Ministry for Development of Communities and Territories of Ukraine

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UNDP

Implementation of the Debris Recycling and Reuse System in Ukraine

Summary Report on the Findings and Recommendations of the Feasibility Study

Kyiv, Ukraine. June 2026

IMPLEMENTATION OF THE DEBRIS RECYCLING AND REUSE SYSTEM IN UKRAINE

Summary Report on the Findings and Recommendations of the Feasibility Study

Kyiv, United Nations Development Programme (UNDP) in Ukraine, 2026, 32 pages

The findings presented in this report are based on a feasibility study conducted between June 2025 and March 2026 at the request of the United Nations Development Programme (UNDP) in Ukraine and the Ministry for the Development of Communities and Territories of Ukraine, with financial support from the Government of Japan. The methodology and findings were reviewed and validated by UNDP and the ministry's expert technical commission.

The study was conducted by the non-governmental organization "Better Regulation Delivery Office" and is dedicated to the memory of one of its authors, Petro Yevhenovych Hryhorovskyi — Doctor of Technical Sciences, Senior Researcher, Honoured Worker of Science and Technology of Ukraine, and Corresponding Member of the Academy of Construction of Ukraine. The authors wish to acknowledge his invaluable scientific leadership and contributions to the development of this study.

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The views expressed in this publication are those of the authors and do not necessarily reflect the views of the Government of Japan, the United Nations Development Programme, or other United Nations entities.

UNDP expresses its sincere appreciation to the local authorities, oblast administrations, educational institutions, research and academic communities, and all other partners who contributed to the development of this report.

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Abbreviations and Acronyms

AUTL	Asphalt for ultra-thin layer
BBTM	Asphalt concrete for very thin layers
CDW	Construction and demolition waste
CMU	Cabinet of Ministers of Ukraine
CRA	Crushed Concrete Aggregate
DBN	State Building Norms of Ukraine (Derzhavni Budivelni Normy)
DSTU	National Standards of Ukraine (Derzhavni Standarty Ukrainy)
EN	European Standards (European Norms)
EU	European Union
FEMA	Federal Emergency Management Agency (United States)
HISER	Holistic Innovative Solutions for an Efficient Recycling and Recovery of Valuable Raw Materials from Complex Construction and Demolition Waste
IDT	Identical adoption of a standard
JICA	Japan International Cooperation Agency
RCF	Recycled concrete fines
RDNA	Rapid Damage and Needs Assessment
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
US	United States

Foreword

As a result of the full-scale invasion, communities across Ukraine have faced extensive destruction. The recovery of these areas remains one of the state's key priorities and requires systemic solutions that address both immediate needs and long-term recovery goals.

Debris poses a significant challenge for communities and remains an obstacle to reconstruction. At the same time, it can also become part of the solution. Secondary raw materials recovered from this waste can be used in the production of construction materials, help reduce pressure on natural resources, and create new opportunities for local economies.

The study, prepared by the United Nations Development Programme in Ukraine in cooperation with the Ministry for Development of Communities and Territories of Ukraine, demonstrates the significant potential for reusing materials recovered from demolition waste. With the right regulatory, infrastructure and market conditions in place, these materials can become an important resource for community recovery and the development of Ukraine's construction sector.

I hope that the findings of this study will inform further decisions aimed at building an effective system for debris recycling and reuse as part of Ukraine's recovery process.

I am grateful to the United Nations Development Programme, the Government of Japan, and all the partners who contributed to this study and continue to stand with Ukraine in its recovery and development.

Oleksii Kuleba

Deputy Prime Minister for Restoration of Ukraine –
Minister for Development of Communities and Territories of Ukraine

The findings of this study show that Ukraine has a time-limited opportunity to build a national system for debris management, recycling and reuse — one that responds to urgent reconstruction needs today while laying the foundation for future peacetime construction and demolition waste management.

UNDP brings global expertise in debris and waste management, combined with operational experience in Ukraine, where since 2022 it has supported the management of more than one million tonnes of war-generated debris. This experience has deepened our understanding of the country's unique context and made clear that Ukraine cannot simply follow the pathway taken by another country in debris management.

Rather, the scale of war-related destruction, ongoing recovery needs and Ukraine's European integration path require new approaches to debris recycling and reuse. Building an effective system will require reliable data, clear rules and regulations, capable institutions, private sector engagement, and confidence that recycled products are safe and fit for purpose. It will also require continuous testing and learning.

This study contributes to that process. It helps define the practical conditions under which war-related debris can become part of Ukraine's reconstruction value chain.

UNDP remains committed to working with the Government of Ukraine, communities, donors and partners to develop a debris management, recycling and reuse system that protects people and the environment, supports reconstruction, and contributes to a more circular and sustainable recovery.

Auke Lootsma

UNDP Ukraine Resident Representative

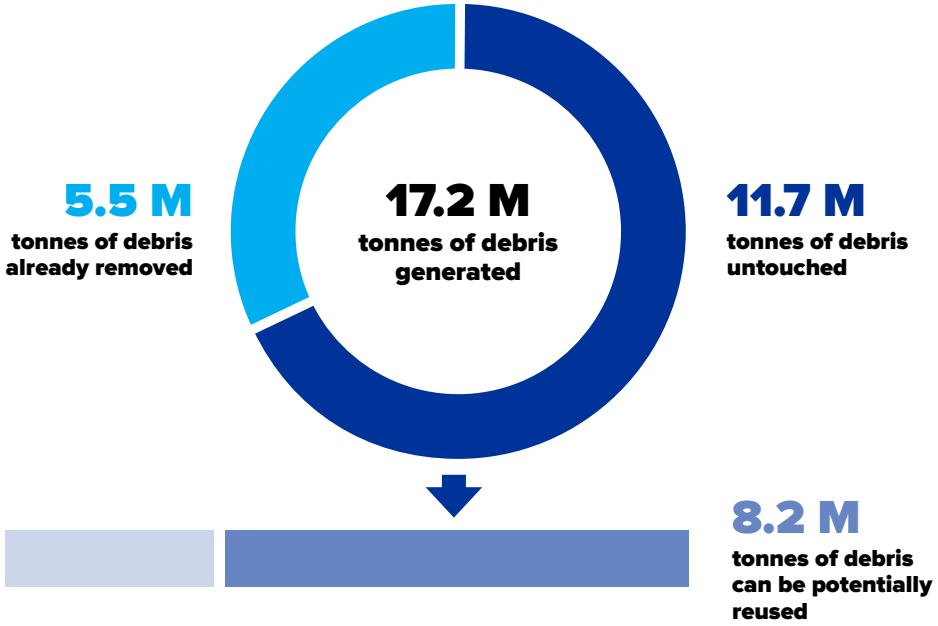
Executive Summary

Since the start of the full-scale invasion, Ukraine has experienced destruction on an unprecedented scale, resulting in the rapid accumulation of debris and construction and demolition waste (CDW). Managing this material poses a critical challenge for recovery, while also presenting an opportunity to transition towards more resource-efficient and circular approaches in the construction sector.

This report presents the findings of a feasibility study assessing the potential to establish a sustainable, market-based system for debris recycling and reuse in Ukraine.

Volumes of debris

As of September 2025, approximately **17.2 million tonnes of debris had been created** in government-controlled territories from damaged and destroyed residential buildings, with around 5.5 million tonnes already having been removed and disposed of in landfills.



