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BUILDING BACK BETTER

6 INVESTMENT CRITERIA TO DRIVE A SUSTAINABLE RECONSTRUCTION OF UKRAINE'S BUILT ENVIRONMENT



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CONTENTS

EXECUTIVE SUMMARY 04

07 INTRODUCTION

I. CONTEXT OF RECONSTRUCTION 08

- A. Damage assessment of the building stock and estimated reconstruction costs
- B. Ukrainian framework for energy-efficient building renovation

10 II. BENEFITS OF ESTABLISHING ELIGIBILITY CRITERIA FOR SUSTAINABLE RECONSTRUCTION

- A. Making the Ukrainian energy system fit for the future
- B. Supporting Ukraine's future as an EU Member State
- C. Creating an environment where people can thrive

III. HOW TO DESIGN SUSTAINABILITY CRITERIA 12

- 1: Investments should be directed towards projects that implement minimum energy efficiency requirements for individual building elements.
- 2: Buildings damaged during the war should not be exempted from minimum energy efficiency requirements.
- 3: Investments should be directed towards projects that involve technical building systems based on renewable energy solutions.
- 4: Investments should be directed towards projects that consider the entire energy performance of buildings.
- 5: Investments should be directed towards projects that support climate change adaptation.
- 6: Investments should be directed towards projects that address material circularity.

22 IV. EUROPEAN EXPERIENCE IN SHAPING "BUILD BACK BETTER" STRATEGIES

- A. Recovery and reconstruction programmes of EU Member States
- B. Highlights and recommendations for the Ukrainian government

CONCLUSION 24



EXECUTIVE SUMMARY

The Russian Federation's war of aggression against Ukraine has caused enormous damage on a multitude of levels. A recent assessment from the World Bank shows the massive extent to which the Ukrainian building stock has been affected by the war. For the housing sector alone, the total cost of the damage exceeds an estimated USD 55.9 billion, while more than USD 80.3 billion is needed for reconstruction.¹

Measures to rebuild the country and fund its reconstruction are already being discussed by the Ukrainian government and international partners. While guaranteeing immediate help to people in need and securing lasting economic development in the longer term are clear priorities, reconstructing the Ukrainian building stock in a sustainable and energy-efficient manner will strengthen the entire national energy system and make it fit for the future. Rebuilding the country according to environmental sustainability principles has a number of clear benefits: it will boost Ukraine's energy security and independence, strengthen its position as a future EU Member State, improve quality of life, create an environment where people can thrive, and help to reduce energy poverty.

The key question is: **"How to best enable the green reconstruction of Ukrainian buildings to maximise these benefits?"** Ukraine's situation is not an ordinary case of renovation and construction of new buildings – instead, it's about fixing the colossal damage caused by the war. Consequently, when rebuilding, it will be necessary to accurately identify the damage that has been done to buildings, in order to take appropriate measures in response. With this in mind, this paper sets out six investment criteria to guide the sustainable reconstruction of Ukraine's building stock.



Ukraine's situation is not an ordinary case of renovation and construction of new buildings. Instead, it's about fixing the colossal damage caused by the war.



¹ World Bank (2024), RDNA 3.

SIX INVESTMENT CRITERIA TO GUIDE THE SUSTAINABLE RECONSTRUCTION OF UKRAINE'S BUILDING STOCK:

1

Investments should be directed towards projects that consider minimum energy efficiency requirements for individual building elements.

2

Buildings damaged during the war should not be exempted from minimum energy efficiency requirements.

3

Investments should be directed towards projects that involve technical building systems based on renewable energy solutions.

4

Investments should be directed towards projects that improve the entire energy performance of buildings.

5

Investments should be directed towards projects that support climate change adaptation.

6

Investments should be directed towards projects that address material circularity.

Ukraine is already transposing European building legislation into national law. To facilitate the assessment of projects and guarantee that standards are consistently applied across the country, all those involved in reconstruction should refer to Ukrainian and European legislative standards in planning their activities.

This paper is a call to the actors who are part of the reconstruction process. It is aimed primarily at **multilateral donors**, to encourage them to allocate funding to reconstruction projects that meet ambitious energy efficiency, renewable energy, climate adaptation, and circularity criteria. We also make some recommendations to the **Ukrainian government**, which we call on to accelerate the implementation of the legal framework for energy efficiency and sustainable construction standards.

We therefore urge multilateral donors and the Ukrainian government to consider the following recommendations.



Recommendations

RECOMMENDATIONS TO MULTILATERAL DONORS

- Require building reconstruction projects to comply with (at least) minimum energy efficiency standards for individual building elements as defined in the Ukrainian State Building Codes, and establish additional criteria to incentivise the achievement of higher energy efficiency standards.
- Refuse funding for the installation of new technical building systems that are based solely on fossil fuels. Establish criteria to fund reconstruction projects which implement renewable energy solutions when installing technical building systems and which comply with the minimum requirements as defined in the European Taxonomy.
- Facilitate the allocation of funds for reconstruction and construction projects that address the entire energy performance of buildings, using the nearly zero-energy building (NZEB) standard as the benchmark. Pilot projects for NZEB buildings should be funded based on best practices from EU Member States.
- Investments should be directed towards projects which conduct climate vulnerability and risk assessments, and integrate climate adaptation measures in the planning and design phase.
- Reward reconstruction projects that address and aim to safely improve the circularity of construction material.

RECOMMENDATIONS TO THE UKRAINIAN GOVERNMENT

- Pursue and intensify data collection on the damage suffered by buildings across the country. Accurate data will contribute to identifying restoration priorities in each region.
- Modify the Ukrainian State Building Codes to ensure that buildings damaged during the war are subject to energy efficiency requirements, and consider modifying other sections referring to exemptions for emergency situations.
- Accelerate the development of national legislation and instruments to support the NZEB² framework.
- Accelerate the development of Regulation 305/2011 on construction materials in the market.
- Continue the development of national action on climate change adaptation in buildings in line with the EU's technical and best-practice guidance.³

² Energy Performance of Buildings Directive (Directive 2010/31/EU), Article 9. With the political agreement on the EPBD (7 December 2023), the Zero Emission Building (ZEB) standard will replace the NZEB standard for new publicly owned buildings as of 2028, and for all other new buildings as of 2030.

³ European Commission, Directorate-General for Climate Action (2023), [EU-level technical guidance on adapting buildings to climate change](#).

INTRODUCTION

While Russia's invasion – and the attendant destruction – continue, Ukraine and the international community are working to develop ways of effectively rebuilding the country. Shortly after the full-scale invasion began, the National Council for Ukraine's Post-War Recovery was established to design a comprehensive roadmap for the country's reconstruction.⁴ The European Commission subsequently committed to set up the 'Ukraine Facility' framework to channel and coordinate financial support from the EU.⁵

Ukraine is facing two major challenges: providing immediate humanitarian solutions to citizens whose accommodations have been damaged or destroyed, and ensuring sustainable reconstruction and development in the long term. With the latter aim in mind, eligibility criteria which focus specifically on sustainability⁶ should be established for funding streams and other reconstruction initiatives.

