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Meta-analysis of postwar recovery financing in Ukraine: Key public documents overview

■ **Abstract.** The aim of this paper was to conduct a meta-analysis of institutional assessments (2022-early 2025) to identify sectoral needs, funding gaps, and institutional obstacles that influence recovery timelines. A structured review and meta-analysis of more than 20 reports and sector studies were applied, along with comparative scenario design (Baseline, Accelerated, Delayed) and the creation of a diagnostic screening tool for the investment environment. Research found that total needs exceed USD 524 billion, mainly in energy, housing, transport, industrial assets, and agriculture; rising estimates reflect both additional damage and the adoption of EU technical, decarbonisation, and digital standards. It was noted that grants and concessional loans are necessary but not enough: key constraints include bankable project preparation, procurement quality, concession structure (risk sharing, step-in, foreign exchange risk), and donor coordination. Three scenario options were developed based on data: a Baseline path (15+ years) with limited private

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involvement; an Accelerated path (8-10 years) relying on standardised preparation, scalable guarantees, political-risk insurance, local-currency funding, and a strong coordination platform; and a Delayed path with longer timelines and growing regional disparities. An operational framework is proposed, comprising a network of Reconstruction Project Preparation Facilities, model concessional agreements aligned with EU standards, a blended-finance approach (including guarantees, local-currency facilities, and social bonds labeled), and a national reconstruction dashboard that links budgeting, procurement, and monitoring. It is shown that transparency does not equal absorption: digital procurement platforms increase contestability but do not ensure executable capital expenditure without engineering support, standardised documentation, and independent goal verification. The findings offer practical guidance for governments and municipalities to prioritise sectors, standardise project preparation, and deploy blended-finance tools that shorten recovery time and boost investment multipliers

■ **Keywords:** reconstruction financing; blended finance; donor coordination platforms; public investment; reconstruction framework; macrofinance

■ INTRODUCTION

The 2022 escalation of Russia's war against Ukraine caused one of the most severe humanitarian and economic shocks in Europe since the mid-20th century. The destruction of transportation, energy, housing, and productive capital turned recovery financing into a challenge of government capacity, donor coordination, and private risk tolerance. Overall needs increased alongside cumulative damage and growing reconstruction goals – rising from about USD 349 billion in 2022 to roughly USD 524 billion by early 2025 (World Bank, 2025). At the same time, policy goals shifted from emergency replacement to resilience, “build back better”, decarbonisation, and alignment with EU rules and standards (European Commission, 2023). The shock spread across borders through trade, relative prices, and expectations: multi-regional models show significant spillovers across European regions (Almazán-Gómez *et al.*, 2023), input-output analysis reveals diverse territorial disruptions within Ukraine (Haddad *et al.*, 2023), and research on the global food system highlights environmental and supply chain impacts radiating from the region (Zhang *et al.*, 2024).

Research on external finance and markets highlights both the importance and limitations of capital inflows when institutional quality is lacking. Postwar reconstruction studies, such as R.J. Moore (2021) and O. Pustovoi (2022) identified external aid and foreign direct investment as key triggers, showing that their growth effects depend on stable political and legal environments and credible property rights enforcement. Evidence from markets after 2022 further emphasises the need for risk-sharing frameworks. European equity markets show asymmetric sensitivity to conflict shocks (Aliu *et al.*, 2023; Kumari *et al.*, 2023). Hospitality-related equities have been more heavily impacted (Balli *et al.*, 2022). Conflict sentiment influences FinTech, blockchain, and cryptocurrency assets in complex, state-dependent ways (Abakah *et al.*, 2023; 2024; Hamouda *et al.*, 2024).

W. Abbassi *et al.* (2023) noted that, at the firm level, vulnerability varies: balance-sheet weaknesses (such as leverage, liquidity reserves, and supply-chain concentration) increase exposure to war shocks, strengthening the need for targeted guarantees and liquidity backstops in recovery plans. Expectations have also shifted: survey data show war-related changes in inflation expectations that make monetary policy transmission more complicated (Afunts *et al.*, 2023), while comparative analysis reveals different policy responses across euro and non-euro countries

(Aliu *et al.*, 2025). Overall, these findings suggest that guarantees, insurance, and blended-finance arrangements are essential, not optional, parts of a cost-of-capital reduction strategy for Ukrainian projects.

