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UKRAINE

Third Rapid Damage and Needs Assessment (RDNA3)
February 2022 – December 2023

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Abbreviations and Acronyms

ACLED	Armed Conflict Location and Event Data
BBB	build(ing) back better
BCP	border crossing point
CBRN	chemical, biological, radiological, and nuclear
CCI	cultural and creative industries
CHA	Confirmed Hazardous Areas
CHPP	combined heat and power plant
CRSV	conflict-related sexual violence
DALY	disability-adjusted life year
DGF	Deposit Guarantee Fund
DTM	Displacement Tracking Matrix
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ENTSO-E	European Network of Transmission System Operators for Electricity
ERW	explosive remnants of war
EU	European Union
GBV	gender-based violence
GDP	gross domestic product
GHG	greenhouse gas
GIS	geographic information system
GIZ	German Agency for International Cooperation
GMI	Guaranteed Minimum Income
GoU	Government of Ukraine
ha	hectare
HPP	hydropower plant/hydroelectric power plan
HUS	Housing Utility Subsidy
ICF	International Classification of Functioning, Disability and Health
ICH	Intangible Cultural Heritage
I&D	irrigation and drainage
IDP	internally displaced person
IFC	International Finance Corporation
IFI	international financial institution
ILO	International Labour Organization

IMF	International Monetary Fund
IOM	International Organization for Migration
IT	information technology
kWh	kilowatt-hour
LGBTIQ+	lesbian, gay, bisexual, transgender, intersex, queer, and other minority gender identities
MCTID	Ministry For Communities, Territories and Infrastructure Development
MFB	multifamily building
MMC	Military Medical Commission
MoES	Ministry of Education and Science
MoH	Ministry of Health
MoVA	Ministry of Veterans Affairs
MRII - МРІЇ	Multi-Donor Resources for Institutions and Infrastructure
MSEC	Medical and Social Expert Commission
NBFI	nonbank financial institution
NBU	National Bank of Ukraine
NGO	nongovernmental organization
NMAA	National Mine Action Authority of Ukraine
NPL	nonperforming loan
NTS	nontechnical survey
OHCHR	Office of the High Commissioner for Human Rights
PDNA	Post-Disaster Needs Assessment
PHC	primary health care
PIM	Public Investment Management
PISA	Program for International Student Assessment
PPP	public-private partnership
RDNA	Rapid Damage and Needs Assessment
RDO	Reforms Delivery Office of the Cabinet of Ministers of Ukraine
SAWR	State Agency of Water Resources
SCS	State Customs Service
SESU	State Emergency Service of Ukraine
SFH	single-family house
SHA	Suspected Hazardous Areas
SMEs	small and medium enterprises
SOB	state-owned bank
SOE	state-owned enterprise
SSSU	State Statistics Service of Ukraine
SWM	solid waste management
TS	technical survey
TSO	transmission system operator
UCPM	Union Civil Protection Mechanism
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations International Children's Fund
UN Women	United Nations Entity for Gender Equality and the Empowerment of Women
URTF	Ukraine Relief, Recovery, Reconstruction and Reform Trust Fund

UVF	Ukrainian Veterans Foundation
VAT	value added tax
WSS	water supply and sanitation
WUO	Water User Organization

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On the part of the GoU, the RDNA3 was led by the Ministry for Communities, Territories and Infrastructure Development of Ukraine (MCTID), with support from the ProSteer Office under MCTID, the Reforms Delivery Office of the Cabinet of Ministers of Ukraine (RDO), and the Kyiv School of Economics (KSE). All relevant line ministries have participated in the assessment.

The European Commission services' contribution was led by the Directorate-General for Neighbourhood and Enlargement Negotiations (DG NEAR) in coordination with the Delegation of the EU to Ukraine, the Service for Foreign Policy Instruments (FPI), and other services.

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Annex 1 includes a list of main contributors. The RDNA team would like to express its deep appreciation to all individuals and organizations who contributed to this assessment.

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FOREWORD

On February 24, 2022, the Russian Federation invaded Ukraine, resulting in vast impacts that will be felt over generations. **This third Rapid Damage and Needs Assessment (RDNA3**)—undertaken jointly by the World Bank, the Government of Ukraine, the European Commission, and the United Nations and supported by other partners—takes stock of almost two years of the ongoing war, estimating damage and losses along with recovery and reconstruction needs for 10 years. Beyond physical and financial impacts that are more readily quantified, the RDNA3 provides a qualitative description of how people's lives have been dramatically altered since the invasion. RDNA3 builds on the previous two Rapid Damage and Needs Assessments (RDNA1 and RDNA2), which respectively covered the initial 3 and 12 months of the war.

Considering almost two years of the war, as of December 31, 2023, **direct damage has reached almost US$152 billion**, with housing, transport, commerce and industry, agriculture, and energy the most affected sectors. Damage continued to be concentrated in Donetska, Kharkivska, Luhanska, Zaporizka, Khersonska, and Kyivska oblasts. Disruptions to economic flows and production, as well as additional costs associated with war (such as debris management), are collectively measured as economic loss amounting to over US$499 billion.

As of December 31, 2023, **recovery and reconstruction needs are estimated at almost US$486 billion** considering an (ambitious) 10-year period to meet them. These needs include critical steps for short-term recovery as well as medium-term reconstruction that builds back better to modern, low-carbon, and climate-resilient standards, and that—where relevant and possible—excludes needs already met through the Ukraine state budget or through partners and international support.

The report also highlights, from Ukrainian authorities, a **US$9.5 billion financing gap** for addressing immediate recovery and reconstruction priorities that need funding in 2024. Ukrainian line ministries have identified US$15 billion in priorities for 2024, with particular focus on the industry and services sector (nearly US$3.6 billion), housing and utilities (US$3.1 billion), energy (US$2.7 billion), social infrastructure and services (US$2.4 billion), and transport (US$2.3 billion), as well as US$1.2 billion needed to address cross-sectoral priorities. While delivering these priorities will require more than US$8 billion in public and state-owned company investments, along with nearly US$7 billion in other public expenditures, a significant share of financing needs have been met through the state budget and donor support. This public expenditure can catalyze up to US$5.5 billion in private investment, underscoring the critical importance of the private sector in supporting recovery and reconstruction. The report underlines the importance of Ukraine's authorities and international partners continuing to build up capacities for implementation, given the challenges of absorbing large volumes of funding in the current circumstances.

While the RDNA3 focuses primarily on war-related impacts and recovery and reconstruction, the principles of building back better are aligned with the vision, reforms, and investments to be set by the Government's Ukraine Plan and the European Union (EU) Ukraine Facility, both under preparation and the long-term development vision of Agenda 2030 and the Sustainable Development Goals as safeguards of inclusive and equitable human development. The findings in the RDNA3 complement the forthcoming Ukraine Plan and the Ukraine Facility – and the reform and investment agenda that comes with these

instruments in the next four years. The Plan will bring about reforms and approaches to help scale up absorptive and institutional capacity of national and subnational authorities in Ukraine in parallel with identifying investment priorities and providing financing availability.

Global experience shows that a phased approach to recovery, reconstruction, and development of human capital, underpinned by strategic prioritization across sectors, is critical given the substantial overall needs. Planning should consider approaches to scale up Ukraine's absorptive capacity so they can manage and utilize the financing available, ensure continuous improvement of systems and processes, and increase institutional and technical capacities to promote efficient and effective investment project preparation, implementation, and monitoring—all focused on the benefits for the population. Targeting public financing to maximize private investment and to meet urgent community needs further contributes to a comprehensive financial and operational strategy and plan for Ukraine's early recovery and long-term reconstruction, to which we are strongly committed.

The World Bank Group	Government of Ukraine	Directorate General for Neighbourhood Policy and Enlargement Negotiations	United Nations

EXECUTIVE SUMMARY

Since the Russian Federation's invasion of Ukraine on February 24, 2022, the war continues to cause civilian casualties and hardship, damage to infrastructure and productive assets, and disruption to the economy. As of December 2023, an estimated 5.9 million people were recorded as refugees across Europe;[1] 3.7 million people were reported as internally displaced persons (IDPs) as of October 2023.[2] Since the invasion, over 10,000 civilians have lost their lives, thousands have been injured, and millions have lost their homes.[3] Poverty and food insecurity have increased: according to initial estimates from a monthly phone survey conducted by the World Bank since April 2023, 9 percent of households reported having run out of food at some point in a 30-day period in November 2023.[4] The impacts of war are uneven, and the greatest effects are felt by women, persons with disabilities, children and youth, IDPs, and the elderly. The war has caused significant loss of jobs and income in the private sector, as well as loss of purchasing power and loss of assets among Ukrainians, particularly the most vulnerable. The estimated gross domestic product (GDP) for 2023 is 74 percent of 2021 GDP in real terms. Overall, there have been dramatic setbacks in the country's development and in its progress toward many of the Sustainable Development Goals.

Over the almost two years of ongoing war, the war intensity has shifted across different spatial areas of Ukraine (Figure 1). The initial three months brought widespread destruction, with direct damage quickly reaching US$97 billion.[5] During the latter half of 2022, the Government of Ukraine (GoU) regained control in embattled areas and limited its loss of control in other areas, and by reducing advances of Russian forces minimized the rapid escalation in damages. However, attacks on critical infrastructure in the fall and winter 2022 resulted in a rapid increase in energy sector damage. By February 2023, damage had reached US$135 billion.[6] Regular intense attacks on infrastructure continued throughout 2023, with unpredictable air and drone attacks extending beyond established and largely unshifting battle zones, and impacting cities like Kyiv, Odesa, and Lviv. The destruction of the Kakhovka Dam and the hydropower plant (HPP) in June 2023 has resulted in incalculable impacts to the environment and exacerbated challenges already faced by people struggling to access housing, water, food, and health services, among others.[7] There have also been serious attacks of ports, including in Odeska and Mykolaivska regions and alongside the Danube River, as well as cyberattacks and intensification of drone and air attacks in the last months of 2023.

[1] UN High Commissioner for Refugees (UNHCR), Operational Data Portal, Link.
[2] International Organization for Migration (IOM), "Ukraine: Internal Displacement Report—General Population Survey Round 14 (September–October 2023)," Link.
[3] Office of the High Commissioner for Human Rights (OHCHR), "Russia 'Should Immediately Cease Its Use of Force against Ukraine,' Türk Declares," Statement of the UN High Commissioner for Human Rights, December 19, 2023, Link. The actual figures are certainly even higher; however, the receipt of information and reports from locations experiencing war and intense hostilities is a challenge, and many are still pending verification.
[4] World Bank, Listening to Ukraine phone surveys (report forthcoming).
[5] World Bank, Government of Ukraine (GoU), and European Commission (EC), "Ukraine Rapid Damage and Needs Assessment," 2022, Link.
[6] World Bank, GoU, EC, and United Nations (UN), "Ukraine Rapid Damage and Needs Assessment: February 2022–February 2023," March 2023, Link.
[7] GoU and UN, "Post-Disaster Needs Assessment: 2023 Kakhovka Dam Disaster, Ukraine," 2023, Link.

Despite the ongoing war, the GoU has, with support from partners, been leading early recovery and restoration efforts alongside an ambitious reform and modernization agenda, in line with Ukraine's European Union (EU) integration efforts. In 2023, some US$7.2 billion was disbursed by the GoU to finance urgent recovery projects in energy, critical and social infrastructure, housing, humanitarian demining as well as for the public sector support.[8] For example, in 2023 restoration works were completed for 3,836 multifamily apartment buildings and 19,091 single-family houses; for 448 schools, 237 kindergartens, and 390 medical facilities and social protection institutions; and for 9,200 critical infrastructure facilities, 449 heating supply facilities, and 221 water supply and sanitation facilities. In addition, emergency repairs were conducted on over 2,000 km of motorways, highways, and other national roads, while 115 road bridges and about 26 km of rail infrastructure and 46 rail bridges were restored. The GoU has established institutional arrangements and introduced reforms to improve planning and implementation of the recovery and reconstruction efforts. Ukraine, on its path toward accession to the EU, is preparing an ambitious set of reforms under its Ukraine Plan, which is linked to the Ukraine Facility planned by the European Commission (EC).[9]

The Third Rapid Damage and Needs Assessment (RDNA3) presents a consistent, validated, and transparent assessment of almost two years of war impacts. Jointly developed by the World Bank, the GoU, the EC, and the United Nations (UN), it presents the impacts as of December 31, 2023, in line with a globally accepted methodology. RDNA3 updates the second RDNA (RDNA2), which covered the first 12 months of the war and built on the RDNA1, which covered the first three months of the war (Box 1). The RDNA3 presents an assessment of the physical damage to infrastructure and buildings, quantifies indirect losses for 40 months (both actual and projected), and estimates financial needs for recovery and reconstruction (see Box 2 with key definitions). To support immediate recovery and reconstruction planning, RDNA3 also includes short-term priorities identified by Ukrainian line ministries that need financing in 2024.

Consistent with previous RDNAs, the RDNA3 integrates the most recent data and estimations, avoids double-counting, and deducts already met recovery and reconstruction needs, based on available information. However, the assessment is subject to inherent and documented data limitations and makes certain assumptions due to the ongoing war. A further important limitation is that total needs and priorities are presented at sector level and do not consider the strategic prioritization across sectors.

Box 1. First and Second Ukraine Rapid Damage and Needs Assessment

RDNA1 estimated US$97.4 billion in direct damage (between February 24 and June 1, 2022), US$252 billion in losses (comprising 3 months of actual losses and 18 months of projected losses), and US$348.5 billion in recovery and reconstruction needs (over 10 years).

RDNA2 estimated US$134.7 billion in direct damage (between February 24, 2022, and February 24, 2023), US$289 billion in losses (comprising 12 months of actual losses and 18 months of projected losses), and US$410.6 billion in

[8] According to the GoU data, Ukraine has mobilized nearly US$11.2 billion to finance its urgent recovery needs (including US$3.7 billion of state budget funding), of which approximately US$7.2 billion was disbursed to finance projects in energy, critical and social infrastructure, housing, and humanitarian demining as well as for public sector support in 2023.

[9] Government Portal, "European Parliament Approves the Launch of the Ukraine Facility Program Worth EUR 50 Billion over 2024–2027," October 17, 2023, Link.

recovery and reconstruction needs (over 10 years). A sum of US$14 billion was estimated to address 2023 implementation priorities.

Sources: World Bank, GoU, and EC, "Ukraine Rapid Damage and Needs Assessment," 2022, Link; World Bank, GoU, EC, and UN, "Ukraine Rapid Damage and Needs Assessment: February 2022–February 2023," March 2023, Link.

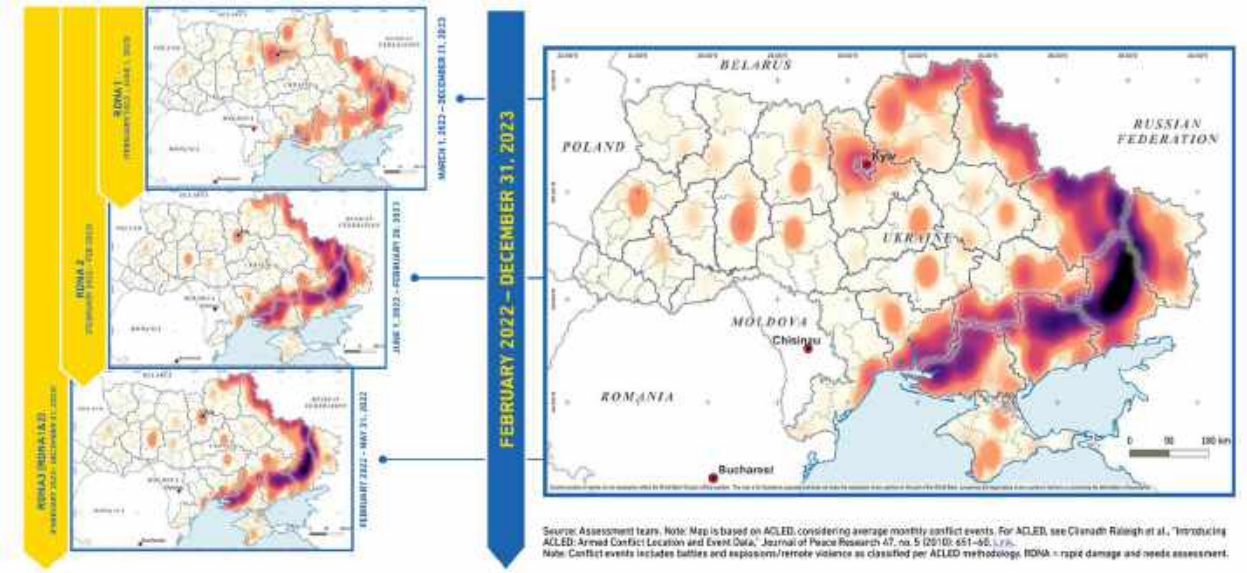
Box 2. RDNA3 key definitions

Damage: Direct costs of destroyed or damaged physical assets and infrastructure, valued in monetary terms. Costs are estimated considering the replacement price prevailing before the invasion.

Loss: Changes in economic flows resulting from the war, valued in monetary terms. Examples include disrupted services, increased operating costs, loss of revenue for authorities/private sector, and debris removal.

Needs: Costs for repair, restoration, and reconstruction, considering a build back better premium, such as improvements for energy efficiency (EE), modernization, and sustainability standards, as well as factors such as inflation, surge pricing due to volume of construction, higher insurance, and so forth. Needs are expressed in monetary terms according to market prices prevailing as of December 31, 2023. Needs do not equal the sum of damage and losses.

Figure 1. Spatial evolution of the war until December 31, 2023, and Ukraine RDNAs



Source: Assessment team. *Note:* Map is based on Armed Conflict Location and Event Data (ACLED), considering average monthly conflict events. For ACLED, see Clionadh Raleigh et al., "Introducing ACLED: Armed Conflict Location and Event Data," Journal of Peace Research 47, no. 5 (2010): 651–60, Link. Conflict events includes battles and explosions/remote violence as classified per ACLED methodology. RDNA = rapid damage and needs assessment.

Summary of Damage and Needs

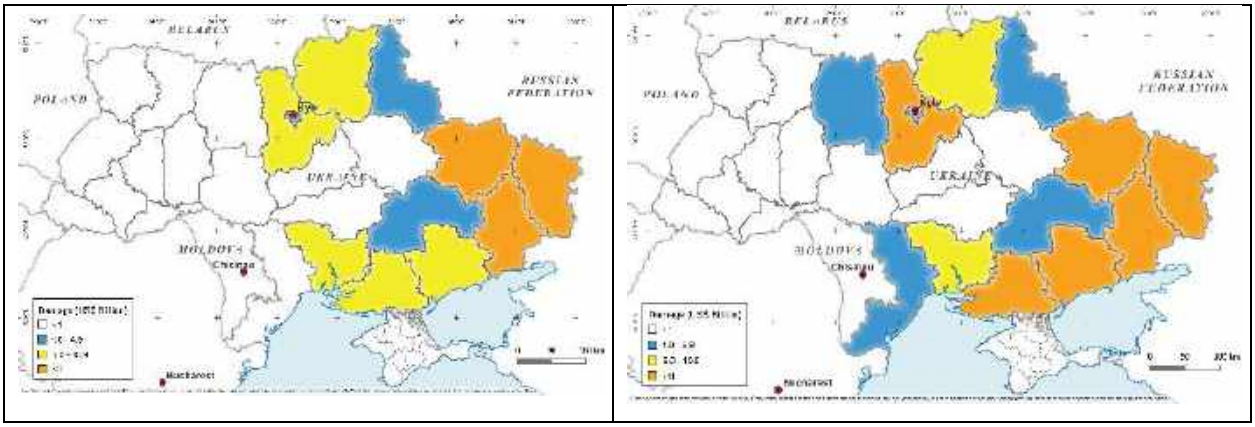
The RDNA3 estimates that up to US$152 billion (€138 billion)[10] in direct damage to buildings and infrastructure has resulted from nearly two years of war. The most affected sectors have been housing (almost US$56 billion, or 37 percent of total damage), transport (almost US$34 billion, or 22 percent), commerce and industry (almost US$16 billion, or 10 percent), energy (almost US$11 billion, or 7 percent), and agriculture (US$10 billion, or 7 percent). In the transport sector, damaged or destroyed assets include 8,400 km of motorways, highways, and other national roads; over 140 bridges on the national road network and 150 bridges on the oblast and village roads; and more than 50km of railways lines, 83

[10] US$ to € exchange rate: 0.906 as of December 31, 2023.

railways bridges, and over 1,400km of railways catenary lines have been damaged or destroyed. Across sectors, Donetska, Kharkivska, Luhanska, Zaporizka, Khersonska, and Kyivska oblasts have sustained the greatest damage (Figure 2).

Direct damage has not escalated substantially since the second assessment (Figure 3), when it totaled US$135 billion[11] (€126 billion) – due to limited shifts in the front line of war; however, the impacts on Ukraine remain immense. According to the current assessment, 10 percent of the total housing stock of Ukraine has been either damaged or destroyed. As a result, millions of people have lost their homes and need to secure shelter from an increasingly limited pool of homes. There has also been a stark increase in damage in several other sectors: environment, natural resources, and forestry; irrigation and water resource management; water supply and sanitation; municipal services; emergency response and civil protection; commerce and industry; and culture and tourism. In part, this escalation of damage is due to the June 2023 destruction of the Kakhovka Dam and HPP, which resulted in a threefold increase in damage to the aquaculture and fishery industries. Increased attacks on cultural heritage sites in areas protected under the World Heritage Convention – such as Lviv and Odesa cities – are reflected in an almost 33 percent increase in damage in the culture sector. Some estimates have increased (e.g., for the emergency response and civil protection sector) or decreased (e.g., for the health sector) due to new and improved data,[12] changes in subsector classification,[13] or adjustments in methodology and assumptions.[14]

Figure 2. Extent of damage by region as of February 2023 (left) and December 31, 2023 (right)



Source: Assessment team. *Note*: The maps draw on damage data as collected and assessed under the RDNA2 (left) and RDNA3 (right) respectively. There were data limitations for certain regions.

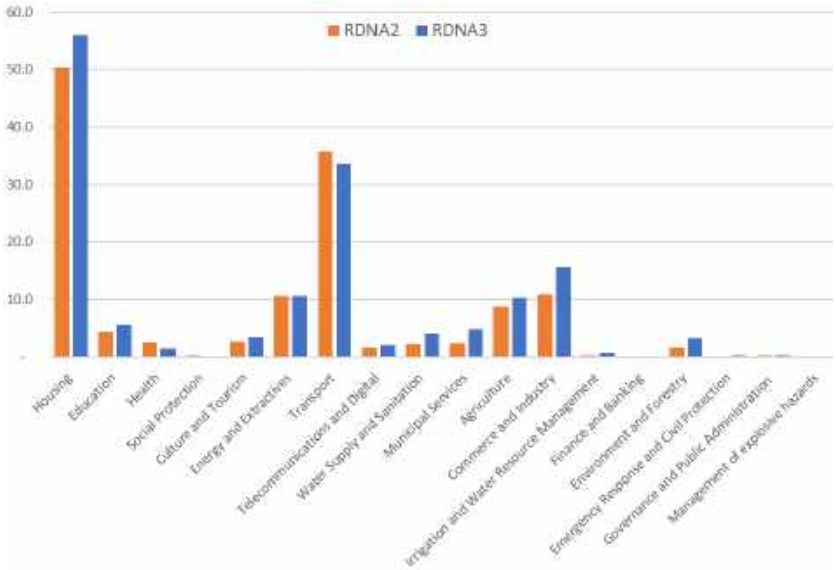
[11] RDNA3 uses the same exchange rate as RDNA2, while RDNA1 used a different exchange rate. Damage reported under RDNA1 and RDNA2 is not double counted under RDNA3.

[12] Sectors that used new or more precise data include agriculture, culture and tourism, commerce and industry, and emergency response and civil protection. In the health sector, baseline data were updated, leading to a decrease in damage.

[13] The RDNA1 and RDNA2 included district heating under the energy sector, whereas RDNA3 includes it under the municipal sector.

[14] In the transport sector, some cost assumptions were updated, while in the commerce and industry sector, new data allowed new calculation and an adjusted methodology.

Figure 3. Comparison of damage in RDNA2 and RDNA3 (billion US$)



Source: Assessment team. *Note*: x axis = US$ billion, y axis = sectors under RDNA2 and RDNA3. RDNA2 damage covers the period February 24, 2022, to February 24, 2023, while RDNA3 damage covers the period February 24, 2022, to December 31, 2023.

As of end-December 2023, recovery and reconstruction needs are estimated at US$486 billion (€440 billion), **which is approximately 2.8 times the estimated nominal GDP of Ukraine for 2023.** These considerable needs arise from a war that has spanned a large geographical area (including urban areas) for an extended period of time. The costs — estimated within a period of 10 years — include measures required for lower energy intensity and more resilient, inclusive, and modern standards, as well as surge pricing (commonly observed when large spatial areas are reconstructed), global inflationary pressures, and higher insurance premiums.

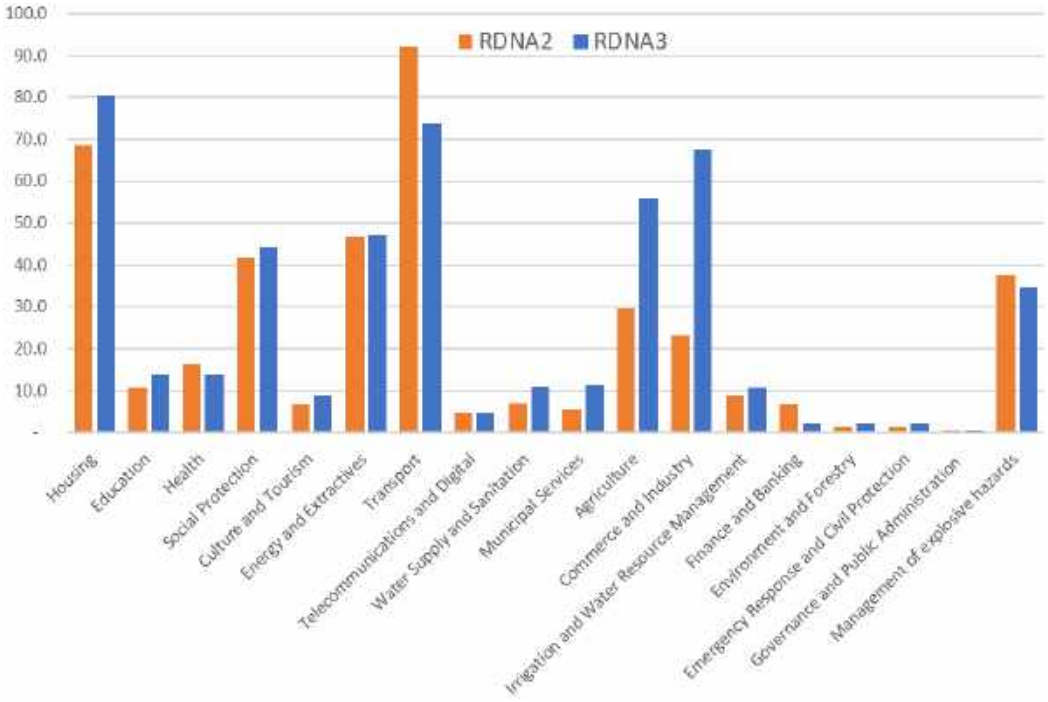
Housing needs are the highest (over US$80 billion, or 17 percent of the total), followed by transport (almost US$74 billion, or 15 percent), commerce and industry (US$67.5 billion, or 14 percent), agriculture (US$56 billion, or 12 percent), energy (US$47 billion, or 10 percent), social protection and livelihoods (US$44 billion, or 9 percent), and explosive hazard management (almost 35 billion, or 7 percent). Across all sectors, the cost of debris clearance and management alone reaches almost US$11 billion. Regions with the greatest net change in needs since February 2023 include Kyivska, Dnipropetrovska, Donetska, Khersonska, Kharkivska, Zaporizka, and Odeska.

Needs that have already been met by the GoU with the support of its partners have been deducted from current needs. For example, according to the GoU data, in 2023, US$1 billion was disbursed from state budget and donor funds for housing sector recovery, with most being dedicated to the repair and reconstruction of damaged assets. In the education sector, some 500 educational institutions were rebuilt, and since January 2023, the share of educational institutions with shelters has increased from 68 percent to 80 percent. In the transport sector, basic road and rail connectivity has been restored in areas where the GoU regained control; the largest efforts focused on Kharkivska, Chernihivska, Kyivska, and Sumska oblasts, where over 2,000 km of emergency road repairs were made, 115 road bridges were replaced with temporary structures, and more than In the transport sector, basic road and rail

connectivity has been restored in areas where the GoU regained control; the largest efforts focused on Kharkivska, Chernihivska, Kyivska, and Sumska oblasts, where over 2,000 km of emergency road repairs were made, 115 road bridges were replaced with temporary structures, and more than 25 km of railways lines, and 46 rail bridges were repaired or rebuilt. The Shandor gate of the Kazarovytska Dam was repaired, and the Slovyansk water monitoring laboratory (Donetska oblast) was again made operational reducing current needs in the irrigation sector.

The increase in needs compared with RDNA2 (US$411 billion/€372 billion) is overall commensurate with the increase in observed damage and proportionate to RDNA2 (see Figure 4). For example, increases in damage to commerce and industry, agriculture, and water supply and sanitation translate into increased needs. However, successful efforts across sectors to collect data, update cost estimates and further prioritize needs also reduced overall costs in some cases. For example, in the transport sector, a greater focus on recovery and reconstruction of core services and completed repairs contribute to a 20 percent reduction in needs. In the finance and banking sector, war-related credit losses decreased. The continued decrease in costs associated with explosive hazard management is a testament to ongoing efforts to assess areas for potential explosive contamination.

