisation of the energy market.

8. NATIONAL-LEVEL ESTIMATES

8.1. Update the strategic framework and key indicators on financing needs, renovation and investment costs. The updated strategic framework should include clear and transparent financial estimates that can be easily used by NGOs and international stakeholders to verify cost-efficiency and achieved results.

8.2.1. The LTRS' estimates on renovation costs per m² of heated area and the cost-effective selection of optional measures (see Table 9) should be supported and validated through pilot projects. While designing renovation projects, the highest priority should be given to comprehensive refurbishment to NZEB requirements (as opposed to individual measures leading to “lock-in” effects – see Recommendation 3.10). In the long term, deep renovation to NZEB provides multiple socio-economic benefits (see Table 12) as well as ensures compliance with evolving standards, thereby future-proofing the investment and supporting sustainable urban development.¹³²

8.2.2. As the renovation costs significantly depend on the selection of measures, the design of the pilot projects to validate the costs should be based on three fundamental pillars:

- › Being cost-effective;
- › Achieving the maximum possible reduction of energy demand of a building (i.e. energy efficiency

¹³¹ <https://eur-lex.europa.eu/eli/dir/2023/1791/oj/eng>

¹³² Ukrainian Pilot on War - Damaged Multi - Family Buildings Must Use Comprehensive Thermal Renovation, IWO, 2026

first principle, as opposed to giving priority to on-site RES generation);

- › Development of standardised renovation packages that can be efficiently scaled up.

Ideally, the results of the pilot projects should inform the GoU and donor community on how to design future state programmes.

8.2.3. The existing assumptions on the costs of comprehensive renovation are not supported by pilot projects. Thus, to verify the costs needed for comprehensive renovation, it is necessary to design standardised renovation packages and implement pilot projects. For example, the GoU and the donor community may consider two or more standardised packages for the renovation of an old multi-apartment building connected to the district heating system in Ukraine:

Package 1. Renovation of the heating system, enabling billing based on actual heat and hot water consumption, which is also one of the requirements of the 2023/1791 EED. Thus, this Package must comply with the following provisions (i.e. any partial repairs of a heating system should be avoided):

- › Installation of an individual heating point with hydraulic balancing, and automatic temperature control;
- › Upgrade to the two-pipe distribution system to allow the regulation of heat consumption;
- › Installation of a heat meter for each building and a heat cost allocator (HCA) for each radiator (i.e. when the installation of conventional heat meters in individual apartments is technically and economically unfeasible);
- › Make by-passes and thermostats mandatory for each radiator;
- › Installation of hot water meters per apartment with an upgrade to a recirculation system to reduce wait times and water waste, as well as to ensure accurate and fair billing of actual consumption.

Package 2. Comprehensive or major renovation to achieve cost-effectively MEPR/NZEB requirements (see Recommendation 3.7. on the definition of major renovation and Renovation Passport above). Thus, this Package must comply with the following provisions (i.e. any partial repairs should be avoided to comply with the EPBD-compliant definition of major renovation):

- › All measures identified in Package 1 (see above) on the renovation of the heating system, including the reduced energy demand due to improved performance of a building;
- › The renovation of windows, façade, roof and basement insulation must be done together to avoid mould-forming thermal bridges;
- › The renovation of multi-apartment buildings should undergo rigorous assessment on safety, load-bearing and thermal bridges of balconies/loggias;
- › Improvement of airtightness (e.g. after replacing windows and doors) must be accompanied by the upgrade of the ventilation system.

The comparison of costs, implementation time and achieved savings of the two or more standardised packages may provide decision makers with a solid foundation and fact-based justifications on the renovation strategy. Namely, whether it is better to prioritise the renovation of heating systems only (see Package 1) as a cheaper and faster option or proceed with a comprehensive renovation (see Package 2), which yields higher savings, but is more expensive and may compete for funding with other strategic costs, e.g. defence budget.

8.2.4. The TM 2030 Program overestimates the potential CO₂ reduction compared to the planned investment volume. It is projected that achieving a 2.6 million tonnes of CO₂-eq reduction in 2030 would require a minimum of four times the investment than the €4.2 bn estimated in the document. The estimated investment costs per ton of CO₂ emissions reduction should be further benchmarked with similar EU indicators and validated through the results of the completed pilot projects (e.g. with the support of GIZ/FELICITYII).