Reuse potential

The study estimates that approximately **8.2 million tonnes of secondary raw materials can be recovered** from the remaining unmanaged debris — specifically from streams that have undergone proper inspection, sorting, hazardous material screening and contamination management. These materials can follow three main pathways: the direct reuse of intact elements; low-treatment applications, such as road sub-base and backfilling; and recycling into new construction products. A wide range of potential applications has been identified and systematized in a dedicated catalogue of construction products. Among them, three priority use cases stand out: cement with recycled concrete fines, ready-mix concrete, and precast reinforced concrete elements.

Constraints

Economic factors remain the primary barrier: because of the costs associated with collection, sorting, and processing, secondary raw materials are often more expensive than natural aggregates, which can lead to moderate increases in construction costs. Recycling is most viable in regions with high debris volumes, higher prices for natural materials, and shorter transport distances. While Ukraine has a significant debris crushing capacity (of up to 7.2 million tonnes annually), its effective utilization is constrained by the fragmented ownership of equipment, limited operability in winter conditions, reliance on diesel-powered machinery, shortages of skilled personnel, and regulatory uncertainty.

Solutions

Without systemic reforms, debris management will remain largely disposal-oriented and economically inefficient. At the same time, developing a secondary raw materials market could reduce landfill use, conserve natural resources, lower emissions, and partially offset public expenditure. This report therefore proposes a set of strategic and operational measures to support the transition towards a circular, market-based system for debris recycling and reuse, aligned with Ukraine's recovery priorities and European Union (EU) integration objectives.

Priority steps

1. **Strengthen market conditions for secondary raw materials**
2. **Clarify the regulatory framework and enable market transactions**
3. **Engage the private sector**
4. **Improve data, standards, and planning systems**

Introduction

Why this matters for Ukraine's recovery

Since February 2022, Ukraine has faced destruction on a scale unprecedented in its modern history. Entire neighbourhoods have been reduced to rubble, and with each new attack, additional debris is generated — often mixed with hazardous materials and explosive remnants — creating a growing barrier to a safe and timely recovery.

Since the start of the invasion, UNDP has supported the management of more than one million tonnes of war-generated debris across eight oblasts of Ukraine, while strengthening institutional capacities and contributing to the development of regulatory frameworks.

Grounded in practical operational experience in Ukraine, global expertise in debris and waste management, and a close partnership with the Government of Ukraine, as well as regional and local authorities, UNDP approaches debris management not only as a clean-up effort, but as a critical prerequisite for restoring safety, rebuilding communities, and enabling reconstruction.

At the same time, Ukraine's forward-looking recovery approach, commitment to build-back-better principles, and progress toward EU accession create a timely opportunity to move beyond mere debris clearance and toward establishing a system that enables reuse, recycling, and development of a secondary raw materials market.

Initial steps are already underway, including regulatory reforms and the deployment of recycling capacities, while the scale of reconstruction continues to generate strong demand for construction materials. However, a more consolidated and systemic approach is required to fully realize this potential.

Objectives of the study

Despite the strong potential for debris recycling and reuse in Ukraine, significant gaps remain in data availability and management, regulatory frameworks, private sector engagement, market development, infrastructure, and coordination. These challenges continue to limit the effective functioning of a comprehensive debris management system.

In this context, the study assesses the feasibility of establishing a sustainable, market-based system for the recycling and reuse of debris in Ukraine as part of post-war recovery and reconstruction.

To achieve this, the study pursues four interrelated objectives:

1. **Assessing the scale and characteristics of debris** created as a result of the war, including estimating volumes, analysing composition, and evaluating the potential for recovering secondary raw materials.
2. **Analysing international experience and applicable standards** in debris and construction waste management, with a focus on identifying practices, technologies, and regulatory approaches that can be adapted to the Ukrainian context.
3. **Identifying and systematizing potential applications of recycled materials**, including the development of a catalogue of construction products that can be manufactured using recycled debris in line with EU and national standards.
4. **Evaluating the market potential and economic feasibility** of using recycled materials in construction, including demand analysis, the modelling of production scenarios, and assessing required investments and enabling regulatory conditions.

Together, the results of this analysis provide an evidence base to inform the design of a circular, resource-efficient debris management system aligned with Ukraine's recovery priorities and EU integration objectives, as well as the key steps required for its implementation.

Although technical in focus and exploratory in nature, the study recognizes that debris recycling and reuse can contribute to inclusive recovery by supporting safer environments, local employment, improved living conditions, the return of displaced populations, community resilience and social cohesion. Further research should examine how such a system can be designed in line with the principles of Leave no one behind and gender mainstreaming, ensuring that recovery solutions respond to the needs of different groups within affected communities.

Methodology

The study applies a mixed-methods approach combining quantitative analysis, desk research, a comparative review of international experience, and stakeholder consultations. The methodology is structured around four analytical components aligned with the study objectives, with each defining its own scope and limitations.

1. Assessment of debris volumes and characteristics

To estimate debris volumes, the study applied a multi-stage calculation model combining open-source data, statistical estimation, and validation against administrative and operational datasets. Due to the absence of a unified national methodology and limited access to official registers, the model provides indicative estimates focused primarily on residential housing in government-controlled areas.

The methodology included:

1. Identifying damaged and destroyed residential buildings by region (as of September 2025) based on open sources.
2. Estimating the average floor area per residential building using State Statistics Service data, with differentiation by urban and rural areas.
3. Distributing buildings by damage levels and estimating affected floor area using RDNA-based coefficients.
4. Classifying the housing stock by building type and number of stories based on historical construction patterns.
5. Calculating debris volumes and material composition using waste generation factors (tonnes per m^2) differentiated by building type and number of stories.
6. Aggregating and validating the results using administrative datasets, including CMU Resolution No. 1073 and UNDP data.

Limitations: The estimates rely on incomplete and non-standardized data, and assumptions regarding building typologies and damage levels. The analysis focuses on residential housing and does not fully capture other infrastructure or cover occupied territories. The results are indicative and intended for developing further unified calculation methodologies.

2. Analysis of relevant international experience and applicable standards

This component is based on a comparative review of regulatory frameworks, technical standards, and case studies related to debris and construction waste management. The review covered international approaches, including standards for CDW management in the EU, Germany, France, the United States, and India, as well as practices from countries affected by conflict and disasters — such as Japan, Turkey, India, Bangladesh, and Nepal.

The analysis drew on UNDP research, HISER Horizon 2020 materials, UNEP and FEMA reports, and expert consultations, focusing on identifying approaches and regulatory models applicable to Ukraine.

Limitations: The analysis relies on secondary sources, and the applicability of international practices is influenced by differences in regulatory frameworks, market conditions, and institutional capacity.

3. Identification of potential applications of recycled materials

This component combined the analysis of debris composition, a review of standards, and an assessment of international practice to identify feasible applications of secondary raw materials.

The methodology included:

1. Analysing recyclable material streams within debris.
2. Reviewing relevant technologies and international practices.
3. Assessing EU and Ukrainian standards on the use of recycled materials.
4. Screening more than 700 EN standards to identify applicable construction products.
5. Formulating a catalogue of construction products that can be created with recycled materials.
6. Assessing the feasibility of their production in Ukraine.

Limitations: The results reflect potential applicability rather than confirmed technical readiness. The catalogue is recommendatory and requires further validation for practical implementation.

4. Evaluation of market potential and economic feasibility

This component assessed the feasibility of using secondary raw materials at scale through market analysis, economic modelling, and the evaluation of recycling capacity and regulatory conditions.

The methodology included:

1. Estimating the supply of secondary raw materials.
2. Selecting priority product groups for analysis.
3. Assessing market demand under reconstruction scenarios.
4. Developing a high-level economic model.
5. Assessing recycling capacity and operational constraints.
6. Analysing regulatory and institutional barriers.