Figure 4. Comparison of needs in RDNA2 and RDNA3 (billion US$)



Source: Assessment team. *Note*: y axis = US$ billion; x axis = sectors under RDNA2 and RDNA3. Needs in both RDNA reports cover the period up to 2033.

Recovery and Reconstruction Principles and Priorities for 2024 financing

Meeting the specified needs is critical for long-term recovery and restoration of development progress, but this will take time. Key factors driving this time frame are the war trajectory and financing availability. But absorptive capacity of the state budget is also relevant, as is the implementation capacity of, and coordination among, line ministries, subnational authorities, civil society, community-based

organizations, and implementing agencies. Restoring Ukraine's productive capacity and reversing the destructive impact of the war will require significant public intervention. This includes rebuilding and improved planning of essential infrastructure, encouraging financing of promising businesses, and supporting the financial sector as the full financial cost of the war is revealed. The readiness of the private sector to implement capital investments and the availability of materials and labor are also significant factors. To ensure the buy in of the private sector, targeted policies and reforms are critical to create an operating environment conducive to donor support, private sector investment, and return of people. However, there will be a tremendous social and economic cost if the most urgent needs are not met in the shortest possible time frame—and this cost will be borne especially by the poorest and most vulnerable.

Given the magnitude and complexity of the needs, the GoU has taken an organized, sector-level approach to recovery and reconstruction planning. Coordinated through the MCTID, the Ministry of Economy, and the Reforms Delivery Office of the Cabinet of Ministers of Ukraine, line ministries worked across 20 sectors to identify project-level priorities, determine financing needs, and monitor funding, implementation, and disbursement. This process was supported by workshops and consultations with experts from the RDNA sectoral teams, with discussions focused on technical, economic, and social impacts of different project priorities and their implementation feasibility and timeframes.

This process identified US$9.5 billion (€8.6 billion) needed in 2024 to address unmet funding for the most urgent repair, recovery and reconstruction priorities. Overall, the most urgent priorities identified by line ministries require more than US$15 billion (€13.6 billion) in public funding; at least US$5.5 billion (€5 billion) in funding for these priorities is already met through the state budget and donor support, in addition to the US$3.6 billion budgeted to support social protection (Figure 5). Among the six priority sectors defined by the GoU ministries, the largest share of public expenditures is for the industry and services sector (nearly US$3.6 billion), followed by housing and utilities (US$3.1 billion). Energy, social infrastructure and services (mainly education and health) and transport account for US$2.7 billion, US$2.4 billion and US$2.3 billion of priorities, respectively, with another US$1.2 billion needed for cross-sectoral priorities.[15] Some additional urgent strategic priorities fall outside the RDNA3 (Box 2).

Box 2. Additional urgent strategic priorities

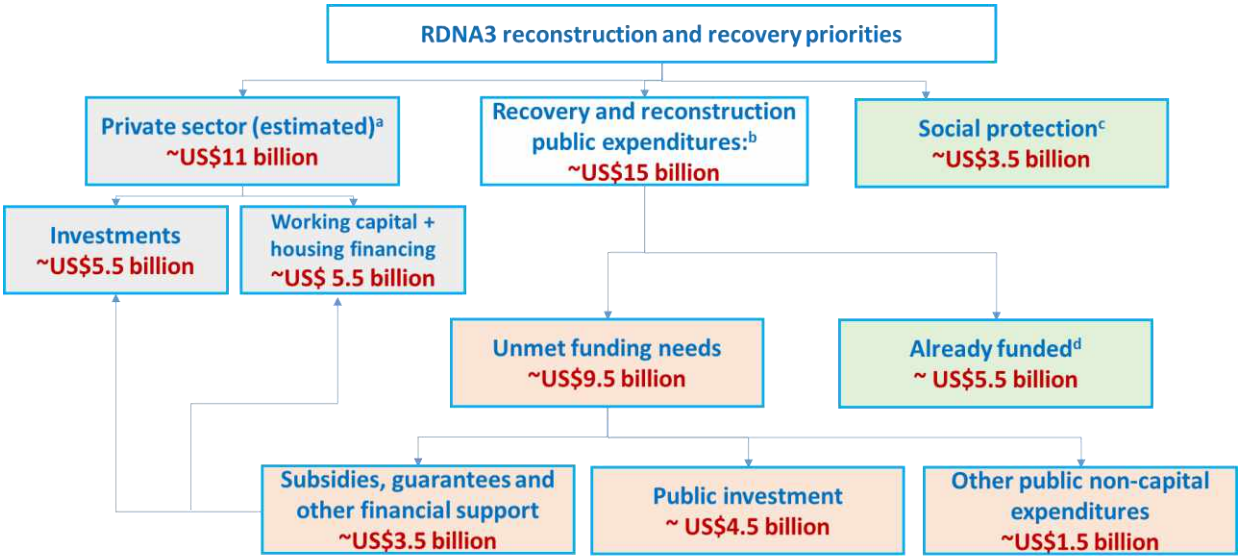
Beyond the RDNA3 recovery and reconstruction projects identified above, the GoU has identified around US$3 billion in additional strategic 2024 priorities[16] as part of multiannual projects to support economic growth and security. These include: US$2 billion for nuclear power plants (out of a total estimate of US$8.9 billion for several nuclear projects); US$700 million for additional high-level protection for substations (total project cost is US$2.1 billion); and around US$280 million for reconstruction of key refineries (total project cost is US$2.5 billion).

[15] Using Government of Ukraine sectoral definitions, industry and services includes agribusiness, industry and commerce, and irrigation; housing and utilities includes: housing, central heating, energy efficiency, municipal services, waste management, and water supply and sanitation; transport includes transport and postal services; social infrastructure and services includes culture, education, health, and social protection; and cross-sectoral includes: demining, emergency response and civil protection, democracy, justice and human rights, and telecom, digital, and cybersecurity.

[16] Due to confidentiality reasons and the innovative nature of some of these projects. the Bank cannot fully validated validate the cost estimates for this projects.

Public investments have the potential to catalyze up to US$5.5 billion in private investment for recovery and reconstruction in 2024.[17] Meeting the priorities identified by line ministries for 2024 across sectors would require more than US$8 billion in public and state-owned enterprise (SOE) investments, along with close to US$5 billion in transfers, subsidies, and guarantees to de-risk financing and overcome constraints to private investment and nearly US$2 billion in other expenditures. These instruments can help catalyze up to US$5.5 billion in private investment, while also facilitating a similar volume of working capital (through programs such as 5-7-9 for firms and preferential mortgages for consumers) to maintain the functioning of firms and supply chains and stimulate consumer investment in the housing market. This level of private sector contribution, and its concentration in industry, commerce, agriculture, and housing in the near term, is in line with the estimations from the International Finance Corporation (IFC) that between one-sixth and one-third of the needs identified in the RDNA2 could be financed by the private sector, depending on reforms and public interventions.[18]

Figure 5. Summary of RDNA3 recovery and reconstruction priorities and funding needs for 2024 as identified by Ukrainian authorities



Source: Assessment team, based on data in sector templates prepared by GoU line ministries and coordinated by the MCTID.

a. Private sector includes firms and households; figures are estimated based on assumptions of investment and lending multipliers of various public support instruments; note that private sector investments not estimated in RDNA2.

b. Includes expenditures and investments from Government and SOEs as well from donors and international financial institutions.

c. Social transfers are part of RDNA-defined needs but are not included in GoU RDNA priorities, as they are considered an ongoing core responsibility covered by the state budget. Figure excludes non-RDNA-related pensions.

d. Including through state and local budgets; loans and grants from international financial institutions and donors; and SOE own funds; includes funding under negotiation but not finalized.

[17] Private sector contributions are estimated using assumptions on investment multipliers for the proposed programs identified by line ministries.

[18] IFC, "Private Sector Opportunities for a Green and Resilient Reconstruction in Ukraine," 2023, Link.

While RDNA3 priorities defined by line ministries represent an increase over RDNA2 priorities (US$15.3 billion compared to US14.1 billion) and 2023 execution, **implementation will be a multi-year process**. Public expenditures required to address identified RDNA3 priorities are 8.5 percent higher than those identified for RDNA2, which is less than half the growth of needs during this period. Moreover, despite relatively good performance in executing on mobilized commitments in 2023, RDNA3 priorities are more than twice the level of execution in 2023 (US$7.2 billion). Increased priorities in RDNA3 reflects growing needs but also a recognition of the importance of planning and financing across multi-year investment program cycles, especially for large infrastructure projects that may have long procurement lead times and requirements for funding in advance of procurement. Thus, funding commitments may be needed in 2024, even if actual expenditure takes place over more than one year. Planning and financing across multi-year investments will become more critical as Ukraine moves from recovery to full-scale reconstruction.

Moving forward on recovery and reconstruction in the context of resource and implementation constraints will require further strategic prioritization, supported by timely and predictable funding. In the context of the likely challenges in mobilizing an additional US$9.5 billion beyond existing budget financing in 2024, the GoU is discussing processes to carry out strategic prioritization *across sectors* to ensure that the most critical needs are met, considering among others implementation capacity of different sectors, priorities related to different geographic areas, needs of communities and vulnerable groups, and financing availability. At the same time, securing medium-term, predictable funding commitments from donors is critical for enabling implementing agencies to plan and manage long and complex procurement. Meeting this requirement would be facilitated by better integrating priority setting and project planning into the medium-term budget planning process as well as by implementing other steps envisaged by the Public Investment Management (PIM) Reform Roadmap, adopted by the GoU, including establishment of a Strategic Investment Council.

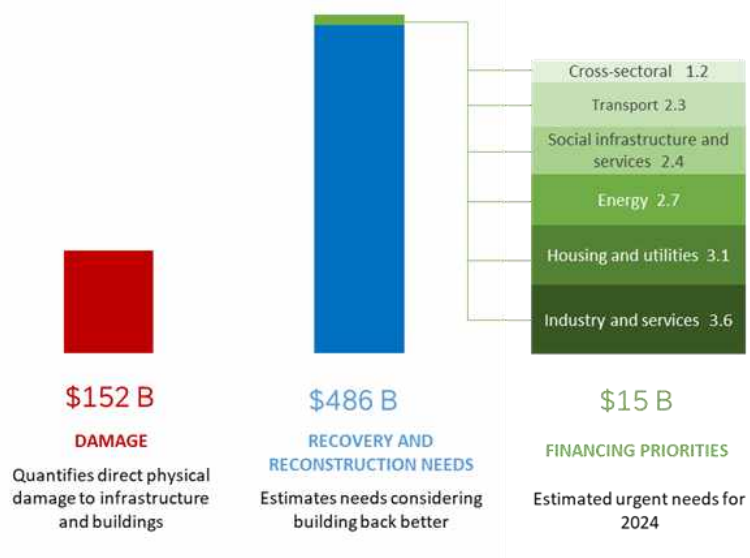
Beyond strategic prioritization, several key actions in the short term can improve the effectiveness of recovery and reconstruction:

- ***Accelerate the reform agenda***, including the framework of the Government's Ukraine Plan under preparation. This will help foster economic growth, modernize the economy and institutions, and promote strengthening of public sector capacity at the local level, in alignment with the standards and policies of the EU.
- ***Strengthen public sector capacity*** to plan, prepare, and deliver recovery and reconstruction activities, through continuous improvements in systems for public finance management, procurement, and strategic and medium-term budget planning. In addition, strengthen the institutional and technical capacities of authorities and relevant stakeholders alongside cross-institutional coordination and cross-sectoral prioritization. The Government's adoption and implementation of the PIM reform roadmap will play a key role in this respect.
- ***Leverage opportunities for private investment***, including through an accelerated agenda of pro-competition reforms and deeper integration with the EU and international markets. Reforms and public interventions that can boost private sector investment and enable the private sector to play a greater role in reconstruction include liberalization of energy prices; privatization of (or

private participation in) the transport and banking sectors; public investments in irrigation, and public-private partnerships (PPPs) in a variety of sectors.

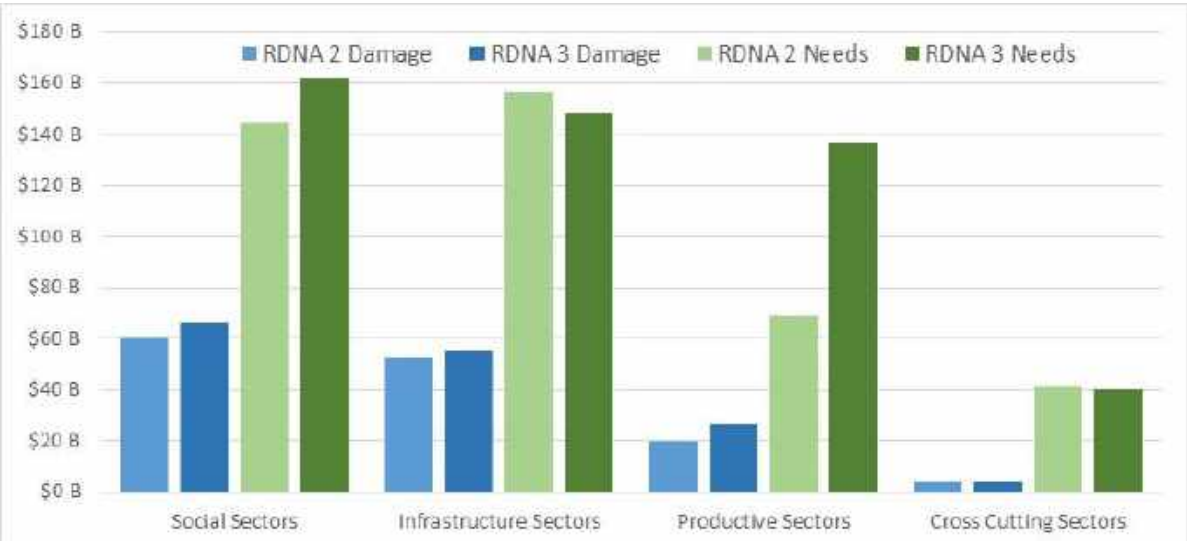
- ***Strengthen the capacity of local authorities*** in strategic planning, project management, procurement, execution of investments, and stakeholder engagement as well as relevant technical skills to build modern, inclusive, and resilient communities that will thrive.

Figure 6. RDNA3 key results: damage, needs, and 2024 financing priorities



Source: Assessment team. *Note*: US$15 billion reflects sectoral assessment and does not consider social protection needs already included in the budget.

Figure 7. Comparison of damage and needs in RDNA3 and RDNA2 (billion US$)



Source: Assessment team. *Note*: y axis = US$ billion; x axis = sectors under RDNA2 and RDNA3. RDNA2 damage covers the period February 24, 2022, to February 24, 2023, while RDNA3 damage covers the period February 24, 2022, to December 31, 2023. Needs are counted within a period of 10 years.

INTRODUCTION

2022 Invasion and War Trajectory

Since Russia's invasion of Ukraine in February 2022, the war has entered varying phases of intensity, as depicted in

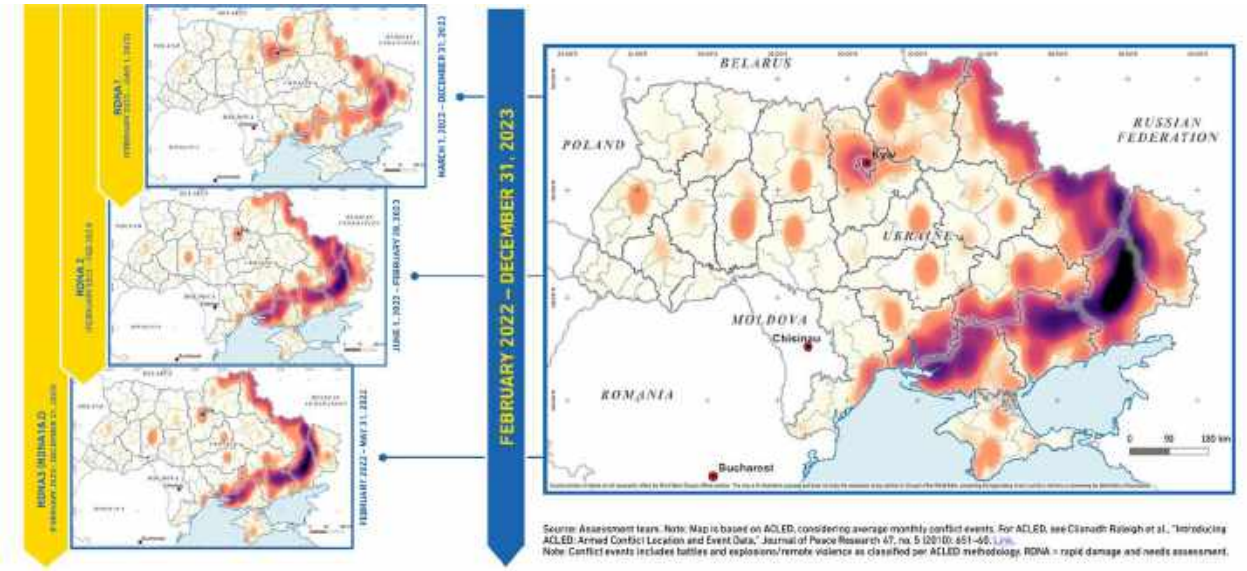
Figure 8**.** The early months brought destruction in several cities, municipalities and regions, especially where the Government of Ukraine (GoU) temporarily lost control. Instances of destruction and disruption correlate strongly with areas where activity relating to the conduct of war was frequent and intense. From April 2022 onwards, the GoU has brought more than half of this territory back under its control, and broadly from summer 2022 until presently, the main line of hostilities has not changed significantly. Missile and combat drone attacks on Ukrainian critical infrastructure, especially on energy infrastructure and housing, escalated in early October 2022 and continued through the autumn and winter of 2022/2023. Attacks were sustained across major cities and at least 16 Ukrainian regions, leaving millions of people without electricity, water, and/or heating.[19]

During 2023, there were regular intense attacks on infrastructure mainly in the southeast, spanning many regions. In the second year of the war, Russia focused its offensive on the East of Ukraine. The Kakhovka Dam breach and destruction of the hydroelectric power plants (HPP) in June 2023 led to extensive flooding that impacted 80 settlements across four oblasts: Khersonska, Mykolaivska, Dnipropetrovska, and Zaporizka. Approximately 100,000 residents were directly affected by the resulting deluge.[20] More information about the impacts of the dam breach is in Box 3. During the last months of 2023, severe attacks were carried out on ports, including in Odeska and Mykolaivska oblasts and along the Danube River, and attacks on infrastructure increased in intensity, particularly in the southeast. Unpredictable air and combat drone attacks, as well as artillery assaults, extended beyond established battle zones, continue to impact cities like Kyiv.

In 2023, the hostilities hotspots shifted toward Donetska and Zaporizka oblasts, where intense clashes occurred as Ukraine sought to gain control over territories temporarily not under government control. Counteroffensive operations in spring 2023 expanded battlefields to Zaporizka and Khersonska oblasts. Notably, Zaporizka oblast faced heavy artillery, missile attacks, and combat air/drone strikes during Ukraine's attempts to regain control during summer. The civilian toll has been heavy throughout the war; the UN High Commissioner for Human Rights reported in December 2023 over 10,000 civilian deaths and 18,500 injuries since February 2022.[21] According to statistics from the Children of War GoU portal, as of December 9, 2023, 19,546 Ukrainian children had been deported and/or forcibly displaced to Russia.[22]

[19] United Nations High Commissioner for Refugees (UNHCR), "Ukraine Situation: Flash Update #35," November 18, 2022, Link.
[20] According to the PDNA, up to a million people lost access to drinking water, and 140,000 were deprived of electricity. *See* GoU and UN, "Post-Disaster Needs Assessment: 2023 Kakhovka Dam Disaster, Ukraine," 2023, Link.
[21] OHCHR. 2023. Statement of the UN High Commissioner for Human Rights, 19 December 2023, Link.
[22] GoU's Children of War website, Link.

Figure 8. Spatial evolution of the war until December 31, 2023, and Ukraine RDNAs



Source: Assessment team. *Note*: Map is based on on Armed Conflict Location and Event Data (ACLED), considering average monthly conflict events. For ACLED, see Clionadh Raleigh et al., "Introducing ACLED: Armed Conflict Location and Event Data," Journal of Peace Research 47, no. 5 (2010): 651–60, Link. Conflict events includes battles and explosions/remote violence as classified per ACLED methodology. RDNA = rapid damage and needs assessment.

Box 3. Summary of the assessment of the Kakhovka Dam breach

The Government of Ukraine and the United Nations carried out a Post-Disaster Needs Assessment (PDNA) to evaluate the extent of the damage and losses incurred due to the destruction of the Kakhovka Dam.

The PDNA estimated approximately US$2.79 billion in direct damage to infrastructure and assets as a result of the event and losses exceeding US$11 billion. The impact on the environment is expected to be particularly long-lasting. The energy and housing sectors were hit the hardest in terms of direct damage; the energy sector suffered US$1.26 billion in damage, and housing damage amounted to over US$1.1 billion. The environmental and energy sectors recorded the highest losses, which have the potential to undermine long-term stability and recovery.

Based on a build back better approach, the PDNA estimates the total recovery and reconstruction needs to be approximately US$5.04 billion, with US$1.82 billion required in the immediate/short term. The report puts forth suggestions for addressing short-term needs in 2023–2024, and for tailoring the response to meet recovery and reconstruction needs over the medium and long term, spanning the next 10 years (until 2033).

Source: GoU and UN, "Post-Disaster Needs Assessment: 2023 Kakhovka Dam Disaster, Ukraine," 2023, Link.

Emergency and Humanitarian Response

Since February 2022, the GoU has continued to provide and coordinate humanitarian support to war-affected regions and populations. Online humanitarian support platforms have been established to provide services, coordination, and support to Ukraine; these are operated by state authorities and volunteers and include cash assistance and housing allowances for IDPs and are an important source of sustenance.

As of February 2024, the EU, its member states, and European financial institutions had made approximately €88 billion available to support Ukraine.[23] This includes humanitarian, economic, and military support as well as funding for Ukrainian refugees in the EU. Through the Union Civil Protection Mechanism (UCPM), the EU has delivered 97,484 tons of assistance to Ukraine, including items and equipment related to CBRN, shelter and shelter-related items (such as appliances, kitchen supplies, and bedding), and over 900 vehicles, including ambulances and fire trucks. The EU has deployed a range of rescEU assets, including power generators, medical equipment, temporary shelter units, and other specialized equipment, and it has coordinated the medical evacuation of over 1,700 Ukrainian patients in urgent need of treatment. The total financial value of the assistance is estimated at €796 million. The UCPM logistic hubs in Poland, Romania, and Slovakia have played a crucial role in facilitating the delivery of support.

In response to the war, the United Nations in partnership with the humanitarian community have scaled up their presence in Ukraine and supported 16 million people in 2022 through US$3.4 billion worth of assistance, including cash, emergency shelter and house repairs, food, medicine, generators, protection services and winter supplies. In 2023 the Humanitarian Country Team further reached 11 million people with life-saving assistance,[24] particularly within front line areas, through approximately US$2.69 billion worth of humanitarian funding from more 38 UN member states and many other private donors.[25] The UN development system has implemented over US$1 billion in 2022-2023 in support to the government's early recovery efforts focusing on community recovery investments in housing, energy, social infrastructure, humanitarian demining, local economic development, mental health and psychological support as well as strengthening the capacity of national systems and community mobilization.[26]

Since February 2022, the World Bank Group has mobilized over US$39 billion in emergency financing in support of the people of Ukraine to help blunt the war's widespread human and economic impacts. About 94 percent of this mobilized capital comes from donor countries. The World Bank's flagship financing instrument for Ukraine, the Public Expenditures for Administrative Capacity Endurance (PEACE) Project, enables international donors to provide support[27] and is helping to sustain essential public service delivery, pensions for the elderly, and social programs for the vulnerable. The World Bank also supports preparation and implementation of framework projects that reflect Ukraine's emergency relief needs, are aligned with the RDNA approach, and are designed to be scalable to absorb additional financing as it becomes available.

Recovery and Reconstruction Efforts

While the war is ongoing, the GoU is leading recovery and reconstruction efforts in relevant areas, having set up relevant institutional structures (see Figure 9). The Cabinet of Ministers of Ukraine determines the priority areas for the recovery of Ukraine on an annual basis, mobilizes appropriate financial resources, and ensures the involvement of international partners in the recovery process. In

[23] EU assistance to Ukraine - European Commission (europa.eu).
[24] Humanitarian partner reporting under the 2023 HRP, January 2024. Ukraine OCHA, Link.
[25] Financial Tracking System, January 2024. Link.
[26] UN Recovery Programming in Ukraine, November 2023, Link.
[27] World Bank, "Supporting Ukraine through the War," Link.

2022, the National Council for the Recovery of Ukraine from the War was established, co-chaired by the prime minister and the Office of the President.[28] This council is charged with developing proposals for priority reforms and the plan for postwar recovery and development. The Government Office for the Coordination of European and Euro-Atlantic Integration of the Secretariat of the Cabinet of Ministers of Ukraine is responsible for coordinating the process of approximation to the EU in close cooperation with public authorities.

Also, in 2023, the GoU, jointly with the G7 countries and the EU, set up the Multi-Donor Coordination Platform for Ukraine to support Ukraine's repair, recovery, and reconstruction process and to help bridge the gap between needs and resources.[29] The Platform is co-chaired by representatives of Ukraine, the EU, and USA. A number of international institutions, including Council of Europe Development Bank, European Bank for Reconstruction and Development, European Investment Bank, International Monetary Fund, Organisation for Economic Co-operation and Development, and the World Bank, actively contribute to the coordination efforts of the platform. The platform meets regularly to coordinate the support for Ukraine's financing needs and future economic recovery and reconstruction.

The GoU is developing a Ukraine Plan linked to the planned Ukraine Facility by the EC (see below).[30] The Ukraine Plan is planned as a program of actions and reforms for the period 2024-2027, which will include macro-financial scenarios for recovery, major sectoral reforms, with the view of priority sectors for development, increasing the capacity to absorb investment, and cross-cutting issues such as European integration, digital transformation, green transition, environmental protection, as well as human capital.[31] The plan's development by the GoU is coordinated by the Ministry of Economy of Ukraine (MoE), in cooperation with representatives of regional and local authorities, private sector, experts, and think tanks.

The GoU is also advancing several reforms related to the construction sector, decentralization reform, energy efficiency, as well as a reform of Public Investment Management (PIM). In December 2023, the GoU has adopted a roadmap for the PIM reform, incorporating recommendations from the IMF and the World Bank. The roadmap introduced the target PIM model that will streamline and adapt decision making process to the new challenges. It will focus on prioritization, financial sustainability, effectiveness and efficiency, timeliness, environmental sustainability, inclusiveness and accessibility, transparency and accountability. The GoU is currently developing a detailed action plan for the implementation of the PIM reform.

Several institutional and policy reforms have been implemented to support the recovery and reconstruction process. The Ministry for Communities, Territories and Infrastructure Development (MCTID or Ministry of Recovery) facilitates coordination and efficient reconstruction of war-affected regions.[32] To support a more systematic approach to planning the restoration of Ukraine, the position of

[28] Government Portal, "About the National Council for the Recovery of Ukraine from the War," Link.
[29] European Commission, "Ukraine: Multi-agency Donor Coordination Platform for Ukraine Kick-starts Work," January 26, 2023, Link.
[30] Government of Ukraine Portal, *European Parliament approves the launch of the Ukraine Facility program worth EUR 50 billion over 2024-2027*, October 2023. Link.
[31] ibid. Decentralization and regional policy are considered part of sectoral reforms.
[32] Government Portal, "Oleksandr Kubrakov Appointed Deputy Prime Minister for Restoration of Ukraine–Minister for Communities, Territories and Infrastructure Development of Ukraine," December 1, 2022, Link.

deputy prime minister for restoration of Ukraine was established; the minister in parallel heads the MCTID. The State Agency for Infrastructure Restoration and Development of Ukraine (the Agency for Restoration), through its territorial offices, is responsible for the largest infrastructure projects at the national level, support and implementation of regional and local recovery projects based on the requests of the relevant project customers. The activities of the Agency for Restoration are coordinated by MCTID.

Territorial communities are responsible for developing planning documents, establishing communication with international partners, and implementing restoration projects in the respective territories. This should be done in an inclusive manner engaging and consulting with local civil society. Regional state (military) administrations (RSA/RMA) can be authorized to implement recovery projects on behalf of territorial communities.

Figure 9. Schematic illustration of national and local level institutions engaged in recovery and reconstruction

Source: Assessment team.

The EU has committed to playing a strong role in Ukraine's recovery and reconstruction, which is linked to the implementation of reforms consistent with Ukraine's European path. In keeping with this role, the EC has proposed a multi-annual instrument to support Ukraine between 2024 and 2027. This is the Ukraine Facility, which aims at supporting the state's basic needs as well as Ukraine's recovery, reconstruction, and modernization, in part through catalyzing of private sector investment tied closely to Ukraine's EU path. [33] The European Council confirmed in February 2023 that the overall resources made available for the Ukraine Facility will be €50 billion. In December 2023, the European Council, in line with the EC's recommendations in November 2023, agreed to open accession negotiations with Ukraine. This

[33] European Commission, "Questions and Answers—A New Ukraine Facility," June 20, 2023, Link.

agreement marks a historical step in the EU enlargement, and the explanatory presentation of the acquis have started.