Governance, coalitions, and resource politics show that markets are shaped by political processes. EU-Ukraine integration advances not only through legal approximation but also through coalition building around access to and governance of natural resources, thus “making markets” in a literal sense, as noted by A. Buzogány & M. Varga (2025). The success of recovery tools – guarantee schemes, procurement frameworks, local-content rules, and concession models – depends on how well they align with coalition incentives, ensuring that reforms and capital mobilisation support each other. In this context, the present study does not aim to produce a new “headline” estimate of reconstruction needs. Instead, it conducts a structured synthesis of assessments, institutional diagnostics, and policy proposals published between 2022 and 2025, with the goal of identifying recurring patterns, key constraints, and gaps in the emerging recovery framework. The aim was to conduct a meta-analysis of institutional data on Ukraine's recovery finance to characterise sectoral needs, identify funding gaps by instrument type, and assess the readiness of the institutional framework to plan, execute, and monitor large, multi-year investment flows under uncertainty.

■ MATERIALS AND METHODS

This study used a mixed-method meta-analytical approach to analyse, compare, and interpret the changing financial estimates, institutional capacities, and policy responses related to Ukraine's postwar recovery. The method was designed to combine both quantitative sector-specific data and qualitative institutional evaluations, allowing for a thorough assessment of recovery financing trends, challenges, and strategic options. The core dataset was built from over 10 influential reports published between 2022 and early 2025 by international financial institutions – IMF (2024), EBRD (Bennett, 2024), World Bank (2025), IFC (2025), multilateral organisations (European Commission, 2023; UNDP, 2024), and Ukraine's government agencies. Key inputs included the Third and Fourth Ukraine Rapid Damage and Needs Assessments (World Bank, 2025), budget documents from Ministry of Finance of Ukraine (2024), and sector-specific studies

on infrastructure, housing, and energy reconstruction. Inclusion criteria specified that sources must provide either: official cost estimates and sectoral breakdowns of recovery needs; empirical or scenario-based assessments of financing flows; evaluative content on institutional readiness, legal frameworks, or investment mechanisms. Public media publications from Reuters (Reuters, 2025; Shalal, 2025) and The Guardian (Clinton *et al.*, 2025) were used selectively to cross-reference updated figures and confirm the timeline of critical announcements, but the core of the analysis is grounded in institutional and government-issued data.

A structured framework was employed to organise and compare cost estimates across five key recovery sectors: housing, transport, energy, industrial infrastructure, and agriculture. These sectors were chosen based on their recurring appearance in damage assessments and the size of their financial needs. For each sector, funding estimates were triangulated from at least two independent sources, ensuring both temporal consistency (2023–2025) and validation across institutions. In addition to aggregating cost estimates, sectoral cost structures – distinguishing between emergency repairs, modernisation components (e.g., green technologies, EU alignment), and logistical or geopolitical constraints – provide deeper insight into the quality and feasibility of proposed investments. To simulate potential recovery pathways, the study developed three recovery scenarios (Baseline, Accelerated, Delayed) based on different assumptions about donor support, institutional reform, and private sector participation. These scenarios were created through logical extrapolation from existing investment commitments and reform trajectories, guided by international benchmarks and past postwar reconstruction cases. Annual investment requirements, timelines, and key assumptions were detailed for each scenario. While the scenarios model is not econometric, it functions as a comparison tool to demonstrate how different policy and coordination environments could affect Ukraine's long-term recovery prospects.