Limitations: The results depend on assumptions regarding market conditions, logistics, and price dynamics. They are indicative and intended to support strategic planning.

Key findings

Section I. Scale of the debris challenge

The estimates presented in this report are indicative and based on an author-developed calculation model. They cover residential building debris only and should be treated as an initial analytical reference for developing an official methodology.

Due to the limited and non-unified data, the results should not be interpreted as official figures. Rather, they provide a transparent starting point for further methodological development, validation and verification.

Assessment of the damage

1. Number of damaged buildings

According to reports from oblast administrations and open-source data, at least **254,624 residential buildings** in Ukraine were damaged or destroyed from 24 February 2022 to September 2025 because of hostilities.

The most severe losses were recorded in Donetsk (81,000), Kharkiv (42,000), Kyiv (27,000), Kherson (19,200), and Zaporizhzhia (15,600) oblasts.

2. Characteristics of Ukraine's housing stock

The calculation model uses data from the State Statistics Service's 2021 Housing Stock dataset[1] to estimate the average floor area per residential building type in rural and urban areas of each oblast. Based on this approach, the total floor area of damaged and destroyed residential buildings is estimated at approximately 33.7 million m^2.

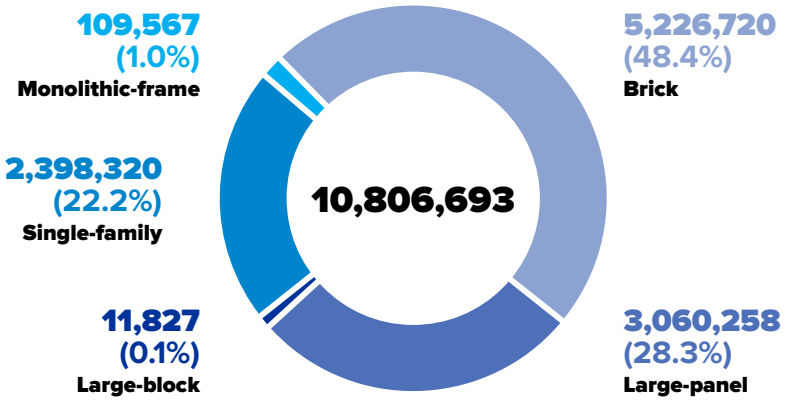
The model also considers the structure of Ukraine's housing stock by building type, construction period and number of stories. This assessment is based on State Statistics Service data, building catalogues and historical construction data.

The analysis estimates the share of housing types across seven historic construction periods of Ukraine, in particular monolithic-frame, brick, large-panel, and large-block in urban areas, and single-family housing in rural areas of each oblast.

As a result, the damaged and destroyed residential floor area consists of:

- **48%** brick buildings,
- **28%** large-panel buildings,
- **22%** single-family housing, and
- **2%** other building types.

Distribution of damaged area by types of buildings in Ukraine as of September 2025, m^2



3. Severity of destruction

The model applies damage-severity assumptions based on the Fourth Rapid Damage and Needs Assessment (RDAN4) findings as of December 2024.[2]

1 Social and Demographic Characteristics of Households of Ukraine. 2021. State Statistics Service of Ukraine. URL: https://ukrstat.gov.ua/druk/publicat/kat_u/2021/zb/07/zb_cdhd_21.pdf

2 Ukraine — Fourth Rapid Damage and Needs Assessment (RDNA4) : February 2022 — December 2024 (English). February 2025, the World Bank, the Government of Ukraine, the European Union, the United Nations. URL: https://www.undp.org/ukraine/publications/ukraine-fourth-rapid-damage-and-needs-assessment-rdna4-february-2022-december-2024-english

To estimate the share of damaged floor area that effectively generates debris, the model assumes that debris management or demolition is required for:

- **5%** of buildings area that sustained minor damage.
- **25%** of buildings area that sustained medium damage.
- **100%** of buildings area that sustained severe damage.

Based on these assumptions, approximately **10.8 million m²** of residential floor area is estimated to require demolition or debris management and is therefore considered as generating debris.

4. Conversion of m² to tonnes

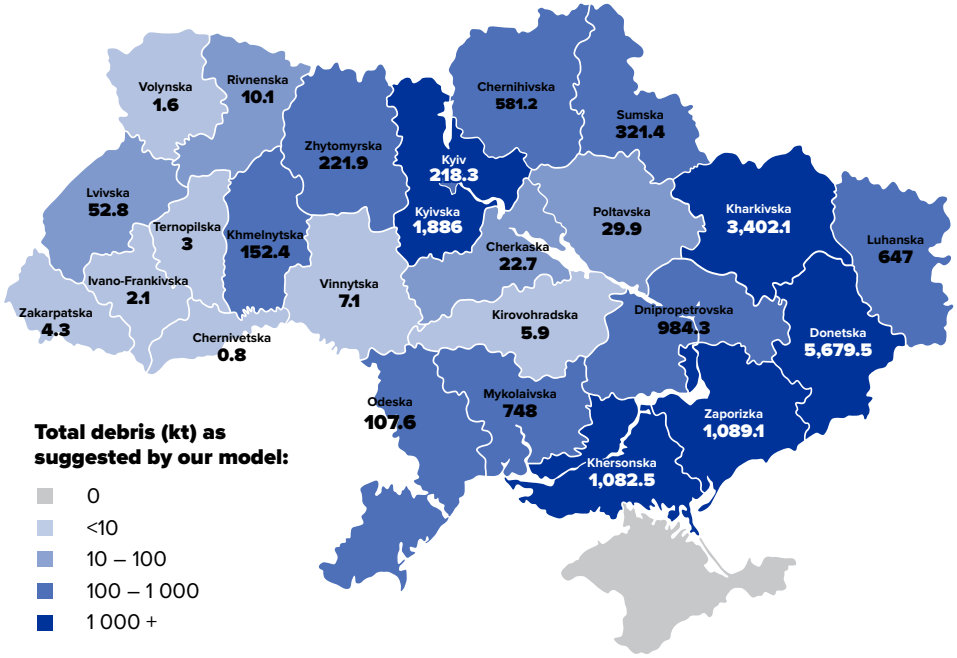
Debris volumes were estimated by converting the floor area of damaged or destroyed buildings into tonnes of debris. This was done by applying debris-generation factors that define the mass of primary debris components — such as concrete, brick, metal, wood, glass and other materials — generated per 1 m² of destroyed floor area, depending on the building type and number of stories.

The model adopted the methodology developed by non-governmental organization "ReThink".[3] For single-family houses and brick buildings, these factors were further refined based on data from destroyed buildings cleared under UNDP-supported projects.

Main findings

The total volume of debris generated by the residential sector was estimated to be **at least 17.2 million tonnes** as of September 2025.

Estimated distribution of debris per oblast in kilotonnes; as of September 2025; government-controlled areas



3 NGO "ReThink". Methodological recommendations for accounting for the volume of waste from demolition. 2024. URL: https://drive.google.com/file/d/1kRTrZc6ColOQRPY_6z45uVKjBWa4u5dG/view

Debris volumes are concentrated mainly in frontline and heavily affected regions. The highest estimated volumes are recorded in the following oblasts: Donetsk (5.7 million tonnes), Kharkiv (3.4 million tonnes), Kyiv (1.9 million tonnes), and Kherson (1.1 million tonnes).

The estimated composition of residential debris is:

- **~50% brick**,
- **~45% concrete**,
- **~5% other materials**, including metals, wood, glass, and insulation.