THE "BUILD BACK BETTER" PRINCIPLE

According to the UN General Assembly, the 'build back better' principle involves the use of "post-disaster recovery, rehabilitation and reconstruction phases to increase the level of resilience by integrating disaster risk reduction measures in the restoration of infrastructure and societal systems, as well as in the revitalisation of livelihoods systems, economies and the environment."⁷ Applied to buildings, this principle aims to accelerate the energy transition and the decarbonisation of the building stock. The National Council for the Recovery of Ukraine recommends that reconstruction should be based on best international practices and involve green technologies.⁸

In Ukraine, many projects are being developed to guide reconstruction efforts, focusing on restoring damaged buildings and constructing new housing and social infrastructure. Ukraine is attempting to coordinate these projects through the recently established [DREAM](#) platform, which aims to contain and organise open data across all project stages in real time, implementing the highest standards of transparency and accountability.

⁴ The "Ukraine Recovery Plan" is being developed by the National Council for the Recovery of Ukraine to rebuild different economic sectors, including the building stock.

⁵ European Commission (2023): Ukraine: Commission proposes to set up a dedicated Facility to support Ukraine's recovery, reconstruction and modernisation.

⁶ While 'prioritisation' refers to the action or process of deciding the relative importance of a certain project for funding, 'eligibility' refers to the state where a project is entitled to receive funding only if appropriate conditions are met. This paper focuses on the 'eligibility' aspect in order to guide international donors.

⁷ UNISDR (2017), Build Back Better in recovery, rehabilitation, and reconstruction.

⁸ National Council for the Recovery of Ukraine from the Consequences of the War (2022), Draft Ukraine Recovery Plan Materials of the "Construction, urban planning, modernization of cities and regions" working group.

I. CONTEXT

A. DAMAGE ASSESSMENT OF THE BUILDING STOCK AND ESTIMATED RECONSTRUCTION COSTS

Since the beginning of the war, large segments of Ukraine's building stock have been heavily damaged or destroyed. Prior to the conflict, the country's housing stock comprised around 20 million units.⁹ According to the latest World Bank assessment (February 2024), 1.8 million¹⁰ multi-family residential building units, 220,315 single-family houses and more than 67,206 dormitory units have since been damaged (Table 1). More than one-fourth of these units have been completely destroyed, with the remainder partially damaged.¹¹ The non-residential building stock has also suffered considerable damage. At least 3,583 school buildings have been partially damaged, and 394 destroyed. As for public health facilities, 1,242 buildings have been damaged or destroyed.¹² These figures will of course have increased since the assessment, and they will keep growing as long as public infrastructure and residential buildings continue to be targeted by missile attacks.

Table 1: – Estimated damaged and destroyed building units in Ukraine, as of 31 December 2023¹³

Building type	Building units with minor or moderate damage	Building units destroyed
Housing	Multi-family apartments	1.8 million
	Single-family houses	220,315
	Dormitories	67,206
Education institutions (all levels)	3,583	394
Public health facilities	1,242 ¹⁴ (total damaged and destroyed)	

The cost of rebuilding the damaged and destroyed building stock will be substantial. In the housing sector, the cost of damage¹⁵ as of December 2023 is likely to reach around USD 55.9 billion; while more than USD 80.3 billion is needed for short-term and long-term reconstruction measures, including deep restoration according to the 'build back better' principle (Table 2).¹⁶ For education and science buildings, damage¹⁷ is estimated at USD 5.6 billion, and the reconstruction needs at USD 13.9 billion. For health infrastructure, the damage¹⁸ amounts to some USD 1.4 billion, with the reconstruction needs estimated at USD 14.1 billion.

⁹ World Bank. (2024). RDNA 3.

¹⁰ Own calculation based on data provided in RDNA 3.

¹¹ Among these three-fourths show partial damage, 880,528 show minor damage and 679,382 show medium damage.

¹² This represents 12,5% of all public health facilities. Additionally, 787 pharmacies were damaged or destroyed.

¹³ World Bank. (2024). RDNA 3.

¹⁴ Additionally, 787 pharmacies damaged or destroyed.

¹⁵ Aside of damage, the losses in the housing sector, that include demolition, debris removal and temporary rental are estimated to be over USD 17,4 billion. (While 'damage' is the estimated cost of replacing destroyed infrastructure, 'loss' is the economic impact of the war, such as increased operating costs or loss of income for public authorities and private companies).

¹⁶ World Bank. (2024). RDNA 3.

¹⁷ The losses in the education sector are estimated to be over USD 6.9 billion.

¹⁸ The losses in the health sector are estimated to be over 17,8 billion.

Table 2: Estimated damage costs and reconstruction needs in Ukraine, as of 31 December 2023¹⁹

	Damage costs (US dollar billion)	Short-, medium- and long-term reconstruction needs (USD billions)
Housing	55.9	80.3
Education and Science	5.6	13.9
Health	1.4	14.1

B. UKRAINIAN FRAMEWORK FOR ENERGY-EFFICIENT BUILDING RENOVATION

Ukraine's building stock was essentially constructed during the Soviet era. Over 80% of multi-family buildings were built prior to 1991, with poor thermal insulation and high energy consumption. In fact, the average energy consumption of these buildings reaches 194 kWh/m², which exceeds the European average by 30 to 50%.²⁰ Ukraine has been actively advancing its legal framework for improving the energy efficiency of its building stock, such as through the 2022 Law of Ukraine on Amending Certain Laws to advance Thermal Modernisation.²¹ In 2022, the Energy Community Secretariat assessed Ukraine's implementation level for the Energy Efficiency of Buildings to be at 90% (this implementation relates to primary legislation and by-laws of the 2010 EPBD, as agreed by the Energy Community and Ukraine; it does not contain analysis of the 2018 EPBD recast).²² Key laws on the energy performance of buildings include the Energy Efficiency of Buildings Law and the Energy Efficiency Law. National strategies include the Plan for Increasing the Number of NZEBs (Nearly Zero/Zero-Energy Buildings), the National Energy Efficiency Action Plan by 2030 (with an Action Plan for 2021-2023), and the Long-Term Renovation Strategy.



The costs of rebuilding the damaged and destroyed building stock are substantial. In the housing sector, damage costs should reach around USD 55.9 billion, and more than USD 80.3 billion is needed for reconstruction.



¹⁹ World Bank. (2024). RDNA 3.