To evaluate Ukraine's readiness to absorb large-scale recovery financing, a diagnostic scorecard was created. This scorecard focused on five key institutional enablers: legal framework for public private partnerships (PPPs), risk-sharing mechanisms, project pipeline readiness, donor coordination, and investment promotion capacity. Each category was rated on a 0–10 scale using semi-quantitative methods, supported by qualitative descriptions from primary reports (SIGMA, 2024; Transparency International, 2024; IFC, 2025). Scores were verified against sectoral data and project implementation trends to identify discrepancies between legal frameworks and actual execution. This hybrid diagnostic aimed to highlight both structural strengths and important gaps in Ukraine's current recovery governance system. The meta-analytical approach inherently depends on the availability, quality, and transparency of secondary data. While every effort was made to use the most current and validated figures, some discrepancies in sectoral classifications and assumptions between reporting agencies may still exist. Additionally, the scenarios developed are illustrative rather than predictive; they aim to inform strategic thinking, not forecast specific outcomes.

■ RESULTS AND DISCUSSION

An analysis of the most reliable assessments of Ukraine's reconstruction needs shows a consistent rise in projected costs over time. The total funding required for complete recovery and rebuilding now exceeds USD 524 billion, according to the February 2025 update issued by the Ukrainian government in partnership with the World Bank, the UN, and the European Commission (World Bank, 2025). This is a substantial increase from the USD 486 billion estimate in 2023, which accounted for both the continued destruction caused by the war and broader development goals including energy transition, climate resilience, and EU integration (European Commission, 2023). The extent and severity of the damage are not evenly distributed across different sectors. The most heavily impacted categories are the energy sector (USD 68 billion), housing (USD 84 billion), and transportation infrastructure (USD 78 billion), with industrial and commercial assets (USD 64 billion) and agriculture (USD 55 billion) following closely behind (World Bank, 2025). These five sectors collectively account for more than two-thirds of the total projected needs. The rise in estimates over time can be attributed to both the adoption of more ambitious policy goals, such as sustainable and equitable development standards, and additional damage that has occurred since the initial assessments (CEPR, 2022).

Large-scale infrastructure recovery and modernisation will require a significant portion of the funding, according to a closer examination of the sectoral data. The extent of the humanitarian disaster is evident in the loss of nearly 2 million dwelling units, particularly in the East and South regions (UNDP, 2024). To comply with EU standards, reconstruction plans are increasingly incorporating seismic resilience and energy-efficiency criteria, which can lead to higher prices per unit (European Commission, 2023). Roads, railroads and port infrastructure have all sustained significant damage. In the case of the railway network, the requirement for gauge conversion and electrification drives up expenses. Dredging and mine clearance are also integral to port reconstruction, particularly in the south (Bandura *et al.*, 2024). Damage in the energy sector occurs at every stage of production, transmission, and distribution.

Despite the recovery strategy's focus on innovative grid development and renewable energy, emergency repairs and stabilisation of current infrastructure account for more than half of the estimated expenses (IEA, 2024). Logistical limitations, persistent security threats and price volatility in international labor and building material markets aggravate these sectors' needs (Bennett, 2024). Given these constraints, financing will need to blend grants, concessional loans, and risk-sharing instruments to bring in private capital where feasible. Sequencing is critical: stabilise and de-mine first, then rebuild to EU codes and resilience standards. Investing in project preparation (feasibility studies, E&S assessments and standardised procurement) will save time and reduce overruns at scale. Domestic capacity building and transparent digital tracking should be treated as core components of every major programme. Based on the open-source analysis, three financing scenarios were developed to explore potential recovery paths (Table 1). These scenarios reflect different levels of private sector participation, progress in internal reforms, and international support.

Table 1. Recovery scenarios based on meta-analysis of publicly available reports

Scenario	Annual investment	Recovery timeline	Assumptions
Baseline	USD 10-12 billion	15+ years	Moderate donor support, limited private investment, partial reform implementation
Accelerated	USD 25-30 billion	8-10 years	Robust donor commitment, successful PPP legislation, and effective project pipeline development
Delayed	< USD 7 billion	20+ years	Declining donor engagement, macroeconomic instability, poor coordination

Source: developed by authors based on CEPR (2022), European Commission (2023), UNDP (2024), R. Bandura et al. (2024), IEA (2024), V. Bennett (2024), Reuters (2025), A. Shalal (2025), J. Clinton et al. (2025), World Bank (2025)