Recycling potential

The analysis assumes that, out of the estimated 17.2 million tonnes of debris, approximately **5.5 million tonnes** — as reported by communities[4] — have already been disposed of, reused, or recycled. The remaining unmanaged **11.7 million tonnes** are considered available for processing and require demolition or other debris management operations.

Only materials that have been properly collected and sorted in accordance with hazardous waste and asbestos-containing materials handling protocols can be considered safe for recycling.

Initial operational observations from communal enterprises operating debris recycling facilities in Mykolaiv City and Kharkiv Oblast suggest that a significant share of debris — **approximately 70%** — may be suitable for recycling or reuse, subject to contamination levels, sorting quality, building typologies, and site-specific conditions.

4 Data reported through the debris accounting form established under Cabinet of Ministers of Ukraine Resolution No. 1073 of 27 September 2022.

This corresponds to a potential recovery of approximately:

- **4.1 million tonnes of recycled brick**,
- **3.7 million tonnes of recycled concrete**, and
- **0.3 million tonnes of other recycled materials**.

Section II. Applicable international experience and standards

International experience shows that debris management approaches vary across contexts — including armed conflicts, after disasters, and routine CDW — but consistently evolve toward reuse, recycling, and circular economy models.

Ukraine presents a combination of elements from all three contexts, simultaneously managing ongoing destruction while building long-term systems. Consequently, debris management must address immediate operational needs while supporting structural transformation.

Conflict-affected contexts

In countries such as Syria, Lebanon, and Gaza, debris management is typically fragmented, with limited regulation and strong reliance on international support. Practices focus on rapid clearance, temporary processing, and low-value reuse, frequently driven by local communities due to the slow response of central authorities.

As a result, debris is often disposed of at unmanaged dumping sites and landfills that do not comply with environmental protection standards.

This situation is comparable to Ukraine, particularly in frontline areas. However, international experience shows that without further system development, such approaches remain ad hoc and do not evolve into sustainable, market-based systems.

Disaster-affected contexts

Countries such as Japan, Nepal, and Bangladesh demonstrate the importance of pre-established debris management systems, including contingency planning, clear institutional roles, and rapid mobilization mechanisms.

For Ukraine, this highlights the need to move toward coordinated and planned approaches that enable faster and more consistent responses across regions.

CDW and circular economy frameworks

In the EU, CDW management is embedded in circular economy systems, supported by technical standards, selective demolition practices, and market incentives.

This provides a relevant pathway for Ukraine, particularly in the adapted context of EU accession, enabling a transition from emergency debris management to a regulated system where recycled materials become a standard input in construction.

Key constraints

Across all contexts, common barriers include:

- The low price competitiveness of secondary raw materials.
- A lack of clear standards and quality assurance.
- Limited trust in recycled materials.
- Gaps in infrastructure and equipment.
- Financial and institutional constraints at the local level.

These challenges are already evident in Ukraine and must be addressed to enable system development.

Implications for Ukraine

International experience suggests that Ukraine has a clear opportunity to move beyond ad hoc debris clearance toward establishing a systematic, market-based debris management model. At the same time, no single model can be directly replicated. Ukraine's context — combining active hostilities, large-scale destruction, and EU integration — requires an adaptive approach drawing on multiple practices.

In the short term, approaches observed in conflict-affected contexts remain relevant, particularly for rapid clearance, temporary processing, and emergency response.

Experience from disaster-affected countries, particularly Japan, provides a useful reference for Ukraine to integrate debris management into local and regional recovery and development planning, thereby strengthening preparedness for repeated damage.

In the longer term, the experience of the EU provides a reference for system development and market-based mechanisms to enable the use of recycled materials.

Taken together, this implies that Ukraine's transition should follow a **phased and hybrid approach**:

- Maintaining operational flexibility in areas affected by ongoing damage.
- Ensuring continuously updated emergency response planning to address new destruction.
- Progressively developing a regulated, standards-based, and market-oriented system aligned with circular economy principles.

Section III. Technically feasible applications of recycled materials today

Ukraine already has a substantial technical base for recycling. Recycling sites have been established under municipal enterprises in Kyiv Oblast (five stations), and in Dnipropetrovsk, Kharkiv, Mykolaiv and Sumy oblasts. Much of this capacity has been developed with international assistance: a significant share of the equipment was provided by JICA, with additional contributions from UNDP, the United Kingdom, Sweden and other partners. In addition, around 10 private companies provide recycling services and equipment rental in Ukraine.

The combined crushing capacity of this equipment is more than 6,900 tonnes per hour. Assuming the equipment operates at 90% capacity, six hours per day, and 191 days per year (excluding cold months), the total annual processing capacity would amount to approximately 7.2 million tonnes. At this rate, accumulated recyclable debris could be processed within approximately two years — under theoretical maximum operating conditions and excluding operational, logistical, contamination, and security constraints.

However, technical capacity alone will not be sufficient to recycle debris at scale. Expanding recycling will require broader and better geographically distributed domestic recycling infrastructure, as transport from demolition sites to processing facilities remains a major logistical and economic constraint.

At the same time, scaling the use of recycled materials depends not only on processing capacity, but also on the establishment of clear technical standards, laboratory-based quality assurance systems, and sufficient market demand to ensure recycled products are safe, compliant, and economically competitive in reconstruction efforts.

Regulatory basis and standards

European EN standards (e.g. EN 12620, EN 206, EN 13369) provide a framework for using recycled aggregates in construction, including defined quality requirements and substitution rates (typically up to 50% depending on the application).

Ukraine has already adopted many of these standards as DSTU, creating a regulatory foundation. However, a large number of them still require translation, and additional national standards are still critically needed to regulate the quality and characteristics of secondary raw materials.

Catalogue of potential applications

The Catalogue developed under the study identifies **50 product types** for which such use is technically or normatively possible, either directly or through referenced standards, and feasible in Ukraine.

These products span several categories, including:

- Aggregates.
- Precast concrete products.
- Cement and building lime products.
- Road construction materials.
- Concrete.
- Masonry products.
- Selected non-standardized applications such as tennisite and military gabions.

Applications were grouped by feasibility:

- High — low technical barriers and high potential for implementation.
- Medium — requiring further development.[5]

In the short term, the most viable applications include road construction, non-structural concrete products, selected precast elements, and masonry. However, product-specific testing is required to confirm compliance with physical properties and performance requirements.

All identified products fall under DSTU standards harmonized with EN, meaning their production is already legally permissible. However, many of these standards have been adopted without translation, creating practical ambiguity and limiting consistent application in the market.

5 Materials with low feasibility — characterized by limited readiness or high-performance constraints — were not included in the summary report but are available in the full research paper.

Section IV. Market potential and economic feasibility

Overview

Building on the assessment of debris volumes, international practices, and technical applications, the analysis of market potential and economic feasibility examines how — and to what extent — recycled materials can be integrated into Ukraine's construction sector under current and projected conditions.

While the technical potential for recycling is substantial, its realization depends on four interrelated factors: material availability, market demand, economic competitiveness, and system organization.

Temporary opportunity window

The accumulated volume of debris creates a unique, short-term opportunity to supply the construction sector with secondary raw materials at scale.

In the near term (10-year scenario), recycled materials can cover a significant share of demand in selected segments:

- **Cement production** — up to 65–199% demand coverage, depending on the scenario.
- **Ready-mix concrete** — approximately 39–119% coverage.
- **Precast hollow-core slabs** — full demand coverage achievable.