8.2.5. The benchmarking of the payback period in Ukraine and other countries may be part of future GIZ projects, as it requires a detailed analysis of differences in MEPR and NZEB standards (i.e. which are defined by national governments), related renovation costs, energy tariffs and financial incentives.

8.3. Ukraine requires further assistance related to the implementation of the circular economy (CE) framework, enhancing the economic viability and scaling up pilots related to the efficient recycling of demolition waste. The specific recommendations and further actions related to the implementation of the CE framework in Ukraine can be found in dedicated studies¹³³ listed in Annex 4.

8.4. Achieving energy independence, economic prosperity, and compliance with the EU acquis (see Section 9.2.) should be considered as key incentives for the GoU to implement building renovation projects. However, the estimated return of investments into the economy can only be achieved if the GoU continues to increase transparency and eradicate corruption, especially for the state-funded renovation projects.

9. COUNTRY-SPECIFIC CHAPTER

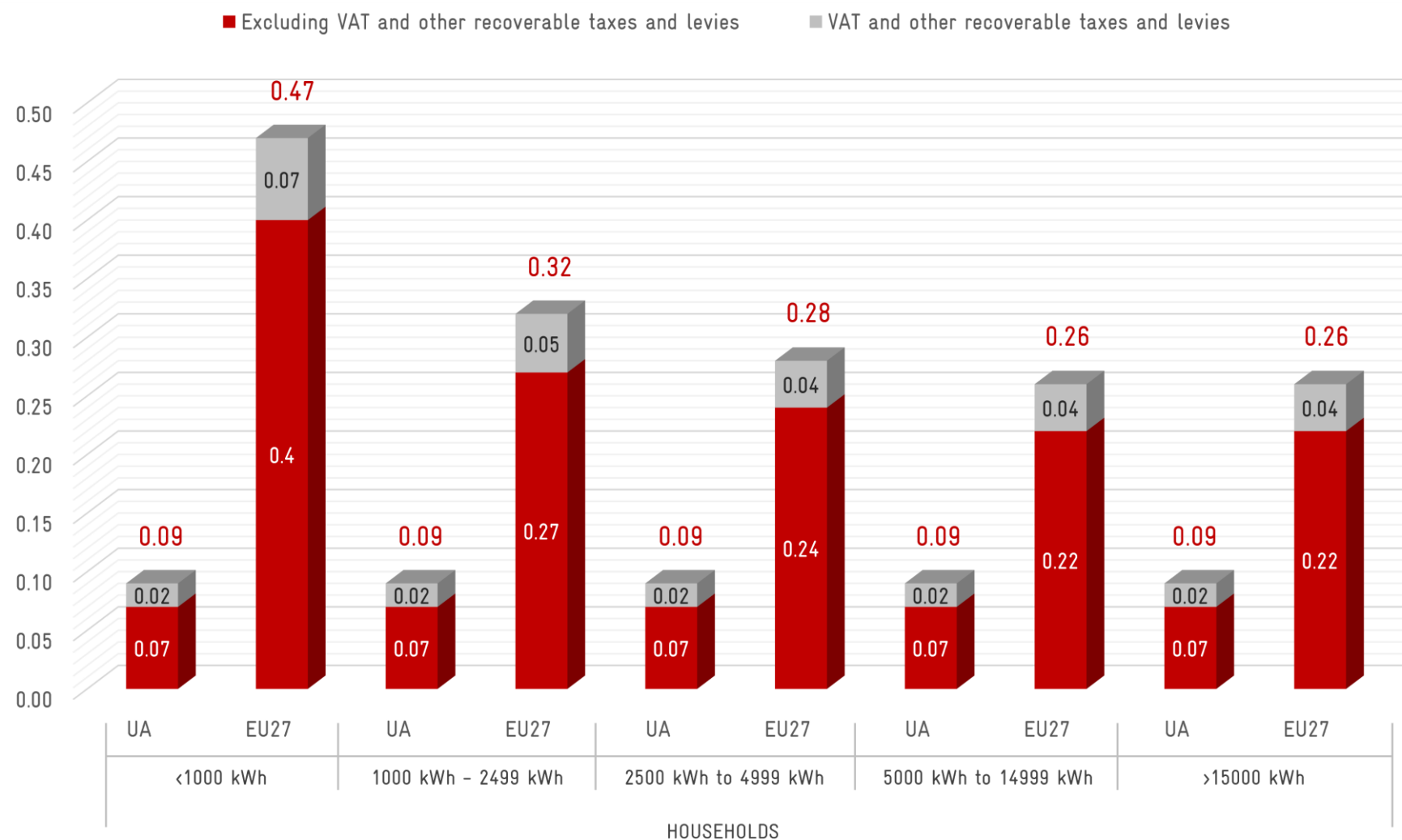
9.1. While emergency repairs below MEPR requirements may be a faster and cheaper option for the GoU, it will require costly upgrades later. As outlined in Chapter 3, the enforcement of MEPR/NZEB at the design stage (both for new buildings and major renovation projects) is significantly cheaper than retrofitting a building later. Foremost, highly efficient newly built and renovated buildings will reduce the building sector's significant energy demand and thus prevent cost otherwise arising for the reconstruction, refurbishment and/or expansion of energy supply infrastructure. Thus, all new and renovated buildings should comply with MEPR/NZEB requirements that will prevent “lock-in” effects and provide multiple co-benefits for Ukraine's economy and households. The renovation of buildings to MEPR/NZEB requirements should not be considered as an EE measure but as a critical component of a cost-effective, resilient and sustainable future of Ukraine. The decision to renovate the damaged buildings to MEPR or NZEB requirements should be justified using the introduction of the Renovation Passports (see Recommendation 3.7. above).