According to the baseline scenario, which most closely matches current financing levels (World Bank, 2025), the entire restoration process might take more than 15 years. The expedited scenario, on the other hand, could significantly shorten the recovery timeline and is only achievable with increased institutional capacity and private sector involvement (IFC, 2025). Conversely, the delayed scenario would likely entail a longer reconstruction period, a substantial decline in the country's GDP, and a widening of regional inequality (IMF, 2024). This meta-analysis's main conclusion is that the difficulty of absorbing and efficiently allocating this funding equals the size of the financial need. A major challenge remains institutional inadequacy. Many implementing agencies and local officials lack the administrative and technical resources needed to create projects ready for financing. Less than 10% of project ideas submitted in 2023-2024 met the requirements set by foreign donors and investors, according to internal evaluations by the World Bank and Ukraine's Ministry for Communities (World Bank, 2025).

Recovery financing faces greater challenges due to procedural and legal issues. Ukraine's legislation related to PPPs is still only partly aligned with international standards and remains unclear in areas like concession rights and dispute resolution procedures. While there has been some progress in reforming public investment management and procurement, especially through the digitalisation of tender processes such as the ProZorro system, oversight mechanisms are still insufficient, and accountability

for major infrastructure projects remains uneven (Transparency International, 2024). Data from SIGMA and Transparency International indicate that up to one in four public contracts at the subnational level may be at risk from procurement-related hazards (SIGMA, 2024). These risks deter private investment and lead donor organisations to question whether current financing sources are sustainable.

Ukraine's recovery environment remains largely dependent on donor and public financing. Around USD 4.5 billion in donor funds were allocated to Ukraine's national budget in 2024 for recovery efforts, mainly to rebuild critical infrastructure systems (Ministry of Finance of Ukraine, 2024). Although only a small part of the roughly USD 6.5 billion in donor commitments was given as grants, the rest was provided as financial aid or concessional loans (European Commission, 2024a; 2024b). Private sector involvement remains limited. The IFC predicts that less than USD 2 billion of the total infrastructure financing in 2024 will come from privately financed projects, including PPPs (IFC, 2024). A lack of legislative guarantees, currency risk, an underdeveloped secondary capital market, and limited scalable insurance options are some of the barriers to increasing private investment (MIGA, 2023). A diagnostic scorecard based on five important enablers to evaluate Ukraine's preparedness to deploy blended financing for post-war recovery needs was created. Table 2 shows the indicators used based on the institutional reports and publicly available data that were used to assign scores on a scale of 0 to 10.

Table 2. Scorecard of preparedness for absorbing large-scale recovery financing

Indicator	Score (2025)	Comments
Legal framework for PPPs	4.5 / 10	Progress on alignment with EU standards is incomplete
Risk-sharing mechanisms	3.0 / 10	Instruments such as partial guarantees and political risk insurance (PRI) remain underutilised
Project pipeline readiness	4.0 / 10	Lack of technical assistance and feasibility studies hampers quality
Donor coordination	7.0 / 10	Coordination platforms exist but remain donor-driven
Investment promotion capacity	5.5 / 10	Fragmentation across agencies reduces effectiveness

Source: developed by authors based on CEPR (2022), MIGA (2023), European Commission (2023; 2024a), UNDP (2024), R. Bandura et al. (2024), IEA (2024), V. Bennett (2024), IMF (2024), Transparency International (2024), SIGMA (2024), World Bank (2025)

On the one hand, these results suggest that Ukraine has advanced in some of the institutional categories (particularly around donor coordination), though there remain notable holes in its ability to attract, manage and retain diversified types of funding. The findings of the meta-analysis show that by itself raising enough financial resources is not sufficient for postwar reconstruction in Ukraine; an institutional and strategic capacity to absorb, as well as distribute, that funding has to be

established. The reconstruction demands, estimated over USD 524 billion, are so large and complex that an approach is needed integrating international coordination, institutional renovation and fiscal innovation. Considering the facts, the following policy recommendations are offered to further enhance the effectiveness and sustainability of Ukraine's recovery efforts.