These estimates are based on allocating recycled concrete fractions (RCF and CRA) to three priority product groups:

- Cement (with RCF replacing up to 60% of limestone).
- Ready-mix concrete (with CRA replacing ~30% of coarse aggregate).
- Precast reinforced hollow-core slabs (with CRA replacing ~30% of coarse aggregate).

However, this high level of coverage is driven by **one-off debris accumulation**, not continuous material flows. As these volumes are processed, supply will decline sharply and become dependent on construction and demolition waste (CDW), which is significantly smaller in scale. In addition, these estimates are based on the assumption that 70% of debris is recyclable, while the actual share may be lower in certain regions depending on prevailing building types and the level of material contamination.

As a result, all modelled scenarios indicate a consistent trajectory:
from short-term material surplus → to medium-term supply constraints.

Application-specific market potential

Although Section III demonstrates that a wide range of applications is technically feasible, the market's capacity to absorb these products varies significantly across different product groups.

Crushed debris is already widely used in Ukraine for road backfilling, representing the simplest and most immediately deployable use of recycled material. However, the demand for such applications is limited and cannot accommodate the full volume of available debris. This creates a need to expand into more advanced recycling and reuse pathways that can support higher-value and larger-scale material utilization.

Ready-mix concrete emerges as the most viable entry point due to:

- Established standards, stable demand, and
- Relatively low adaptation requirements.

Cement production offers the largest long-term absorption potential but remains constrained by:

- Technological uncertainty,
- Limited operational experience in Ukraine, and
- Stricter quality requirements.

Precast products (precast hollow-core slabs) demonstrate technical feasibility but limited capacity to absorb large material volumes, making them a complementary rather than leading solution. Other types of precast products may offer higher application potential, but this requires further research.

These differences indicate that no single application can absorb the available resource base. Market development will require a **portfolio approach**, combining multiple use cases.

Mismatch between supply and demand dynamics

A key structural finding is that there is a misalignment between the temporal dynamics of supply and demand:

- In the short term, the recycling of accumulated debris generates large volumes of secondary materials,
- In the medium to long term, supply declines as debris stocks are exhausted, while the demand for construction materials increases with recovery and reconstruction.

This dynamic is particularly evident in:

- Cement — where initial substitution rates decline over time.
- Ready-mix concrete — where an early supply sufficiency transitions into sustained deficits.

Even under optimistic assumptions, debris alone cannot provide a stable long-term resource base. Without increased CDW flows and improved waste management systems, the market will face recurring shortages.

Economic feasibility and regional variability

As highlighted in Section III, Ukraine's existing crushing equipment has an output of up to 7.2 million tonnes of debris processed annually. At full utilization, this would allow the currently accumulated recyclable debris to be processed within approximately two years. However, the effective use of this capacity is limited by multiple constraints. Operational barriers include a mismatch between equipment scale and local needs, limited operability in winter conditions, a reliance on diesel-powered machinery, and shortages of trained personnel.

System-level bottlenecks include the dominant role of municipal enterprises in controlling both debris flows and processing equipment, limited legal clarity on the sale of recycled materials, and weak economic incentives for recycling due to low penalties for improper disposal.

At the same time, scaling debris recycling requires significant investment across the entire debris management chain.

- Analysis of the operating recycling stations in Ukraine shows that the capital investment required for their establishment ranges from **US $1.2 to $2.4 million**, which includes equipment, buildings, laboratory infrastructure, land and electricity — connection expenses.
- The long-term viability of these stations depends heavily on operating costs. Data provided by the Mykolaiv recycling facility reflects approximately **UAH 405 ($9) per tonne** of processed debris covering personnel costs, equipment operation costs (fuel and lubricants, depreciation, maintenance and materials), overheads and taxes.
- Recycling can only function effectively if it is supported by safe and organized upstream debris management. These costs vary significantly depending on demolition complexity, contamination levels, transport distance and operational conditions. Market analysis of government contracts, combined with UNDP's operational experience, indicates a cost range of approximately **$20-42 per tonne** for upstream debris management activities.

Overall, the estimated cost of producing secondary raw materials ranges from **$29 to $52 per tonne**, reflecting the combined costs of collection and sorting, logistics, pre-treatment and recycling.

This translates into moderate but important cost impacts, with the range depending on the region and logistics. The estimates below reflect calculation of the cost increase across Mykolaiv, Kharkiv, and Kyiv oblasts, considering their specifics:

- Cement — price increase of 1–3%.
- Ready-mix concrete — increase of 5–40%.
- Precast hollow-core slabs — 2–11% increase.

Economic viability is therefore highly location-specific, improving in regions where:

- Debris volumes are high.
- Natural materials are more expensive;
- Transport distances to recycling facilities are short.

From technical feasibility to market viability

Taken together, the findings indicate that Ukraine already possesses the core elements required for a recycling system:

- Sufficient material volumes (in the short term),
- Established technical solutions, and
- An initial regulatory foundation aligned with EU standards.

However, these elements are not yet fully integrated into a functioning market system. The transition from technical feasibility to market viability is constrained by:

- Weak economic incentives,
- Inconsistent material quality,
- Limited trust among market actors, and
- A misalignment between supply and demand over time.

The existing volume of debris provides a **window of opportunity** to:

- Test and validate applications,
- Build confidence in recycled materials, and
- Establish initial market practices and supply chains.

Without systemic reforms — including market development, regulatory clarity, and the integration of CDW streams — this temporary resource advantage will not translate into a sustainable, circular construction materials market.

Modelling a scenario for debris recycling market development

The study models three scenarios for the development of Ukraine's debris recycling market under different political and security conditions: active hostilities ending in September 2025 with the frontline frozen; the restoration of Ukraine's 1991 borders; and the continuation of hostilities.

This report summarizes the first scenario. It assumes that active hostilities end in September 2025, with the frontline remaining frozen, and that reconstruction takes place from 2026 to 2035, reaching its peak in 2032–2033 as construction capacity, financing, and material resources gradually recover. The scenario assumes the full restoration of the damaged and destroyed housing stock and covers only territories controlled by the Government of Ukraine as of September 2025.

The September 2025 cut-off date is used only for modelling purposes, as the debris volume calculations available for this study cover the period up to that point. The results are therefore indicative theoretical assumptions rather than forecasts.

The model includes three waste streams: accumulated war-generated debris, CDW generated through reconstruction, and CDW from regular construction activity. It also assesses the potential link between debris recycling and the demand for secondary raw materials in cement production. Cement is selected due to its high consumption in residential construction and reconstruction.

The model focuses on the possible use of RCF under EN 197-6, where RCF may substitute up to 14% of cement mass in composite Portland cement CEM II/A-M. This is treated as a theoretical maximum, assuming that concrete fractions obtained through recycling meet the required quality standards and can be processed into suitable RCF.