9.2. Strengthen the administrative capacity and prioritise the implementation of recommendations outlined in the 2025 EC's assessment.¹³⁴

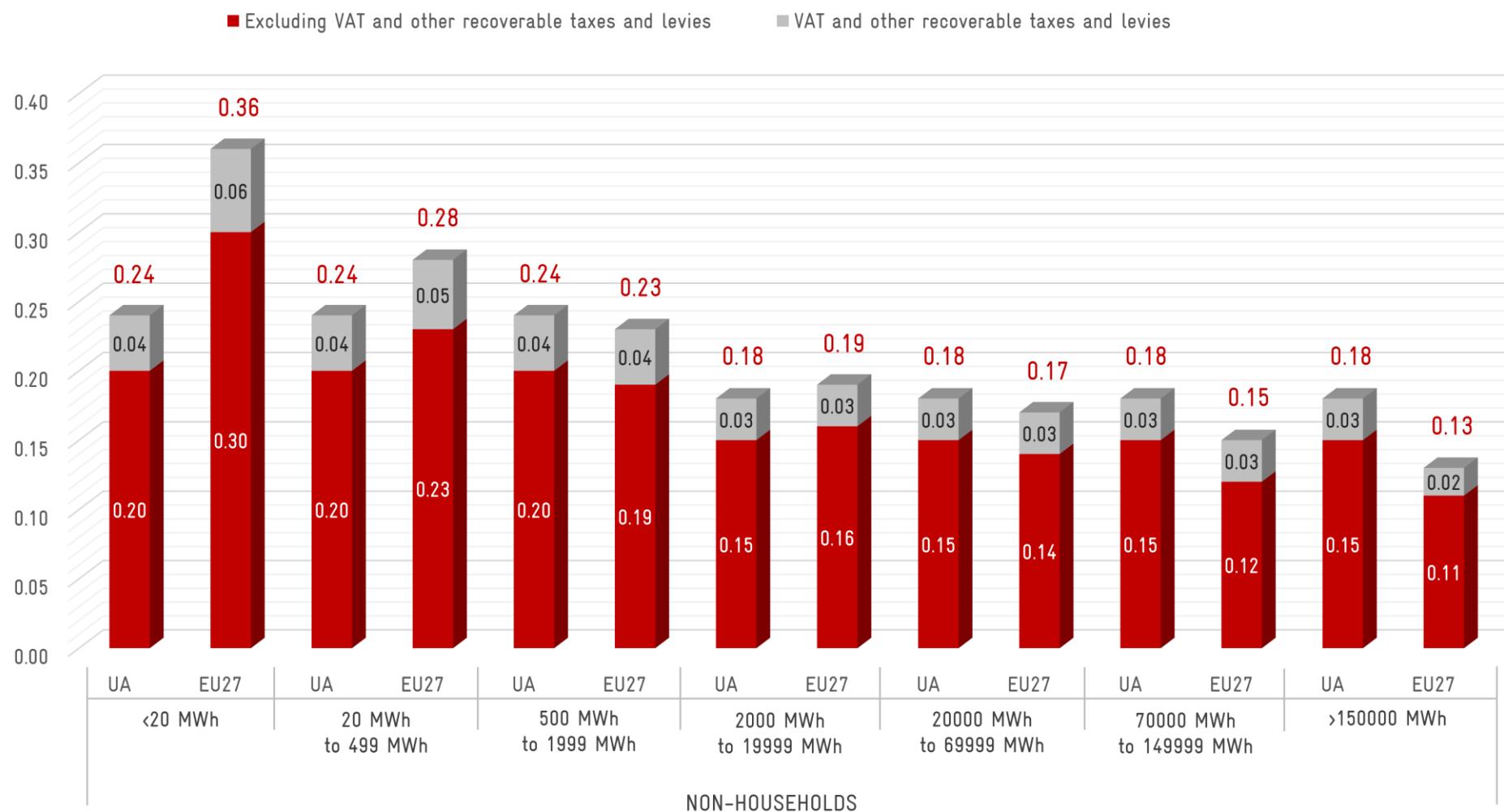
¹³³ https://www.eu4environment.org/app/uploads/2024/07/Towards-the-Circular-Economy-Ukraine_ENG_online.pdf & <https://www.giz.de/sites/default/files/media/pkb-document/2026-03/giz2026-en-felicity-ii-embodied-carbon.pdf>