The UN in Ukraine leverages its large operational footprint (24 agencies, 3,000 personnel) in communities across the country to support communities to implement recovery and reconstruction initiatives. These communities are mobilizing, articulating their needs, and building their capacity to drive their own recovery. The UN has a strong focus on supporting the inclusion of marginalized groups and seeks to ensure that the recovery process benefits those farthest behind, reduces inequalities, and promotes social cohesion and livelihoods. In collaboration with the GoU and MCTID, the UN in Ukraine has established a flexible Ukraine Community Recovery Fund.[34] The fund supports communities that are driving their own recovery efforts in targeted communities to reduce current and prevent future humanitarian needs; to rebuild the social and economic fabric; and to provide the conditions for people to voluntarily return to their homes and rebuild their lives. These community-focused early recovery efforts sit in the nexus of humanitarian, recovery, and social cohesion interventions.

In December 2022, the Ukraine Relief, Recovery, Reconstruction and Reform Trust Fund (URTF)[35] was set up by the World Bank to channel donor support.[36] The URTF provides a coordinated financing and support mechanism that helps the GoU sustain its administrative and service delivery capacity, conduct relief efforts, and plan and implement Ukraine's reconstruction and reform agenda. The URTF is financing projects with a focus on repairing damaged infrastructure, restoring public services, and sustaining economic activities in the areas of health care, energy, logistics, agriculture, and housing. As of January 2024, URTF has over US$1.5 billion in contributions from 14 donor countries, making grants to support early recovery and administrative capacity of the government. The URTF operates under the overarching World Bank Multi-Donor Resources for Institutions and Infrastructure (MRII - MPIЇ) for Ukraine Facility, which is part of broader international support to Ukraine. MRII - MPIЇ takes a phased and multipronged approach to mobilizing financing, using guarantees, co-financing, parallel financing, and other financial instruments to help Ukraine. The multisectoral support provided by the World Bank during the war builds on a decades-long development partnership and sets the stage for resilient reconstruction when peace returns.[37] A list of ongoing World Bank–supported projects is in Box 4. Through the Economic Resilience Action Program, the International Finance Corporation (IFC) is providing for the immediate needs of Ukraine's private sector with a US$2 billion package to help build private sector resilience and support livelihoods.[38]

Box 4. Ongoing World Bank–supported projects

The **Health Enhancement and Lifesaving Ukraine Project (HEAL)**, approved in December 2022, is helping restore and improve access to health care and address new and urgent needs for health services due to the war.

[34] United Nations, "Ukraine Community Recovery Fund," Concept note "Ukraine Community Recovery Fund'. Link.
[35] World Bank. 2024. Ukraine Relief, Recovery, Reconstruction and Reform Trust Fund (URTF). Link.
[36] World Bank, "Ukraine Relief, Recovery, Reconstruction and Reform Trust Fund (URTF)," December 16, 2022, Link.
[37] World Bank, "The World Bank and Ukraine: Laying the Groundwork for Reconstruction in the Midst of War," November 30, 2023, Link.
[38] IFC, "IFC Launches $2 Billion Response Package to Support Ukrainian Private Sector," December 15, 2022, Link.

The **Repairing Essential Logistics and Network Connectivity Project (RELINC)**, approved in February 2023, is helping repair damaged critical road and rail networks; the goal is to reconnect communities and improve westward transport linkages that mitigate impacts of Black Sea disruption.

The **Restoration Project of Winterization and Energy Resources**, approved in April 2023, is helping restore essential energy services by financing emergency repairs to the power transmission and heating infrastructure.

The **Housing Repair for People's Empowerment (HOPE)** Project, approved in August 2023, is helping more than 100,000 families in Ukraine make urgent repairs to homes damaged by the war.

The **Ukraine Agriculture Recovery Inclusive Support Emergency (ARISE) Project**, approved in October 2023, targets the agriculture sector, which was negatively impacted by the war, with further ramifications for food and nutrition security globally. The ARISE Project will help more than 90,000 farmers access affordable loans and receive grants for agricultural production.

The **Investing in Social Protection for Inclusion, Resilience, and Efficiency (INSPIRE) Project,** approved in November 2023, will provide additional support to 29 social assistance programs targeting the most vulnerable war-affected people in Ukraine. The poorest households need adequate support to mitigate the impacts of the ongoing war and avoid slipping further into poverty.

The **Ukraine Relief and Recovery Development Policy Loan (DPL),** approved in June 2023, is designed to address the needs of the newly poor and displaced by providing relief to households; to enhance the transparency and accountability of public resource expenditures; and to help markets function better during and after the war.

Source: The World Bank in Ukraine website. Link.

RDNA3 Objectives and Methodology

The Third Rapid Damage and Needs Assessment (RDNA3) considers social, infrastructure, and productive sectors as well as cross-cutting sectors and issues. The RDNA3 assesses the impact during the period February 24, 2022, to December 31, 2023—almost two years of the war. In doing so, it builds on the foundations and analytics of RDNA1, which covered the period between February 24 and June 1, 2022; the RDNA2, which covered the period between February 24, 2022, and February 24, 2023. The RDNA3 takes also into account important assessments, including the 2023 Kakhovka Dam Post-Disaster Needs Assessment (PDNA) and several other analytics.[39]

Box 5. First and Second Ukraine Rapid Damage and Needs Assessment (RDNA1 and RDNA2)

RDNA1: Focused on the first three months of the war. It estimated **US$97.4 billion** in direct damage (covering the period between February 24 and June 1, 2022), **US$252 billion** in losses (which considered in 21 months in total comprising 3 months of actual and 18 months of projected losses), and **US$348.5 billion** in recovery and reconstruction needs (10 years). The most damage-affected sectors were housing (40 percent of total damage),

[39] GoU and UN, "Post-Disaster Needs Assessment: 2023 Kakhovka Dam Disaster, Ukraine," 2023, Link. Other assessments include International Finance Corporation (IFC), "Private Sector Opportunities for a Green and Resilient Reconstruction in Ukraine," 2023, Link; Kyiv School of Economics (KSE), "Report on Damages to Infrastructure Caused by Russia's War against Ukraine One Year after the Start of the Full-Scale Invasion," Link; UN Environment Programme (UNEP), "The Environmental Impact of the Conflict in Ukraine: A Preliminary Review," 2022, Link; United Nations Development Programme (UNDP), "Ukraine: Human Impact Assessment," June 2023, Link; UNESCO, "In the Face of War, UNESCO's Action in Ukraine," 2023, Link; UNDP, "Towards a Green Transition of the Energy Sector in Ukraine," 2023, Link; UN, World Bank, and Government of Ukraine, "Ukraine Energy Damage Assessment," 2023, Link; Food and Agriculture Organization of the United Nations (FAO), "Ukraine: Impact of the War on Agricultural Enterprises," 2023, Link.

transport (31 percent), and commerce and industry (10 percent). The most affected oblasts in terms of direct damage were Donetska, Luhanska, and Kharkivska, followed by Kyivska, Chernihivska, and Zaporizka.

RDNA2: Focused on the first year of the war. It estimated **US$134.7 billion** in direct damage (covering the period between February 24 and February 24, 2023), **US$289 billion** in losses (which considered in 30 months in total comprising 12 months of actual loss and 18 months of projected losses), and **US$410.6 billion** in recovery and reconstruction needs (10 years). The RDNA2 estimated implementation priorities for 2023 at around **US$14 billion,** or close to 3.5 percent of total needs identified. The most affected sectors were housing (38 percent), transport (26 percent), energy (8 percent), commerce and industry (8 percent), and agriculture (6 percent). Donetska, Kharkivska, Luhanska, Zaporizka, Kyivska, and Khersonska oblasts have sustained the greatest direct damage.

Sources: World Bank, GoU, and EC. Ukraine Rapid Damage and Needs Assessment," Link; World Bank, GoU, EC, and UN. Ukraine Rapid Damage and Needs Assessment: February 2022–February 2023," March 2023, Link.

The RDNA3 follows a globally established and recognized PDNA methodology jointly developed by the World Bank, the European Union (EU), and the United Nations. This approach has been applied globally in post-disaster and war contexts to inform recovery and reconstruction planning. The report uses standard terminology; key terms are highlighted in Box 6. The use of the global approach and standard terminology facilitates any future assessments. An integral part of the assessment across all sectors is the understanding of the direct and indirect damage and loss and human impacts; application of the build back better (BBB) approach; and use of principles of green, resilient, inclusive, and sustainable recovery and reconstruction in estimating needs. Where information was available, recovery and reconstruction needs already met were deducted from the needs estimates. In line with the exchange rate used in RDNA2, the RDNA3 uses the rate of US$1 = UAH 36.5686.[40] Regions are organized according to groupings presented by the GoU in 2022, updated based on the current situation. Frontline regions are those areas temporarily not under government control and/or areas of active war; support regions are those providing logistics for defense and humanitarian cargo, backline regions are those protecting export/import logistics hubs and evacuated enterprises, and regions where the government has regained control are areas recovering from sustained damage.

While much of this report focuses on areas where the impact of the war can be financially quantified, it also provides a qualitative description of how people's lives have been altered. This analysis follows the specific groups/topics identified. In addition to the four groups/topics covered in RDNA2 (displaced persons and returnees, persons with disabilities, veterans and their families, and gender-specific impacts), RDNA3 includes two more: (i) youth and child protection and rights; and (ii) elderly. The human impacts chapter also describes a broader set of needs and priorities that cut across sectors and that can improve people's lives as the war continues. Addressing this set of needs and priorities will also contribute toward more socially inclusive development for Ukraine beyond the immediate response. It should be noted that in addition to the group-specific issues assessed, there are population-wide human impacts felt by everyone in Ukraine, as mentioned across sectoral chapters in the report.

While focusing on war-related impacts and needs, the RDNA3 contributes to and complements other ongoing efforts related to Ukraine's reconstruction, modernization, and integration into the European community. The principles of building back better are aligned with the vision and investments to be set by the Government's Ukraine Plan and the EU Ukraine Facility, both under preparation, that will support

[40] For conversions from US$ to €, the exchange rate: 0.906 as of the end December 2023 was used.

Ukraine's reform agenda to become a modern country, aligned with EU policies and ready to join the EU. Results of the RDNA3 can also inform and complement other sector-specific analytics as well as ongoing efforts by the GoU and partners to identify key reforms, medium-term economic growth opportunities, and opportunities for private sector engagement.

Building on the analysis of 2023 priorities in RDNA2 and complementary to the needs' estimation, the RDNA3 also includes short-term priorities identified by Ukrainian line ministries that need financing in 2024. These priorities have been defined by line ministries through an ongoing process of project development and monitoring and involving extensive consultations with development partners. Sectoral priorities, to be monitored and refined over time, are intended to inform investment planning, mobilization of resources, and implementation. The RDNA3 also includes an overview of key requirements to facilitate more effective and efficient recovery and reconstruction planning and implementation.

The RDNA3 faced several constraints and relied on several specific assumptions. The sector assessments were produced in a short timeframe with sometimes significant limitations related to data availability (such as for data related to the private sector, certain geographic areas, or comprehensive information on recovery and reconstruction needs met) and data sensitivity (such as for critical energy infrastructure). Field verification was not possible due to the ongoing war. To ensure the relevance of the estimations, substantial efforts have been made to improve the accuracy of the information that was collected, analyzed, and verified. The RDNA3 does not provide asset-level information and instead provides portfolio level information at the level of oblast. Damage to asset types considers three levels: fully destroyed, damaged, and no/minor damage. Since loss is typically measured until "normality" is restored, the calculation includes in total 40 months, which included 22 months between February 24, 2022, and December 31, 2023, as well as an additional 18 months. The geographic scope includes all areas under government control on February 1, 2022. An important limitation is that the total needs and priorities are presented at sector level and do not consider balancing of one sector's needs against those of another sector. The RDNA3 is not intended for legal or compensatory claims. While the assessment considers human impacts of the war, there continue to be gaps, and the report can serve as the basis for further analysis. Future analyses may also focus more in depth on the reform and growth agenda – including different types of reforms depending on war trajectory, priorities and expected outcomes, as well as the deterioration of infrastructure and services in areas with limited or no fighting due to reduced investment during the war and therefore increased investment needs.

Box 6. RDNA3 definitions

Damage: Direct costs of destroyed or damaged physical assets and infrastructure, valued in monetary terms. Costs are estimated based on replacing or repairing physical assets and infrastructure, considering the replacement price prevailing before the war. The data cut-off for RDNA3 was December 31, 2023.

Loss: Changes in economic flows resulting from the war, valued in monetary terms. Examples include increased operating costs and loss of revenue for authorities/private sector.

Needs: Value associated with the resumption of prewar normality through activities such as repair and restoration, including a premium linked to build back better principles—e.g., improved energy efficiency, modernization efforts, and sustainability standards—as well as factors such as global inflation, surge pricing due to volume of construction, higher insurance, and so forth. Needs are expressed in monetary terms according to market prices prevailing as of December 31, 2023. Needs do not equal the sum of damage and losses. Needs met were discounted as relevant.

Build back better: Relates to improvements integrated into rehabilitation and reconstruction of damaged assets, including improved functionality, energy efficiency, universal access, disaster and climate resilience (greening, decarbonization), and critical modernization measures, such as right-sizing and right-siting of infrastructure and services. This costing is added in the needs calculation, and each sector uses appropriate standards and costing assumptions.

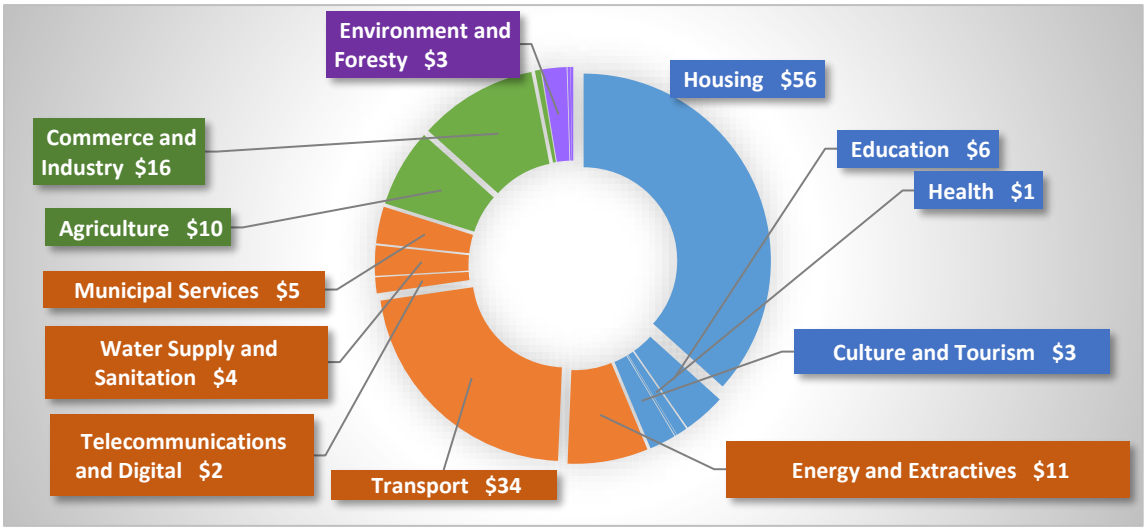
Recovery and reconstruction financing priorities for 2024: Priorities refer to recovery and reconstruction needs identified by GoU line ministries, that are considered highest priority for urgent delivery and require funding in 2024. Investment priorities account for both capital and current expenditures and consider expenditures that would be made by central and local governments, by state-owned enterprises (SOEs), by the private sector (including households), or by other actors (e.g., development partners).

SUMMARY OF IMPACTS AND NEEDS

Summary of Damage

The total direct damage to buildings and infrastructure across sectors is estimated at approximately US$152 billion (Table 1). The most affected sectors have been housing (almost US$56 billion, or 37 percent of total damage), transport (almost US$34 billion, or 22 percent), commerce and industry (almost US$16 billion, or 10 percent), energy (almost US$11 billion, or 7 percent) and agriculture (US$10 billion, or 7 percent). Across sectors, Donetska, Kharkivska, Luhanska, Zaporizka, Khersonska, and Kyivska oblasts have sustained the greatest damage (Table 2).

Figure 10. Total damage (US$ billion): US$152 billion



Source: Assessment team. *Note*: Values are for the period between February 24, 2022, and December 31, 2023.

On average, across assessed sectors, the direct damage has not escalated substantially due to limited shifts in the front line of war since the second assessment (US$135 billion)[41] (Figure 8), but the impacts on Ukraine remain immense. For example, 10 percent of the total housing stock of Ukraine has been either damaged or destroyed, impacting more than 2 million housing units across the country. There is US$4.8 billion in damage in the municipal sector of which 42 percent is in district heating. In transport, this includes 8,400 km of motorways, highways, and other national roads, over 140 bridges on the national road network and 150 bridges on the oblast and village roads, more than In transport, this includes 8,400 km of motorways, highways, and other national roads, over 140 bridges on the national road network and 150 bridges on the oblast and village roads, more than 50 km of railways and 83 railway bridges damaged or destroyed.

RDNA3 records changes in damage for some sectors for several reason since the RDNA2. For example, there has been stark increase in emergency response and civil protection (almost 115 percent) environment, natural resources, and forestry sector (112 percent), irrigation and water resource management sector (almost 95 percent), water supply and sanitation sector (82 percent). For example,

[41] RDNA3 uses the same exchange rate as RDNA2, while RDNA1 used a different exchange rate. Damage reported under RDNA1 and RDNA2 is not double counted under RDNA3.

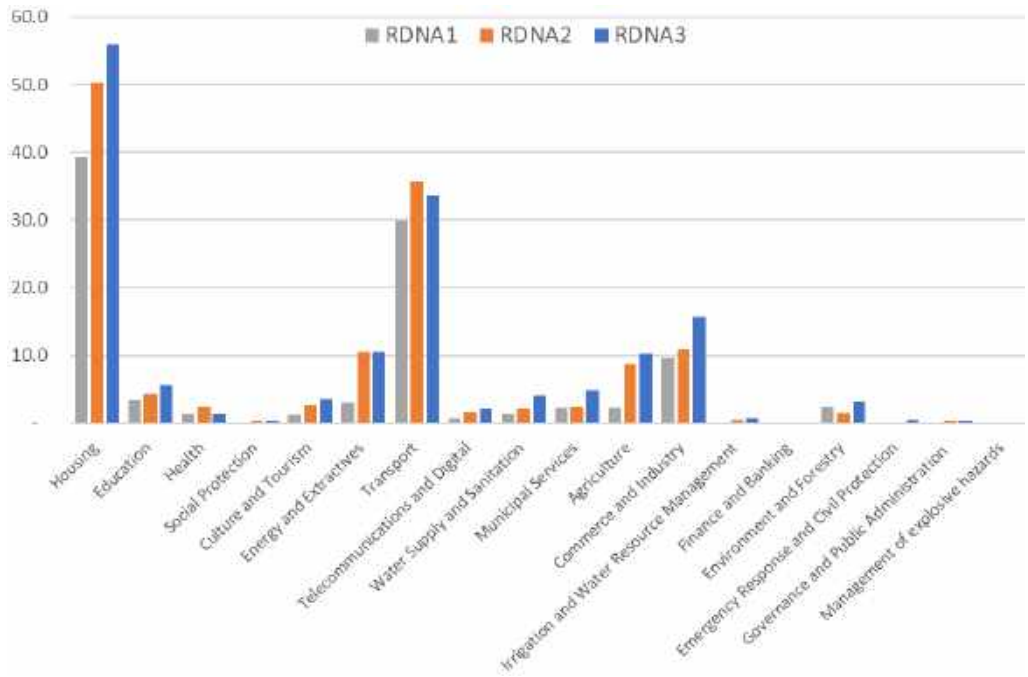
207 water treatment facilities and pumping stations, and 234 sewage treatment plants and pumping stations have been destroyed or damaged as of December 31, 2023.

The Kakhovka Dam breach contributed to considerable increase in damage across several sectors. For example, in the agriculture sector, the dam break resulted in a threefold increase in damage to the aquaculture and fishery industries. In the housing sector, of the 11 percent increase in the cost of damage since RDNA2, approximately a fifth can be attributed to the damage caused by the breakage of the Kakhovka Dam and the subsequent flooding (primarily in the Khersonska oblast).[42] Increased attacks on cultural heritage sites in areas protected under the World Heritage Convention such as Lviv and Odesa cities, including, among others, damages to the Transfiguration Cathedral, the first and foremost Orthodox church in Odesa founded in 1794, are reflected in an almost 33 percent increase in the culture sector. In the culture sector, it is estimated that in total 4,779 cultural and tourism assets destroyed or damaged as of December 31, 2023.

It is important to note that some changes in damage (increase or decrease) is linked to the inclusion of new or improved data, changes in subsector classification, or adjustments in methodology and assumptions. For example, sectors that used new or more precise data include agriculture, culture and tourism, commerce and industry, and emergency response and civil protection. In the health sector, baseline and damage data was updated contributing to a 40 percent decrease in damage. In the transport sector, some cost assumptions were updated, contributing to an almost 6 percent decrease in damage, while in the commerce and industry sector, new data allowed the use of new calculation and adjusted methodology, contributing an almost 43 percent increase in damage compared to RDNA2. Damage in municipal services sector increased over 103 percent, in large part due to the inclusion of district heating under which was previously included under the energy sector in RDNA2 and RDNA1, and this change also contributes to explaining only a slight increase in damage in the energy sector compared with RDNA2.

Figure 11. Comparison of damage in RDNA1, RDNA2, RDNA3 (billion US$)

[42] European Union et al., "Analysis of the Impact of the Kakhovka Hydroelectric Power Station Explosion on the Populated Areas of Kherson and Mykolaiv Regions," 2023, Link.

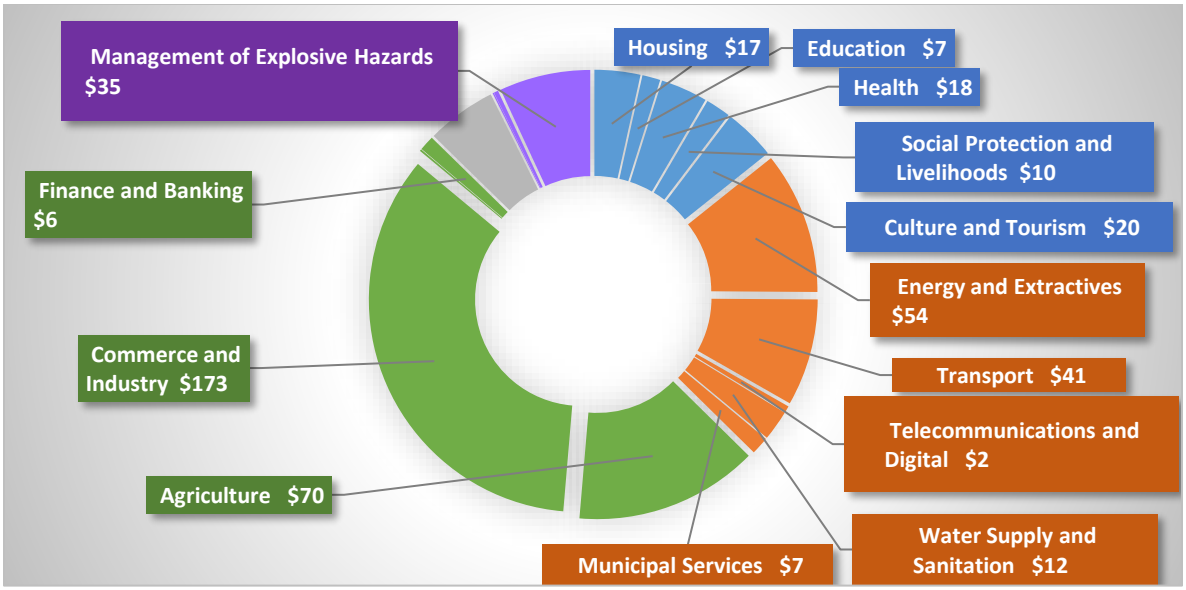


Source: Assessment team. *Note*: y axis = US$ billion; x axis = = sectors under RDNA1, RDNA2 and RDNA3. RDNA1 damage covers the period between February 24, 202,2 and June 1, 2022. RDNA2 damage covers the period between February 24, 2022, and February 24, 2023, while RDNA3 damage covers the period between February 24, 2022, and December 31, 2023.

Summary of Loss

Aggregate economic, social, and other monetary losses total almost US$499 billion (Table 1). Loss is dominated by commerce and industry (over US$173 billion, or 35 percent of the total loss), and in a lesser degree by agriculture (almost US$70 billion, or 14 percent), energy and extractives (US$54 billion, or 11 percent), transport (almost US$41 billion, 8 percent), and explosive hazards management (almost US$35 billion, or 7 percent). Five percent of total loss is attributed to the environment, natural resource management, and forestry sector, in large part linked to the Kakhovka Dam breach and inclusion of new types of losses (such as assessment of ecosystem service losses). In the banking and finance sector, there are US$5.7 billion estimated in credit. It should be noted that losses in one sector can flow into and intersect with those in other sectors, though careful efforts are made to avoid double-counting. For example, reduction in agricultural production affects transportation needs, and loss of electricity affects commerce and industry in areas that are otherwise unaffected by the war. The total loss figures do not include household income loss—estimated under the social protection and livelihoods sector and valued at over US$60 billion—to avoid potential double-counting in relation to other sectors.

Figure 12. Total loss (US$ billion): US$499 billion



Source: Assessment team. *Note*: Loss includes an additional 18 months beyond the 12 months between February 24, 2022, and December 31, 2023. Loss in social protection does not include loss of household income to avoid potential double-counting.

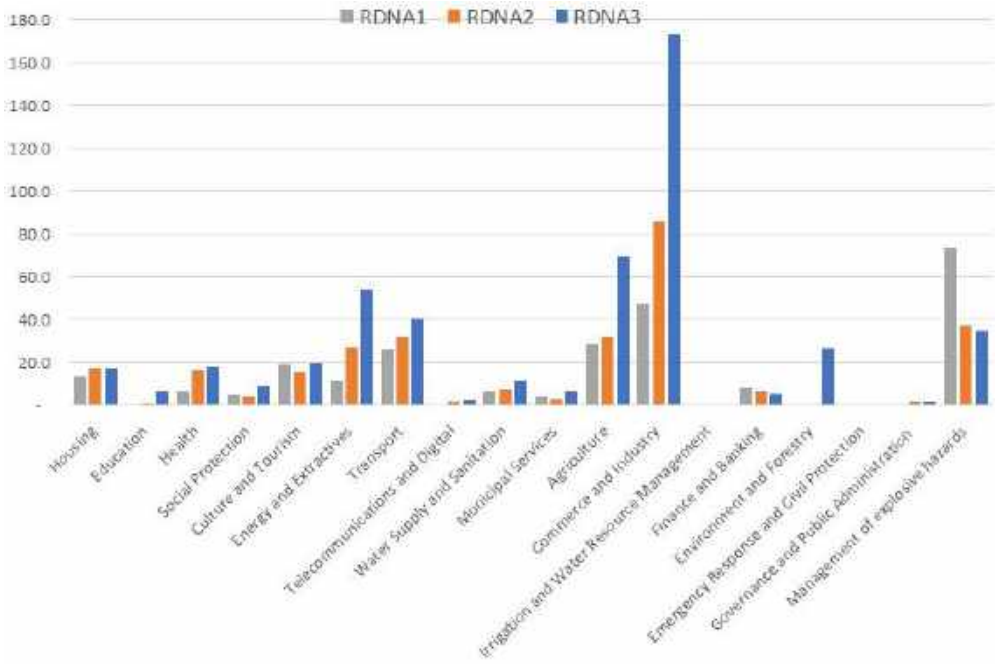
On average and across all sectors assessed, compared with RDNA2 loss results (US$290 billion), RDNA3 loss results show a considerable increase. As was the case for damage, the increased loss in some sectors is linked to specific events such as the Kakhovka Dam break (which affected the energy, irrigation and water resource management, and environment sectors), or to cyberattacks and increased costs of generators (which affected the telecommunications and digital sector). The most pronounced increase in losses compared with RDNA2 is in Kyivska, Dnipropetrovska, Zaporizka, Khersonska, Kyiv City, and Odeska oblasts.

In the case of losses, much of the increase has to do with new and improved data and new estimations. In the education sector and environment sectors, the inclusion of new types of losses, specifically learning loss in the case of education (not assessed under RDNA1 or RDNA2) and loss of ecosystem services in the environment sector (RDNA2 estimated only losses from reduced forest carbon sequestration and a limited range of forest ecosystem services) contribute to the steep increase in losses. In the agriculture sector, which saw increase over 120 percent of losses, the RDNA3 estimates include crop losses for the entire year of 2023 (while the RDNA2 considered only production in 2022 and winter 2023) as well as projected crop production losses for all of 2024, with similar principle for livestock production. The commerce and industry sector recorded an increase of 100 percent, based on updated methodology which used actual sales data for industry and commerce that have become available and updated assumptions.

As loss comprises several categories including disruption of the production of goods/services and access to goods/services, disruption to governance, and increased risks/vulnerabilities, loss is not proportionately linked to damage. For example, in agriculture, damage in farm equipment can be relatively low, while loss to crops can be still high; in commerce, damage to commercial/industry buildings can be low but sales drop can be still significant. For example, Dnipro was a major industrial

center contributing to 14.7 percent of national sales before the war and hence damages disproportionately affected sales, and losses in turn. In the social protection sector, while damage is relatively small, losses are considerable – for example US$3.3 billion in additional social protection expenditure for internally displaced persons as of December 2023.