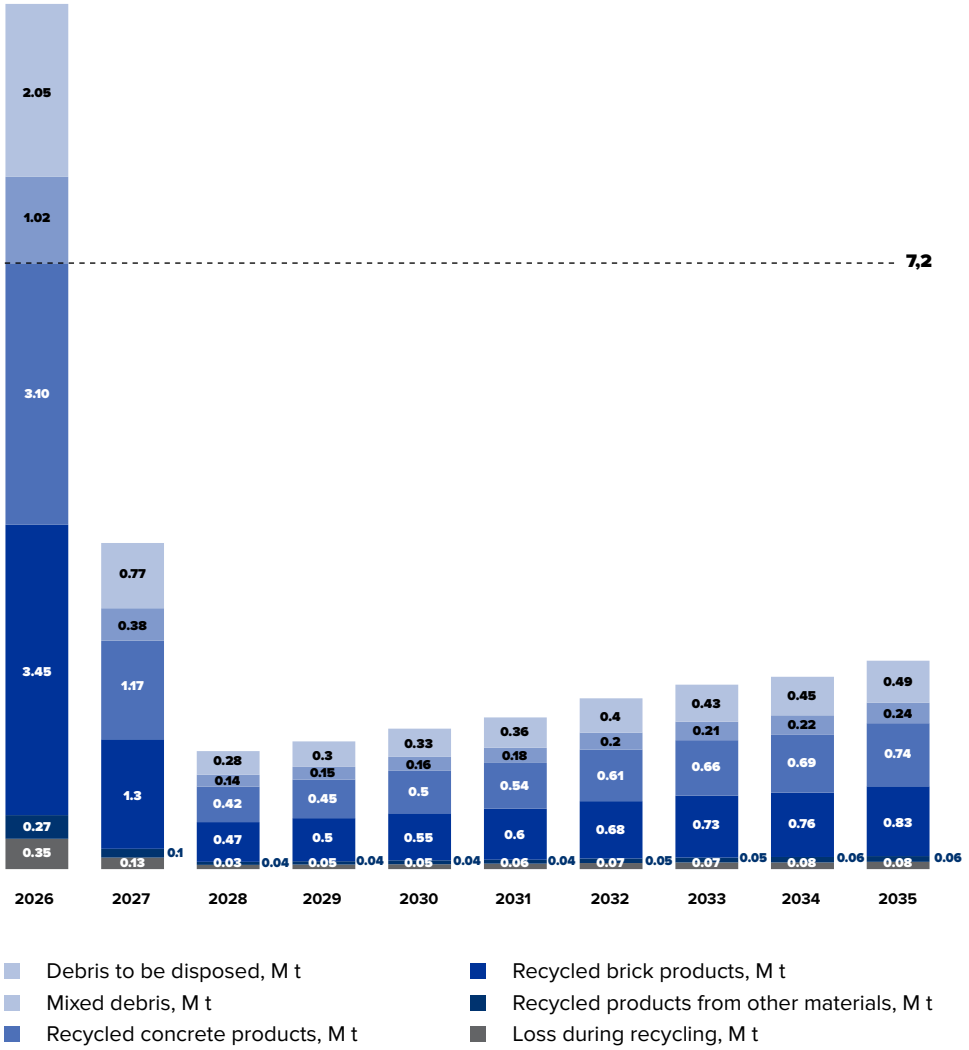
Key modelling results:

- In 2026, the total volume of waste requiring management reaches approximately 12.9 million tonnes, including accumulated debris and 1.2 million tonnes of newly generated CDW.
- Assuming that 70% of debris and CDW is suitable for recycling, the maximum recycling demand reaches around 9 million tonnes in 2026.
- Based on the current fleet of crushing equipment and 90% utilization, Ukraine can process around 7.2 million tonnes in 2026. This creates a short-term capacity bottleneck, with around 2.6 million tonnes of recyclable waste carried over into 2027 and approximately 3 million tonnes requiring disposal or other forms of management.

- After processing losses of around 5%, recycling in 2026 generates approximately 6.8 million tonnes of secondary raw materials: 3.1 million tonnes of concrete fraction, 3.5 million tonnes of brick fraction, and 0.3 million tonnes of other fractions.
- The concrete fraction is particularly relevant for cement production, as it can potentially be processed into RCF, provided it meets the applicable quality requirements.
- Cement demand increases from 6.3 million tonnes in 2026 to 13.5 million tonnes in 2035, driven by the growth of residential construction and reconstruction.
- The largest supply of secondary raw materials is generated in 2026–2027, mainly through the processing of accumulated war-generated debris.
- Available RCF fully covers the maximum allowable substitution of natural raw materials in cement production through 2030, with annual surpluses carried forward.
- From 2031 onwards, accumulated debris is exhausted, and CDW from reconstruction and regular construction becomes the only source of secondary raw materials.
- From 2032, available RCF covers only around 39% of cement industry demand for recycled input, leaving a deficit of approximately 61%.
- Over the full 2026–2035 period, secondary raw materials cover around 65% of the cumulative RCF demand in cement production.

Overall, the scenario shows a time-limited opportunity: accumulated war-generated debris can create a strong early supply of secondary raw materials, but this supply declines once the backlog is processed. At the same time, the early recycling phase can help establish a circular economy model for regular CDW management in the longer term. Realizing this potential depends not only on crushing capacity, but also on selective demolition, sorting, logistics, processing, quality control, certification and market acceptance of recycled materials.

Modelling the amount of demolition waste and recycled materials according to the scenario until 2035, in tonnes



Recommendations
on priority actions for 2026–2028

Strategic area	Key measure	Government of Ukraine	Local authorities & operators	Businesses	International partners
1. Regulatory & institutional framework	**Define legal status of secondary materials ("end-of-waste") and align debris & CDW regulation**	☐ Adopt a legal framework; clarify status and rules	☐ Integrate into local plans and implementation	☐ Prepare for compliance with new regulations	☐ Provide technical assistance and alignment with EU practices
	Enable the legal sale of recycled materials	☐ Establish legal conditions and market rules	☐ Implement sales mechanisms	☐ Participate in legal market transactions	☐ Advise on regulatory design
	Introduce a national debris accounting & tracking system	☐ Develop unified digital system; enforce reporting	☐ Ensure accurate reporting and system use	☐ Comply with reporting requirements	☐ Support the development of digital tools
	Strengthen enforcement and liability mechanisms	☐ Establish and enforce penalties	☐ Ensure compliance at the local level	☐ Comply with enforcement rules	☐ Share best practices

Strategic area	Key measure	Government of Ukraine	Local authorities & operators	Businesses	International partners
2. Market development & economic incentives	**Improve the price competitiveness of secondary materials**	☐ Introduce incentives, compensation mechanisms, and pricing instruments for natural materials	☐ Ensure stable supply to market	☐ Adjust business models to integrate recycled materials	☐ Support financing instruments and policy design
	Establish transparent sales mechanisms (e.g. auctions)	☐ Create a regulatory basis for sales systems	☐ Organize and participate in sales	☐ Participate in the procurement of materials	☐ Support system design and transparency
	Stimulate demand through public procurement	☐ Introduce green procurement criteria	☐ Apply in local reconstruction projects	☐ Supply compliant products	☐ Support pilot procurement approaches
	Implement pilot projects for recycled materials	☐ Initiate and co-finance pilots	☐ Facilitate local implementation	☐ Test and scale applications	☐ Provide funding and technical expertise
3. Operational efficiency & infrastructure	**Plan and optimize recycling infrastructure**	☐ Develop a national planning framework	☐ Assess and optimize equipment and facilities	☐ Invest in production adaptation	☐ Support infrastructure upgrades
	Improve sorting, collection, and processing practices	☐ Set requirements and guidelines	☐ Implement sorting and selective demolition	☐ Adapt processes to material inputs	☐ Provide training and technical support
	Optimize logistics and resource allocation at the local level	☐ Define system-level principles and guidance for actors responsible for debris removal, sorting, recycling, and reuse	☐ Ensure efficient local logistics and equipment use	☐ Develop supply chains	☐ Share operational expertise