¹³⁴ https://enlargement.ec.europa.eu/ukraine-report-2025_en

Annex 1. Average electricity tariffs for households in the EU and Ukraine in the first half of 2025, €/kWh



Annex 2. Average electricity tariffs for non-households in the EU and Ukraine in the first half of 2025, €/kWh



Annex 3. List of donor-funded projects related to the improvement of energy efficiency (EE) in buildings in Ukraine

Title, Timeframe, Link	Short Description
Ukraine Public Building Energy Efficiency (UPBEE) Programme 2022–2027 https://www.undp.org/ukraine/projects/technical-assistance-final-beneficiaries-eib-ukraine-public-buildings-energy-efficiency-upbee-programme	The Programme is implemented by UNDP and funded through a loan from the European Investment Bank. The primary goal of this programme is to fund extensive energy efficient upgrades in public buildings across Ukrainian cities, with a focus on small and medium-sized municipalities, and local governments. Beyond energy improvements, the Programme also allocates funding to repair war damages and modify public buildings, ensuring they cater better to the needs of Internally Displaced Persons and their host communities.
Energy Efficiency Support Programme for Ukraine (EE4U) 2018–2026 https://eefund.org.ua/en/home/	The Energy Efficiency Fund provides grants to homeowners' associations (HOAs) for energy-saving upgrades and post-war building restoration, integrating best European thermal modernisation practices. It is funded by the State Budget of Ukraine, the EU, and the German government.
Eastern Europe Energy Efficiency and Environment Partnership (E5P) Fund 2013–2029 https://e5p.eu/	The Fund coordinates and accelerates the implementation of important energy efficiency and environmental protection projects in the areas of municipal infrastructure. These include, for example, district heating projects, public transport and lighting projects. It is designed to provide effective financial support over a number of years by pooling non-repayable deposits that are primarily used to support energy efficiency and environmental projects, leading to significant energy savings and reductions in CO2 and other greenhouse gas emissions.
Energy-Efficient District Lviv 2018–2028 https://eedlviv.tilda.ws/	The project is supporting Ukrainian municipalities in creating incentives for the renovation of residential buildings. To this end, a residential area in the district of Sykhiv in Lviv was selected in conjunction with the project partners for the implementation of modernisation measures. The aim is to save as much energy and as many social subsidies as possible, and to improve the comfort of residents.
Database on donor Projects N/A https://ukrainian-climate-office.org/en/projects/?_filter_by_project_tags=energy-efficiency	The Ukrainian Climate Office develops and regularly updates (every 6 months) the list of Climate related projects in Ukraine.