²⁰ National Council for the Recovery of Ukraine from the Consequences of the War. (2022). Draft Ukraine Recovery Plan Materials of the "Construction, urban planning, modernisation of cities and regions" working group. Note: According to ODYSEE-MURE data, heating consumption in 2019 per m² in European countries varied from 5 koe/m² in Spain, Cyprus, Portugal and Malta to around 15 koe/m² in Latvia, Hungary, Czechia, Estonia and Romania. 1 koe (kg of oil equivalent) equals approximately 11.63 kWh.

²¹ The Law of Ukraine. (2022). On Amendments to Certain Laws of Ukraine on Creating Conditions for the Implementation of Comprehensive Thermal Modernisation of Buildings.

²² Energy Community Secretariat. (November 2022). Ukraine Annual Implementation Report.

II. BENEFITS

OF ESTABLISHING ELIGIBILITY CRITERIA FOR SUSTAINABLE RECONSTRUCTION

To ensure that the transformation of Ukraine's building stock supports energy efficiency and carbon neutrality, post-war reconstruction must incorporate an environmental and sustainable dimension. The 'build back better' principle must be integral to the long-term vision for the future: this will bring multiple benefits.

A. MAKING THE UKRAINIAN ENERGY SYSTEM FIT FOR THE FUTURE

Sustainable reconstruction has the potential to considerably boost the energy efficiency of Ukraine's building stock. This can play a crucial role in minimising energy consumption throughout the entire national energy system, and in reducing CO₂ emissions.²³ When combined with on-site renewable energy solutions, such as solar panels and heat pumps, it will help to further reduce fossil fuel consumption and greenhouse emissions – a vital aim in light of the climate emergency. In addition, on-site renewable energy solutions and increased energy efficiency in buildings will boost Ukraine's energy security and independence, strengthening its energy system's resilience against external factors.

B. SUPPORTING UKRAINE'S FUTURE AS AN EU MEMBER STATE

The building sector accounts for 36% of the EU's carbon emissions and 40% of its energy consumption, and therefore – as is identified in the European Green Deal – the improvement of buildings will play a key role in achieving EU climate-neutrality targets. The EU aims to double building renovation rates by 2030 and to achieve a climate-neutral building sector by 2050. Throughout 2023, the EU was working to finalise the 'Fit for 55' policy package to deliver the Green Deal, establishing many targets and requirements. Under the new Energy Efficiency Directive, Member States will have to ensure that not less than 3% of the total surface area of heated and/or cooled buildings owned by public bodies is renovated each year to the highest building performance standards (NZEB and ZEB).²⁴ In addition, the revision of the Renewable Energy Directive requires Member States to define an indicative national share of renewable energy to be generated on-site, nearby and from the grid, to be consistent with at least a 49% share of energy from renewable sources in the EU building sector in 2030.²⁵ Finally, the most significant

²³ Berlin Economics has carried out more precise calculations on energy savings and emission reductions according to specific assumptions and reconstruction scenarios. Berlin Economics' project 'Low Carbon Ukraine' analyses the benefits of green reconstruction in the study *Building a Low Carbon Future in Ukraine*, which is at the consultation draft stage. Berlin Economics presented progress on this study during the C4E Conference (May 2023); the study is expected to be published in 2024.

²⁴ Energy Efficiency Directive (2023 recast). Article 6.

²⁵ Renewable Energy Directive (2023 recast). Article 15a.

development is the revision of the Energy Performance of Buildings Directive (EPBD), which includes new provisions for renovation, standardisation and support schemes, along with requirements for Member States to improve the energy performance of their building stock by specific deadlines.²⁶

It is evident that the EU has made considerable progress, and that Ukraine will have to follow this evolution on its path as a future Member State. In undertaking a green and sustainable reconstruction, Ukraine can improve the functioning of relevant laws, and advance them towards alignment with EU targets. This will ensure that rebuilt buildings are fit for the future, avoiding the need for further renovations to comply with EU requirements.

C. CREATING AN ENVIRONMENT WHERE PEOPLE CAN THRIVE

Better buildings play a major role in improving people's well-being. Buildings that are constructed in line with modern standards on efficiency and material use improve the indoor environment, resulting in improved indoor air quality, sound isolation, humidity and comfort levels. This may also reduce respiratory diseases such as those caused by damp and mould, and even improve mental health. Additionally, efficient buildings reduce operational costs while achieving the same or an even higher standard of living and functionality, allowing households to enjoy lower energy bills and alleviating energy poverty. In a scenario involving deep and efficient renovations along with liberalised energy prices, average household savings could reach more than EUR 600 per year.²⁷

Taking a broader perspective, the Ukrainian cities that have suffered the most severe damage have also seen the highest numbers of people moving away to more secure regions or to other European countries. With the war continuing, many of these people are likely to become increasingly deeply integrated into their new places of residence, away from their original homes. Ukrainian officials regularly emphasise the importance of ensuring economic restoration and development to attract displaced Ukrainians back home.²⁸ Besides economic development, other quality-of-life improvements such as modern, healthy and efficient buildings can also play an important role in attracting people to return.

²⁶ Proposal for a Directive on the Energy Performance of Buildings (COM/2021/802 final, recast). An interinstitutional agreement was reached in December 2023. The EPBD recast will be formally adopted in 2024.

²⁷ Berlin Economics' project 'Low Carbon Ukraine' analyses the benefits of green reconstruction in the study *Building a Low Carbon Future in Ukraine*, which is at the consultation draft stage. Berlin Economics presented progress on this study during the C4E Conference (May 2023); the study is expected to be published in 2024.

²⁸ Politico. (2023). It's time to start rebuilding now, says Ukraine (link).

III. HOW TO DESIGN SUSTAINABILITY CRITERIA

In this chapter, we explore six sustainability criteria we consider to be essential in the recovery process and which reconstruction projects should meet to access funding. They are primarily aimed at multilateral donors who allocate the funding; however, some are also of relevance to the Ukrainian government.

Their design is guided by European standards and legal frameworks, specifically the EPDB²⁹ and the EU Taxonomy³⁰ for sustainable investments. The criteria are aligned to scenarios representing three levels of building damage: minor, moderate, and heavy (Figure 1).

Figure 1: Scenarios based on building damage and associated reconstruction requirements³¹

3 DIFFERENT SCENARIOS

1

Building suffered MINOR DAMAGE

Minor damage refers to damage done to individual elements of the building – for example, shattered windows or shelled walls.

2

Building suffered MODERATE DAMAGE

Moderate damage refers to considerable damage that requires significant restoration work, without complete reconstruction – for example, a destroyed wall or a partially destroyed roof.

3

Building suffered HEAVY DAMAGE

Heavy damage refers to a building that has been destroyed or damaged beyond repair, requiring a complete reconstruction.

It is important to highlight the need to collect data on the building stock and to conduct an assessment phase to evaluate the level of damage, especially if the intent is to build back better with higher energy efficiency levels. The better the data, the easier it is to identify and fund the most appropriate reconstruction measures and monitor their implementation. However, insufficient data should not be used as an argument for delaying reconstruction actions and decisions.