Strategic area	Key measure	Government of Ukraine	Local authorities & operators	Businesses	International partners
4. Standards, data & application pathways	**Develop and implement standards for recycled materials**	☐ Adopt and translate national standards aligned with EN; translate the adopted standards; develop new standards for construction materials characteristics.	☐ Apply standards in practice	☐ Ensure certification and compliance	☐ Support research and standard development
	Establish laboratory testing and quality assurance systems to verify the absence of contamination and ensure compliance of recycled materials with required physical and mechanical properties	☐ Ensure a systematic testing framework and requirements	☐ Provide data and samples	☐ Implement quality control systems	☐ Support labs and applied research
	Conduct testing of construction products made with recycled materials	☐ Create incentives for businesses and state institutions to conduct the testing	☐ Provide material samples	☐ Conduct the testing of materials and feasibility of producing them	☐ Support pilot projects
	Develop data systems and forecasting methodologies for debris and CDW volumes	☐ Define national methodologies	☐ Provide reliable local data	☐ Use data for planning	☐ Support analytical tools and studies
	Define application pathways for materials	☐ Provide guidance and frameworks	☐ Identify local use cases	☐ Integrate materials into products	☐ Support innovation and applied research

Strategic area	Key measure	Government of Ukraine	Local authorities & operators	Businesses	International partners
5. Market confidence & innovation	**Promote the use of recycled materials through policy and communication**	☐ Introduce green procurement and national information platforms	☐ Disseminate local information and practices	☐ Demonstrate product performance	☐ Support awareness campaigns
	Support knowledge exchange and innovation	☐ Enable policy and institutional support	☐ Engage in local initiatives	☐ Participate in pilots and innovation	☐ Facilitate international exchange and partnerships

* Effective implementation of the key recommendations requires coordinated leadership across the national and local authorities that are responsible for reconstruction, waste management, environmental protection, regional development and infrastructure planning.

Catalogue of Feasible Construction Products from Recycled Debris in Ukraine

N	Product Group	EN Standard	DSTU Standard	Standard Status	Production Feasibility in Ukraine
Aggregates					
1	**Aggregates for concrete**	EN 12620:2002+A1:2008	DSTU B EN 12620:2013 (EN 12620:2002+A1:2008, IDT) Aggregates for concrete	Adopted and translated	High but requires testing for specific application
2	**Lightweight aggregates**	EN 13055:2016	DSTU EN 13055:2024 (EN 13055:2016, IDT) Lightweight aggregates		
3	**Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction**	EN 13242:2002+A1:2007	DSTU B EN 13242:2013 (EN 13242:2002+A1:2007, IDT) Aggregates for materials treated and untreated with hydraulic binders for use in civil engineering work and road construction		
4	**Aggregates for railway ballast**	EN 13450:2002; EN 13450:2002/AC:2004	DSTU EN 13450:2023 (EN 13450:2002, IDT; EN 13450:2002/AC:2004, IDT) Aggregates for railway ballast		
5	**Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas**	EN 13043:2002; EN 13043:2002/AC:2004	DSTU EN 13043:2019 (EN 13043:2002, IDT) Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas; DSTU B EN 13043:2013 / Amendment No. 1:2019 (EN 13043:2002/AC:2004, IDT)	Adopted but **not** translated	
6	**Aggregates for mortar**	EN 13139:2002; EN 13139:2002/AC:2004	DSTU EN 13139:2019 (EN 13139:2002, IDT) Aggregates for mortar; DSTU B EN 13139:2013 / Amendment No. 1:2019 (EN 13139:2002/AC:2004, IDT)		
7	**Armourstone – Part 1: Specification**	EN 13383-1:2002; EN 13383-1:2002/AC:2004	DSTU EN 13383-1:2019 (EN 13383-1:2002, IDT) Armourstone for hydraulic engineering works — Part 1: Specification; Amendment No. 1:2019 (EN 13383-1:2002/AC:2004, IDT)		

N	Product Group	EN Standard	DSTU Standard	Standard Status	Production Feasibility in Ukraine
Precast Concrete Products					
1	**Foundation elements**	EN 14991:2007	DSTU EN 14991:2022 (EN 14991:2007, IDT) Precast concrete products — Foundation elements	Adopted and translated	High
2	**Precast concrete products**	EN 13369:2023	DSTU EN 13369:2022 (EN 13369:2018, IDT) Common rules for precast concrete products	Adopted but **not** translated	
3	**Hollow core slabs**	EN 1168:2005+A3:2011	DSTU EN 1168:2019 (EN 1168:2005+A3:2011, IDT) Precast concrete products — Hollow core slabs		
4	**Street furniture and garden products**	EN 13198:2003	DSTU EN 13198:2022 (EN 13198:2003, IDT) Precast concrete products — Street furniture and garden products		
5	**Ribbed floor elements**	EN 13224:2011	DSTU EN 13224:2019 (EN 13224:2011, IDT) Precast concrete products — Ribbed floor elements		
6	**Floor plates for floor systems**	EN 13747:2005+A2:2010	DSTU EN 13747:2019 (EN 13747:2005+A2:2010, IDT) Precast concrete products — Floor plates for floor systems		
7	**Stairs**	EN 14843:2007	DSTU EN 14843:2019 (EN 14843:2007, IDT) Precast concrete products — Stairs		
8	**Wall elements**	EN 14992:2007+A1:2012	DSTU EN 14992:2019 (EN 14992:2007+A1:2012, IDT) Precast concrete products — Wall elements		
9	**Beam-and-block floor systems – Part 1: Beams**	EN 15037-1:2008	DSTU EN 15037-1:2019 (EN 15037-1:2008, IDT) Precast concrete products — Beam-and-block floor systems — Part 1: Beams		
10	**Beam-and-block floor systems – Part 2: Concrete blocks**	EN 15037-2:2009+A1:2011	DSTU EN 15037-2:2019 (EN 15037-2:2009+A1:2011, IDT) Precast concrete products — Beam-and-block floor systems — Part 2: Concrete blocks		
11	**Beam-and-block floor systems – Part 5: Lightweight blocks for simple formwork**	EN 15037-5:2013	DSTU EN 15037-5:2019 (EN 15037-5:2013, IDT) Precast concrete products — Beam-and-block floor systems — Part 5: Lightweight blocks for simple formwork		
12	**Terrazzo tiles for internal use**	EN 13748-1:2004/A1:2005	DSTU EN 13748-1:2019 (EN 13748-1:2004/A1:2005, IDT) Terrazzo tiles — Part 1: Terrazzo tiles for internal use		Medium
13	**Terrazzo tiles for external use**	EN 13748-2:2004	DSTU EN 13748-2:2019 (EN 13748-2:2004, IDT) Terrazzo tiles — Part 2: Terrazzo tiles for external use		
14	**Floor slats for livestock**	EN 12737:2004+A1:2007	DSTU EN 12737:2019 (EN 12737:2004+A1:2007, IDT) Precast concrete products — Floor slats for livestock		