Figure 13. Comparison of losses in RDNA1, RDNA2, RDNA3 (billion US$)



Source: Assessment team. *Note*: Loss in RDNA1 considers 21 months in total - 3 months between March and June 2022, and additional 18 months. Loss in RDNA2 considers 30 months in total - 12 months between February 24, 2022, and February 24, 2023, and additional 18 months. Loss in RDNA3 considers 40 months in total - 22 months between February 24, 2022, and December 31, 2023, and additional 18 months.

Summary of Macroeconomic and Social impacts

Human development impacts of the war continue to be deep and wide-ranging. Between February 2022 and July 2023, almost 10,000 civilian deaths and 18,500 injuries were reported.[43] At the start of the war, 13.5 million people—approximately one-third of Ukraine's population—were forcibly displaced. As of December 2023, an estimated 5.9 million people[44] remain recorded as refugees across Europe and 3.7 million as IDPs, as of October 2023.[45] The war has brought hardship as livelihoods have been lost and access to basic services has been severely disrupted and resulted in decrease of living standards. Different societal groups face unique sets of challenges. For example, youth have suffered learning loss and increased mental health issues, additional to those already accumulated during the COVID-19 pandemic. The elderly have been disproportionally impacted with many impoverished and unable to

[43] Office of the High Commissioner for Human Rights (OHCHR). Report on the human rights situation in Ukraine, 1 February to 31 July 2023, Link.
[44] UNHCR. Ukraine Refugee Situation, website, accessed December 2023. Link.
[45] International Organization for Migration (IOM), "Ukraine: Internal Displacement Report—General Population Survey Round 14 (September – October 2023)," Link. This compares to 5.4 million people in the Ukraine RDNA2 report.

meet basic needs, especially if they live close to frontlines, support adults and children who became IDPs and refugees, lost their social networks or access to coping mechanisms such as kitchen gardens to supplement food supply. The invasion has resulted in increased cases of trauma and serious injuries, leading to a rapid rise in the number of people with disabilities. IDPs and returnees face many challenges linked to their socio-economic existence facing employment challenges, scarcity and geographical mismatches of vacancies and reduced wages, and barriers in the labor market, particularly for women and vulnerable subgroups such as, young people and persons with disabilities. Demobilization, reintegration, and socio-economic support are needed to address the needs of veterans and their families. Risks of gender-based violence, including war-related sexual violence, human trafficking and partner violence, have increased since February 2022.[46]

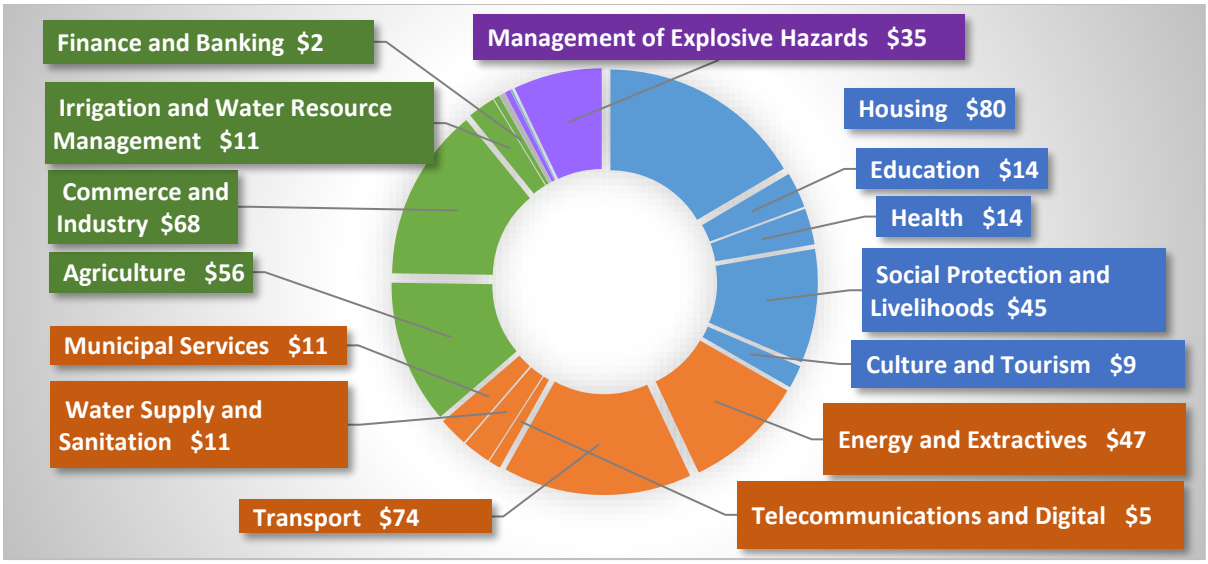
The invasion has caused economic disruption, job loss, and low investor confidence, affecting public and private financing. However, after a significant Gross Domestic Product (GDP) contraction in 2022, Ukraine's economy has demonstrated resilience and returned to growth in 2023. More reliable electricity supply, an exceptional wheat harvest, and regular inflows of external assistance have allowed for a growth recovery in 2023. Yearly growth for 2023 is estimated at 4.8 percent (compared with a 29.1 percent contraction in 2022), though growth in 2024 is expected to be slower than in 2023. As of December 31, 2023, Ukraine has yet to secure firm commitments for sufficient support receipts to finance its budget deficit. The 2024 budget plans for the receipt of US$37.3 billion in external loan and grant to meet Ukraine's fiscal needs. The receipt of this is, however, highly uncertain, as no firm commitments of this magnitude have been received to date. Given the budget financing shortfalls, Ukraine needs to prioritize any external assistance to meet its budgetary needs, and thus to pay for social assistance, pensions and salaries, among others.

Summary of Needs

The total estimated recovery and reconstruction needs is almost US$486 billion (Table 1). These costs — estimated within a period of 10 years — consider building back better principles, including shift toward lower energy intensity, modern standards including climate resilience and inclusive design, as well as inflation, market conditions, surge pricing in construction commonly seen in areas of major construction, and higher insurance premiums. The highest estimated needs are in housing (over US$80 billion, or 17 percent of the total), followed by transport (almost US$74 billion, or 15 percent), commerce and industry (US$67.5 billion, or 14 percent), agriculture (US$56 billion, or 12 percent), energy (US$47 billion, or 10 percent), social protection and livelihoods (US$44.3 billion, or 9 percent), and explosive hazard management (almost 35 billion, or 7 percent). Across all sectors, the cost of debris clearance and management (and demolition where needed) reaches almost US$11 billion. The health sector (over US$14 billion) and education sector (almost US$14 billion) each represent 3 percent of the total needs.

Figure 14. Total recovery and reconstruction needs (US486 billion)

[46] Regional Gender Task Force, "Making the Invisible Visible: An evidence-based analysis of gender in the regional response to the war in Ukraine", October 2022, Link.

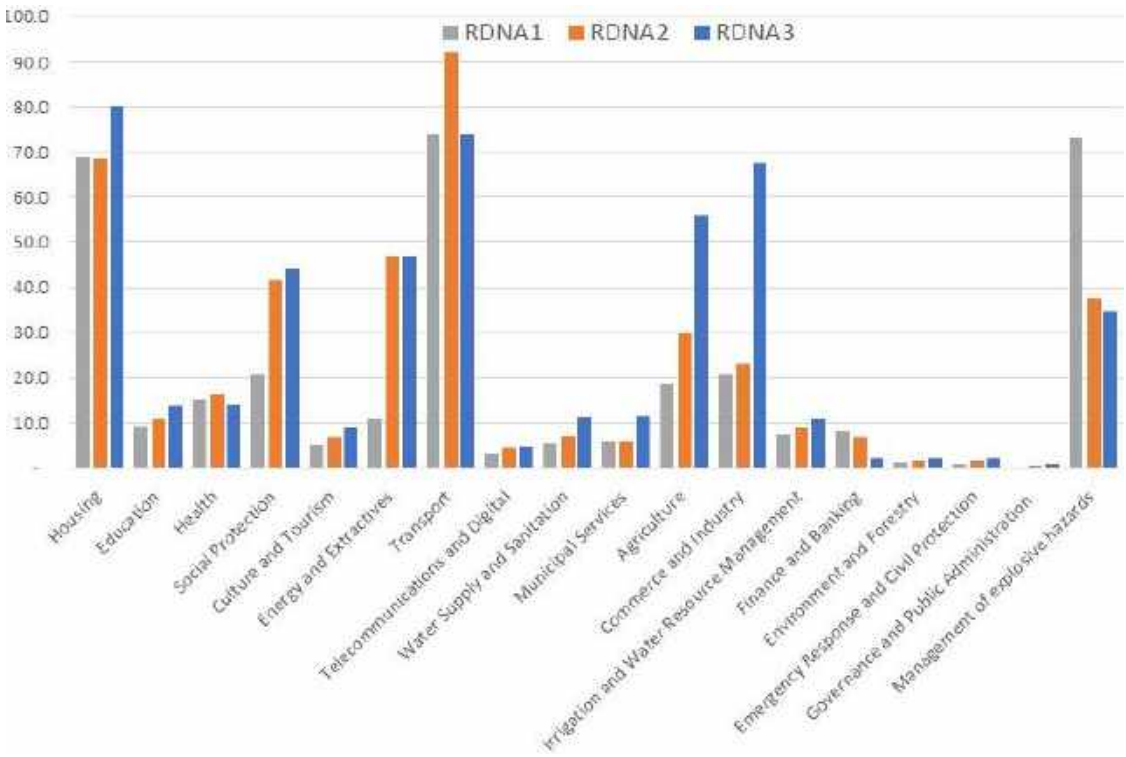


Source: Assessment team. *Note*: Needs relate to total estimated needs covering the period 2024–2033. Where data was available, needs met were deducted.

On average, across assessed sectors, the increase in needs in RDNA3 compared to RDNA2 (US$411 billion, see Figure 7) is moderate and proportionate to the impacts sustained (Figure 4). Sectors with the highest increase in needs include those that have seen an increase in damage, specifically commerce and industry, agriculture, and water supply and sanitation. However, new or improved data, changes in subsector classification, adjustments in methodology and assumptions, as well as and deduction of needs met, contributed to changes for specific sectors between RDNA3 and RDNA2 sector needs. An updated baseline and damage data led to a decrease in needs in the health sector. In the transport sector, adjustment of cost assumptions and a greater focus on recovery and reconstruction of core services contributed to a 20 percent decline compared with RDNA2. This sector has recorded also several needs met. In the finance and banking sector, decrease in needs reflects results of the 2023 resilience assessment, and decrease of war-related credit losses. A decrease of 8 percent for management of explosive hazards is linked to improved accuracy of data due to ongoing and increased data collection, estimating 174, 000 km^2 of area contaminated with explosive ordnance. The regions with the greatest net change in needs include Kyivska, Dnipropetrovska, Donetska, Khersonska, Kharkivska, Zaporizka, and Odeska.

Meeting the overall estimated needs will be critical for the long-term recovery from the war, but all needs cannot be met immediately. The timeframe for covering these needs will depend on the availability of financing, but also on several other factors: the absorptive capacity of the Ukrainian budget; the implementation capacity of and coordination among line ministries, subnational authorities, civil society, community-based organizations, and implementing agencies; the readiness of the private sector to support capital investments; and the trajectory of the war. The critical role of private sector investments in meeting needs should be noted; further information is provided in the final chapter. An estimation of recovery and reconstruction priorities for 2024 is discussed in the next section.

Figure 15. Comparison of needs in RDNA1, RDNA2, and RDNA3 (in billion US$)



Source: Assessment team. *Note*: y axis = US$ billion; x axis = sectors under RDNA1, RDNA2 and RDNA3. Needs are counted within a period of 10 years.

Table 1. Total damage, loss, and needs by sector (US$ billion)

Sector	Damage	Loss	Needs
Social sectors			
Housing	55.9	17.4	80.3
Education and science	5.6	6.9	13.9
Health	1.4	17.8	14.2
Social protection and livelihoods[a]	0.2	9.5[a]	44.5
Culture and tourism	3.5	19.6	8.9
Infrastructure sectors			
Energy and extractives	10.6	54.0	47.1
Transport	33.6	40.7	73.7
Telecommunications and digital	2.1	2.3	4.7
Water supply and sanitation	4.0	11.6	11.1
Municipal services	4.9	6.8	11.4
Productive sectors			
Agriculture	10.3	69.8	56.1
Commerce and industry	15.6	173.2	67.5
Irrigation and water resource management	0.7	0.7	10.7
Finance and banking	0.0	5.7	2.3
Cross-cutting sectors			
Environment, natural resource management, and forestry	3.3	26.5	2.3
Emergency response and civil protection	0.4	0.5	2.3
Justice and public administration	0.3	1.7	0.7
Explosive hazard management	-	34.6	34.6
Total	**152.5**	**499.3**	**486.2**

Source: Assessment team. *Note:* - = not relevant. Damage covers 22 months of war between February 24, 2022, and December 31, 2023; loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months through June 30, 2025; needs cover the period 2024–2033. a. Under social protection, household income loss valued at US$60 billion is not included to avoid potential double-counting in relation to other sectors.

Table 2. RDNA3 Damage, loss, and needs by oblast (US$ billion)

Oblast	Damage	Loss	Needs
Frontline regions, subtotal	116.0	157.6	250.5
Donetska	38.7	39.0	73.9
Zaporizka	13.5	30.4	33.6
Luhanska	17.8	19.1	39.0
Mykolaivska	5.6	11.1	14.2
Kharkivska	27.8	32.3	54.9
Khersonska	12.6	25.7	35.0
Support regions, subtotal	5.3	81.3	36.3
Vinnytska	0.2	9.3	4.7
Dnipropetrovska	2.9	39.3	16.4
Kirovohradska	0.2	5.7	2.7
Odeska	1.3	15.2	7.2
Poltavska	0.8	12.0	5.3
Backline regions, subtotal	1.2	47.5	19.1
Volynska	0.1	4.6	1.7
Zakarpatska	0.3	2.9	1.4
Ivano-Frankivska	0.1	5.6	1.9
Lvivska	0.3	11.3	3.3
Rivnenska	0.1	3.5	1.6
Ternopilska	0.0	3.9	1.7
Khmelnytska	0.2	6.9	3.6
Chernivetska	0.0	1.6	0.7
Cherkaska	0.2	7.2	3.2
Regions where government has regained control, subtotal	22.9	135.7	80.8
Kyiv City	2.2	27.4	8.2
Zhytomyrska	1.1	6.2	4.7
Kyivska	11.2	82.7	42.5
Sumska	3.0	8.8	10.4
Chernihivska	5.5	10.6	15.0
Not specified—nationwide, subtotal	**7.1**	**77.2**	**99.5**

Source: Assessment team. *Note*: Damage covers 22 months of war between February 24, 2022, and December 31, 2023; loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months through June 30, 2025; needs cover the period 2024–2033. The regions follow categorization as presented by the GoU at the July 2022 Lugano conference, with some updates. As of December 2023, there were hostilities in Mykolaivska, even though most clashes had moved to the Khersonska region.

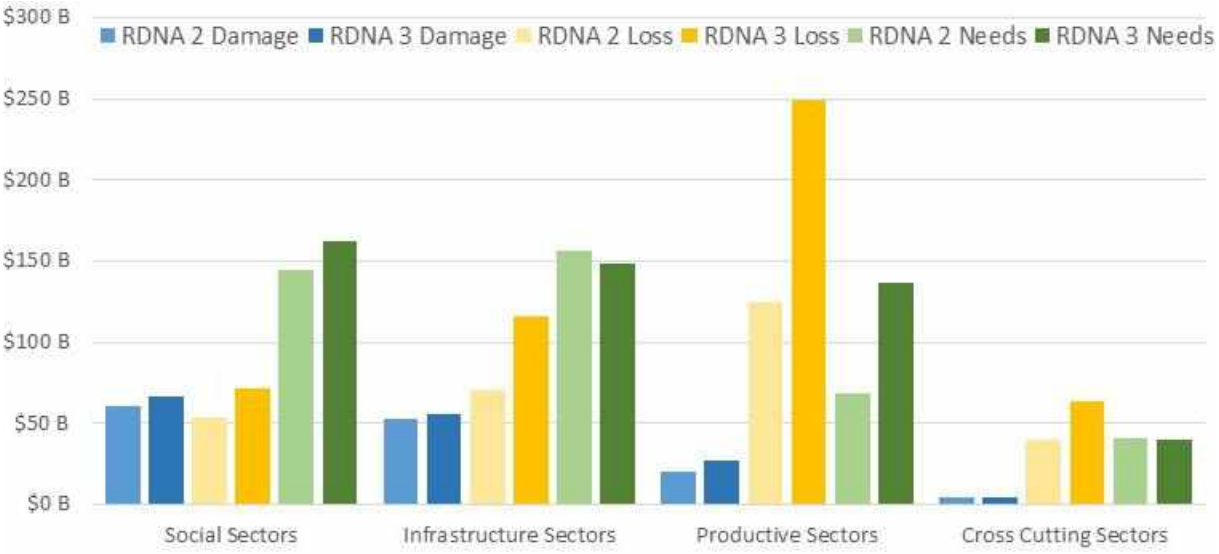
Table 3. RDNA1, RDNA2, and RDNA3 damage, loss, needs by sector (US$ billion)

Sector	Damage			Loss			Needs		
	RDNA 3	RDNA 2	RDNA1	RDNA 3	RDNA 2	RDNA1	RDNA 3	RDNA 2	RDNA1
Social sectors									
Housing	55.9	50.4	39.2	17.4	17.2	13.3	80.3	68.6	69.0
Education	5.6	4.4	3.4	6.9	0.8	0.5	13.9	10.7	9.2

Health	1.4	2.5	1.4	17.8	16.5	6.4	14.2	16.4	15.1
Social protection	0.2	0.2	0.2	9.4	4.2	4.5	44.5	41.8	20.6
Culture and tourism	3.5	2.6	1.1	19.6	15.2	19.3	8.9	6.9	5.2
Infrastructure sectors									
Energy and extractives	10.6	10.6	3.1	54.0	27.2	12.0	47.1	47.0	10.7
Transport	33.6	35.7	29.9	40.7	31.6	26.1	73.7	92.1	73.8
Telecommunications and digital	2.1	1.6	0.7	2.3	1.6	0.6	4.7	4.5	3.3
Water supply and sanitation	4.0	2.2	1.3	11.6	7.5	6.8	11.1	7.1	5.4
Municipal services	4.9	2.4	2.3	6.8	3.0	4.3	11.4	5.7	5.7
Productive sectors									
Agriculture	10.3	8.7	2.2	69.8	31.5	28.3	56.1	29.7	18.7
Commerce and industry	15.6	10.9	9.7	173.2	85.8	47.5	67.5	23.2	20.8
Irrigation and water resource management	0.7	0.4	0.2	0.7	0.3	0.1	10.7	8.9	7.5
Finance and banking	0.0	0.0	0.0	5.7	6.8	8.1	2.3	6.8	8.0
Cross cutting sectors									
Environment, natural resources, forestry	3.3	1.5	2.5	6.5	0.5	0.7	2.3	1.5	1.2
Emergency response and civil protection	0.4	0.2	0.1	0.5	0.5	0.2	2.3	1.5	0.7
Justice and public administration	0.3	0.3	0.1	1.7	1.4	0.0	0.7	0.6	0.2
Management of explosive hazards	-	-	-	34.6	37.6	73.2	34.6	37.6	73.2
Total	**152.5**	**134.7**	**97.4**	**499.3**	**289.1**	**252.0**	**486.2**	**410.6**	**348.5**

Source: Assessment team. Data per RDNA1, RDNA2 and RDNA3.

Figure 16. Comparison of damage, loss, and needs for sector clusters in RDNA2 and RDNA3 (billion US$)



Source: Assessment team. *Note*: y axis = US$ billion; x axis = sectors under RDNA2 and RDNA3.

RECOVERY and RECONSTRUCTION PRIORITIES and PRINCIPLES

Recovery and Reconstruction Priorities

As needs continue to grow, it will be increasingly important to establish clear priorities for recovery and reconstruction, to mobilize and leverage financing effectively, and to ensure organized and efficient implementation. This chapter summarizes the implementation priorities identified by the GoU line ministries, assesses the implications of these priorities from a financing and implementation perspective, and sets out some recommendations for ensuring effective and efficient recovery and reconstruction efforts over the medium term.[47]

Given the magnitude and complexity of the needs, the GoU has taken an organized, sector-level approach to recovery and reconstruction planning. Coordinated through the MCTID, the MOE, and the RDO, line ministries worked across 20 sectors to identify project-level priorities, determine financing needs, and monitor funding, implementation, and disbursement. Along with a detailed data collection and monitoring effort, a series of workshops and consultations was organized in June and November 2023 with line ministries and development partners to review progress on implementation, outline priorities and expected impacts, discuss implementation feasibility and timelines, and assess funding needs. This process has enabled individual ministries to determine existing 2023 priorities that will require continued implementation in 2024, confirm new priorities to be mobilized in 2024, and, in coordination with the established state budgeting and donor coordination processes, identify funding sources.

While the GoU has not established an overall financial envelope under which to prioritize recovery and reconstruction needs, some broad priorities have been defined, in line with RDNA2. As described above, determination of 2024 recovery and reconstruction priorities has been made bottom-up by line ministries and has not been prioritized *across* sectors in line with an overall resource envelope. However, the GoU has organized discussions of needs around six broad priorities, as listed below.[48] These are mainly in line with RDNA2, with some small additions and reorganization.

1. **Energy**, including restoration and repair of transmission and distribution lines and restoration and decentralization of generation capacity, such as through the development of renewables and protection of the power grid
2. **Transport,** with a strong focus on internal and cross-border connectivity, including repair and reconstruction of road, rail, bridges, ports, border crossings, and postal services[49]

[47] Figures presented in this chapter are based on priorities as defined by line ministries through a process coordinated by the Ministry of Restoration. They reflect line ministry priorities.
[48] It should be noted that the GoU's first and foremost priority is to ensure its ability under the state budget to finance its core functions and deliver services to its citizens. Reconstruction and recovery needs come as the next priority.
[49] Postal services are included under telecommunications and digital in the RDNA nomenclature.

3. **Housing and utilities**, including routine repair and capital reconstruction of housing; as well as reconstruction and service restoration of central heating,[50] energy efficiency,[51] water supply and sanitation services, and waste management services[52]
4. **Social infrastructure and services,** including repair, reconstruction, and service restoration of schools and health facilities, as well as social and cultural infrastructure and services[53]
5. **Industry and services,** encompassing the main support to the private sector, including industry and commerce, agribusiness, and irrigation,[54] with a focus on de-risking investment and trade
6. **Cross-sectoral** priorities, including demining,[55] telecommunications, digital and cybersecurity,[56] emergency response and civil protection, and democracy, justice, and human rights.[57]

Recovery and reconstruction priorities in 2024 identified by line ministries total US$15.3 billion in public funding[58], while the private sector (including firms and households) could contribute up to another US$11 billion to meeting the most urgent needs. Total public and private spending accounts for around 6 percent of overall RDNA needs over the span of 10 years. Meeting the priorities identified by line ministries for 2024 across sectors would require US$8.2 billion in public and SOE investments, along with US$4.7 billion in grants, subsidies, and guarantees to de-risk financing and overcome constraints to private investment (Figure 17). This would be complemented by US$2.3 billion in other government current expenditures.[59] Public support to de-risk and facilitate financing has the potential to catalyze up to US$5.5 billion in private investment, while also facilitating a similar volume in working capital (through programs such as 5-7-9 for firms and preferential mortgages for consumers) to maintain the functioning of firms and supply chains and stimulate consumer investment in the housing market.[60]

Support for the private sector accounts for the largest share of 2024 priorities. Based on priorities defined by line ministries, the largest share of recovery and reconstruction expenditures are in the industry and services sector (nearly US$3.6 billion, or 23.5 percent of total public expenditures) followed by housing and utilities (US$3.1 billion). Energy, social infrastructure and services (mainly education and

[50] Central heating is covered under energy in the RDNA nomenclature, while district heating is covered under municipal services.
[51] Energy efficiency is not covered in the RDNA nomenclature as a separate sector but considered in a cross-cutting manner.
[52] Waste management is covered under municipal services in the RDNA3 nomenclature.
[53] These are municipal services, social protection, and culture and tourism, respectively, in the RDNA3 nomenclature.
[54] These are commerce and industry, agriculture, and irrigation and water resource management, respectively, in the RDNA3 nomenclature.
[55] This is explosive hazards management in the RDNA nomenclature.
[56] This is telecommunications and digital in the RDNA nomenclature; cybersecurity is not covered in the RDNA nomenclature.
[57] This is justice and public administration in the RDNA nomenclature.
[58] Note that public funding is based on priority sectors/programs as identified by the GoU and does not include an additional US$3.6 billion in RDNA-related social transfers that are an established part of the state budget, or possible transfers to support liquidity needs of the district heating sector.
[59] A significant share of this expenditure is accounted for by a provision of US$740 million in gas and electricity purchases.
[60] Private sector contributions are estimated using assumptions on investment multipliers for the proposed programs identified by line ministries. In the case of the industry and services sector this includes programs like 5-7-9 that primarily facilitate working capital loans and grants, credit facilities, risk mitigation facilities, and direct investments. In the housing sector this includes various mortgage assistance programs as well as direct transfers (compensation) that stimulate investments in the housing market; for purposes of assessing investment impacts, the analysis uses the pre-war market dynamics whereby 10 percent of housing lending supports purchases of new facilities in the primary market while 90 percent supports purchases of existing units in the secondary market (as per IFC, 2023)

health)[61] and transport account for US$2.7 billion, US$2.4 billion and US$2.3 billion of priorities, respectively), with another US$1.2 billion needed to address cross-sectoral priorities, including demining, emergency response, telecommunications and digital, and the justice sector (Figure 18). Private expenditures and investments are expected to be concentrated in the industry and commerce, agribusiness, and housing sectors in 2024 (Table 4), although there are opportunities for private investment in other sectors, including energy and transport.

Figure 17. Estimated distribution of RDNA3 priorities by expenditure type (US$ million)

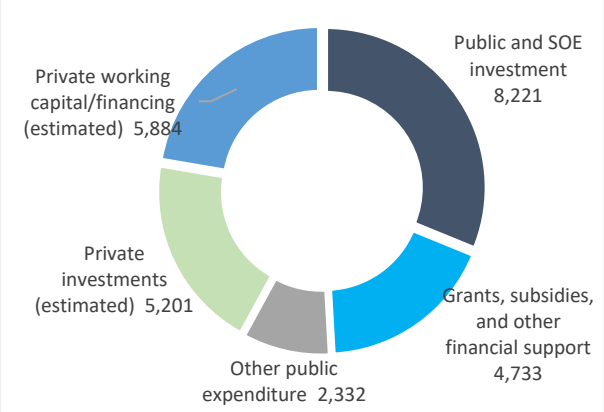
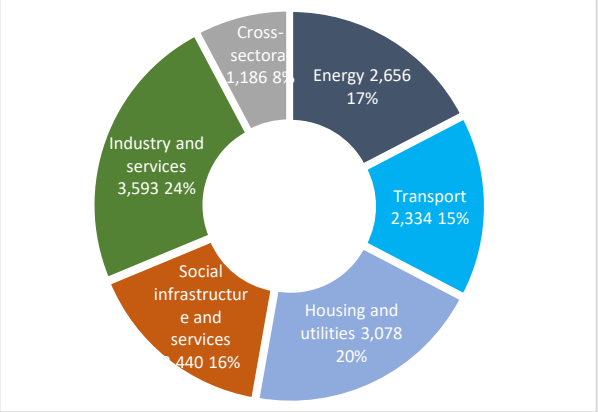


Figure 18. Distribution of RDNA3 priority public expenditures by broad sector (US$ million)

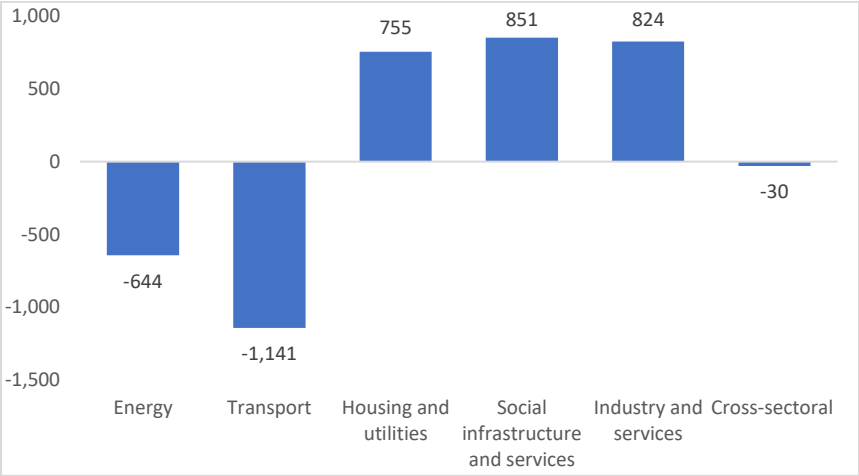


Source: Assessment team, based on data in sector templates prepared by GoU line ministries and coordinated by the MCTID. *Note:* SOE = state-owned enterprise.