²⁹ DIRECTIVE 2010/31/EU on the energy performance of buildings. The European directive on building performance has recently been substantially amended and will lead to several changes. A political agreement on the recast of the EPBD was reached on 7 December 2023. The EPBD recast will be formally adopted by the European Parliament and the Council in 2024. Key changes include the establishment of national trajectories for the renovation of residential buildings, minimum energy performance standards for the renovation of non-residential buildings, the introduction of detailed requirements for National Building Renovation Plans, the introduction of a zero-emission building standard (ZEB) for new buildings, as well as the improvement of Energy Performance Certificates.

³⁰ Official Journal of the European Union. (2020). REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088.

³¹ Own reflection, inspired by World Bank (2023), Ukraine rapid damage and needs assessment.

INVESTMENTS SHOULD BE DIRECTED TOWARDS PROJECTS THAT IMPLEMENT MINIMUM ENERGY EFFICIENCY REQUIREMENTS FOR INDIVIDUAL BUILDING ELEMENTS.

As a general principle, buildings which undergo measures on one or several of their elements should meet **specific technical thresholds to access funding**, such as those set by relevant national laws which are based on European standards. This should apply to all buildings, whatever the level of damage (all scenarios, Figure 1).

According to the European Taxonomy, activities relating to the installation of specific building elements are considered taxonomy-aligned if they comply with the minimal requirements set for individual systems and components in the national rules which implement the EPBD. This is also the case if they comply with the individual measures for equipment and products in the two highest energy efficiency classes, in accordance with the Energy Labelling Regulation (Regulation (EU) 2017/1369) and the delegated acts adopted under this Regulation.³² Ukraine has transposed the majority of the requirements set by the 2010 EPBD through its Law on the Energy Efficiency of Buildings³³ and the State Building Codes, as well as making advances in the transposition of the 2018 EPBD recast. The transposition of Energy Labelling Regulation is also advancing in Ukraine with recent Order of the Energy Ministry of Ukraine (№ 615/37951), which is effective from 1 August 2023.

Ukrainian State Building Codes

Multilateral donors should refer to the minimum energy efficiency requirements for individual building elements set in the Ukrainian State Building Codes (Table 3) when allocating funding to projects. The Ukrainian State Building Codes are comprehensive and numerous, and some of the recently updated Codes address energy efficiency in construction. The primary Code to look for is the 'Thermal Insulation and Energy Efficiency of Buildings DBN V.2.6-31:2021', in accordance with the Law on the Energy Efficiency of Buildings.³⁴ It outlines technical requirements – such as R-values for building elements – for new construction, reconstruction, and major renovation.

Table 3: Minimum permissible value of heat transfer resistance of the envelope (residential & public buildings)³⁵

Type of enclosing structure	R-Value ($R_{Q_{min}}$), $M^2 \cdot K/W$, for temperature zone	
	First temperature zone	Second temperature zone
1 External wall	4,00	3,50
2 Combined coating, bordering outside air	7,00	6,00
3 Coating of heated attics (technical floors), mansard, attic overlaps of unheated attics	6,00	5,50
4 Overlaps, bordering outside air, and those above unheated basements	5,00	4,00
5 Translucent enclosing	0,90	0,70
6 Roof lanterns	0,80	0,70
7 External doors	0,70	0,60

European and Ukrainian standardisation bodies should cooperate to make sure that Ukrainian values are adequate in relation to European ambitions.

³² Commission Delegated Regulation (EU) 2021/2139. For more information see Part 7.3. Installation, maintenance, and repair of energy efficient equipment. Note: EU taxonomy determines uniform performance standards for manufacturing energy efficient equipment. Roofing systems should show a U-value that is lower or equal to $0.3 \text{ W/(m}^2\text{K)}$. For external wall systems, this value should be lower or equal to $0.5 \text{ W/(m}^2\text{K)}$. For windows, the value should be no higher than $1 \text{ W/(m}^2\text{K)}$. For external doors, the value should be lower or equal to $1.2 \text{ W/(m}^2\text{K)}$. As well as other acts mentioned in Chapter I, b.

³³ As well as other acts mentioned in Chapter I, b.

³⁴ Unified State Electronic System in the Construction Sector (assessed 08/2023), DBN V.2.6-31:2021.

³⁵ Table is taken from the Ukrainian Building Code DBN V.2.6-31:2021, for more information about the R-value formula and definition of temperature zones see the Code.



RECOMMENDATIONS TO MULTILATERAL DONORS

- **Require that building reconstruction projects comply with (at least) minimum energy efficiency and thermal insulation standards for individual building elements as defined in the Ukrainian State Building Codes.**
- **Establish additional criteria to incentivise building reconstruction projects to achieve higher energy efficiency standards.**



2

BUILDINGS DAMAGED DURING THE WAR SHOULD NOT BE EXEMPTED FROM MINIMUM ENERGY EFFICIENCY REQUIREMENTS.

The second criterion applies in all three damage level scenarios. The Ukrainian State Building Codes include a derogation from the requirements for individual building elements (Table 3) for construction works aimed at mitigating the consequences of emergency situations or the restoration of objects that ensure the vital activities of the population.³⁶ Thus, this exemption could potentially extend to buildings damaged during the Russian war. However, in the context of reconstruction projects which receive public support and funding from multilateral donors, **it is vital to ensure that energy efficiency requirements are systematically followed.**

Adjusting the Ukrainian State Building Codes so that minimum energy efficiency requirements also apply to war-damaged buildings would have multiple benefits. Multilateral donors would not have to design minimum energy efficiency requirements since all projects would follow requirements that already exist, leaving donors free to focus on designing their own additional criteria to incentivise projects to achieve higher energy efficiency standards that go beyond the State Building Codes. More generally, this would improve the quality of the building stock over time, reducing disparities between war-damaged and unaffected buildings.



RECOMMENDATION TO THE UKRAINIAN GOVERNMENT

- **The sections within the State Building Codes referring to exemptions for emergency situations should be suspended or removed, so that buildings damaged in the Russian war fall within the scope of these requirements.**

³⁶ The Ukrainian Building Code, DBN V.2.6-31:2021, part 1.4.

3

INVESTMENTS SHOULD BE DIRECTED TOWARDS PROJECTS THAT INVOLVE TECHNICAL BUILDING SYSTEMS BASED ON RENEWABLE ENERGY SOLUTIONS.

The third criterion for reconstruction projects applies to all damage scenarios. Reconstruction projects that involve the installation of technical building systems should **include renewable energy solutions. Therefore, we call on multilateral donors to allocate funds to projects that do not allow heating equipment based solely on fossil fuels.**

This will accelerate alignment with current European policies. The revised Renewable Energy Directive (RED III) sets new renewable energy targets in the buildings sector. In the EU, the energy supply for the building sector must be consistent with the target to achieve a share of at least 49% from renewable sources by 2030.³⁷ The binding increase in the share of renewable energy in the heating and cooling sector is set at an annual average of 0.8% between 2021 and 2025, and 1.1% between 2026 and 2030 (taking 2020 as the reference point).