N	Product Group	EN Standard	DSTU Standard	Standard Status	Production Feasibility in Ukraine
15	**Linear structural elements**	EN 13225:2013	DSTU EN 13225:2019 (EN 13225:2013, IDT) Precast concrete products — Linear structural elements		
16	**Box culverts**	EN 14844:2006+A2:2011	DSTU EN 14844:2019 (EN 14844:2006+A2:2011, IDT) Precast concrete products — Box culverts		
17	**Retaining wall elements**	EN 15258:2008	DSTU EN 15258:2022 (EN 15258:2008, IDT) Precast concrete products — Retaining wall elements		
Road Materials					
1	**Surface dressing**	EN 12271:2006	DSTU EN 12271:2021 (EN 12271:2006, IDT) Surface dressing — Specifications	Adopted and translated	Medium
2	**Slurry surfacing**	EN 12273:2008	DSTU EN 12273:2023 (EN 12273:2008, IDT) Slurry surfacing — Requirements		
3	**Unbound mixtures**	EN 13285:2018	DSTU EN 13285:2021 (EN 13285:2018, IDT) Unbound mixtures — Specifications		
4	**Asphalt concrete**	EN 13108-1:2016	DSTU EN 13108-1:2018 (EN 13108-1:2016, IDT) Bituminous mixtures — Material specifications — Part 1: Asphalt concrete		
5	**Soft asphalt**	EN 13108-3:2016	DSTU EN 13108-3:2018 (EN 13108-3:2016, IDT) Bituminous mixtures — Material specifications — Part 3: Soft asphalt		
6	**Stone mastic asphalt**	EN 13108-5:2016	DSTU EN 13108-5:2018 (EN 13108-5:2016, IDT) Bituminous mixtures — Material specifications — Part 5: Stone mastic asphalt		
7	**Mastic asphalt**	EN 13108-6:2016	DSTU EN 13108-6:2018 (EN 13108-6:2016, IDT) Bituminous mixtures — Material specifications — Part 6: Mastic asphalt		
8	**Asphalt concrete for very thin layers (BBTM)**	EN 13108-2:2016	DSTU EN 13108-2:2019 (EN 13108-2:2006, IDT) Bituminous mixtures — Material specifications — Part 2: Asphalt concrete for very thin layers (BBTM)	Adopted but **not** translated	
9	**Asphalt concrete with bituminous emulsion**	EN 13108-31:2019	DSTU EN 13108-31:2022 (EN 13108-31:2019, IDT) Bituminous mixtures — Material specifications — Part 31: Asphalt concrete with bituminous emulsion		
10	**Hot rolled asphalt**	EN 13108-4:2016; EN 13108-4:2016/AC:2017	DSTU EN 13108-4:2019 (EN 13108-4:2016, IDT) Bituminous mixtures — Material specifications — Part 4: Hot rolled asphalt; Amendment No. 2:2019 (EN 13108-4:2016/AC:2017, IDT)	Adopted but **not** translated	Medium

N	Product Group	EN Standard	DSTU Standard	Standard Status	Production Feasibility in Ukraine
11	**Porous asphalt**	EN 13108-7:2016	DSTU EN 13108-7:2019 (EN 13108-7:2016, IDT) Bituminous mixtures — Material specifications — Part 7: Porous asphalt		
12	**Asphalt for ultra-thin layer (AUTL)**	EN 13108-9:2016	DSTU EN 13108-9:2022 (EN 13108-9:2016, IDT) Bituminous mixtures — Material specifications — Part 9: Asphalt for ultra-thin layer (AUTL)		
13	**Stone mastic asphalt**	EN 13108-5:2016	DSTU EN 13108-5:2018 (EN 13108-5:2016, IDT) Bituminous mixtures — Material specifications — Part 5: Stone mastic asphalt	Adopted and translated	
14	**Mastic asphalt**	EN 13108-6:2016	DSTU EN 13108-6:2018 (EN 13108-6:2016, IDT) Bituminous mixtures — Material specifications — Part 6: Mastic asphalt		
15	**Reclaimed asphalt**	EN 13108-8:2016	DSTU EN 13108-8:2018 (EN 13108-8:2016, IDT) Bituminous mixtures — Material specifications — Part 8: Reclaimed asphalt		
Concrete					
1	**Concrete**	EN 206:2013+A2:2021	DSTU EN 206:2022 (EN 206:2013+A2:2021, IDT) Concrete — Specification, performance, production and conformity	Adopted but **not** translated	High but requires testing for specific application
2	**Sprayed concrete**	EN 14487-1:2022	DSTU EN 14487-1:2022 (EN 14487-1:2005, IDT) Sprayed concrete — Part 1: Definitions, specifications and conformity		
3	**Admixtures for concrete, mortar and grout**	EN 934-1:2008	DSTU EN 934-1:2022 (EN 934-1:2008, IDT) Admixtures for concrete, mortar and grout — Part 1: Common requirements		High
4	**Admixtures for sprayed concrete**	EN 934-5:2007	DSTU EN 934-5:2019 (EN 934-5:2007, IDT) Admixtures for concrete, mortar and grout — Part 5: Admixtures for sprayed concrete — Definitions, requirements, conformity, marking and labelling	Adopted and translated	
Masonry					
1	**Calcium silicate masonry units**	EN 771-2:2011+A1:2015	DSTU B EN 771-2:2016 (EN 771-2:2011+A1:2015, IDT) Masonry units — Part 2: Calcium silicate masonry units — Specifications	Adopted and translated	High
2	**Autoclaved aerated concrete masonry units**	EN 771-4:2011+A1:2015	DSTU B EN 771-4:2016 (EN 771-4:2011+A1:2015, IDT) Masonry units — Part 4: Autoclaved aerated concrete masonry units — Specifications		
3	**Aggregate concrete masonry units (dense and lightweight aggregates)**	EN 771-3:2011+A1:2015	DSTU B EN 771-3:2016 (EN 771-3:2011+A1:2015, IDT) Masonry units — Part 3: Aggregate concrete masonry units (dense and lightweight aggregates) — Specifications		Medium

N	Product Group	EN Standard	DSTU Standard	Standard Status	Production Feasibility in Ukraine
4	**Rendering and plastering mortar**	EN 998-1:2016	DSTU EN 998-1:2023 (EN 998-1:2016, IDT) Specification for mortar for masonry — Part 1: Rendering and plastering mortar		
5	**Masonry mortar**	EN 998-2:2016	DSTU EN 998-2:2023 (EN 998-2:2016, IDT) Specification for mortar for masonry — Part 2: Masonry mortar		
Cement and Building Lime					
1	**Cement with recycled building materials**	EN 197-6:2023	DSTU EN 197-6:2025 Cement. Part 6. Cement using recycled construction materials (EN 197-6:2023, IDT)	Adopted but **not** translated	High
Prefabricated reinforced components					
1	**Prefabricated reinforced components of autoclaved aerated concrete**	EN 12602:2016	DSTU EN 12602:2022 (EN 12602:2016, IDT) Prefabricated reinforced components of autoclaved aerated concrete	Adopted but **not** translated	High
Other products					
1	**Recycled fine aggregate for sports and landscaping applications**	No single EN standard regulates tennisite as a construction product. Its use may be indirectly regulated through: EN 13242:2002 +A1:2007; EN 12620:2002+ A1:2008; EN 15330-1:2013	No single DSTU regulates tennisite as a construction product. Its use may be indirectly governed through: DBN V.2.2-13:2003 Buildings and structures — Sports and recreational facilities; DSTU EN 14904:2019 (EN 14904:2006, IDT) Surfaces for sports areas — Indoor surfaces for multi-sports use — Specification	Partially regulated	High
2	**Gabion systems using recycled aggregates**	No single European standard regulates gabions as a construction product	Existing Ukrainian guidance references the following standards: DSTU B V.2.6-173:2011 Welded reinforcing meshes for reinforced concrete structures and products — General specifications; DSTU B V.2.6-168:2011 Welded reinforcement and embedded products for reinforced concrete structures — General specifications; DSTU B V.2.6-169:2011 Welded joints of reinforcement and embedded products for reinforced concrete structures — Types, construction and dimensions; DSTU EN 10244-2:2022 (EN 10244-2:2001, IDT) Steel wire and wire products — Non-ferrous metallic coatings on steel wire — Part 2: Zinc or zinc alloy coatings		

* The catalogue in this Annex includes only products assessed as having medium to high feasibility for production in Ukraine. Fourteen additional products were assessed as having low feasibility and were therefore excluded.