Priorities identified by line ministries for RDNA3 have increased modestly over those in RDNA2 (for 2023). Estimated at US$15.3 billion, public expenditures required to address RDNA3 priorities are 8.5 percent higher than in RDNA2 (US$14.1 billion). This increase in urgent priorities is less than half the overall increase in needs in RDNA3. As shown in Figure 19, the increase is explained by sharply rising priorities in the social infrastructure and services sector (increased more than 50 percent compared to RDNA2) as well as the industry and services and the housing and utilities sectors (increases of around 30 percent each), though these are partly offset by a decline of estimated urgent priorities in transport (one-third lower than RDNA2) and energy (20 percent lower). This relative shift in concentration of urgent priorities reflects in part an increased strategic focus on the private and social sectors of the economy, and also reflects successful planning, prioritization, and execution in key infrastructure sectors. On the other hand, it is important to recognize that needs in sectors like transport and energy remain huge and these sectors remain exposed to significant risks that could require urgent investments.

[61] Note that while (nonpension) social transfers—around US$3.6 billion in 2024—are considered part of RDNA3 needs, they are fully covered in the state budget and not considered part of the RDNA3 priorities defined by GoU line ministries. This is in line with the approach taken in RDNA2.

Figure 19. RDNA3 priority public expenditures by broad sector (US$ million) compared with RDNA2

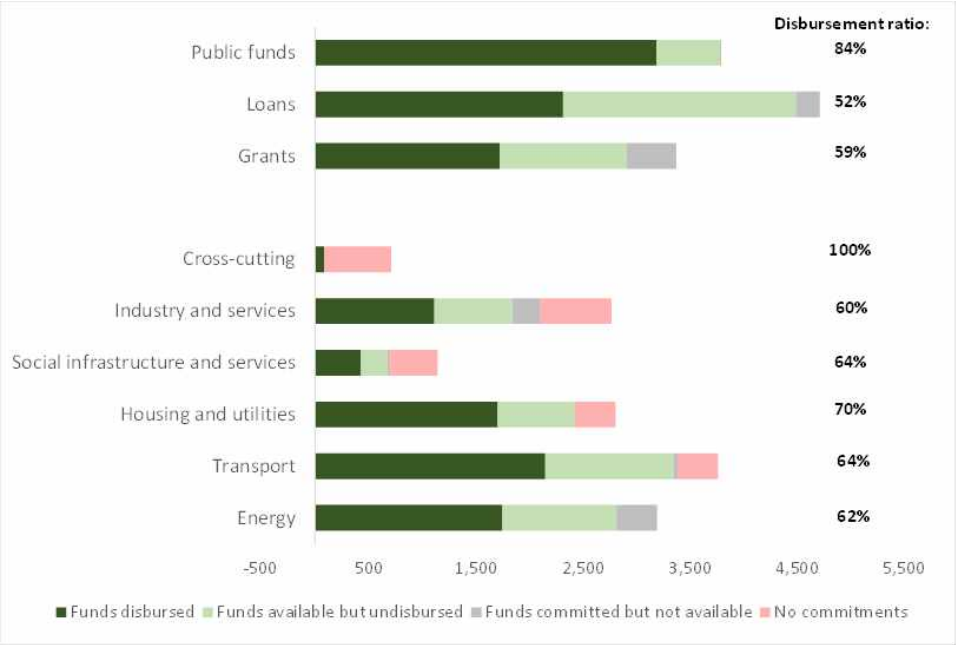


Source: Assessment team, based on data in sector templates prepared by GoU line ministries and coordinated by the MCTID.

While all the funding identified as priorities by line ministries is unlikely to be fully disbursed in 2024, mobilizing funding commitments will be important to facilitate implementation. Monitoring of execution on RDNA2 priorities shows that more than US$7.2 billion was disbursed in 2023, which was around 61 percent of available funding mobilized through the state budget and donors.[62] The disbursement ratio[63] was highest in the Housing and utilities sector (70 percent)[64], and was above 60 percent in all sectors (Figure 20); committed funding was highest in the infrastructure sectors and lagged in the private and social sectors. While 84 percent of public funds (mainly from the state budget) were disbursed during the year, indicating relatively strong execution of budget funds, execution was much lower for loans and grants, which may be a function of more complex disbursement procedures but may also be explained by funding from donors coming available, on average, later in the year. Looking ahead to 2024, absolute levels of disbursement would need to more than double to fully execute the RDNA3 priorities within a year. Despite relatively positive performance in 2023, such an increase in 2024 is highly unlikely. At the same time, one of the main barriers to disbursement is lack of timely availability of funds that enable development of multi-year investment programs. Moreover, for infrastructure projects, long lead times mean that delays of a year or more can occur between procurement and disbursement, and funding is typically required in advance of procurement. Thus, while the priorities identified by line ministries may not all require full funding on the ground in 2024, implementation will depend crucially on securing funding commitments.

[62] Commitments were achieved on around 84 percent of identified RDNA2 priorities.
[63] Disbursement as a share of available funds
[64] The disbursement ratio was 100 percent in the Cross-cutting sector, but that accounted only for small funding in demining and telecommunications.

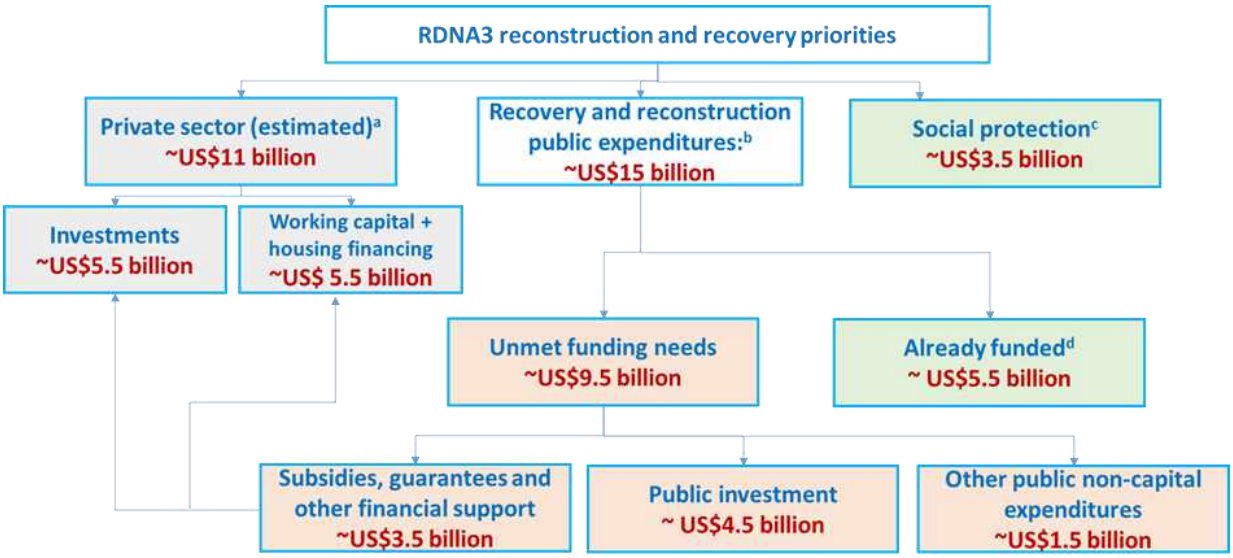
Figure 20. Execution on RDNA2 priorities by sector and funding during 2023 (US$ million)



Source: Assessment team, based on '2023 Monitoring report' (dated February 1, 2024) provided by GoU; report is based on a combination of actual data verified by Ministry of Finance and self-reported data from line ministries.
Note: Figure above presents results using RDNA3 sector definitions; Cross-cutting sector here includes only demining and telecommunications and digital; Disbursement ratio equals funds disbursed as a share of funds available.

Significant funding has already been secured to meet recovery and reconstruction priorities in 2024, but around US$9.5 billion in additional funding would be needed in 2024 to support all priorities identified by the line ministries. As of January 2024, around US$5.5 billion in funding had already been secured to meet the public expenditure priorities for recovery and reconstruction, in addition to the US$3.6 billion budgeted to support war-related social protection. Secured funding includes expenditure allocation from the state budget and complementary spending through local budgets, which are underpinned by support through loans and grants from international financial institutions (IFIs) and other donor (these account for around two-thirds of existing funding). Yet more than 60 percent (around US$9.5 billion) in funding needs are still unmet (Figure 21). Unmet funding needs are particularly high, in both nominal and percentage terms, in the energy and industry and services sector. An estimated US$3.5 billion of unmet funding needs relates to programs and instruments designed to catalyze private investment (in industry and services and in housing); failure to secure this would have negative spillovers on the private sector's contribution to meeting recovery and reconstruction priorities.

Figure 21. Summary of RDNA3 recovery and reconstruction priorities and funding needs for 2024 as identified by Ukrainian authorities



Source: Assessment team, based on data in sector templates prepared by GoU line ministries and coordinated by the MCTID.

a. Private sector includes firms and households; figures estimated based on assumptions of investment and lending multipliers of various public support instruments; note private sector investments not assessed in RDNA2.

b. Includes expenditures and investments from Government and SOEs as well from donors and international financial institutions.

c. Social transfers are part of RDNA-defined needs but are not included in GoU RDNA priorities, as they are considered an ongoing core responsibility covered by the state budget. Figure excludes non-RDNA-related pensions.

d. Including through state and local budgets; loans and grants from international financial institutions and donors; and SOE own funds; includes funding under negotiation but not finalized.

Moving forward on recovery and reconstruction in the context of resource and implementation constraints will require further strategic prioritization, supported by timely and predictable funding. Given the likely challenges in mobilizing an additional US$9.5 billion beyond existing budget financing (and additional funding already secured) in 2024, it will be important for the government to carry out strategic prioritization *across sectors* to ensure that the most critical needs are met. At the same time, securing medium-term, predictable funding commitments from donors is critical for enabling implementing agencies to plan and manage long and complex procurement. Meeting this requirement can be facilitated by better integrating priority setting and project planning into the medium-term budget planning process as well as by implementing other steps envisaged by the adopted PIM Reform Roadmap.

Beyond this, several key actions will accelerate disbursement against priorities and maximize the effectiveness and efficiency of recovery and reconstruction investments:

- ***Accelerating the reform agenda***, including the framework of the Government's Ukraine Plan under preparation. This action will help foster economic growth and modernization of the economy and institutions and promote strengthening of public sector capacity at the local level, in alignment with the standards and policies of the EU.

- ***Strengthening public sector capacity.*** Alongside increasing the role of the private sector, continued strengthening of public sector capacity to plan and deliver recovery and reconstruction projects will be critical to ensure effective and efficient implementation. The Government's adoption and implementation of the PIM reform roadmap will play a key role in this respect, in part by bringing public investments within the framework of strategic and medium-term budget planning, and by developing a single project pipeline, by strengthening institutional and technical capacities of authorities and relevant stakeholders, and by fostering cross-institutional coordination and cross-sectoral prioritization, including through establishment of the Strategic Investment Council.
- ***Leveraging opportunities for private investment***. As the figures presented in this report show, the private sector will play a critical role in meeting recovery and reconstruction needs. As market conditions evolve, and with commitment to reforms, the sectoral scope and depth of private investment can increase substantially. This growth will help accelerate implementation while reducing fiscal burdens.
- ***Strengthening the competencies of local authorities and community representatives.*** Stronger strategic planning, project management, investment activities, coordination with different stakeholders, and relevant technical capacities will promote modern, inclusive, resilient, and thriving communities.

Table 4. Summary of assessed recovery and reconstruction priorities for 2024 financing - estimated contribution by sector and type of expenditure (US$ million)

	Public funds – estimated distribution across types of expenditure				Private funds – estimated additional contribution to meeting priorities		
	Total	Public and SOE investment[a]	Subsidies, guarantees, and other financial support[b]	Other public expenditure[c]	Total private sector	Estimated private investment[d]	Estimated private working capital / financing[e]
Energy	**2,656**	**1,874**	**-**	**782**	**-**	-[g]	**-**
Transport	**2,334**	**2,334**	**-**	**-**	**-**	**-**	**-**
Housing and utilities	**3,078**	**1,494**	**1,214**	**370**	**2,500**	**500**	**2,000**
Housing	*2,116*	*533*	*1,214*	*370*	*2,500*	*500*	*2,000*
Central heating	*159*	*159*	*-*	*-*	*-*	*-*	*-*
Municipal services	*247*	*247*	*-*	*-*	*-*	*-*	*-*
Energy efficiency	*258*	*258*	*-*	*-*	*-*	*-*	*-*
Waste management	*56*	*56*	*-*	*-*	*-*	*-*	*-*
Water supply and sanitation	*242*	*242*	*-*	*-*	*-*	*-*	*-*
Social infrastructure and services	**2,440**	**1,869**	**-**	**571**	**-**	**-**	**-**
Education	*1,193*	*743*	*-*	*450*	*-*	*-*	*-*
Healthcare	*873*	*816*	*-*	*57*	*-*	*-*	*-*
Culture	*6*	*6*	*-*	*-*	*-*	*-*	*-*
Social protection[f]	*369*	*305*	*-*	*64*	*-*	*-*	*-*
Industry and services	**3,593**	**44**	**3,519**	**30**	**8,000**	**4,500**	**3,500**
Industry and commerce	*3,114*	*-*	*3,104*	*10*	*6,000*	*4,000[h]*	*2,000[h]*
Agribusiness	*435*	*-*	*415*	*20*	*2,000*	*500*	*1,500*
Irrigation	*44*	*44*	*-*	*-*	*-*	*-*	*-*
Cross-sectoral	**1,186**	**606**	**-**	**580**	**300**	**300[i]**	**-**

	Public funds – estimated distribution across types of expenditure				Private funds – estimated additional contribution to meeting priorities		
	Total	Public and SOE investment[a]	Subsidies, guarantees, and other financial support[b]	Other public expenditure[c]	Total private sector	Estimated private investment[d]	Estimated private working capital / financing[e]
Demining	*492*	-	-	*492*	-	-	-
Emergency response and civil protection	*272*	*272*	-	-	-	-	-
Democracy, justice, and human rights	*22*	*22*	-	-	-	-	-
Telecom and digital	400	312	-	87	300	300	-
Total	**15,287**	**8,241**	**5,014**	**2,031**	**up to 11,000**	**~5,300**	**~ 5,500**

Source: Assessment team, based on data in sector templates prepared by GoU line ministries and coordinated by the Ministry of Restoration. Note that the analysis of distribution across expenditure types and private sector potential contribution is made by the World Bank team based on analysis of GoU monitoring data and other sources and is intended as an estimate to provide perspective on the nature of expenditure needs and contributions. Figures shown here are assessed priorities for 2024 and do not indicate the funding commitments mobilized to meet these priorities. Sectoral definitions used in this table are aligned with priority sectors as defined by GoU and do not match exactly with the structure and nomenclature of the RDNA3.

a. Public investment includes investment from central and local governments and SOEs as well as from international financial institutions and other donors and development partners.

b. Instruments include subsidies, grants, and other transfers to firms and households that are intended to enable private investment, including by reducing risks to credit provision and risks and costs of investment. This includes in agriculture: all projects other than technical assistance support (US$20 million); in housing: e-recovery, voucher compensation, preferential loans to rural developers, and various preferential mortgage programs; in industry and services: all projects other than technical assistance (US$10 million).

c. Other public expenditure includes non-capital expenditures by the state, excluding grants, subsidies, and other expenditures covered in the previous column.

d. Private investment includes investments by private firms and households, which are facilitated by the public financial support instruments (grants, loans, guarantees, etc.). Figures are estimates from the World Bank assessment team and calculated based on assumed multipliers on private capital mobilization from different support instruments.

e. Private working capital/financing includes expenditures made by firms for reconstruction and recovery needs as well as expenditures made by private households in the housing market. which are financed by private capital mobilized through instruments of public financial support (e.g., subsidized or guaranteed lending). Figures are estimates from the World Bank assessment team and calculated based on assumed multipliers on private capital mobilization from different support instruments.

f. Excludes US$3.56 billion in RDNA-related social transfers not included in GoU-identified sectoral priorities because they are established as an ongoing commitment in the state budget.

g. There are expected to be opportunities for private investment in the energy sector as part of recovery and reconstruction, although these are not captured in the analysis presented here as it is linked to sector-specific instruments (note: some programs under Industry and services sector could facilitate private investment in energy.

h. Investments and working capital facilitated through programs from the Ministry of Economy will not be restricted to the industry and services sector and the agribusiness sector and may also support infrastructure sectors like energy, transport, and construction.

i. Reflects expected investments by private telecommunications operators.

Principles and Opportunities for Recovery and Reconstruction

Guiding Principles

Guiding principles have already been adopted by the GoU and the international community.[65] These include partnership, reform focus, transparency, accountability, and rule of law; democratic participation; multi-stakeholder engagement; gender equality and inclusion; and sustainability. The key guiding principles of the government's recovery efforts so far have been to start immediately and ramp up gradually; grow prosperity in an equitable way; integrate into the EU and be consistent with and supportive of the accession path; build back better (for the future); and enable private investment and entrepreneurship.[66]

Challenges in post-war settings include limited resources, security concerns, political complexities, and social divisions and trauma. Securing adequate funding and resources is crucial for effective reconstruction, as is ensuring a safe and secure environment. Overcoming political challenges and ensuring inclusive decision-making processes are crucial as well. A successful recovery will require rebuilding trust, promoting social cohesion, and addressing the psychological needs of the affected population.

The previous assessments proposed a set of complementary recommendations based on international experience with post-war and post-disaster recovery and reconstruction efforts. The following points remain relevant for the RDNA3 (with more details available in RDNA2):

- *Leadership and coordination by the government and partners*
- *Balancing of urgent needs and medium- to long-term goals*
- *Differentiated approaches that prioritize impact and needs and advance decentralization*
- *Building back better for a more sustainable future and strengthening disaster and climate resilience, including through mitigation and adaptation efforts*[67]
- *Engagement and building capacity*
- *Inclusivity and equity*
- *Continuous data collection as well as monitoring and evaluation processes*

The remainder of this chapter highlights areas of particular focus in the short-term. They include accelerating broad reforms; maximizing private financing for reconstruction; and building back inclusively.

Accelerating Broad Reforms

Ukraine's ambitious reform and EU integration agenda, coupled with financial and technical assistance from partners, requires a strong government-led coordination architecture at political, strategic, and technical levels. This coordination architecture would facilitate dialogue between the GoU, partners, local authorities, private sector, and civil society on lessons learned, successes, challenges and solutions. It would also promote transparency and mutual accountability for measuring results by ensuring the

[65] URC2022, "Lugano Declaration," 2022, Link. The 2022 Lugano Declaration for the Reconstruction of Ukraine outlines several guiding principles for recovery and reconstruction.
[66] See Government of Ukraine, "Plan for the Recovery of Ukraine (ПЛАН ВІДНОВЛЕННЯ УКРАЇНИ)," 2022, Link.
[67] Please refer to sectoral chapters for specific principles highlighted, such as greening and decarbonization, and alignment with the EU laow, standards and *acquis communautaire*.

efficient collection of data for monitoring and reporting and by creating an evidence base for prioritization and investments.

Successful recovery and reconstruction, and progress toward EU standards, will require significant institutional reforms that both strengthen public sector capacity and facilitate a competitive private sector. Implementation of extensive reforms—both prior to the invasion and during the past two years—has played a major role in enabling the government to deliver on its core functions and initiate recovery. But further changes are needed. Experience from other post-war situations highlights the central role of government in managing resource allocation and ensuring coordination during the reconstruction process. Moreover, given the scale of financing needs and the capacity of the Ukrainian private sector, there is a significant opportunity and need to take full advantage of the potential for the private sector to finance and execute recovery and reconstruction investments. In this context, the Ukraine Plan —which will include economy-wide and sectoral reforms, increasing the capacity to absorb investment, and cross-cutting issues such as European integration, digital transformation, green transition, environmental protection, as well as human capital[68]— will play a critical role over the coming years. Programs under the Ukraine Plan include actions and reforms for the period 2024–2027, among them macro-financial scenarios for recovery and major sectoral reforms, with the view of priority sectors for development.

Reconstruction is an opportunity for, but also dependent on, strengthening of public sector capacity. In particular, reforms to strengthen the efficiency of public investment management, project implementation, and financial management will be critical to ensure effective implementation and make efficient use of budget and donor resources. To this end, the government's adoption of the Draft Roadmap for Reforming the PIM System as a crucial component of a sustainable and efficient public finance management system. Building effective investments is an important step in setting out both the framework for a public investment management system in which investment projects are planned based on strategic priorities (single, prioritized pipeline of projects), and a medium-term budgetary framework, in which projects are selected following with unified and transparent procedures and clear criteria and implemented within the planned timeframe and funding. Complementary reforms will also be needed to strengthen public procurement and public financial management. Moreover, institutional strengthening will need to cascade across both central and local governments.

Reforms to increase absorption capacity and speed up procurement processes are needed. There are bottlenecks that slow down receipt of necessary financing from IFIs and other financial parties, which have slowed down procurement even for urgent needs. In general, the following improvements could be considered, including (i) removing barriers to advanced procurement and simplify the procurement process to ensure procurement before loans are signed, to speed up implementation, (ii) simplifying further the authorization process and ensure clear procedures for grants, as currently there is no clear grant registration procedure, and (iii) implementation of electronic tools to track approvals and signatures, as well as introduction of signature delegation to avoid delays caused by business travel.

[68] Government Portal, "European Parliament Approves the Launch of the Ukraine Facility Program Worth EUR 50 Billion over 2024–2027," October 17, 2023, Link. Decentralization and regional policy are considered part of sectoral reforms.

Private sector and growth-oriented reforms are at the heart of recovery and reconstruction. As discussed in the previous subsection, the private sector will be an essential component in financing and executing Ukraine's recovery. Beyond that, however, recovery is dependent on accelerated and sustained private sector growth. Again, catalyzing the private sector is central to the Ukraine Plan and the associated Ukraine Facility, and will require implementation of a wide range of economywide, sectoral, and financial reforms.

Maximizing Private Financing for Reconstruction[69]

Recent analysis by IFC highlights the potential of the private sector to finance recovery and reconstruction investments, particularly if sufficient reforms and public measures are put in place to provide a supportive policy environment. IFC estimates that the private sector could finance between one-sixth and one-third of the needs identified in the RDNA2, depending on reforms and public interventions. The IFC assessment concludes that private investment will be more easily attracted to commercial sectors (agriculture, commerce and industry, banking) and housing in the current policy environment. However, an accelerated agenda of pro-competition reforms and deeper integration with the EU and international markets could significantly increase the private sector's role in reconstruction, especially in infrastructure sectors, while also creating additional investment opportunities beyond the needs outlined in the RDNA2. Reforms and public interventions that can boost private sector investment include the liberalization of energy prices; privatization or private participation in the ownership and/or management of state-owned assets in the transport and banking sectors; public investment in irrigation, and public-private partnerships (PPPs) in a variety of sectors, including traditionally state-dominated social sectors (water and sanitation, health, education). Beyond the needs identified in the RDNA2, and depending on which reforms and interventions are implemented, IFC identifies private investment opportunities between 2023 and 2033— supporting Ukraine's economic growth but not directly related to reconstruction—in the range of US$99 and US$282 billion (in constant 2023 prices).

The GoU has continued introducing financial incentives, structural reforms, and policies to maintain financial stability and strengthen the private sector during the war. For example, in the last two years, the GoU accelerated energy sector reforms by (i) approving its Energy Strategy 2050, which sets clear decarbonization targets and aligns with the EU Clean Energy Package; (ii) increasing maximum price caps in the wholesale electricity market; (iii) improving market liquidity and supporting investments in renewable energy (notably wind); and (iv) implementation by Ukrenergo of the key technical requirements to enable permanent interconnection with the European Network of Transmission System Operators for Electricity (ENTSO-E), which is an important step in integrating Ukraine's united energy system into both the regional electricity market and the EU internal market. Beyond the energy sector, an important reform supporting delivery of PPPs was enacted. The Law on Amendments to the Budget Code of Ukraine on the Regulation of Budgetary Relations in the Implementation of Contracts Concluded within the Framework of Public Private Partnerships specifies the conditions for increasing investment in infrastructure and facilitates provision of high-quality public services. In July 2021, the GoU removed its moratorium on domestic transactions involving small land plots by individuals, the first stage of land reform. Since January 1, 2024, the second phase of land reform has been underway; it will eventually

[69] This section draws on the IFC. "Private Sector Opportunities for a Green and Resilient Reconstruction in Ukraine," 2023, Link.

allow Ukrainian businesses to buy land, thus expanding opportunities for investment in agriculture. Interventions supporting private sector resilience include risk mitigation programs such as the government's "Affordable Loans 5-7-9" program, through which the GoU partially compensates the interest on loans to Ukrainian SMEs. Through this program, businesses received 78,303 loans from both private and state-owned banks for a total of UAH 263.1 billion as of December 25, 2023.[70] These are just a few examples of recent GoU policy changes that have created positive momentum to unlock private sector opportunities.

IFC notes that economic reforms will not be sufficient to attract private investment and may need to be combined with risk mitigation instruments. Government-backed incentives, subsidies, and/or infrastructure development can lower barriers to entry and reduce otherwise risk for businesses, while accelerating the adoption of climate-smart technologies. Public support is required to de-risk private investment in selected sectors. For example, infrastructure projects typically face uncertainty that extends over a long payback period, making them less attractive to private investors without publicly financed risk mitigation. Such interventions must be judiciously designed to avoid crowding out private finance but rather to mitigate enough of the risk to maximize private sector financing.

Building Back Inclusively

While large capital investments in infrastructure at national level are critical for Ukraine's overall recovery and economic growth, it will be small-scale recovery and reconstruction of infrastructure and housing in communities around the country that allows people to rebuild their lives and return to their homes. The RDNA3 investment priorities in housing reconstruction, energy, social infrastructure, humanitarian demining, and support to livelihoods and local economic development reflect this community approach. These interventions have to be combined with targeted capacity strengthening of local authorities for essential service provision, and with community mobilization to create the conditions that allow people to recover from the impacts of the war. Strengthening of local systems for managing and coordinating data and projects, along with efforts to promote community engagement and participation, is critically important to the recovery. Numerous partners support the GoU with community-level investments, and community-level recovery initiatives in 2023 have offered tangible improvements for Ukrainians in affected communities. The GoU has worked with partners to map the needs and resources of affected hromadas, launch local recovery planning, and develop local recovery coordination mechanisms. These efforts must be expanded in 2024 with rapid, focused, and efficient area-based early recovery support for people in communities affected by the war. Similarly, it will be important to provide comprehensive assistance and incentives to the local private sector to stimulate economic recovery and create job opportunities. Such efforts can empower communities, enhance resilience, and pave the way for long-term prosperity.

Effectively scaled up and accessible social protection programs are at the core of GoU's recovery agenda, which pays particular attention to vulnerable groups and their needs. Social services, including employment-related measures with underlying budgeting and estimated implementation priorities, are

[70] Government Portal. "Ministry of Finance: About 43,500 soft loans amounting to UAH 173.5 billion issued under Affordable Loans at 5-7-9% State Programme." December 25, 2023. Link.

indicated under the social protection and livelihoods sector. Health, well-being, and mental health services for the population, particularly for veterans and victims of gender-based violence (GBV), are accounted for under the health sector. To respond to the need of IDPs, the elderly, and people with disabilities and to address child-care issues, accessible and inclusive infrastructure aspects need to be reflected in temporary housing, emergency support options, affordable mortgages, compensations for housing repair and reconstruction, safety designs (including barrier-free parameters), construction of bomb shelters, and so on. Specific assistance for veterans is envisaged under the 2024 state budget allocations for the Ministry of Veterans Affairs; it focuses on the transition to civilian life (UAH 3.8 billion, or about US$100 million) and mental, physical, and psychological rehabilitation and professional adaptation (UAH 2.5 billion, or about US$66 million). Ministry of Social Policy programs with 2024 budget allocations include support for persons who have suffered from GBV (UAH 200 million, or about US$5.3 million) and provision of small group homes and housing for children (UAH 575 million, or about US$15 million). Civic and economic initiatives for youth that focus on physical culture and sports are essential for attracting youth to return to and grow in the country. The Ministry of Youth and Sports has a 2024 budget of UAH 94 million (US$2.5 million) for youth economic activities and a budget totaling UAH 5 billion (US$132 million) for physical culture and sports. The Ukraine Youth Fund and the Ukrainian Veterans Foundation have been established to attract and coordinate support to youth and veterans as alternative off-budget financing tools.

Displaced persons and returnees. There is a need to invest in housing, basic services, social protection, and livelihoods, all of which are regularly cited by refugees and IDPs as enablers of return, integration of IDPs and their durable solutions.[71] Partnerships between central- and local-level authorities, civil society, academia, and the private sector can help to design and deliver solutions that meet these needs with tailor-made packages to support communities. These support packages could also offer mental health and psychosocial support, assistance with livelihoods and business financing, and technical assistance to facilitate return and integration of refugees and IDPs.

Persons with disabilities. The rising number of persons with disabilities caused directly by the war highlights the importance of deinstitutionalization and community-based living for disabled persons in Ukraine. Socialization and adaptation should be at the core of any measures taken, with due consideration for creating accessible rehabilitation spaces; the primary aim is the return of such persons to active socioeconomic participation in their community. Establishing accessible and barrier-free environment for the persons with different impairments helps persons with disabilities maintain mobility and autonomous care skills, increases their motivation to maintain social contacts, and promotes their participation in the labor market, allowing them to contribute to economic growth and active decision-making in the community. Housing and workplace arrangement services should be introduced to facilitate rehabilitation and enable effective social and labor adaptation for persons with disabilities. The priority is to strengthen community-level facilitation by meeting the needs of those returning to their communities so they can live as independently as possible.

[71] UNHCR, Lives on hold: Intentions and Perspectives of Refugees and IDPs from Ukraine #4, Link.