The inability to generate projects that are investment-ready is a serious barrier for Ukrainian institutions

at the subnational level. The Ukrainian government should establish a network of specialised Reconstruction Project Preparation Facilities (RPPFs) in close cooperation with foreign development organisations to address this. While preparing feasibility studies, environmental assessments, and procurement documents, they need support from these units of cooperation, as developed by municipalities and line ministries. The experience of the Marshall Plan and the Western Balkans Investment Framework, both of which have clearly accelerated infrastructure delivery through project pipeline development, offers valuable lessons.

Ukraine's current institutional framework does not align with donor interests or the early participation of private companies in the market. There is a need to encourage long-term private investments. This includes immediately aligning Ukraine's PPP legislation with EU standards, streamlining approval processes, and increasing transparency in concession terms and dispute resolution mechanisms. Establishing a PPP Guarantee Facility supported by global financial institutions, such as EBRD and IFC, especially for transportation, energy, and water infrastructure, can help mitigate perception-based risks and potentially boost investor confidence in these sectors. As of 2025, private participation in infrastructure projects remains limited; most financing is provided by public funds and donor organisations (European Commission, 2024b; Ukraine Facility, 2025). Increasing private investment directly depends on the availability of scalable guarantees and clear PPP regulations. To close this gap, Ukraine and its international partners should expand the use of blended finance models that combine grants, concessional loans, and equity capital. This approach should also include greater use of guarantees, political risk insurance, and local currency lending facilities offered by organisations like EBRD. Additionally, Ukraine can consider issuing green bonds or

reconstruction bonds to the diaspora to tap into ethical finance market potential.

International aid is only as effective as the coordination and accountability that ensure its delivery. Ukraine needs to formally establish and strengthen the Multi-Agency Donor Coordination Platform, which should be empowered with the authority to evaluate disbursements, reduce duplication, and align financial sources with national policy priorities. A results-based framework for all major donor programmes, using sector-specific performance indicators, can increase transparency and foster confidence among both local and international stakeholders. Ukraine's ambition to join the EU, along with the need to achieve long-term sustainability, requires that reconstruction efforts focus on creating a more modern and resilient economic base. From this perspective, the green and digital transitions must be incorporated into all major reconstruction projects, especially those related to energy, housing, or transportation. Ukraine should leverage all available EU funding sources, such as the Digital Europe Programme and the Green Deal Investment Plan. Additionally, local governments need more technical assistance to develop recovery efforts centered on digital solutions, and support the private sector in integrating energy efficiency guidelines or climate risk assessments into their designs.

The national reconstruction dashboard would consolidate information on cash flows, milestone achievements, and performance outcomes from all funds and sectors in Ukraine – building on lessons learned from systems like ProZorro and Digital Restoration Ecosystem for Accountable Management (DREAM). Oversight mechanisms should at least be broad-based and include civil society, local communities, and foreign observers to offer an independent perspective on the process. Table 2 summarises policy recommendations, particularly regarding absorption issues related to postwar recovery financing.

Table 3. Policy recommendations on efficient absorption of recovery financing under current recovery framework

Policy Area	Lead Actor	Timeline	Expected Impact
Institutional capacity building	Government of Ukraine + IFIs	Short-term (2024-2026)	Improved project pipeline and donor absorption
Legal reform (PPPs Law)	Parliament of Ukraine + Ministry of Economy	Short-term (2024-2025)	Increased investor confidence and PPP mobilisation
Blended finance instruments	Ministry of Finance + IFC + EBRD + MIGA	Medium-term (2025-2028)	Higher private capital inflow and reduced fiscal burden
Donor coordination mechanisms	Government of Ukraine + Donor Platform	Immediate & ongoing	Efficient donor engagement and reduced fragmentation
Green & Digital transition	Ministry of Infrastructure + EU Partners	Medium-term (2025-2030)	Long-term competitiveness and EU alignment
Monitoring & Transparency	Ministry of Digital Transformation + Civil Society	Immediate & ongoing	Greater transparency and reduced corruption risks