The European Taxonomy supports renewable energy solutions if they are installed on-site as technical building systems.³⁸ It defines the following renewable energy solutions as taxonomy-aligned: solar PV systems, solar hot water panels, heat pumps, on-site wind turbines, solar transpired collectors, thermal or electric energy storage units, high efficiency micro combined heat and power plant, heat exchanger/recovery systems, renewable energy-based heating, ventilation and air conditioning equipment (including district heating), as well as products for smart monitoring and regulating of heating systems.

Regardless of the technology concerned, the EU Taxonomy defines an overarching life cycle emissions intensity threshold of 100g CO₂e/kWh for electricity and heat production, as well as for the co-generation of heat and electricity.³⁹ Reconstruction measures addressing heating and cooling should comply with this threshold to be eligible for funding.

Renewable energy solution at the district level

In addition to renewable energy solutions at the building level, it is equally important to consider and support solutions at the district and neighbourhood level. Noting that Ukraine has well-developed but highly inefficient district heating networks in most of its cities, with 40% of the total population relying on district heating,⁴⁰ measures involving the extension and modernisation of these networks should also be supported by multilateral donors – provided that these networks are mainly supplied with efficient solutions and renewable energy.⁴¹

RECOMMENDATIONS TO MULTILATERAL DONORS

- **Exclude the installation of new technical building systems that are based solely on fossil fuels from funding.**
- **Funds should be allocated to reconstruction projects involving the installation of technical building systems based on renewable energy solutions which comply with the minimum requirements set by the EU Taxonomy.**

³⁷ Official Journal of the European Union. (2023). Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652.

³⁸ Commission Delegated Regulation (EU) 2021/2139. For more information see Part 7.6. Installation, maintenance, and repair of renewable energy technologies.

³⁹ OECD. (2023). *The European Union sustainable finance taxonomy*.

⁴⁰ KeepWarm project (Horizon 2020 Project N°784966), Improving the performance of District Heating Systems in Central and Eastern Europe, District Heating in Ukraine.

⁴¹ According to the European Energy Efficiency Directive, district heating is considered efficient if at least 50% of renewable energy, 50% of waste heat, 75% of cogenerated heat, or 50% of a combination of energy and heat is injected.

INVESTMENTS SHOULD BE DIRECTED TOWARDS PROJECTS THAT CONSIDER THE ENTIRE ENERGY PERFORMANCE OF BUILDINGS.

The fourth criterion applies to buildings which have been moderately or heavily damaged (scenarios 2 and 3). For these scenarios, investments should be directed towards reconstruction and construction projects that consider the **entire performance of buildings**: the highest possible cost-effective energy performance should be achieved. With this in mind, multilateral donors should refer to the NZEB standard, which sets energy performance and renewable energy thresholds.

Definition of NZEB according to EPBD⁴²

“Near zero/nearly-zero energy buildings” means a very high energy performance, as determined in accordance with [Annex I of EPBD]. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby.”

European legislation requires all new buildings to be aligned with the NZEB standard as of 2020.⁴³ NZEB standard has been transposed into national legislations, with some variations according to the building type and the climate zone in which the building is located.

In addition to energy performance requirements for the net primary energy consumption, the NZEB standard also sets requirements to increase the share of energy from renewable sources: in combination with efficiency measures, on-site renewable energy must bring the energy needs of the building close to zero.⁴⁴ For countries with continental climates, the European Commission recommends that the share of renewables in total primary energy consumption should be 50% for single-family houses and 49% for non-residential buildings.⁴⁵ For reconstruction purposes, the use of renewable energy should be supported where possible, and these thresholds should be targeted.

The European Commission currently recommends the following benchmark thresholds for primary energy consumption in residential and non-residential buildings in order to align with the NZEB standard⁴⁶:

⁴² Energy Performance of Buildings Directive (Directive 2010/31/EU), Article 2.

⁴³ Energy Performance of Buildings Directive (Directive 2010/31/EU), Article 9. With the [political agreement on the EPBD \(7th of December 2023\)](#), the Zero Emission Building (ZEB) standard will replace the NZEB standard for new publicly owned buildings as of 2028, and for all other new buildings as of 2030.

⁴⁴ While the NZEB-standard is the main benchmark to improve the energy performance of new buildings, the EU Taxonomy specifies NZEB-10% criterion ([link](#)). This means primary energy consumption of new buildings should be at least 10% lower than that of the nationally defined NZEB standard to contribute to climate change mitigation under the taxonomy.

⁴⁵ BPIE (2021), [Nearly zero: a review of EU member state implementation of new build requirement](#)

⁴⁶ BPIE (2022), [Ready for carbon neutral by 2050 - assessing ambition levels in new building standards across the EU](#).

Table 4: European Commission building energy performance and renewables benchmarks (Source BPIE 2021)⁴⁷

	A	B	C	D	E
Climate zone	Net primary energy kWh/m ² /a	Energy supplied from renewable energy sources kWh/m ² /a	Primary energy threshold including that supplied from renewable resources kWh/m ² /a	Renewables as % of total primary energy (based on mid-point)	
SINGLE FAMILY HOUSE					
Mediterranean	0-15	50	50-65	87%	
Oceanic	15-30	35	50-65	61%	
Continental	20-40	30	50-70	50%	
Nordic	40-65	25	65-90	32%	
OFFICES					
Mediterranean	20-30	60	80-90	71%	
Oceanic	40-55	45	85-100	49%	
Continental	40-55	45	85-100	49%	
Nordic	55-70	30	85-100	32%	

Note: Ukraine corresponds to the continental climate zone.

International donors should allocate funding to pilot projects in order to explore the full potential of the NZEB standard within Ukraine’s reconstruction. The findings from these projects will be useful in identifying and tackling potential bottlenecks for large-scale reconstruction at NZEB levels. These pilot projects can also be supported by Ukrainian institutions and stakeholders which already specialise in funding energy-efficient construction (and renovation), for example Ukraine’s Energy Efficiency Fund.⁴⁸

Ukrainian NZEB Plan

It is important to point out that Ukraine has made progress in standardisation, with the NZEB requirements for new buildings set for 2025 (public buildings) and 2027 (all buildings).⁴⁹ Ukraine has also suggested new requirements for primary energy consumption in new constructions, which are in line with the Commission’s recommendation on NZEBs (Table 5).⁵⁰ Further work is needed: the intention is for the NZEB standard and its application to be defined in more detail within the First Phase (2020-2025) of the Ukrainian NZEB Plan.⁵¹ However, these timelines are based on Ukraine’s pre-war situation: given the changed circumstances, the development of the NZEB framework should be accelerated. The total energy performance of buildings should be considered in all reconstruction projects in order to achieve long-term structural benefits.