Veterans and their families. Guaranteed access to housing and health services, rehabilitation, prostheses, essential drugs, employment opportunities, education/retraining options and prior consideration of the needs of the specified categories and personal life circumstances should underline any community support for veterans. Demobilization efforts and effective social and economic reintegration should take into account the changing demographic profile; moreover, the implementation of the transition strategy from armed service to civilian life must include psychological and legal assistance; social, professional, and skill development; and cultural adaptation and life planning support—not just for members of the military and war veterans, but also for their family members, and family members of fallen soldiers.

Gender-specific impacts. Gender equality and nondiscrimination reforms need to be an integral part of recovery and reconstruction planning, with civil society organizations and advocacy groups that represent women and LGBTIQ+ individuals participating fully and equally in state and local planning processes. Gender equality and a women's empowerment agenda—including women's expanded access to and inclusion in the labor market and business in order to build short- and long-term economic security—are priorities to ensure that building back better in Ukraine proceeds in a gender-responsive and inclusive way. Within the recovery process, it will be important for women to be engaged in decision-making at all levels where gender-responsive planning, budgeting, and monitoring tools are applied. Among the most urgent issues is how to prevent and respond to GBV that is a direct result of the war or indirectly due to the stressors of war.

Youth and children. High-quality in-person education with reliable security conditions allows children to socialize with peers and lays a foundation for the large-scale return of children and young people to the country and for their future productivity and employment. The functions of the community-based youth infrastructure should be strengthened through counseling and support groups to address mental health issues, social and physical activities for displaced and idle youth, and training and guidance to promote youth employment. These measures will contribute to the growth agenda and ensure a future-oriented Ukraine by drawing the country's young people into both national and local-level recovery planning and reconstruction. At the community level, the system of childcare and child rearing must be transformed so that it meets the country's economic development needs; contributes to the development of social, educational, medical, and other services at the local level; and protects the right of children to grow up in a family.

Elderly. A combination of community-based social services, employment assistance programs, and investment in inclusive infrastructure with barrier-free public transportation will meet the elderly populations' critical needs and ensure attainment of the long-term goal of deinstitutionalization. Efforts to strengthen cooperation among neighboring communities, or indeed to establish redistribution mechanisms between communities, will ensure equitable access to service provision.

MACROECONOMIC IMPACTS

Economic and Poverty Update

Despite Russia's on-going invasion of Ukraine, economic growth in 2023 exceeded expectations. In 2022, the widespread destruction of infrastructure, internal and external displacement, and attacks on the energy infrastructure had led to a 29.1 percent GDP contraction; but Ukraine's economy has since shown signs of recovery and resilience. More reliable electricity supply, an exceptional wheat harvest, and the steadier receipt of external assistance have allowed for gradual growth recovery in 2023, with GDP expanding by 19.5 percent and 9.3 percent in Q2 and Q3, respectively (Figure 22). Yearly growth for 2023 is estimated at 4.8 percent, with potential to the upside. This constitutes a significant upward revision from the 2 percent growth rate projected in mid-2023. On the demand side, growth was driven by continued strong public consumption and a modest expansion of exports; the supply side was helped by better-than-expected agricultural output (

Figure 23) and continued growth in sectors supporting the war economy. Growth in 2024 is expected to be slower than in 2023: base effects and one-off factors, including the agricultural harvest, will subside, whereas key growth constraints related to the invasion, low investment, constrained exports, and the need for a restrictive monetary policy, will remain.

Monetary policy has remained restrictive throughout 2023, which has contributed to a substantial decline in inflation and facilitated the transition to a slightly more flexible exchange rate regime. The National Bank of Ukraine entered 2023 with an exchange rate pegged to the US dollar and a key policy rate of 25 percent. This policy stance helped to anchor inflation expectations, attract bank deposits, and increase private savings, thereby contributing to a gradual decline in inflation throughout 2023. At the end of 2023, inflation was estimated at only 5.1 percent, compared with 26.6 percent at the end of 2022. The decline in inflation was also aided by conducive supply-side factors, as high agricultural yields and export bottlenecks boosted excess domestic food supply. With the decline of inflation exceeding expectations (mid-year World Bank projections had end-of-year inflation rates at 14 percent), the National Bank of Ukraine has taken steps to adjust its monetary policy, gradually lowering the nominal policy rate to 15 percent and transitioning to an exchange rate regime of managed flexibility. Following the implementation of this system, the exchange rate temporarily appreciated, dropping below UAH 36 per US$1 from the pegged rate of UAH 36.57 per US$1; but it has been depreciating since late November 2023. Ukraine's cash exchange rate—the rate at which households can sell foreign currency—has diverged from the official rate since February 2022, but the difference has narrowed since the transition to a more flexible regime; in early January 2024, average cash selling and buying rates differed from the official rate by 1.3 percent and 2.3 percent, respectively.

After recording a surplus in 2022, Ukraine's current account turned into a deficit in 2023. By November 2023 Ukraine's trade deficit had reached US$34 billion, which exceeded the deficit during all of 2022 by US$9 billion. The increase in the trade deficit was driven by a US$6 billion reduction in merchandise

exports, partially resulting from continued export bottlenecks, including the discontinuation of the Black Sea Grain Initiative, blockades of Ukrainian agricultural exports by some neighboring countries, attacks on the trade infrastructure, and a continued increase in imports. While Ukraine was able to open new shipping routes through the Black Sea, these were unable to compensate for the loss of volume caused by the other shocks to export logistics. At the same time, Ukraine received US$20.6 billion in secondary income, almost US$1 billion less than in the same period in 2022. Foreign aid through loans was sufficient to finance the current account deficit while accumulating over US$10 billion in reserves, which reached a historic peak of US$41.7 billion in July 2023 before decreasing modestly to US$40.5 billion by January 1, 2024.

Greater needs for defense expenditure necessitated a significant revision of the 2023 budget and an expansion of the fiscal deficit. Nominal expenditure in 2023 reached UAH 4.4 trillion, 46 percent higher than in 2022. This increase was driven by higher spending on goods and services, primarily for defense needs, which reached UAH 1.7 trillion, 97 percent more than in 2022. Capital expenditures and interest payments also increased, albeit from a significantly lower base. Total revenue (excluding grants) reached UAH 2.7 trillion (56 percent more than in 2022). Most of the increase is accounted for by UAH 840 billion in profit transfers from budgetary institutions, including the National Bank of Ukraine. Tax revenues broadly increased in line with inflation and were aided by a return to prewar excise duty and VAT rates for motor fuels starting July 1. The high expenditure outturn necessitated a budget revision for 2023, enacted in October, which targets a general government fiscal deficit (excluding grants) of 27 percent of estimated GDP.

External aid through grants and loans was the main mechanism used to finance the budget deficit. In 2023, international partners provided Ukraine with the equivalent of US$11.9 billion (6.7 percent of GDP) in grants and US$29.7 billion (16.8 percent of GDP) in loans, which in addition to financing the deficit covered 1.1 percent of GDP in external debt amortization. Domestic borrowing in local and foreign currency provided 3.7 percent of GDP in financing net of amortization.

Macroeconomic Risks Overview and Policy Recommendations

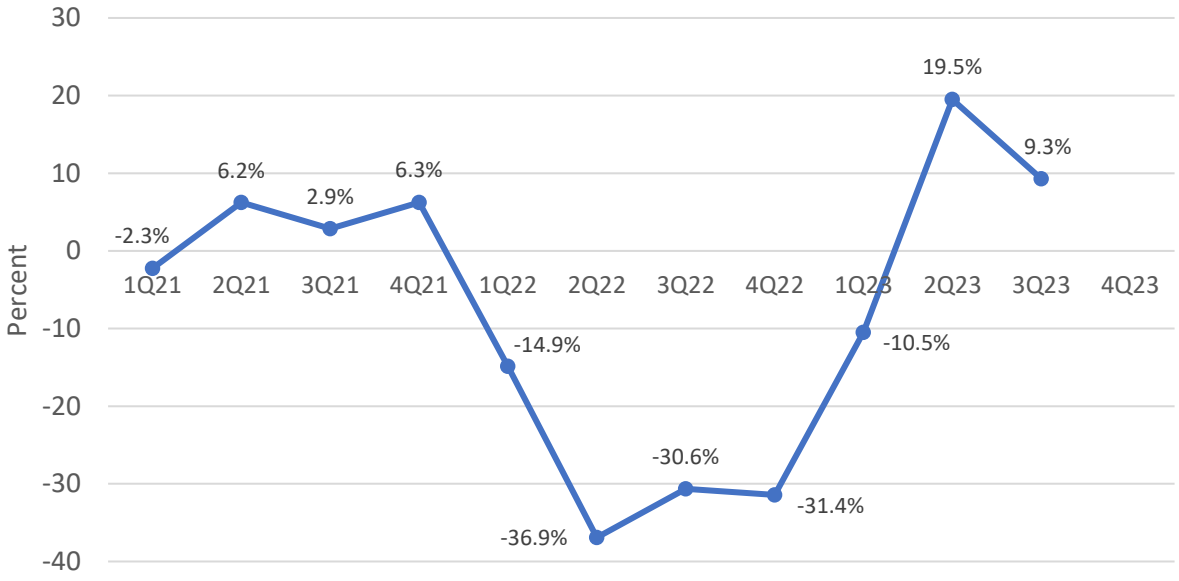
The 2024 state budget reflects the current outlook of continued hostilities throughout the year. The invasion has generated elevated expenditure needs for defense, amounting to UAH 1,692.6 billion (US$46.3 billion), or a forecasted 22.1 percent of GDP. This is less than the UAH 1,973 billion (US$54 billion) that was budgeted for 2023, but it remains the main expenditure item. Social protection expenditure is critical for restraining the rising poverty and dampening the negative effects of unemployment, which erode the social contract. Accordingly, the 2024 budget has allocated UAH 469.4 billion (US$12.8 billion) to social protection, an amount similar to the UAH 469.3 billion (US$12.83 billion) spent in 2023. Interest payments are budgeted to increase from UAH 253.9 billion (US$6.9 billion) in 2023 to UAH 422 billion (US$11.5 billion) in 2024, putting additional pressure on the government budget. In addition, Ukraine's moratorium on external commercial debt payments is set to expire in August 2024, and Ukraine will be liable to resume significant debt service payments unless it reaches an agreement with creditors on a debt treatment or an extension of the moratorium. The pressures on the budget are reflected in the fiscal deficit (excluding grants), which the 2024 state budget expects to be 20.5 percent of GDP, compared to the targeted 27 percent of GDP in the October revision of the 2023 budget. Similar

to the share in the 2023 budget, 95.1 percent of the 2024 budget is channeled to current expenditure, and only the remaining UAH 176.8 billion (US$4.8 billion) is budgeted for capital expenditure.

The 2024 budget plans for the receipt of US$37.3 billion in external aid (loans and grants) to finance the deficit, but these resources have not been committed yet. Specifically, critical external financing sources from the United States and the European Union remain uncertain at the time of writing and it is unclear if Ukraine will receive sufficient aid in 2024 to meet its budgetary needs. Should aid subside, the Ukrainian authorities could partially meet the increased needs from domestic sources. For example, in 2023, a redistribution of income tax revenue from local budgets to the state budget added US$0.7 billion in state revenue. Yet such sources cannot compensate for all external financing. Therefore, where available, external financing needs to be prioritized for meeting budget needs before being allocated to additional reconstruction and capital expenditure. In addition, the Ukrainian authorities will need to mobilize additional revenue. The implementation of the initial steps in the National Revenue Strategy contributes toward this goal by broadening the excise base and collecting revenue from additional taxes on the banking sector.

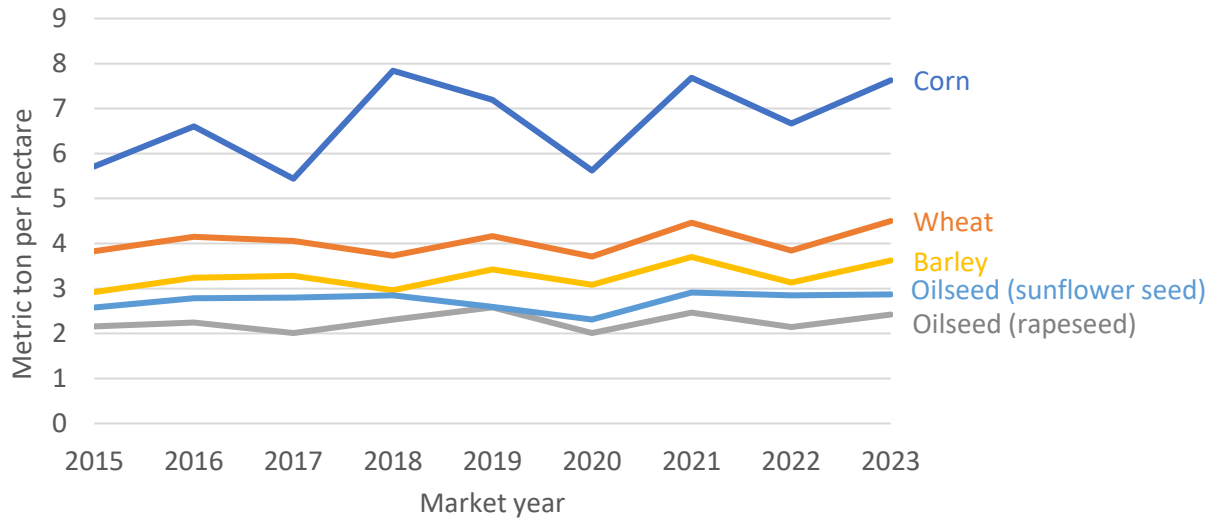
The public sector has an instrumental role to play in the reconstruction of Ukraine once hostilities end. Restoring Ukraine's productive capacity and reversing the destructive impact of the invasion will require significant public intervention, such as rebuilding essential infrastructure, encouraging financing of promising businesses, and supporting the financial sector as the full financial cost of the invasion is revealed. Recognizing the limited fiscal space while hostilities continue, Ukrainian authorities can prioritize less fiscally demanding policies that create an environment conducive to donor support and private sector participation in reconstruction. Such policies, coupled with domestic revenue mobilization, will enable the eventual successful reconstruction of Ukraine.

Figure 22. Ukraine real GDP growth, year-on-year (YoY)



Source: State Statistics Service of Ukraine.

Figure 23. Yield by Commodity



Source: U.S. Department of Agriculture, Foreign Agricultural Service.

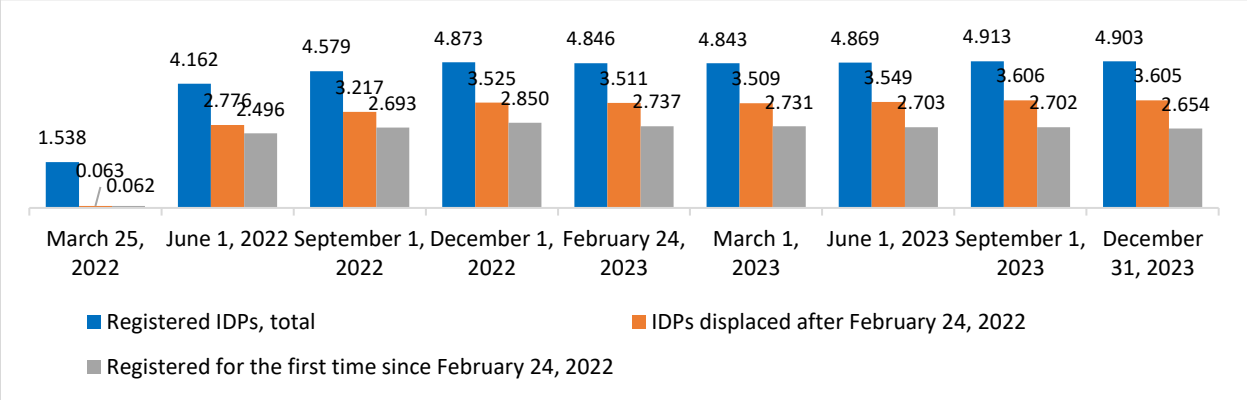
HUMAN IMPACT ASSESSMENT

Displaced Persons and Returnees

Summary

At the start of the war, 13.5 million people—approximately one-third of Ukraine's population—were displaced. Some have since returned to their places of origin. As of December 2023, an estimated 5.9 million people were recorded as refugees across Europe,[72] compared with the 8.1 million reported in RDNA2 as of February 2023. As of October 2023, IOM estimated 3.7 million internally displaced persons (IDPs), compared to 5.4 million people in the RDNA2 report.[73] The number of individuals officially registered as IDPs with the Ministry of Social Policy has been increasing since February 2022, peaking just under 4.9 million in December 2022; fluctuating, and reaching 4.9 as of December 2023 (Figure 24).

Figure 24. Number Of Registered IDPS In Ukraine (Million), March 25, 2022–December 31, 2023



Source: Ministry of Social Policy of Ukraine, "Dynamics of Key Indicators That Characterize the State of Registration, Re-registration and Record Keeping of Internally Displaced Persons for the Period of Martial Law."

Both external and domestic factors have driven the return of displaced persons to their places of origin. The IOM Displacement Tracking Matrix (DTM) identifies five drivers for returns: livelihoods; utilities and services; residential destruction; safety and security; and public life (social tensions).[74] The proximity of hostilities is the dominant factor in refugees' decision about whether to return to Ukraine.[75] UNHCR's periodic intention surveys find that 76 percent of refugees from Ukraine and 82 percent of internally displaced persons hope and intend to ultimately return to their home in Ukraine, and that the key enablers of sustainable return – apart from security and safety which is cited by 95 percent - are access to housing, basic services and jobs.[76] Refugees who have undertaken short visits to Ukraine, to visit family members and their community, are more likely to express an intention to return compared to those who have not been back to Ukraine since they fled.[77] Decisions may also be affected by the difficulty of returning to host countries after visits to Ukraine. Among people who returned to host countries following visits to Ukraine,

[72] UN High Commissioner for Refugees (UNHCR), Operational Data Portal, Link.
[73] IOM, "Ukraine—Returns Report—General Population Survey Round 14 (September–October 2023)," November 10, 2023, Link,
[74] IOM, "Ukraine: Conditions of Return Assessment Factsheet—Round 3 (June 2023)," Link.
[75] Other factors include integration into host countries, education and employment opportunities in host countries, and reunion with family members in Ukraine.
[76] UNHCR, Lives on hold: Intentions and Perspectives of Refugees and IDPs from Ukraine #4 , Link.
[77] Ibid.

the share reporting challenges tripled between Q4 2022 and Q3 2023, from 6 percent to 18 percent. These challenges included revocation of legal status, suspension of social protection benefits, and obstacles when reentering host countries.[78]

Observed Impacts

To receive IDP assistant, IDPs must be registered and have an IDP certificate. IDPs had been eligible for a monthly allowance and housing support, but in 2023, the GoU changed the criteria for aid eligibility, namely revising the residency criteria, including an assessment of financial and property status, limiting the payment term to a six-month period (under certain conditions, this term may be extended), and also introducing current and preventive verification mechanisms. The aim is to reduce the expected number of IDP beneficiaries in 2024 to 170,000, down from 2.6 million in 2023 (according to the ombudsman for human rights).

IDPs were experiencing employment challenges before February 2022. In 2020, 60 percent of IDPs ages 20–64 were employed, compared to 69 percent of peers in the general population. This discrepancy represents an improvement in IDP employment from prior years.[79]

The average IDP household size is 3.3 individuals; 43.6 percent of IDPs are of working age; 21.2 percent are children; and 26 percent are elderly.[80] This indicates that these households tend to be larger compared to the average household size in Ukraine before the invasion (2.58 persons).[81]

The state provides all displaced persons with monetary assistance. Disabled persons and children under 18 receive UAH 3,000 (US$83) monthly, while adults receive UAH 2,000 (US$55) monthly for the duration of displacement.[82] However, the cash transfers are insufficient to meet essential needs.

The program supporting IDPs has become fiscally unsustainable. In 2022, IDP cash transfers totaled UAH 53.5 billion (US$1.5 billion), half of which was funded through external aid. Monitoring and verification of IDPs was also inadequate, and some who moved continued receiving cash transfers.[83] Enhanced targeting since July 2023, however, has improved the program's efficiency and increased its fiscal sustainability.

Affordable and accessible housing is a challenge for IDPs, especially the most vulnerable. Most IDPs temporarily relocate to reside with family and friends or find rental or other long-term accommodations. However, approximately 120,000 remain in collective sites on a permanent basis. These individuals tend to be the most vulnerable: the elderly, solitary persons, and sick and/or disabled persons.[84] Few IDP households can afford to purchase a home, and rental housing is both scarce and expensive in areas of

[78] UNHCR Operational Data Portal, "Displacement Patterns, Protection Risks and Needs of Refugees from Ukraine: Regional Protection Analysis #3," November 2023, Link.
[79] IOM, "National Monitoring System on the Situation with IDPs: Summary of Key Findings," Link.
[80] IOM DTM. 2023. Ukraine — Snapshot report: Population Figures and Geographic Distribution — General Population Survey Round 13 (11–23 May), Link.
[81] State Statistics Service of Ukraine. 2022. Sex and age population structure, Link.
[82] Cabinet of Ministers of Ukraine. March 2022. Decree 332 "Some issues of payment of accommodation allowance to internally displaced persons", Link.
[83] Law and Business, "Uncontrolled Payments to IDPs Deplete the State Budget," July 5, 2023, Link.
[84] IMPACT REACH Initiative. April 2023. Collective Site Monitoring Round 7, Link.

high IDP concentration. The most vulnerable IDPs struggle to find affordable rental housing that meets the needs of the elderly, those with disabilities, or others with limited mobility.

Unemployment and underemployment are more extreme among IDPs. As of January 2023, only 30 percent of IDP households had a salary as their primary source of income,[85] and 24 percent relied on government transfers for income. Many employers are reluctant to hire IDPs, seeing them as transient. IDPs also often lack necessary documentation for formal employment, such as proper termination from previous places of work in their home regions. To mitigate this challenge, in 2022 the government introduced an employer subsidy—UAH 6,500 (US$178) per month for two months—for hiring IDPs.

For households with children, employment difficulties are exacerbated by schooling issues. Host communities in the east of the country rely on online schooling, and preschools in the country's center and west lack the capacity to absorb IDP children. Beyond slowing integration and learning among the youngest IDPs, this creates a barrier to employment for IDP caregivers, who are mostly mothers.

Recovery and Reconstruction Needs, including Build Back Better

Evaluate the effectiveness of the IDP cash assistance program, the adequacy of cash transfers to meet the basic needs of low-income IDPs, and the fiscal sustainability of the program. Through Resolution of the Cabinet of Ministers No. 709, dated July 11, 2023, the GoU has enhance targeted support to IDPs. It should also increase the focus on housing rental support, since the program does not currently account for geographic variations in rents; and it should offer additional childcare options, so parents have opportunities for employment and the associated income.

Construct or renovate kindergartens and schools in overstretched IDP host communities and expand access to home-based care. IDP families—mostly women and children—are clustered in host communities with inadequate capacity for childcare, preschool, and secondary education. Local governments should be supported in building more kindergartens and bomb shelters to meet security requirements; in expanding the Municipal Nanny program to cover the cost of a nanny for children six and under (it currently applies to children three and under); and in facilitating the aggregation of home care beyond individual caregivers.

Provide IDPs with vocational training for re-qualification and with microfinance for entrepreneurship. NGOs and voluntary organizations that have been aiding IDPs should move beyond humanitarian relief to promote livelihoods by training IDPs for re-qualification and providing microfinance for small-scale entrepreneurial activities. Technical and vocational education training (TVET) institutions should also be utilized.

Prepare a time-bound strategy to relocate individuals residing in collective sites. Most IDP households stay temporarily at collective sites and then relocate to family and friends, rental housing, or other longer-term accommodations. The estimated 100,000-plus individuals who remain at these sites are among the most vulnerable and include the elderly, solitary persons, disabled persons, and those unable to afford

[85] It should be noted that only 45 percent of non-IDP households had a salary as their primary source of income; this figure speaks to the widespread unemployment and underemployment in Ukraine during the war. IOM DTM. 2023. Ukraine — Internal Displacement Report — General Population Survey Round 12 (16–23 January 2023). Link.

housing at market rates. A time-bound action plan is needed to relocate these individuals to affordable and accessible housing and/or to convert collective site buildings into appropriate long-term housing. Instruments for subsidizing rent for IDPs and other vulnerable persons should be developed as one of the tools for providing social housing.

Youth (Aged 14 – 35) and Child Protection and Rights

Summary

This section focuses on the youth demographic as defined by the United Nations—i.e., individuals ages 15 to 24; but it also includes information on those 14 to 35, which is the definition of youth in Ukraine.[86] This age bracket represents a crucial phase of transitioning from childhood to adulthood, marked by selection of educational paths, entry into the workforce, and career-related decision-making.

Before February 2022, Ukraine's network of youth centers provided educational and career guidance and legal aid for vulnerable youth. Ukraine had also moved toward inclusive classrooms for children with disabilities, though inaccessible infrastructure and transport and lack of adapted materials remained problems.

Before February 2022, Ukraine was home to 3,893,000 young people ages 15 to 24 (representing 9.5 percent of the population) and to 10.5 million people ages 14 to 35 (representing about one-quarter of the population).[87] Two-thirds (67 percent) of young people lived in cities. The share of males in this age group slightly exceeded the share of females at 51.5 percent.[88] Following the decade-long decrease in birthrate,[89] since aggravated by the war,[90] the number and share of youth is expected to gradually decrease in the future.

In 2022, 58,630 children were in institutions with 24-hour stay, among them 5,626 orphans (children deprived of parental care). Of this number, 4,909 children were under full state support in institutions. As of August 2023, 5,083 children were under full state care in institutions (including 1,309 children with disabilities) and need placement in noninstitutional educational settings.[91]

Observed Impacts

Since February 2022, children and youth have been heavily impacted by displacement. Some 37 percent youth have experienced internal displacement; this share consists of 20 percent who have returned to their places of origin, 11 percent who intend to return, and 6 percent who do not intend to return. According to the Ministry of Social Policy, as of December 2023, 1.04 million children under the age of 18 were registered as IDPs. UNHCR data shows that 36 percent of the refugee population are children.[92]

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[86] United Nations Department of Economic and Social Affairs (UNDESA), "Definition of Youth," Link.
[87] Data on population are from the State Statistics Service of Ukraine (SSSU) and are as of January 1, 2022.
[88] SSSU provides population data, including age and regional distribution, that are estimations based on data from the last general census, conducted in 2001. Thus the real number of young people and their distribution may differ from SSSU estimates. After the war began, SSSU stopped assessing the size of the population and surveying households, so there is no information on the number of young people after March 1, 2022.
[89] SSSU, 2022 data.
[90] Opendatabot, "The Birth Rate in Ukraine Has Decreased by 28% Since the Beginning of the Full-Scale War," July 31, 2023, Link.
[91] Data are from the Ministry of Social Policy of Ukraine
[92] UNHCR, Ukraine Situation Regional Refugee Response Plan (January-December 2024), Link.

According to the Ministry of Youth and Sports, about 2 million youth ages 14 to 35 are still abroad, which is around 20 percent of this age group. In addition, an unknown number of youth up to the age of 35 are in military service, including those conscripted to temporary service in 2020–2021 and those who volunteered or were conscripted after February 2022.[93]

Children and youth have suffered learning losses and increased mental health challenges. Data from the 2022 iteration of the Program for International Student Assessment (PISA) found that learning levels decreased compared to 2018—in math by 12 points, in science by 19 points, and in reading by 38 points.[94] Parents and teachers perceive deteriorating mental health and significant learning losses owing to the COVID-19 pandemic and subsequent invasion. Eighty-five percent of surveyed parents agreed that the pandemic- and war-related knowledge and skills gap would have an impact on their child's education and future.[95] Nearly two-thirds of parents (61 percent) believe their children have signs of stress and poor sleep; 24 percent of young people ages 14–24 believe their psychological state has deteriorated; and 11 percent believe they need psychological help.[96]

Reintegration of displaced youth into secondary, vocational, and higher education systems will be critical for long-term employment, productivity, and earnings. The government is developing plans and tools for addressing war-related learning losses. Ukraine's 2019 Strategy for Development of Educational Assessments in Secondary Schools by 2030, not yet implemented, is being updated for rollout.[97] A learning assessment toolkit for grades 6–8 has also been developed.

In-person learning remains disrupted by a lack of equipped and accessible bomb shelters with enough space for all students. Students can access in-person classes only if educational institutions are equipped with bomb shelters – and if these shelters are too small to accommodate all students and school staff, education takes place in shifts. As a result, the GoU and local governments have prioritized the establishment of bomb shelters in educational institutions across the country: as of December 2023, 80 percent of educational institutions in Ukraine were equipped with bomb shelters, compared to 68 percent in December 2022. However, many of these shelters are established in the basement of the institution and lack adequate equipment for the well-being of students. Many shelters are not guaranteed to be secure, as their construction has not been systematically assessed against the standards set by authorities. In addition, important geographical disparities remain: as of May 2023, only 54 percent of schools in Odeska, 41 percent in Dnipropetrovska, 23 percent in Mykolaivska, and 5 percent in Kharkivska had shelters, per Ministry of Education and Science data. Therefore, online learning remains a defining feature of the Ukrainian education system. According to the Ministry of Education and Science, as of September 2023, nearly two million children, more than 50 percent of the 3.837 million children enrolled in Ukrainian schools, remain reliant on online or blended education, with 2,321 schools across the frontlines closed for safety reasons. Yet, virtual learning infrastructure is underdeveloped, leaving few learning opportunities

[93] Access to data on the general mobilization and those who volunteered for the military is restricted.
[94] UNICEF, "Education Survey Reveals Impact of War on Ukraine's Students," December 5, 2023, Link.
[95] Cedos, "War and Education: How a Year of the Full-Scale Invasion Influenced Ukrainian Schools," March 21, 2023, Link.
[96] United Nations Population Fund (UNFPA), "Impact of the War on the Youth in Ukraine," 2023, Link.
[97] Ukrainian Center for Educational Quality Assessment, "Strategy of Educational Assessments in Ukraine until 2030," July 11, 2019, Link.

for students without access to bomb shelters or undamaged, well-staffed schools, for internally displaced students, for those with disabilities, or for those in areas not under government control.