Source: developed by authors based on CEPR (2022), MIGA (2023), European Commission (2023; 2024a), UNDP (2024), R. Bandura et al. (2024), IEA (2024), V. Bennett (2024), IMF (2024), Transparency International (2024), SIGMA (2024), World Bank (2025)

The evidence shows that Ukraine's recovery is limited as much by institutional capacity as by funding levels. Total needs now surpass USD 524 billion, mainly in energy, housing, transport, industry, and agriculture. However, key challenges include project preparation, procurement transparency, PPP and concession design, and coordination among donors. Scenario analysis suggests different timelines: without legal alignment with EU standards and proper

execution capacity, recovery could take over 15 years; however, a faster path (around 8-10 years) requires standardising pipeline preparation, implementing risk-sharing measures like guarantees, PRI, and local-currency options, and establishing a strong coordination platform. Therefore, the recovery plan should follow these steps: stabilisation and demining; rebuilding using EU technical codes with resilience features; and integrating green and digital initiatives

systematically. Operationally, setting up RPPFs, aligning PPP laws and dispute-resolution systems with EU standards, expanding blended finance options (grants, concessional loans, equity, guarantees), and creating a national reconstruction dashboard based on ProZorro, DREAM are essential for turning commitments into practical, investable projects. With these measures, external funding can be used to develop resilient infrastructure, competitive businesses, and improved urban systems; without them, even large amounts of money risk being wasted through slow spending and low impact.

The meta-analytic findings – that the main constraints on Ukraine’s recovery are institutional (such as procurement quality, PPP and concession design, project preparation capacity, and coordination) – align broadly with recent comparative and Ukraine-specific literature. Synthesis work emphasises that increasing funds without matching improvements in governance and pipeline quality results in weak absorption and limited impact (Becker *et al.*, 2025). Institutional diagnostics also supports this conclusion and needs assessments that show rising headline requirements alongside uneven delivery capacity (European Commission, 2023; UNDP, 2024; World Bank, 2025). Regarding programme design, sustainable finance, and firm adaptation, conceptual and Ukraine-focused analyses agree that recovery finance must be integrated into corporate-finance strategies with clear incentives and measurable outcomes (Pustovoit, 2022; Aleksin, 2024; Aleksin & Dyba, 2024). Incorporating ESG, SDG markers and labeled instruments within blended-finance vehicles enhances accountability and can reduce the cost of capital when paired with reliable monitoring (Becker *et al.*, 2025). At the entrepreneurial level, Latvia’s experience demonstrates how green-enterprise ecosystems (advisory services, credit lines, incubation) turn policy goals into local investment and jobs – an approach easily adaptable to Ukrainian regions (Arbidane *et al.*, 2024).

Multi-regional and input-output studies show that the war’s effects are uneven across regions, with strong interregional spillovers in Europe and varied territorial shocks within Ukraine (Almazán-Gómez *et al.*, 2023; Haddad *et al.*, 2023). Sector analyses for energy and logistics highlight that sequencing is important: stabilisation and emergency repairs, followed by modernisation for resilience and EU standards, improve multipliers and lower long-term costs. Global supply chain and environmental impacts (such as food system effects) support the need for climate-focused reconstruction (Zhang *et al.*, 2024). Recovery instruments operate within coalition structures that “make markets” around natural-resource access and governance; EU-Ukraine integration thus requires aligning incentives so that legal approximation, procurement rules, and local-content and competition policies pull in the same direction (Buzogány & Varga, 2025). Historical perspectives echo this architecture-first logic: durable successes of post-war programmes stemmed from institutional arrangements – decision rules, coordination platforms – rather than financing volumes alone (Achenui, 2021; Onah *et al.*, 2023; Martinez, 2025).