⁴⁷ BPIE (2021), Nearly zero: a review of EU member state implementation of new build requirement.

⁴⁸ Energy Efficiency Fund webpage.

⁴⁹ Order of the Cabinet of Ministers of Ukraine (№ 88-2020-p), Conception and Plan for increasing the number of NZEB.

⁵⁰ According to the Commission’s benchmark, primary energy requirements for continental member states are set at 50-70 kWh/m²/a (20-40 kWh/m²/a net primary energy) for single family houses and at 85-100 kWh/m²/a (40-55 kWh/m²/a net primary energy) for non-residential buildings.

⁵¹ Order of the Cabinet of Ministers of Ukraine (№ 88-2020-p), Conception and Plan for increasing the number of NZEB.

Table 5: Requirements on maximum primary energy consumption for new construction in kWh/m² and [kWh/m³] for first and second temperature zones, as set out in the Ukrainian Conception⁵²

Building type	Number of floors	First temperature zone ⁵³	Second temperature zone
Residential buildings	1-3	92	88
	4-9	69	63
	10-16	63	56
	≥17	56	46
Public buildings	1-3	[33]	[28]
	4-9	[28]	[26]
	10-24	[26]	[21]
Educational institutions and healthcare facilities		[35]	[33]

Note: The Conception mentions that for buildings undergoing reconstruction and major renovation, the above mentioned values are applied with a coefficient of 1.2.



RECOMMENDATIONS TO MULTILATERAL DONORS

- In case of medium and heavy damage, funds should be allocated to reconstruction and construction projects that address the entire energy performance of buildings. The NZEB standard should be used as a benchmark.
- Pilot projects for NZEB buildings should be funded, based on best practices from EU Member States. The findings from these projects may be useful in exploring potential bottlenecks for large-scale reconstruction at NZEB levels.



RECOMMENDATIONS TO THE UKRAINIAN GOVERNMENT

- The development of the legislation supporting the NZEB framework should be accelerated, and it should be transparently applied.
- The introduction of building renovation passports outlining a set of steps and defined measures on energy performance could be an effective way of coordinating works to meet the NZEB standard.⁵⁴
- The Ukrainian methodology for evaluating buildings' performance⁵⁵ should be revised and updated, and should be widely applied during reconstruction.

⁵² Order of the Cabinet of Ministers of Ukraine (№ 88-2020-p), Conception and Plan for increasing the number of NZEB.

⁵³ Zones are defined in accordance with Ukrainian Building Code DBN V.2.6-31:2021.

⁵⁴ Renovation passports have already been developed in some EU Member States, for example France and Germany, and are being further defined at EU level within the current EPBD revision.

⁵⁵ Order of the Ministry of Regional Development, Construction, and Public Housing and Utilities of Ukraine (2018, identifier z0822-18, registered under № 822/32274), on the approval of methodology for assessing energy efficiency of buildings.

5

INVESTMENTS SHOULD BE DIRECTED TOWARDS PROJECTS THAT SUPPORT CLIMATE CHANGE ADAPTATION.

The fifth criterion applies to buildings which have suffered heavy damage and require complete reconstruction, as well as to new construction. The latest report from the Intergovernmental Panel on Climate Change (IPCC) confirms that accelerating global warming will lead to an intensification of extreme weather and climatic conditions in the coming decades,⁵⁶ and emphasizes the urgency of adapting to the impacts. Extreme weather events become more prevalent as temperatures rise, and Ukraine has already encountered some of the consequences, including dust storms, hurricanes, fires, floods and droughts.⁵⁷ The rising likelihood of these weather hazards will increasingly put significant stress on the built environment, and will reveal and intensify the vulnerability not only of buildings but also of the people living in them. Creating a more resilient built environment which is adapted to current and future extreme weather events will be key when reconstructing the Ukrainian building stock, at individual building level as well as at the district and neighbourhood level.

In 2021 Ukraine adopted the Strategy of Ecological Safety and Adaptation to Climate Change until 2030, comprising a planned set of actions.⁵⁸ The tasks outlined in Chapter IV of the Strategy include the revision of Ukrainian Building Codes in response to the current and future impacts of climate change – although due to the war, not all the actions planned for 2022 were implemented.⁵⁹ Moreover, Ukraine has also been including adaptation into its war recovery planning.⁶⁰ The Ukrainian government should continue to develop a framework for adaptation, and if possible accelerate it. Furthermore, funds should be allocated to reconstruction projects that **integrate strong climate change adaptation measures**. Increased climate resilience within the reconstruction process will make the need for future retrofitting and adaptation of the building stock less likely.

The European Taxonomy and the European Commission's technical and best practice guidance 'on adapting buildings to climate change' could be taken as a baseline to direct the majority of investments to reconstruction projects that address climate change adaptation. Annex II of the Taxonomy outlines the criteria under which an activity qualifies as contributing to climate change adaptation.⁶¹ It mentions a process of '**climate risk and vulnerability assessment**' (CRVA) which can be conducted to identify the exposure of a site to climate hazards and the sensitivity of a building to these identified risks. Thus, the CRVA makes it possible to define a building's adaptation needs.⁶² Measures that most effectively reduce the climate-related hazards should then be implemented, as early as during the planning and design phase. The European Commission provides comprehensive technical guidance that details adaptation solutions for addressing climate hazards: these can relate to the building's shape, its foundations, its walls/roof/windows, the space considerations, the vegetation, and the materials used.⁶³

⁵⁶ International Panel on Climate Change. (2023). *Climate Change 2023 Synthesis Report*.

⁵⁷ EcoAction webpage. (2020). *A chronicle of Ukrainian disasters caused by climate change*.

⁵⁸ Cabinet of Ministers of Ukraine (№ 1363-2021-p), Strategy of Ecological Safety and Adaptation to Climate Change until 2030.

⁵⁹ EcoAction. (2023). *The position of civil society regarding the consideration of adaptation to climate change in the post-war reconstruction of Ukraine*.

⁶⁰ National Council for the Restoration of Ukraine from the consequences of war. (2022). *Recovery Plan of Ukraine (draft) Materials of the working group 'Environmental safety'*.

⁶¹ Commission Delegated Regulation (EU) 2021/2139. For more information see Annex II.

⁶² European Commission. (2023). *EU-level technical guidance on adapting buildings to climate change*.

⁶³ European Commission (2023), *EU-level technical guidance on adapting buildings to climate change: Best practice guidance*.



RECOMMENDATION TO MULTILATERAL DONORS

- Investments should be directed towards projects which conduct climate vulnerability and risk assessments, and integrate climate adaptation measures within the planning and design phase.