Existing legislation establishes broad categories of youth eligible for post-secondary financial support, such as orphans, those in active combat areas, those with war-related disabilities, and others. But current levels of support are below the subsistence minimum and inadequate to cover expenses.[98]

Educational continuity poses an additional challenge for refugee children and youth. In European countries, in-person participation in the national secondary education system is usually compulsory. Students may continue with their Ukrainian education while engaging in the host country's school system, though participation in two educational programs increases the pressure and stress for students and their parents. Those who continue with the Ukrainian education system may choose online learning, homeschooling,[99] or an external education approach.[100] According to UNHCR's study, only about half of Ukrainian refugee children across Europe were enrolled in schools in host countries for the 2022-2023 academic year.[101] As of May 2023, approximately 780,000 Ukrainian refugee students had been integrated into other EU school systems. There is a significant risk, however, that such students will enroll in foreign universities and not return to Ukraine. This trend would worsen the demographic and human capital situation in Ukraine. In turn, this would impede Ukraine's potential to recover from the consequences of the war. No data exist on the number of Ukrainian students who continue to participate in the Ukrainian education system from abroad.

Financial and human resources to support vulnerable youth have been diminished, for example, for coordinating volunteers and delivering humanitarian aid, and youth center buildings have been damaged, destroyed, or repurposed. Of 300-plus youth centers, 14 have been destroyed and 24 damaged, while 64 are located in territories temporarily not under government control. Local government financing for youth policy and programs was also cut by 36 percent in 2022. As of 2023, more than 120 youth centers and more than 140 youth spaces continue to operate and have almost fully resumed their work.[102]

Despite the challenges, many young people have played a role in emergency response as volunteers, helping to distribute humanitarian aid and supporting vulnerable populations. Since February 2022, the

[98] Subsistence minumum is UAH 2684 per month whereas the unversity social stipend is UAH 540 - 1180 per month and the academic scholarship UAH 1,250 - 2,000 per month depending on education level.
[99] Homeschooling involves the independent mastering of the school curriculum by a student under the guidance of parents or guardians, while being affiliated with a school. Parents or guardians teach the educational material, while teachers draw up an individual curriculum and provide consultations. Assessment of academic achievement takes place at least four times a year, and if students receive an unsatisfactory grade, they must return to school.
[100] The external education approach involves independent study of the school curriculum without school affiliation. Students take tests once a year and consult with their teachers. According to Ukrainian law, only children who belong to certain categories are eligible for this approach.
[101] UNHCR: "Education on Hold: Addressing barriers to learning among refugee children and youth from Ukraine – challenges and recommendations", Link. UNHCR: Education on hold: Education Policy Brief (September 2023), Link.
[102] Ukrinform, "Maryna Popatenko, Deputy Minister of Youth and Sports: Young People Are Interested in the Reconstruction of Ukraine, so We Must Create Such Conditions for Them to Return," February 27, 2023, Link.

number of young people serving as volunteers has increased substantially: one survey shows that 30 percent of young volunteers volunteered for the first time in 2022, compared with 6 percent in 2021.[103]

Most children have witnessed traumatic events or suffered losses, mistreatment, or violence as a result of the war. UNICEF analysis suggests the percentage of children living in poverty has almost doubled from 43 percent in 2021 to 82 percent.[104] The UN's independent international commission of inquiry into Ukraine has documented legal and political measures against Ukrainian children deported to the Russian Federation. According to Article 8 of the Rome Statute of the International Criminal Court, illegal deportation or transfer or illegal deprivation of liberty is a war crime; according to Article 6, forcible transfer of children from one ethnic, religious, racial, or national group to another constitutes genocide.[105] The government is taking all necessary measures to ensure the return of children who were taken to Russia or Belarus. As of December 2023, 19,546 children had been deported and 387 returned;[106] 21,074 children had disappeared and 2,237 found;[107] and 1,152 children had been injured and 511 killed.[108]

Taking into account the need to approximate EU standards and align to the requirements for EU accession in social support for children in Ukraine, the Ministry of Social Policy is implementing a comprehensive policy aimed at placing children who are evacuated in family-type settings rather than institutions. One of the critical factors in this regard is the availability of appropriate housing; the lack of housing with a sufficient area for large numbers of children is a key impediment to such arrangements.

Recovery and Reconstruction Needs, including Build Back Better

Strengthen support for online education in zones of recent or ongoing hostilities and expand opportunities for distance learning and access to technology and devices. In areas where schools have been damaged and staff depleted, digital education centers could provide reliable and secure access to online education. Students from vulnerable groups, such as IDPs, those with disabilities, and those living in areas temporarily not under government control, would also benefit from online learning opportunities and distribution of laptops.

Strengthen the existing youth infrastructure by supporting cooperation between authorities and the NGO youth sector, and by working to involve young people in decision-making about the recovery process.

Assess the needs of children and youth at the local level and involve youth organizations in planning. Hromadas should introduce feedback mechanisms to monitor the evolving needs of young people, particularly the most vulnerable; and both national and local youth organizations should be included in planning for recovery and reconstruction.

Repair and reconstruct multipurpose youth centers. During the war, many youth centers have been damaged or repurposed for broader humanitarian response efforts, with youth-oriented services largely

[103] United Nations Development Programme (UNDP), "Impact of War on Youth in Ukraine: Findings and Recommendations," 2023, Link.
[104] UNICEF: "War in Ukraine pushes generation of children to the brink, warns UNICEF", 21 February 2023, Link.
[105] United Nations, "Rome Statute of the International Criminal Court," 1998, Link.
[106] National Information Bureau data.
[107] National Police of Ukraine data.
[108] Office of the Prosecutor General data. Exact data on the number of injured are not available, given ongoing fighting and the GoU's temporary loss of control over some territories.

discontinued. A priority investment program to repair and reconstruct these centers to better serve ongoing humanitarian efforts and restore youth services is recommended.

Implement youth economic empowerment programs through training in entrepreneurship and job acquisition. As a result of massive displacement within and outside of the country, there is a large and growing gap between labor market supply and demand. One way to bridge this gap is to improve competencies for youth employment and entrepreneurship, in part by building partnerships with the business sector and offering high-quality internship programs.

Revise legislation on financial support for post-secondary education of vulnerable youth. Existing legislation establishes broad categories of youth eligible for post-secondary financial support, but current levels of support are below the subsistence minimum and inadequate to cover expenses. Low-income students within these categories should be targeted with more effective coverage.

Pursue deinstitutionalization of children. This should be done for human rights reasons, as part of Ukraine's candidacy for EU accession, to save the GoU money (the average cost of a child's stay in a social protection institution is approximately US$409.8/month, compared to US$276 a month in a family-type children's home), and to meet the needs of the labor market.[109]

Develop housing for family-type children's homes. This is a priority of the Ministry of Social Policy. The goal is for children in institutions in Ukraine or returning from evacuation abroad to be housed in such settings.

Elderly Persons

Summary

A significant proportion of the elderly (individuals ages 60 and above) are impoverished and unable to meet basic needs. Compared to the general population, they are less able to purchase winter outerwear and footwear once in five years, consume a protein every other day, or adequately heat their homes.[110] Existing social benefits are insufficient to resolve this issue.

The elderly have been disproportionally impacted by the war. They constitute 25 percent of Ukraine's population yet account for 35 percent of the civilians killed in the first year of fighting.[111] They are now the largest share of the population in areas affected by war, close to the front lines, or temporarily not under government control. According to HelpAge International, Ukraine has the largest percentage of older people impacted by ongoing war in the world.[112]

Observed Impacts

The elderly in war zones face severe hardships and high risk; many have been unable or unwilling to evacuate, given logistical challenges and displacement uncertainties. Those living in active combat zones, on the shifting front lines, or in territories temporarily not under government control face

[109] Ministry of Social Policy of Ukraine data.
[110] SSSU, "Resident Population of Ukraine by Sex and Age, as of January 1, 2022," Link.
[111] Office of the High Commissioner for Human Rights, "The Human Rights Situation of Older Persons in Ukraine in the Context of the Armed Attack by the Russian Federation," May 2023, Link.
[112] HelpAge International, "Ignoring the Rapidly Ageing Population Will Jeopardize Ukraine's Recovery," June 20, 2023, Link.

challenges with housing, with access to food, medicine, and health services, and with feelings of loneliness and isolation.

The war has exacerbated poverty among the elderly. A survey conducted in December 2022/January 2023 found that 61 percent of elderly women and 46 percent of elderly men could not afford to meet basic needs.[113] Accessible housing is typically unavailable, and affordable rental housing is scarce for those on pensions below the poverty line. About a quarter of elderly-headed households face unmet food security needs.[114]

Housing and transport infrastructure is unaffordable and/or inaccessible for the elderly. Many elderly face mobility issues that render IDP transport and housing options inaccessible and unaffordable. Lack of affordable transport has been a barrier to health care for the elderly, especially as staff shortages have concentrated care in larger urban areas. Elderly displaced without family tend to remain for long periods in the "temporary" collective sites used for IDP transit.

The elderly face discrimination and other difficulties in the labor market. Many elderly adults seek work to supplement meager pensions, but face discrimination based on age, health status, and disabilities. Many who do work are in low-skill jobs that are informal and insecure. Enhanced digital literacy and professional retraining might help older workers, but data on the use of relevant State Employment Service programs are not disaggregated by sociodemographic characteristics, making it difficult to analyze programs' effectiveness. The pension system needs to be adapted to facilitate prolonged working lives in the formal sector.

The elderly often lack access to important information. Information about evacuation procedures, temporary accommodations, and long-term services for the elderly in new locations is either not available or difficult for the elderly to access digitally. Procedures to apply for social benefits, such as IDP cash transfers, are not well tailored to those with limited mobility or digital skills.

Recovery and Reconstruction Needs, including Build Back Better

Conduct a communications campaign on entitlements targeted to the elderly. The elderly should be better informed about changes in the Pension Fund and in application procedures for housing and utility benefits, as well as other benefits for IDPs and people with disabilities to which they may be entitled.

Revise systems of social support for the elderly (both pension legislation and social assistance programs) to better cover their actual expenditures on basic needs. Along with ongoing reforms to better target and limit the duration of cash assistance, policy makers should provide a more adequate level of assistance to the elderly to cover basic needs. The statutory subsistence minimum should remain the basis for calculating means-tested social assistance benefits while decoupling it from unrelated payments, fees, and fines.

Allow elderly people to participate in employment assistance programs and adapt programs to meet their needs. Barriers to employment among the elderly and those drawing pensions should be eliminated.

[113] HelpAge International, "Older People on the Edge of Survival in Eastern Ukraine," March 4, 2022, Link.
[114] REACH, "Multi-Sector Needs Assessment (MSNA) 2023: Food Security Preliminary Findings," October 2023, Link.

The elderly should be eligible for employment services adapted to their needs, such as strengthening of digital literacy. Elderly IDPs who have reached statutory retirement age should be placed in temporary programs supporting employment and entrepreneurship among IDPs.

Strengthen existing community-based social service provision. To ensure that the elderly are able to receive social services in their communities, improve these services' financial and administrative capacities. For example, the state could co-finance services, neighboring hromadas could work cooperatively, or hromadas could establish a redistribution mechanism to ensure equitable access to services.

Invest in barrier-free public transportation for the elderly and others with limited mobility. Reconstruction of public transport systems should incorporate barrier-free infrastructure, and public transport and "social taxi" services should be available in rural hromadas. Affordability should be ensured through appropriate tariff policies.

Develop rapid response systems at the local level to protect the elderly. Local self-governments need the capacity and resources to monitor the elderly and other vulnerable groups in their communities, and to take emergency action as needed. Preventing malnutrition and hypothermia and treating chronic diseases are most critical for these groups.

Persons with Disabilities

Summary

In Ukraine, the Medical and Social Expert Commission (MSEC) grants individuals' disability status and determines their needs. Ukraine became a state party to the UN Convention on the Rights of Persons with Disabilities (CRPD) in 2006, framing disability both as a human rights issue and a development issue. Ukraine's Law on Social Protection of Persons with Disabilities grants material, social, household, and medical support. However, individuals often do not receive social support—primarily care services—until they have a formal status as a person with disabilities. Currently, care services are not designed to effectively meet the needs of people with disabilities—for example, People with disabilities are unnecessarily directed to special institutions.

The war has resulted in increased cases of trauma and serious injuries, leading to a rapid rise in the number of people with disabilities. This includes civilians as well as active and ex-combatants. In the year and a half after February 2022, the number of people with disabilities increased by 300,000.[115] The Ministry of Veterans Affairs provides for an increase in the number of people with disabilities. In 2022, at least 145,000 individuals underwent the MSEC assessment to register officially as persons with disabilities: some but not all of these suffered disability as a result of the war. The complexity and long duration of the assessment procedure create a number of risks for Ukraine's socioeconomic development, as delays in supporting people with disabilities may cause some to drop out of the labor market and become permanently dependent on the state's financial support. Integration measures should be accompanied by work-based psycho-social support.

[115] Ministry of Social Policy data; cited in Ukrinform, "There Are 3 Million People with Disabilities in Ukraine—Zholnovych," September 19, 2023, Link.

The percentage of IDP families caring for persons with disabilities has risen slightly. RDNA2 indicated that 25 percent of IDP households had one or more household members with a disability.[116] This number rose slightly, to 29 percent, in October 2023.[117]

Observed Impacts

Bomb shelters are often inaccessible to people with disabilities. Residential care facilities may lack accessible bomb shelters, well-defined security protocols, or sufficient space to accommodate all residents and personnel; or people with disabilities may be forced to reach or remain in bomb shelters unaccompanied by staff. Larger cities publish maps of available shelters, but these rarely contain information on accessibility.

Evacuation of people with disabilities[118] from areas where hostilities are ongoing has been challenging. This is partly due to the legal ambiguity concerning the responsibility for decision-making, implementation of the evacuation, and access to information. The challenge is particularly great where facilities serve as guardians for people with disabilities who have been declared legally incompetent. The evacuation protocols in many facilities are too general and difficult to apply.[119] Information on accessible and affordable transportation and on accompanying attendants is lacking, contributing to a situation in which people with disabilities are caught in territories temporarily not under government control. Local administrative service providers do not provide information on whether IDP centers are architecturally accessible. Air raid sirens are inaccessible for the deaf, while written warnings are inaccessible for the blind. Displaced people with disabilities have also lacked sufficient information to connect them with social services and assistance programs in their new surroundings.

Humanitarian needs are consistently higher among households that include a people with disabilities than among other households. Nearly a third of households that include a people with disabilities face food security gaps. Over half—58 percent—have severe or worse multisectoral needs, which is a higher share than for both IDPs and returnees.[120] For these households, accessible notification and alerts during crises and afterward are crucial.[121]

The war has affected efforts to reform historic institutionalization of people with disabilities. In keeping with global and European Union norms, Ukraine has sought deinstitutionalization of people with disabilities in favor of community-based housing and support. Progress before February 2022 was limited, however, and it has since reversed. Residential care facilities are often the only available and affordable housing for people with disabilities fleeing hostilities, in part because shortly after February 2022, the GoU simplified the procedures for admitting people with disabilities and the elderly into residential care

[116] IOM, "Ukraine—Internal Displacement Report—General Population Survey Round 12 (16–23 January 2023)," Link.
[117] IOM, "Ukraine—Internal Displacement Report—General Population Survey Round 14 (September–October 2023)," Link.
[118] As of January 2023, 25 percent of IDPs were persons with disabilities. IOM, "Ukraine—Internal Displacement Report—General Population Survey Round 12 (16–23 January 2023)," Link.
[119] UNDP Ukraine, "Rapid Assessment of the Experience of Evacuating People with Disabilities in Ukraine Due to Armed Hostilities: Study Report," 2022, Link.
[120] REACH, "2023 MSNA Bulletin: Ukraine," Link.
[121] UNDP, "Assessment of Accessibility of Information and Notification during Crises and Humanitarian Response," 2022, Link.

facilities.[122] According to Amnesty International, which analyzed requests to regional administrations in 17 regions that provided data, 3,585 admissions were made into residential care facilities from February 24, 2022, to July 1, 2022, compared to only 998 admissions during a comparable period in 2021.[123]

The system of social support for people with disabilities is being reformed in order to provide injured persons with comprehensive rehabilitation and psychosocial support. In this approach, the space in which a person lives is adapted to the disability so the people with disabilities can maintain mobility, form self-care skills, and increase motivation to maintain social contacts and employment. This approach requires multidisciplinary teams of specialists and uses the International Classification of Functioning, Life Limitations and Health (ICF) to assess needs. The ultimate goal is to allow people with disabilities to return to the labor market, and thus reduce the need for financial support from the state.

By law, employers are subject to a 4 percent hiring quota for people with disabilities, but they typically prefer to pay a fine rather than hire people with disabilities. Employers rarely apply for financial assistance to modify workplaces to accommodate people with disabilities, as they consider the application process too complicated.[124] According to the Pension Fund of Ukraine, only 17 percent of people with disabilities are officially employed.

An updated mechanism for calculating administrative and economic sanctions was introduced in November 2022. This provides for an automated regime that uses data from the State Register of Mandatory State Social Insurance and the Centralized Data Bank on Disability Problems to identify enterprises, institutions, and organizations that did not ensure compliance with the previous year workplace standards. In its first months of operation, this mechanism showed high levels of noncompliance related to employment of people with disabilities. At the same time, use of the mechanism led to fines that were three times the amount expected.

Inclusion of people with disabilities requires an accessible living environment and the absence of barriers to services (administrative, social, health care, transport, etc.). New State Construction Regulations on "inclusiveness of buildings and structures"[125] came into force on April 1, 2019, but do not require developers to implement appropriate changes if reconstruction or restoration of an existing inaccessible building is planned. Application of the regulations would require the use of universal design principles for new public and residential buildings. However, these regulations are mandatory only for new construction and not for the reconstruction, restoration, or capital repair of buildings and structures. This exception means that reconstruction efforts may not improve general accessibility or create barrier-free spaces.[126]

[122] The previous procedure required an assessment by the MSEC. The simplified procedure allows people with disabilities and the elderly to be placed in a residential care facility based solely on request, without submitting documentation (including identification).
[123] Amnesty International, "Ukraine: 'I Used to Have a Home': Older People's Experience of War, Displacement, and Access to Housing in Ukraine," December 6, 2022, Link.
[124] According to data provided by the State Employment Service, employers claimed reimbursement for creating reasonable adjustments for people with disabilities only 332 times in 2019.
[125] Ministry of Infrastructure of Ukraine, "Inclusiveness of Buildings and Structures," Link.
[126] Fight for Right, "Alternative Report on Ukraine's Implementation of the Convention on the Rights of Persons with Disabilities," Link.

Recovery and Reconstruction Needs, including Build Back Better

Develop warning systems for hearing- and vision-impaired individuals and persons with physical, mental, and intellectual impairments. All individuals need accessible information about safety, evacuation, handling of explosives, and avoidance of landmines. Adapted materials and systems are needed for persons with different impairments. Laws should be enacted that specify how people with disabilities should be alerted to emergency situations depending on the type of impairment.

Reform legal competency legislation for persons with disabilities by implementing a decision support mechanism. Reform is necessary to ensure that every person with mental or intellectual disabilities has access to mechanisms for supported decision-making. This is particularly important because the war has disrupted long-standing institutional arrangements, creating precarious evacuation and housing situations for many people with disabilities.

Adopt a rights-oriented disability model and services based on individual needs. Ukraine needs legal changes consistent with the Convention on the Rights of Persons with Disabilities. Rather than immediately provide cash benefits, the state should assess individual needs of people with disabilities and provide tailored social services. The capacity of local authorities to provide social services should be strengthened; the state can ensure the provision of those services that are financially and organizationally difficult to provide in the territorial community.

As part of Ukraine's integration into Europe, implement the transition from the medical model of disability to the biopsychosocial one. Such a model assesses a person's health care, social, educational, and employment needs; establishes the individual's state of functioning and limitations; and offers supports that meet the individual's needs. Assessment should use an internationally recognized tool like the ICF.

Develop a cross-cutting strategy and roadmap for deinstitutionalization and social service reform for people with disabilities. This effort will require central and local executive authorities and stakeholders to work jointly. It will entail review of the legislative framework aimed at strengthening the system of social services, a medium-term action for gradual deinstitutionalization, and long-term institutional closure in keeping with EU and international policy standards.

Reform medical and rehabilitation services for people with disabilities. Reform of the MSEC should be accelerated by adopting the World Health Organization's ICF as the basis for disability evaluation. Access to timely medical services, rehabilitation, prostheses, and personal assistance devices should be immediate and not contingent on disability status. Housing and workplace services will help to achieve the goals of rehabilitation and effective social and labor adaptation for people with disabilities.

Scale up piloting of community-supported housing alternatives for people with disabilities and eliminate community-level barriers to deinstitutionalization. Instead of reconstructing residential care facilities, community-based housing should be considered in accordance with the UN Committee on the Rights of Persons with Disabilities' Guidelines on Deinstitutionalization, including in Emergencies.[127]

[127] Office of the High Commissioner for Human Rights, "CRPD/C/5: Guidelines on Deinstitutionalization, Including in Emergencies (2022)," September 9, 2022, Link.

Strengthening capacity at the community level will help meet the needs of people with disabilities exiting institutional care.

Veterans and their Families

Summary

The number of veterans has increased rapidly since 2014. The Ministry of Veterans Affairs (MoVA) reports that 908,832 individuals qualified as veterans before February 2022.[128] Information on the number and sociodemographic characteristics of military members is not publicly available, making it difficult to predict future numbers of veterans and their likely needs. Nonetheless, according to MoVA, numbers may rise to an estimated 4 million to 5 million veterans in the future, and the share of veterans in Ukrainian society is likely to rise to 10–15 percent of the population (compared to around 1–2 percent of the population before 2022).

The current legislation for war veterans was not designed for active hostilities within the country. War veterans include both active service members who have the status of combatants, as well as demobilized persons, people with disabilities as a result of the war, and war participants. By law, all these groups receive nearly equal social support without regard to the different groups' needs or circumstances. This approach is ineffective.

Active fighting within the country poses daunting challenges for veterans' demobilization, reintegration, and social and economic support, especially given the comparative youth of many veterans. Nonrepresentative surveys conducted among veterans found that two-thirds were ages 40 or younger (35 percent were 31–40 and 31 percent were 19–30).[129] This age profile puts a premium on offering able-bodied veterans educational and employment support for lifetime livelihoods, rather than long-term social assistance.

Ukraine's legal framework guarantees veterans a wide array of benefits, including cash transfers, reduced housing and utility fees, free public transport, and preferences for employment and education. However, the framework has logistical challenges and is becoming increasingly costly as the number of veterans rises. Some social support tools are outdated and ineffective, for example, benefits for the installation of a landline telephone. MoVA was established in 2018 to coordinate policy making and public program delivery for ex-combatants and their families.

The government has launched a project (to run through 2032) for veterans' transition from military service to civilian life. The transition system will include psychological and legal assistance and will support the social, professional, and cultural adaptation of service members, war veterans, veterans' family members, and family members of fallen soldiers to ensure their smooth social and economic reintegration. In 2023, the veteran's assistant institute was introduced, a pilot program focusing on the

[128] Unified State Register of War Veterans data.

[129] Ukrainian Veterans Foundation, "Portrait of a Veteran: Russian-Ukrainian War 2014–2022," July–August 2022, Link.

transition from military service to civilian life. In 2024, the veteran's assistant institute will be expanded to the whole of Ukraine.[130]

Observed Impacts

Many veterans and their families have suffered from displacement and have lost prewar employment and income sources. Veterans have identified the following as top priorities: housing acquisition and repair (63 percent); health care (54 percent); livelihoods (51 percent, comprising 31 percent income support and 20 percent employment assistance); and access to education (25 percent).[131]

Massive damage to housing stock, combined with large-scale displacement, has limited the supply of housing, particularly in areas where displaced people are concentrated. Housing programs for veterans are oriented toward home ownership. They are poorly adapted to meet shorter-term needs for rental housing, especially for veterans hoping to return to their oblasts of origin. Affordable rental housing, subsidized public housing, and disability-accessible housing are scarce for those with financial and accessibility constraints.

The number of veterans who will require state employment and education support is large. As of mid-2022, 60 percent of those who were veterans before February 2022 were engaged in fighting the current war.[132] This group, largely of working age, will swell the ranks of veterans seeking livelihood support and long-term employment when they demobilize. Furthermore, multiple surveys emphasize that veterans primarily need education and employment.[133] A quarter of respondents (25 percent) prioritize access to education and 20 percent to employment assistance. Nonetheless, there are not enough retraining courses or short-term skill courses. Alarmingly, 52 percent of the interviewed veterans and service men anticipate losing their previous qualifications upon demobilization, highlighting the need for further training and skill development.

One-third of surveyed veterans listed financial support among their priority needs. Disabled veterans receive one-time cash transfers of UAH 173,000–990,000 (US$4,806–27,500), depending on their disability category. Most veterans receive a small annual cash transfer, which in 2021 ranged from UAH 600 to UAH 4,000 (US$17–111).[134] Veterans are legally entitled to free public transportation and preferential employment, although veterans report difficulties in obtaining these benefits. In the 2021/2022 academic year, 10,470 veterans and approximately 11,000 children of veterans received state support for professional (vocational and technical) or higher education.[135]

In 2022, the Ukrainian Veterans Foundation (UVF) was established as a budgetary institution to protect the rights of veterans, promote their reintegration, and support their entrepreneurship and employment. During 2023, 136 projects became winners within the framework of the UVF's competitive

[130] Government Portal, "State Budget for 2024: A Maximum of 14 Billion UAH Has Been Transferred to Support Veterans and Their Families," November 10, 2023, Link.
[131] Ukrainian Veterans Foundation, "Needs of Veterans," Link. Data reflect research conducted in January–April 2023.
[132] Ukrainian Veterans Foundation, "Portrait of a Veteran: Russian-Ukrainian War 2014–2022," July–August 2022, Link.
[133] Ukrainian Veterans Foundation Analytics. "Needs and obstacles of veterans in employment". Sociological research conducted during June-July 2023, Link.
[134] Legal Hundred, "Analysis of the System of Social Protection of Veterans and Military Personnel," 2022, Link.
[135] Ibid.

programs, in total, financial support was provided in the amount of over UAH 201 million (US$5.5 million). As part of microfinancing grants (US$555 each), support was provided to 212 businesses for a total amount of over UAH 4.1 million (US$115 thousand).

Veterans must be assessed by the Military Medical Commission (MMC) to ascertain fitness for further military service, and by the civilian MSEC to qualify for disability benefits and services. But navigating these processes is difficult. Over two-thirds (68 percent) of surveyed veterans cited challenges completing the MMC evaluation, such as unclear instructions and long waits to see specialized physicians.[136] To ease processing, the government has opened MMCs in civilian hospitals, but veterans have noted difficulties coordinating between military and civilian facilities as well as a lack of digitized document management.[137] Evaluations are often considered subjective, and information is lacking on the appeals process. Annual reapplication to MSEC is mandatory even when patently unnecessary (e.g., loss of a limb).

Veterans experience problems accessing medications, rehabilitation services, and prosthetics, which by law they should receive free of charge.[138] According to a 2016 survey, 39 percent of respondents faced challenges with access to free medications,[139] and the situation has worsened since February 2022 with the closing of pharmacies and shortages of essential drugs. Veterans also noted that the approved list of free drugs does not include treatment for post-traumatic stress disorder (PTSD) or post-concussion syndrome, common ailments among veterans. Ukraine's 423 rehabilitation facilities are also inadequate for the rising number of veterans.[140] Rehabilitation capacity is planned to expand to 6,000 beds, though the Ministry of Health estimates a need for 7,800 beds.[141] Complex administrative procedures often prevent veterans from obtaining prostheses during the treatment and rehabilitation period. To resolve this, the government is piloting a program for making prostheses available prior to disability certification.

Recovery and Reconstruction Needs, including Build Back Better

- **Ensure revision of legislation on social support for war veterans**. Legislation should focus on demobilized persons with combat experience, not civilians; should distinguish between active service members and demobilized; and should target social support to personal needs and circumstances.

- **Eliminate untargeted cash transfers in favor of targeted transfers to low-income veterans and those certified as disabled.** Cash transfers should target those most in need, whether due to poverty or disability or both. Training and qualification programs and job matching for long-term employment of veterans should de-emphasize cash transfers.