Market-based studies document asymmetric vulnerability across European equities, sector-specific drawdowns (e.g., hospitality), and transmission to FinTech, blockchain and crypto assets with nonlinear dynamics; these patterns

validate the need for guarantees and contingent liquidity to stabilise investment pipelines (Abbassi *et al.*, 2023; Abakah *et al.*, 2023; 2024). Shifts in inflation expectations and heterogeneous monetary policy responses across currency areas further shape the cost of capital and timing of issuance for Ukraine-linked instruments (Afunts *et al.*, 2023; Aliu *et al.*, 2025). City-scale rebuilding must balance heritage conservation with modern infrastructure, highlighting the need for integrated conservation planning in Ukrainian municipalities facing complex reconstruction decisions (Dimelli & Kotsoni, 2023). Recovery outcomes are also socially varied; refugee and displacement literature emphasises the importance of addressing diverse needs in programme design, especially for vulnerable groups (Vella, 2024). Incorporating these aspects into project planning enhances absorption and legitimacy. Programme design is crucial for durability. Evidence from Ukraine shows that investments in innovation capacity and firm-level adaptation generate more lasting productivity improvements than short-term construction spending. In this context, governance quality acts as a de-risking tool: combining public and donor resources with transparent conditions on integrity, compliance, and ESG goals increases private sector involvement and enhances absorptive capacity (Aleksin & Dyba, 2024). Given the scope of the task, relying solely on grants and budget funding is insufficient; financing must be integrated into corporate-finance strategies aligned with the SDGs, using instruments that combine sources and motivate firm-level performance (Aleksin, 2024).

Measurement frameworks and institutional structures influence both perspectives and implementation. Business-sector needs seem exaggerated when only compared to direct asset losses: RDNA (February 2023) reports USD 120 billion in business needs for 2023–2033 versus USD 34 billion in direct damages, reflecting severe decapitalisation in 2022 (approximately -42% of book value) and suggesting that early-stage priorities should focus on recapitalisation and compensation rather than additional leverage (Zymovets, 2023a; 2023b). An actionable response involves a specialised facility that consolidates funding streams and provides standardised payouts based on a unified registry of direct losses, with distribution, where possible, managed through local financial institutions under donor oversight. Past experience supports this approach: the European Recovery Programme’s most lasting contributions were institutional – decision rules, allocation procedures, and coordination platforms – rather than volume-based (Achenui, 2021; Onah *et al.*, 2023). Country-level evidence (e.g., Italy) shows that adaptable, locally specified instruments outperform uniform loan schemes (Martinez, 2025).

Recovery is socially differentiated, spatial, and aligned with climate considerations. Outcomes differ across demographic groups; evidence from refugee and displacement research highlights complex, gender-specific needs and barriers to access that – if left unaddressed – weaken programme effectiveness (Vella, 2024). Urban recovery must balance heritage preservation with modern infrastructure and land-use pressures; integrated conservation planning developed for complex postwar contexts (e.g., Aleppo) offers a transferable approach for Ukrainian cities (Dimelli & Kotsoni, 2023). On the growth front, green-entrepreneurship ecosystems – including incubation, specialised

credit lines, and advisory services – can transform energy-efficiency and circular-economy opportunities into employment and exports, with Latvia's experience serving as a nearby example for programme design and sequencing (Arbidane et al., 2024). When integrated with Europe-wide spillovers and Ukraine's internal input-output structure, these insights support a recovery plan that is spatially aware, institution-led, climate-compatible, and attentive to distributional differences.

■ CONCLUSIONS

Ukraine's post-war reconstruction depends as much on institutional capacity as on financing. Current estimates exceed USD 524 billion, mainly for energy, housing, transport, industry, and agriculture. The pace of recovery hinges on the ability to design bankable projects, structure public-private partnerships (PPPs), and coordinate donor flows through a unified framework. Three scenarios (Baseline, Accelerated, and Delayed) illustrate that outcomes vary chiefly by legal alignment and implementation capacity. Without reform, recovery could take over 15 years; with professionalised project preparation, risk-sharing tools, and effective coordination, it may shorten to 8-10 years. Transparency reforms alone are insufficient. Digital procurement and open data enhance integrity but cannot ensure capital formation without robust RPPFs providing feasibility studies, due diligence, and standardised procurement packages. PPP and concession frameworks must align with EU norms – step-in rights, dispute resolution, and risk allocation – to reduce uncertainty and enable limited-recourse project finance.