RECOMMENDATION TO THE UKRAINIAN GOVERNMENT

- EU-level technical guidance on adapting buildings to climate change can be used to further develop national policies.



6

INVESTMENTS SHOULD BE DIRECTED TOWARDS PROJECTS THAT ADDRESS MATERIAL CIRCULARITY.

The last criterion addresses material circularity in both the reconstruction of buildings that suffered moderate and heavy damage (scenarios 2 and 3) and in the manufacturing of new construction materials. **Investments should be channelled into reconstruction projects that use sustainable materials.** Since the beginning of the full-scale invasion, the widespread destruction of residential buildings and social infrastructure have meant that large amounts of waste and debris from war damage have accumulated. A systematic analysis of the potential for – and risks associated with – the reuse of debris should be carried out. Some waste might show contamination (by heavy metals, PCBs, asbestos, etc.), but when there is no major risk, **waste collection and the reuse of debris to reduce the use of primary raw materials**⁶⁴ should be considered. Through the reconstruction process, Ukraine could also advance the implementation and enforcement of requirements for building materials, and set the basis for a framework to collect, reuse and recycle destruction waste. While it may be premature to require circularity to be integrated into reconstruction projects, its importance in the long term cannot be dismissed. With the entry into force of the Law on Waste Management⁶⁵ in July 2023, Ukraine has made a first step in this direction by aligning with the European Waste Framework Directive (2008/98/EC),⁶⁶ which sets out key concepts⁶⁷ and binding targets to reduce waste landfills and increase recycling volumes, including for construction and demolition waste.

Benchmarks could be set in different ways, using EU practices as a guideline. According to the European Taxonomy, the construction of new buildings (and the renovation of existing ones) does no significant harm⁶⁸ if the transition to a circular economy is addressed. To be classified as such, it specifies that at least 70% by weight of the non-hazardous construction and demolition waste generated on the construction site should be prepared for recycling, reuse and material recovery. Moreover, the Taxonomy mentions that building designs and construction techniques should support circularity and show standards for assessing the

⁶⁴ There is currently no available data on the waste volume.

⁶⁵ Ukrainian Government. (2023). *Law of Ukraine on Waste Management*.

⁶⁶ European Commission. (2008). *Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives*.

⁶⁷ The 'waste hierarchy', the 'polluters pay' principle and the 'end-of-waste' status are some of the key concepts.


⁶⁸ 'Do no significant harm' constitutes one of the approaches to sustainable finance. More in the *Taxonomy Regulation (EU) 2020/852*.

adaptability or disassembly of buildings through resource efficiency, reuse and recycling.⁶⁹

In its Sustainability Guarantee case document, the European Investment Fund also suggests that projects that lead to a reduction in the use of primary raw materials of at least 20% or to an increase in the use of secondary raw materials or waste of at least 20% should be eligible for investment. Additionally, it specifies that manufacturing of products that demonstrate superior recyclability of above 80% should also be incentivised.⁷⁰

Equally important is the national implementation and enforcement of **European Regulation 305/2011**, which lays down harmonised conditions for the marketing of construction products (it is also known as the Construction Products Regulation). Alongside rules for market actors, the Regulation sets the basic requirements for construction works, which include that they must not have an excessively high impact on the quality of the environment or on the climate during their construction, use and demolition. The Regulation also establishes that construction works should be designed, used, and demolished in such a way that their use of natural resources is sustainable.⁷¹

Prior to the full-scale invasion, the Ukrainian Parliament adopted the Law on implementing Regulation 305/2011, as well as legislative acts concerning the categorisation of construction products, the system for inspecting and evaluating them, and details regarding bodies for the technical evaluation and market supervision of construction products.⁷² These measures were scheduled to come into force on 1 January 2023, but full implementation has been postponed until 2025 due to the war.



RECOMMENDATION TO MULTILATERAL DONORS

- Reward projects that address and aim to safely improve circularity in construction materials and the transition to the circular economy.⁷³



RECOMMENDATION TO THE UKRAINIAN GOVERNMENT

- The implementation of Regulation 305/2011 in Ukraine should be accelerated to ensure that there is transparency and sufficient information on construction materials in the market.

⁶⁹ Commission Delegated Regulation (EU) 2021/2139. For more information see Parts 7.1. Construction of new buildings and 7.2. Renovation of existing buildings.

⁷⁰ European Investment Fund. (2022). Sustainability Guarantee Use Case Document.

⁷¹ EU. (2011). Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC Text with EEA relevance, Annex I.

⁷² Ukrainian Steel Construction Centre webpage (accessed 24/09/2023). Measures to implement the Law of Ukraine "on the placing of construction products on the market" (Regulation (EU) 305/2011).

⁷³ The reward may take the form of additional points awarded during the project assessment phase or the allocation of higher funding for implementation.

IV. EUROPEAN EXPERIENCE IN SHAPING “BUILD BACK BETTER” STRATEGIES

Beyond the above criteria, it is important for actors involved in reconstruction to look at the past experiences of other countries in shaping ‘build back better’ strategies. Several EU Member States have gained valuable experience in designing recovery programmes, particularly those that are frequently confronted with natural disasters such as earthquakes and landslides. Croatia, Italy and Germany have designed reconstruction programmes that included energy efficiency goals based on the ‘build back better’ principle. Public funding covered the cost of restoring buildings to their original state, as well as part of the cost associated with seismic strengthening and energy efficiency upgrading.

A. RECOVERY AND RECONSTRUCTION PROGRAMMES IN EU MEMBER STATES

Italy and Croatia have designed recovery programmes for post-earthquake reconstruction, integrating energy efficiency criteria.



Croatia suffered two major earthquakes in 2020 that caused damages of HRK 86 billion (EUR 11.4 billion)⁷⁴ for Zagreb and HRK 41.6 billion (EUR 5.6 billion)⁷⁵ for the Banovina region. In 2021, the government established a National Recovery and Resilience Plan (2021-2026), with the support of EUR 6.3 billion in subsidies from the European Recovery and Resilience Facility, of which EUR 789 million were allocated to the reconstruction of damaged buildings. The budget combines energy efficiency improvements and seismic strengthening under the ‘build back better’ principle. Energy efficiency upgrading must lead to a 30%⁷⁶ reduction in energy consumption compared to the pre-renovation state.⁷⁷

Italy has been hit by numerous earthquakes over the past 50 years, causing the deaths of 5,000 people and damage of around EUR 150 billion. In the past decade, three large earthquakes have damaged significant building areas: L’Aquila in

⁷⁴ Ministry of Physical Planning, Construction and State Assets. (2023). National Recovery and Resilience Plan (Initiative: Building reconstruction).

⁷⁵ Housing Europe. (2023). Recovery and Resilience Plan Croatia.

⁷⁶ European Commission. (2023). Croatia’s recovery and resilience plan.

⁷⁷ The annual energy consumption for heating must be reduced by 50%.