Annex 4. List of reports and studies related to the improvement of energy efficiency (EE) in buildings in Ukraine (completed during 2015–2025)

Title, Year of publication, Author, Link	Short Description
Rebuilding Better and Faster – Why Energy Efficiency is Key for Ukraine 2025, IEA Rebuilding better and faster – why energy efficiency is key for Ukraine – Analysis – IEA	The report states that energy efficiency must play a central role in Ukraine's reconstruction, as rebuilding damaged homes and infrastructure offers a unique opportunity to significantly reduce energy demand.
Step-by-Step Plan for Energy Efficient Reconstruction in Ukraine 2025, DiXi Group Step-by-Step Plan for Energy Efficient Reconstruction in Ukraine	The report outlines a clear roadmap for Ukraine's post-war rebuilding via energy-efficient renovation, setting measurable targets for energy savings, energy-performance compliance and large-scale thermal modernisation of residential and public buildings.
Instruments to Catalyse Energy Efficiency Investments in Residential Buildings 2024, Low Carbon Ukraine https://www.lowcarbonukraine.com/wp-content/uploads/LCU_PP_03_2024_Energy_Efficiency-1.pdf	This policy paper examines the challenges and opportunities for improving energy efficiency in Ukraine's residential housing sector.
Energy Efficiency in Green Recovery – Best Practices and Opportunities for Ukraine 2023, DiXi Group; Buildings Performance Institute Europe https://www.bpie.eu/wp-content/uploads/2023/09/Energy-Efficiency-in-Green-Recovery_DiXi-GroupBPiE.pdf	The report examines how Ukraine can embed energy-efficiency as a core pillar in its reconstruction and green recovery efforts. It highlights the importance of applying the "build back better" and "energy-efficiency first" principles, aligns Ukrainian building policy with European standards, surveys financing and certification schemes, and offers recommendations for leveraging international best practice to upgrade the building sector post-war.
Rebuilding Ukraine with a Resilient, Carbon-Neutral Energy System 2023, UNECE https://unece.org/sites/default/files/2023-07/EN_Rebuilding%20Ukraine%20with%20a%20Resilient%20Carbon-Neutral%20Energy%20System_V8.pdf	The report highlights that rebuilding Ukraine's energy system requires prioritising deep renovation and modern energy-efficiency standards in buildings, as this sector offers the fastest and most impactful pathway to reduce energy demand, strengthen resilience.
Building back better. 6 investment criteria to drive a sustainable reconstruction of Ukraine's built environment 2024, BPiE (Buildings Performance Institute Europe) https://www.bpie.eu/wp-content/uploads/2024/02/FINAL-Reconstruction-of-Ukraine.pdf	The Report addresses the key question: "How to best enable the green reconstruction of Ukrainian buildings to maximise these benefits?"
Towards the Circular Economy in Ukraine 2024, UNIDO https://www.eu4environment.org/app/uploads/2024/07/Towards-the-Circular-Economy-Ukraine_ENG_online.pdf	The report outlines the circular economy potential of Ukraine and strategies that can be applied for the sustainable renovation of building stock.

Title, Year of publication, Author, Link	Short Description
<p>Embodied Carbon 2025, FELICITYII</p> <p>https://www.giz.de/sites/default/files/media/pkb-document/2026-03/giz2026-en-felicity-ii-embodied-carbon.pdf</p>	<p>The presentation outlines perspectives for the reconstruction of war-damaged residential buildings in Ukraine</p>
<p>Comparative Gap Analysis Report (UA–EU legislation in DH-sector) 2025, GIZ/ ReWarm</p> <p>https://rewarm.nlu.org.ua/s/rewarmEN/item/1102</p>	<p>The report presents a comparative gap analysis of Ukrainian legislation in the district heating sector against relevant European Union legal frameworks. The study identifies discrepancies between national regulations and EU directives, evaluates the degree of legal and policy alignment, and formulates recommendations to support harmonisation within the Reform of the District Heating Sector in Ukraine (ReWarm) project. The findings aim to facilitate Ukraine's approximation to the EU acquis in the field of energy and district heating governance.</p>
<p>Comprehensive study assessing the degree of alignment between Ukrainian legislation and relevant European Union regulations in the field of district heating 2026, GIZ/ ReWarm</p> <p>https://rewarm.nlu.org.ua/s/rewarmEN/item/1100</p>	<p>The report provides a comprehensive assessment of the alignment of Ukrainian legislation in the district heating sector with relevant European Union legal and policy frameworks. The study evaluates compliance with key EU directives, including the Energy Efficiency Directive (EU) 2023/1791, the Energy Performance of Buildings Directive (EU) 2024/1275, and the Renewable Energy Directive (EU) 2023/2413 (RED III), as well as the consistency of national strategic documents with EU energy and climate policies. The report presents findings and recommendations to support further harmonisation of Ukraine's district heating legislation with the EU acquis within the framework of sector reform.</p>