A layered financing model is required. Grants and concessional loans should fund social infrastructure, while guarantees, political-risk insurance, and local-currency mechanisms de-risk revenue assets. Green, sustainability, and diaspora bonds should operate within blended-finance vehicles embedding ESG-SDG metrics and covenants.

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Sequencing is essential: stabilisation and de-mining, reconstruction to EU technical codes, and integration of green and digital components to improve resilience and efficiency. Institutional design remains the core constraint. A strengthened multi-agency coordination platform linked to a national reconstruction dashboard should align donor funds, enforce preparation standards, and track outputs. Embedding labour-market modules within sector programmes can mitigate capacity shortages.

Policy priorities include establishing RPPFs, finalising PPP legislation, expanding guarantee and liquidity instruments, institutionalising results frameworks, and developing integrated data systems. Effective institutional frameworks, not funding volumes, will determine Ukraine's ability to transform commitments into resilient infrastructure and competitive, sustainable growth. Future work should assemble a harmonised project-level dataset linking preparation milestones, procurement attributes, risk-sharing terms, and ex-post delivery outcomes to estimate "absorption elasticities" with granular causal designs (event studies, matched difference-in-differences); integrate political-economy and coalition metrics – e.g., sectoral lobbying intensity, local content provisions, and EU acquis alignment scores – into financing models to test how governance shifts reduce the cost of capital; extend scenario analysis with dynamic multi-regional input-output and spatial general-equilibrium modules to quantify regional spillovers, supply-chain re-routing, and distributional effects across regions.

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Мета-аналіз фінансування повоєнного відновлення України: огляд ключових загально доступних документів

■ **Анотація.** Метою цієї роботи було провести метааналіз інституційних оцінок (2022 – початок 2025) для визначення галузевих потреб, фінансових розривів і інституційних перешкод, що впливають на терміни відновлення. Було застосовано структурований огляд і метааналіз понад 20 звітів і секторних досліджень, а також порівняльне моделювання сценаріїв («Базовий», «Прискорений», «Відкладений») і створено діагностичний інструмент для оцінки інвестиційного середовища. Дослідження показало, що загальні потреби перевищують 524 мільярди доларів США, здебільшого у сферах енергетики, житла, транспорту, промислових активів і сільського господарства; зростання оцінок відображає як додаткові збитки, так і впровадження технічних, декарбонізаційних і цифрових стандартів ЄС. Зазначено, що гранти та пільгові кредити є необхідними, але недостатніми: ключові обмеження включають підготовку банківських проєктів, якість закупівель, структуру концесій (розподіл ризиків, механізм step-in, валютні ризики) та координацію донорів. Було розроблено три варіанти сценаріїв на основі даних: «Базовий» шлях (15+ років) з обмеженою участю приватного сектору; «Прискорений» шлях (8-10 років), що спирається на стандартизовану підготовку, масштабовані гарантії, страхування політичних ризиків, фінансування у національній валюті та потужну координаційну платформу; і «Відкладений» шлях із довшими термінами та зростаючими регіональними диспропорціями. Запропоновано операційну рамку, яка складається з мережі Центрів підготовки проєктів відновлення, типових пільгових угод, узгоджених зі стандартами ЄС, підходу змішаного фінансування (включно з гарантіями, інструментами в національній валюті та соціальними облігаціями з маркуванням), а також національної панелі моніторингу відновлення, що поєднує бюджетування, закупівлі та контроль. Показано, що прозорість не дорівнює ефективності освоєння коштів: цифрові платформи закупівель підвищують конкуренцію, але не забезпечують реалізацію капітальних видатків без інженерної підтримки, стандартизованої документації та незалежної верифікації цілей. Результати дослідження пропонують практичні рекомендації для урядів і муніципалітетів щодо визначення пріоритетних секторів, стандартизації підготовки проєктів і застосування інструментів змішаного фінансування, що скорочують час відновлення та підвищують інвестиційні мультиплікатори

■ **Ключові слова:** фінансування відбудови; змішане фінансування; платформи координації донорів; державні інвестиції; рамка відбудови; макрофінансування