2009, Emilia in 2012, and central Italy⁷⁸ in 2016-2017. The support programmes implemented following these natural disasters jointly focus on repair measures, seismic strengthening and energy efficiency improvements. In response to the 2016-2017 earthquakes, global support of EUR 2.75 billion was provided by the European Investment Bank in the form of low-interest loans based on a tax credit mechanism.⁷⁹ The funding underlined the ambition of making “significant improvements in energy efficiency and seismic safety” to contribute to climate change mitigation.⁸⁰ Similarly, the public grants allocated in 2012 largely covered reconstruction costs and partially covered the strengthening and energy efficiency measures. An additional 15% contribution was made available to companies for energy retrofitting, provided that the buildings to be rebuilt were more efficient than the equivalent standard building, in compliance with energy efficiency laws (30% improvement in energy performance).⁸¹ In response to the 2009 earthquake, public funding covered the cost of restoring buildings outside historical city centres to their original.

In response to the widespread flooding that hit Germany in 2021, the federal government simplified access to subsidies to support the victims in rebuilding better.



The floods in Germany in 2021 caused almost EUR 33 billion of damage.⁸² In the Ahr Valley, 3,000 out of 4,200 buildings (houses, commercial and industrial structures) were severely damaged.⁸³ Public funding covered up to 80% of the costs of restoration, and up to 100% for historical buildings.⁸⁴ Funding could be supplemented with support schemes provided by the KfW Bank⁸⁵ if a building was to be rebuilt to a higher energy standard than its pre-disaster state.⁸⁶ Access to federal subsidies was simplified for flood victims to cover the additional costs of energy upgrading.

B. HIGHLIGHTS AND RECOMMENDATIONS FOR THE UKRAINIAN GOVERNMENT

There are two particularly important points in the experiences of Italy, Croatia and Germany which should be considered by the Ukrainian government and multilateral donors in shaping the recovery programme.

- The first relates to the creation of one single support programme, such as those introduced by Croatia and Italy, aimed both at rebuilding and improving energy efficiency. Energy efficiency measures should be fully integrated into the global recovery programme, rather than being promoted or funded separately. This is essential if Ukraine is to secure a significant transformation of its building stock.
- The second regards the facilitation of access to support schemes, as Germany demonstrated for flooding victims. Simplifying administrative procedures to access funding will enable Ukraine to accelerate reconstruction. Initiatives such as the DREAM platform can contribute to this aim.

⁷⁸ The earthquake hit the Abruzzo, Lazio, Marche and Umbria regions.

⁷⁹ European Investment Bank. (2017). *Lazio Umbria Marche earthquake recovery*.

⁸⁰ European Investment Bank. (2015). *Environmental and Social Data Sheet*.

⁸¹ M. Giovanna Bosco and E. Valeriani. (2022). *Energy Retrofitting of Firms after a Natural Disaster: A “Build Back Better” Strategy*.

⁸² Mostly in the areas of North Rhine-Westphalia and Rhineland-Palatinate.

⁸³ A. Jasmin Truedinger, A. Jamshed, H. Sauter & J. Birkmann. (2023). *Adaptation after Extreme Flooding Events: Moving or Staying? The Case of the Ahr Valley in Germany*.

⁸⁴ Bundesfinanzministerium. (2021). *Verordnung über die Verteilung und Verwendung der Mittel des Fonds „Aufbauhilfe 2021“*

⁸⁵ As a state-owned promotional bank, the Kreditanstalt für Wiederaufbau (KfW) delivers support schemes for energy-efficient construction and refurbishment.

⁸⁶ BAFA. (2021). *Energie – Bundesförderung für effiziente Gebäude – einfacher Zugang für Hochwasserbetroffene*.



Conclusion

The damage caused to the Ukrainian building stock by the Russian invasion has been considerable – but a ‘build back better’ strategy will deliver multiple benefits to Ukraine if it is applied correctly. In light of this, funding should be directed towards reconstruction projects that meet ambitious criteria in terms of energy efficiency, renewable energy and circularity. For emergency reconstruction projects that cannot include these criteria from the beginning, it is important to ensure that energy efficiency and renewable energy measures can be added at a later stage to avoid lock-ins. We therefore urge multilateral donors and the Ukrainian government to consider the following recommendations.

RECOMMENDATIONS TO MULTILATERAL DONORS

- Require building reconstruction projects to comply with (at least) minimum energy efficiency standards for individual building elements as defined in the Ukrainian State Building Codes, and establish additional criteria to incentivise the achievement of higher energy efficiency standards.
- Refuse funding for the installation of new technical building systems that are based solely on fossil fuels. Establish criteria to fund reconstruction projects which implement renewable energy solutions when installing technical building systems and which comply with the minimum requirements as defined in the European Taxonomy.
- Facilitate the allocation of funds for reconstruction and construction projects that address the entire energy performance of buildings, using the nearly zero-energy building (NZEB) standard as the benchmark. Pilot projects for NZEB buildings should be funded based on best practices from EU Member States.
- Investments should be directed towards projects which conduct climate vulnerability and risk assessments, and integrate climate adaptation measures in the planning and design phase.
- Reward reconstruction projects that address and aim to safely improve the circularity of construction material.

RECOMMENDATIONS TO THE UKRAINIAN GOVERNMENT

- Pursue and intensify data collection on the damage suffered by buildings across the country. Accurate data will contribute to identifying restoration priorities in each region.
- Modify the Ukrainian State Building Codes to ensure that buildings damaged during the war are subject to energy efficiency requirements, and consider modifying other sections referring to exemptions for emergency situations.
- Accelerate the development of national legislation and instruments to support the NZEB⁸⁷ framework.
- Accelerate the development of Regulation 305/2011 on construction materials in the market.
- Continue the development of national action on climate change adaptation in buildings in line with the EU's technical and best-practice guidance.

Establishing these criteria is only the first step towards green reconstruction. Other challenges to build back better need to be addressed, such as the lack of a skilled workforce, experts, quality materials and equipment, as well as measurement and verification processes. International donors and the Ukrainian government are encouraged to allocate funding to support capacity building, and to engage with industrial actors to restore a supply chain capable of producing building materials, technologies and equipment which are aligned with European standards.

Ensuring a green and sustainable reconstruction of Ukrainian buildings is a considerable challenge. Ukraine would draw many benefits from this, including the development of a future-proof energy system, supporting the country's path toward the EU family and providing a wellbeing-focused environment for people. These are worthwhile endeavours which can significantly contribute to Ukraine's long-term vision and prosperity.

⁸⁷ Energy Performance of Buildings Directive (Directive 2010/31/EU), Article 9. With the [political agreement on the EPBD](#) (7 December 2023), the Zero Emission Building (ZEB) standard will replace the NZEB standard for new publicly owned buildings as of 2028, and for all other new buildings as of 2030.



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