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[136] "The Path of the Injured: Needs, Challenges and Future Visions," Link. The survey was conducted in February–May 2023.
[137] Ibid; see also Julia Slabinska, "'It Can't Be Called a Reform Yet': Human Rights Activist Lyubov Galan on What Has Already Changed in the Work of the MPC and MSEC," June 15, 2023, Link.
[138] The Law on the Status of War Veterans and Guarantees of Their Social Protection, Link.
[139] The Legal Hundred, "White paper: analysis of the state support system for veterans and their families in Ukraine", Annex 1: "Study of the System of Social Protection of Combatants and Family Members of Those Killed in the Anti-terrorist Operation," 2016, Link.
[140] Ustinov, O.V., Ukrainian Medical Journal, Comment by the Minister of Health of Ukraine; see "The Maximum Number of Rehabilitation Cycles in Two or More Areas Has Been Increased," June 19, 2023, Link.
[141] Ukrinform, "Ukraine Needs 7800 Rehabilitation Beds—Ministry of Health," July 19, 2023, *Link*

- **Accelerate process reform for veterans' medical assessments (MMC and MSEC).** Planned reforms need to be accelerated to offer better information, simpler processes, digital queuing, digital records management, one-stop assistance, and better collaboration between military and civilian facilities. Process reengineering and legal enforcement are also needed to improve timely access to guaranteed drugs, rehabilitation services, and prostheses. Order 402 of the Ministry of Defense needs to be amended to promote broader diagnoses and a comprehensive and holistic assessment of veterans' physical and psychological health.

- **Organize information and adapt housing programs to the needs of today's veterans.** A digital clearinghouse should be set up with information on housing needs among veterans and the various housing programs to support them. Programs should support obtaining housing at prices that are affordable for veterans through mortgage lending, preferential long-term state credit, etc.

- **Enhance professional reorientation programs to focus on short-term qualification training and small business development support.** New short courses should respond to current labor market demand. Mentoring, coaching, and employment and business start-up support will be needed to complement technical training.

- **Adapt service system to respond to the needs of veterans**. This includes providing counseling and liaison services to access affordable housing, skill development, higher education, disability support, medical services, financial and life planning support, and other public services.

Gender Specific Impacts

Summary

The war has had profound impacts on women, girls, and LGBTIQ+ persons who have been affected differently than men and who have specific needs and priorities for recovery. Women account for more than half of IDPs and for the large majority of people seeking to return to Ukraine. As of October 2023, 56 percent of the 3.7 million estimated IDPs were women, and women made up 93 percent of the 4.6 million people returning to their places of habitual residence.[142] Out of the 14.6 million people who will need humanitarian assistance in 2024, 56 percent are women and girls.[143] In recent years Ukraine has made notable progress toward greater gender equality, but gaps persist. Women earn 18.6 percent less than men for work of equal value, and their labor force participation rate is 15.1 percent lower than men's. Lack of employment is especially pronounced for women ages 25–44.[144] Other challenges to a gender-responsive national recovery include an increase in women's unpaid care work, heightened risks of gender-based violence, and a decrease in women's formal decision-making.

Observed Impacts

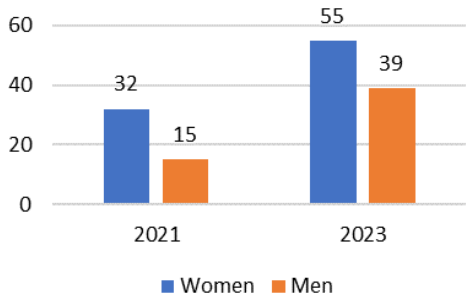
As of April 2023, 72 percent of people registered as unemployed were women,[145] and of the IDPs employed before the invasion, 45 percent of women—as compared to 27 percent of men—still did not

[142] IOM, "Ukraine—Returns Report—General Population Survey Round 14 (September–October 2023)," November 10, 2023, Link.
[143] UN OCHA, "2024 Ukraine Humanitarian Needs and Response Plan," forthcoming.
[144] ILO, "Prospects for Achieving Ukraine's 2032 GDP Target: A Labour Market Perspective," September 2023, Link.
[145] State Employment Service, April 2023 data.

have a job.[146] More women than men depend on social assistance, especially among those ages 60–80. In 2023, the total income per capita in male-headed households was on average 20 percent higher than in female-headed households,[147] highlighting the impact of increased unpaid care work and unemployment on women and their families. A larger share of female-headed households rely on unstable income sources compared to male-headed households (58 percent vs. 45 percent).[148] Female-headed households are also more likely to rate their needs as "Extreme" or "Extreme+" in at least one sector (41 percent) compared to male-headed households (37 percent).[149]

As estimated by the UN Women experts, women spend over 16 hours per week more than men on unpaid domestic work (Figure 25),[150] and the potential cost implications of women's increased unpaid childcare work since February 2022 is US$72.5 billion.[151] While men's unpaid work has more than doubled since the start of the war and there has been a noticeable increase in fathers' participation in childcare,[152] women still have the primary responsibility for domestic and care work. This has significant implications for their labor market participation and income generation.

Figure 25. Number of hours spent on unpaid domestic work (housekeeping, care for family members) per week



Source: UN Women Ukraine, 2023 (data from State Statistics of Ukraine and the Human Impact Assessment, 2023).

Risks of gender-based violence (GBV), including war-related sexual violence (CRSV), human trafficking, and intimate partner violence, have been heightened since February 2022.[153] As of 1 February 2024, the UN Human Rights Monitoring Mission (HRMMU) documented 220 cases of CRSV (137 men, 77 women, 4 girls, 2 boys)[154], and the Office of the Prosecutor General of Ukraine recorded 270 cases of CRSV (96 men, 161 women, 12 girls, and 1 boy).[155] While complaints of domestic violence recorded by the National Police

[146] European Training Foundation (ETF), "The Invasion of Ukraine: The Impact, in Numbers," December 1, 2023, Link.
[147] REACH, "Multi-sector Needs Assessment," 2023, Link.
[148] Ibid; see also REACH, "2022 MSNA Gender Focus Snapshot," February 2023, Link.
[149] REACH, "Multi-sector Needs Assessment," 2023, Link. "Extreme" and "Extreme+" represent the most severe needs.
[150] Calculations are based on data from UNDP, "Ukraine: Human Impact Assessment," June 2023, Link.
[151] Calculations are based on 2021 data from the State Statistics Service of Ukraine and on UNDP, "Ukraine: Human Impact Assessment," June 2023, Link. The calculations are based on the following formula: number of hours of additional unpaid work per week x hourly rate (using compensation rate for foster carers in Ukraine) x number of weeks since the start of the war x number of affected people = potential cost implications due to increase in unpaid work.
[152] UNFPA, "The Role of Men in Parenthood During the Full-Scale War," August 2023, Link.
[153] Regional Gender Task Force, "Making the Invisible Visible: An Evidence-Based Analysis of Gender in the Regional Response to the War in Ukraine," October 2022, Link.
[154] OHCHR, Situation of human rights in Ukraine: 1 August to 30 November 2023, Link
[155] Office of the Prosecutor General of Ukraine, Statistics on CRSV cases. Link

initially decreased in 2022, they rose again in 2023 to 243,980 cases by November.[156] Reports from local NGOs and international organizations confirm that the invasion exacerbated existing inequality and discrimination of LGBTIQ+ people and caused an increase in homo- and transphobic violence.[157] Local civil society organizations believe that GBV has increased but is significantly underreported due to stigma, a culture of silence, and a lack of services and police capacity made worse by the war.[158] The risk of trafficking is also rising.[159]

Lack of GBV response services appear to be a problem in Ukraine. In 2023, 19 percent of households reported that GBV response services were not available where they lived; the share was 32 percent in rural areas (compared to 10 percent in urban areas).[160] Out of the 714 specialized services for domestic violence survivors that existed before February 2022, 67 had ceased to function sometime in 2023.[161] However, 228 new services have been launched, and 875 specialized GBV services now operate across Ukraine, including shelters, crisis rooms, day centers, counseling services, mobile teams, and hotlines. Staffing of specialized GBV services remains an issue; there is a 23 percent deficit in staffing of service managers, psychologists, social workers, and other administrative and legal staff.[162]

Women are playing a key role in the humanitarian response and recovery efforts but are not equally involved in planning and decision-making. Women continue to be underrepresented in decision-making positions, including at the highest level; there are 4 women in the 22-member Cabinet, and women make up only 21 percent of Parliament. Only 1 out of 24 regional administrations is headed by a woman,[163] and after local elections in 2020, the shares of women on regional, city, district, and village councils were between 33 percent and 43 percent, but these numbers have dropped since 2022. Only 9 percent of mayors and only 16–21percent of village heads were women.[164] Women's rights, gender equality, and other social issues are sometimes sidelined as a result.[165]

The intersection between gender and factors such as age, disability, and displacement status heightens vulnerability. Older women and women with disabilities have significantly higher levels of need than male counterparts and are more vulnerable economically.[166] For example, households led by women ages 60 or above make up the largest share of food-insecure households (31 percent).[167]

Recovery and Reconstruction Needs, including Build Back Better

[156] Complaints numbered 325,599 in 2021; 244,381 in 2022; and 243,980 as of November 28, 2023. See National Police of Ukraine, "The National Police Has 54 Specialized Units for Countering Domestic Violence—Ivan Vyhivskyi," November 29, 2023, Link.
[157] Nash Svit, "The battle for freedom. LGBTQ situation in Ukraine in 2022," February 2023, Link.
[158] Care, "Rapid Gender Analysis Ukraine," October 2023, Link
[159] Christopher H. Smith, "Report on Human Trafficking Issues to the Standing Committee of the 2023 Winter Meeting of the OSCE Parliamentary Assembly," Vienna, February 23–24, 2023, Link.
[160] REACH, "Multi-sector Needs Assessment," 2023, Link.
[161] Ministry of Social Policy data.
[162] Estimations are based on Ministry of Social Policy data, November 2023.
[163] Official website of the President of Ukraine, December 2023, Link.
[164] Electoral Commission of Ukraine, November 2023. Women make up 36 percent of representatives in regional councils, 33 percent in city councils, 43 percent in district councils, and 37 –41 percent in village councils.
[165] UNDP, "Ukraine Human Impact Assessment," 2023; EU4GenderEquality Reform Helpdesk, "Country Gender Profile: Ukraine," July 2023, Link.
[166] REACH, "2022 MSNA Gender Focus Snapshot," February 2023, Link.
[167] World Food Program, "2023 Ukraine Needs Assessment: Food Security and Essential Needs," June 2023, Link.

To ensure a gender-responsive and -inclusive approach to building back better in Ukraine, the following areas should be prioritized in 2024:

- **Targeted interventions to expand women's access to and inclusion in the labor market and business.** Women should have opportunities to develop required competencies, including in sectors traditionally occupied by men, and unemployed women should be matched with available jobs, partly as a way to attract female refugees back to Ukraine. Interventions should support both short- and long-term economic security for women—including female heads of households, internally displaced women, returnee women, GBV survivors, and women from groups facing multiple forms of discrimination such as Roma women and rural women. Improving working conditions, particularly through social dialogue and collective bargaining, will help to increase the attractiveness of the labor market to women.
- **Dedicated initiatives to reduce women's unpaid care work.** Interventions should prioritize reconstructing and opening easily accessible childcare facilities, schools (including bomb shelters for kindergartens), and services for people with disabilities and older people. Advocacy for men's engagement in unpaid childcare and domestic work is important, as are employer-based childcare and private service provision to expand good-quality, affordable services.[168]
- **Expanded GBV prevention and response efforts.** This includes further development of GBV protection mechanisms, such as additional GBV-related services, strengthened referral pathways, and gender-sensitive police practices. Special attention is needed to ensure GBV prevention and response efforts reach IDPs, people living in rural and remote communities, those at risk of trafficking, and veterans.
- **Engagement with women as active leaders and decision-makers in recovery processes at all levels where gender-responsive planning, budgeting, and monitoring tools are applied.** This involves the use of effective quotas/temporary special measures in elections and appointments, systematic consultations with people of all genders, and expansion of leadership opportunities for women at hromada, oblast, and national levels. Improved use of gender targets and markers is also needed to track financing for gender-responsive recovery.
- **Strengthened collection, analysis, and dissemination of data on the gender-specific impacts of the war, especially on the intersection of gender and groups facing multiple forms of discrimination.** Sex-disaggregated data should be collected, analyzed, and used to ensure evidence-based decision-making on the needs and priorities of different groups of women and men.

Limitations and Recommendations for Future Assessments of Impacts on Specific Groups

One important cross-cutting priority for responding to the needs of specific groups is to invest in data collection systems to aid recovery. The highest priorities for improved data availability include (i) monitoring and verification of IDP status; (ii) sex-disaggregated data related to gender impacts in the infrastructure, social services, health, and employment/livelihoods sectors; (iii) socially disaggregated data on employment and pension provision; (iv) digitized registry of veterans and their needs; and (v) data on number and legal status of elderly individuals and people with disabilities living in residential care

[168] International Labour Organization, "Care Policy Investment Simulator," 2023, Link.

facilities. Equally important is aligning statistical and administrative data collection and dissemination with Ukraine's decentralization reform so that communities have access to socially disaggregated data needed for operational and strategic planning.

SOCIAL SECTORS

Housing

Context

With over 10 percent of the total housing stock either damaged or destroyed and close to 2 million households affected, housing continues to be one of the most impacted sectors.[169] The total damage to the housing stock has increased by 11 percent since February 2023. Before February 2022, the housing stock comprised of an estimated 20 million units distributed across multifamily buildings (MFBs), dormitories, and various types of single-family houses (SFHs). MFBs are predominant in urban areas and cater to nearly 67 percent of the urban population. In larger cities, this share increases to 79 percent. On the other hand, SFHs, including individual homes, dachas, garden houses, and country houses, and are primarily located in rural areas. The asset typology used in this housing sector assessment remains unchanged from the first RDNA. Units in MFBs are divided by age: in one group are the Soviet-era apartment buildings (pre-1991), which are estimated to constitute 88 percent of the apartment building stock; and in the other group are the more recent (post-1991) multifamily apartments, which are estimated to account for 12 percent of the apartment buildings in the country. Almost 94 percent of the housing is privately owned,[170] and as of 2013, only about 3.4 percent of households were officially considered renters, although an additional 10–15 percent likely rent informally.[171] Since February 2022, rental rates reportedly have increased, particularly in the western regions of the country. [172]

Given the sheer volume of damage to the housing sector and the resulting needs and negative impact on prolonged displacement, the GoU, including local authorities, as well as international partners and donors have prioritized housing recovery and building back better since the onset of the war. The GoU established the Register of Damaged and Destroyed Property (RDDP), which mandates the verification and registration of damaged assets by territorial hromadas,[173] and allows for monitoring the extent, nature, and location of damaged assets and progress on their repair and reconstruction. This damage inventory is managed by the Ministry for Communities, Territories and Infrastructure Development (MCTID) and was estimated to include about 60 percent of damaged assets as of December 2023. The GoU has also launched different programs for affected homeowners including, among others, the eRecovery repair program, which caters to residential property owners with damaged or destroyed units.[174] The GoU, multilateral organizations, and donors have since 2022 continued to invest in much-needed energy-efficient restoration of MFBs and have sought modernization of housing policy, renewal of property rights regulations, the building regulatory framework, and urban development in a manner that is oriented toward EU regulations. The interagency Shelter/Non-Food Item Cluster of the

[169] The housing sector concentrated 40 percent of the total damage in RDNA1 and 38 percent in RDNA2. In RDNA 1, 20 percent of the proposed needs focused on housing; the share is 17 percent in RDNA2.
[170] Ownership rights are in the process of being systematically included in the State Registry of Rights for Real Estate (eRegistry), which was established in 2015, only after privatization had been largely completed.
[171] United Nations Economic Commission for Europe. 2013. Link
[172] Datskevych, N."Rental prices soar in western Ukraine amid influx of refugees." March 18, 2022. The Kyiv Independent. Link.
[173] Ukraine has three levels of constitutionally guaranteed subnational government: (i) oblasts, or regions; (ii) rayons, or districts; and (iii) hromadas, or local self-government units that range from cities to villages and rural hamlets.
[174] The eRecovery program provides compensations to owners for undertaking repairs in case the unit is partially damaged and in the case of destroyed units, owners are supported through the provision of housing vouchers, etc. Link.

humanitarian coordination system has also developed a Shelter Information Damage Assessment and Response Database (SIDAR) and is working on its inter-operability with the RDDP system. Yet these advancements cannot keep pace with the needs, which increased by 16 percent between RDNA2 and RDNA3. To accelerate recovery, it is necessary to rapidly enhance implementation and technical capacities at the national level and (to a larger extent) at the local level, as well as address persisting sectoral challenges pertaining to ownership, outdated and complex regulatory framework, incomplete decentralization. Uncertainties posed by the ongoing war and resulting macro-fiscal challenges will continue to determine the speed of the housing sector recovery.

Damage and Loss Assessment

As of December 31, 2023, the total cost of damage to the housing sector is estimated to be US$55.9 billion (Table 5).[175] Of the 11 percent increase in the cost of damage since February 24, 2023, roughly a fifth can be attributed to the damage caused by the breakage of the Kakhovka Dam and the subsequent flooding (primarily in the Khersonska oblast).[176] Units in MFBs continue to represent the largest share of both damaged units and damage costs, both at 86 percent. An estimated 220,315 SFHs have been damaged as well, and account for around 10 percent of the total affected assets. The number of damaged dormitory units stands at 67,206 as of the end of 2023. Concerning geographic distribution, over 75 percent of the damage cost is concentrated in four oblasts: Donetska (30 percent), Kharkivska (27 percent), Luhanska (12 percent), and Kyivska (8 percent); an additional 18 percent is estimated in Mykolaivska (4 percent), Chernihivska (4 percent), Khersonska (4 percent), Zaporizka (3 percent), and Dnipropetrovska (3 percent). Over one-fourth of the damaged units are destroyed (547,010 units), and the other three-fourths are partially damaged.[177] Of these, 880,528 units have minor damage (damage of up to 10 percent), and 679,382 units have medium damage (damage of 10–40 percent). The impacted units reported across all three damage levels (destroyed, minor damage, medium damage) have increased since the previous assessment (RDNA2), but there has been a notable 200 percent increase in the units that sustained minor damage. This significant increase in units with minor damage can likely be explained by the GoU's gradual adoption of more rigorous data collection methods and processes, together with the implementation of housing repair programs that are prioritizing the inspection and recovery of partially damaged units, starting with those that have minor damage.

Thus far, the housing sector has incurred an estimated US$17.4 billion in losses (Table 5). The loss assessment reflects estimated cost of demolition, debris removal, rental and bank loss, and costs associated with the provision of emergency housing support and temporary housing. Rental losses are

[175] This is likely an underestimation given the lack of access to damage data in the frontline oblasts and areas temporarily not under GoU control.

[176] European Union, KSE Institute, Vox Ukraine, UNDP, et al., "Analysis of the Impact of the Kakhovka Hydroelectric Power Station Explosion on the Populated Areas of Kherson and Mykolaiv Regions," 2023, Link.

[177] Damaged assets were categorized into three damage levels in agreement with the MCTID: damage below 10 percent (considered minor damage), damage between 10 percent and 40 percent (considered medium or moderate damage), and damage above 40 percent (considered destroyed). All units that had damage of 40 percent or less are considered partially damaged and repairable in the short to medium term.

estimated at US$10.2 billion,[178] while bank losses related to mortgages linked to destroyed assets are estimated at US$1.2 billion. The total estimated cost of demolition and removal of debris is a notable US$5.6 billion. Critical housing support—including emergency shelters, operation and maintenance of collective centers, and basic housing refurbishment for winterization during the previous 22 month—amounts to an estimated US$104 million. In addition, the GoU, together with donors, has provided homeowners and utilities with around US$141 million as compensation for temporary housing and basic service delivery for internally displaced persons (IDPs).

Human impact. The scale of damage in this sector is exacerbating the already existing shortage of adequate, affordable, and safe housing in Ukraine—an especially severe challenge for IDPs. As compared to 13 percent nationally, 28 percent of households residing in the Southeast macro region, reported their accommodation was directly affected by the war; more damage was reported by households in urban areas compared to rural areas.[179] Affected households were likely to have sold or lost durable goods due to displacement, destruction, or looting. A survey report by the International Organization for Migration indicated that 47 percent of IDPs owned a house or apartment unit that was damaged or destroyed; that 31 percent faced a shortage of adequate accommodation in their current location; and that elderly IDPs struggled to find housing.[180] Displaced households belonging to lower-and middle-income groups, along with the IDPs who have been twice displaced, are particularly vulnerable; their limited financial resources and limited access to documentation can prevent them from repairing their own homes, seeking adequate temporary housing, or accessing monetary support programs. Although the number of IDPs has been gradually declining over the past months, as of December 2023 there were over 3,522,045 registered IDPs in Ukraine.[181]

Recovery and Reconstruction Needs, including Build Back Better

The needs for the housing sector are estimated at US$80.3 billion across the long term (2024–2033) (Table 6). Of the long-term total, US$72.1 billion is for repair and reconstruction of housing assets under the build back better approach. MFBs, which sustained 86 percent of the overall damage, were mostly built during the Soviet period and had exceeded their design lifespan; they are also energy inefficient and suffer from deferred maintenance and repairs. Thus, the restoration needs for MFBs will entail improvements such as climate- and disaster-proofing, as well as compliance with Eurocodes, EU laws, and specifically priorities like energy efficiency and inclusion. But the restoration of housing assets also entails a host of other vital activities, including debris removal and demolition, inspections, technical designs and studies, and complex implementation processes and associated capacity, all of which are also accounted for in the total needs. In the first four years of the sector recovery, the primary focus is on rapid repairs and recovery of the partially damaged assets, supporting owners with destroyed housing, provision of

[178] Due to the prevalence of informality in the rental market, lack of verified data and access to reliable rental market data, estimations may not provide a clear indication of associated nuances and costs. Rental losses have been estimated accounting for the following variables (i) Average rent per month reported by the GoU that has been adjusted to reflect other sources (ii) Rental market share-assumed at 13 percent and (ii) Estimated number of IDP and registered households for the 22 months of the war and the following 18 months.

[179] UNDP, et al. "Human Impact Assessment," June 2023, Link.

[180] IOM, "DTM Ukraine—Internal Displacement Report—General Population Survey Round 14 (September–October 2023)," November 6, 2023, Link.

[181] IOM, "DTM Ukraine—Area Baseline Assessment (Raion Level)—Round 31 (December 2023)," January 16, 2024, Link.

temporary housing and emergency support, and planning, organization, and coordination between national and local levels for ensuing phases of the recovery. Critical preparatory activities, necessary policies and plans, and adequate capacity and implementation arrangements needs to be in place for the ongoing and subsequent large-scale repair and recovery works.

Although significant funding is being directed toward the housing sector recovery, it is not possible to gauge the overall needs met at this stage. According to the GoU data, in 2023, US$ 1 billion was disbursed toward housing sector recovery and included both, disbursements verified by the Ministry of Finance as well as that reported by line Ministries. These were channeled through the state or municipal budgets or by loans and grants provided by donors and international finance institutions, with most being dedicated to the repair and reconstruction of damaged assets, and overall representing about 52 percent of the sectoral priority needs identified in RDNA2. Although, according to preliminary estimation based on data provided by regional state administrations, at least 2,601 MFBs and 10,017 SFHs are reported, by the GoU to have been repaired by the end of 2023, it appears that the method for tracking recovered assets is not uniformly employed across regions and hromadas. In addition, there is a considerable lag between the disbursement of funds and completion of works. For example, in 2023, 29,600 households were provided compensation for the repair of their partially damaged buildings, but the completion of repairs is yet to be verified by the local authorities and could take up to 12 months after the receipt of compensation.[182]

2024 Recovery and Reconstruction Priorities

Recovery and reconstruction investment priorities for 2024 in the housing sector are estimated at US$2.1 billion (Table 7). In line with the phased approach for housing recovery, the estimate emphasizes the need to focus on rapid light and medium repairs in the short term as the fastest way to increase adequate housing in the housing market, thus encouraging safe shelter for all, including IDPs and the need to support households with destroyed housing. Current and major repairs of MFBs and SFHs are expected to cost around US$500 million in 2024. Costs related to provision of emergency housing support and temporary housing account for US$248 million. Demolition and debris removal is estimated at US$119 million and is vital for initiating substantial and large-scale works in the housing sector. The proposed priority needs also assign a notable US$68 million for technical inspections that ascertain habitability of housing units and for the preparation of studies and project documentation; these pave the way for actual repairs of MFBs in the subsequent years and create a viable project pipeline. Organizational arrangements and design of policies and strategies are expected to cost US$11 million and would lay a solid foundation for faster and more efficient housing sector recovery in coming years. Components within this category could include, among others, training and staffing of relevant personnel at the local level, updating of spatial plans, procurement of software and hardware, and design and implementation of sound monitoring and reporting systems. Investing in capacity and in policy and regulatory improvements at the outset would mitigate implementation risks at later stages.

The extensive recovery needs in the sector, coupled with the limited resources necessitates a comprehensive sector reform and development of a housing strategy and associated operational and action plans, right at the outset. These would allow for adopting a programmatic approach, to determine

[182] Data reported by the GoU.

investments over time, that is based on a shared vision for housing recovery and prioritization criteria. Without an agreed strategy, a multitude of ad hoc solutions that lack coordination may be pursued. To this end, the GoU is in the process of adopting the "Basic Principles of Housing Policy law", (currently in draft) in 2024. Such a vital yet enormous undertaking would require keen attention at elevating not only organizational arrangements and capacity at all levels of the government, but also, at developing robust institutional and regulatory processes, plans and strategies. At present, for 2024, funding commitments (which are at various stages of approval) to meeting housing needs are mostly dedicated to current and major repairs of MFBs and various compensation programs. Items related to organizational arrangements and technical studies are less salient, but they remain critical determinants of the sector's absorption capacity and the success of the overall reform agenda.

Limitations and Recommendations for Future Assessments

Access to reliable data continues to be a key challenge for accurately assessing the level of damage in the housing sector. The war itself severely hampers access to reliable and detailed information, making it increasingly challenging to accurately assess the impacts and associated costs for rebuilding. This is particularly true in territories that are not under GoU control. Moreover, costing data linked to the needs estimations as well as the data required to make valid assumptions increasingly lack reliability and validity as the war continues. This makes it more difficult to correctly assess the impacts and needs in the sector.

Changes in data collection methods and tools prevent meaningful comparisons of results over time. It is important to acknowledge that the government has made efforts to improve data collection tools and mechanisms since the beginning of the war; its introduction of the Register of Damaged and Destroyed Property is a notable example. However, because data collection processes are now different from those used in previous assessments, direct comparisons become difficult. For instance, although RDNA3 provides a cumulative assessment, it found slight reductions in damage in few regions.

Moving forward, it would be worthwhile to design and implement a methodology for systematically and uniformly tracking recovered assets and various categories of needs met, as well as the associated projects and sources of funding. Such a system would allow for improved needs determination and targeted identification of specific housing sector needs across regions. In addition, given that the war is ongoing, tracking of recovered assets and needs met could also potentially show if a repaired asset had been subject to further damage.

Table 5. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	82.9	25.6	143.7
Chernihivska	2,121.4	499.3	2,916.3
Chernivetska	0.0	6.9	19.5
Dnipropetrovska	1,471.1	553.6	2,039.6
Donetska	16,937.8	4,464.4	25,032.6
Ivano-Frankivska	0.1	8.9	29.6
Kharkivska	15,120.0	3915.7	21,176.1
Khersonska	2,357.7	1024.9	3,273.2
Khmelnytska	30.1	12.3	54.7
Kirovohradska	10.7	13.9	36.9

Kyiv (City)	957.5	1,306.6	1,285.0
Kyivska	4,708.1	1,426.3	6,829.1
Luhanska	6,782.5	1,509.6	9,888.5
Lvivska	41.7	15.2	103.6
Mykolaivska	2,063.0	803.8	2,829.0
Odeska	276.3	214.9	415.1
Poltavska	97.9	18.3	163.8
Rivnenska	6.1	6.6	21.1
Sumska	752.8	375.1	1,038.1
Ternopilska	9.1	6.7	31.4
Vinnytska	80.0	21.0	138.0
Volynska	0.1	11.4	13.0
Zakarpatska	3.4	8.8	35.9
Zaporizka	1,723.4	990.9	2,342.5
Zhytomyrska	312.7	175.5	435.3
Total	**55,946.3**	**17,416.2**	**80,291.5**

Source: Assessment team. *Note*: Damage covers 22 months of war between February 24, 2022, and December 31, 2023; loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months through June 30, 2025; total estimated needs cover the period 2024–2033.

Table 6. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Component	Total needs (2024–2033)
Reconstruction needs	Repair and reconstruction	72,119.7
	Demolition and debris removal	5,676.1
	Technical inspections, designs, documentation, and studies	1,685.5
Service delivery restoration needs	Organizational arrangements	37.5
	Regulatory and technical processes, plans, and strategies	12.5
	Provision for temporary housing and emergency support	760.1
	Total	**80,291.5**

Source: Assessment team.

Table 7. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
Repair and reconstruction through owner-driven mechanisms, including compensation, vouchers, etc.	869.0
Repair and reconstruction through current and major repairs of multifamily buildings and single-family houses through cluster approach	499.9
Improving access to housing through housing finance mechanisms	297.0
Demolition and debris removal	119.0
Design and documentation	68.4
Organizational arrangements	11.3
Regulatory and technical processes, plans, and strategies	3.1
Provision of temporary housing and emergency support to IDPs	248.4
Total	**2,116.1**

Source: Assessment team based on priorities defined by line ministries.

Education and Science

Context

The war continues to pose challenges to the education sector's performance, primarily affecting in-person education and learning outcomes. Before February 2022, Ukraine's education sector fared comparatively well, with high enrollments at all levels and student performance above expectations for its level of development. Since 2014, the GoU has followed a comprehensive reform agenda driven by the New Ukrainian School, aimed at tackling disparities in learning outcomes and improving the effectiveness of the education and science systems. However, since February 2022, providing in-person education has been extremely challenging, and opportunities to learn—at all levels, from preschool to higher education—have been affected. Since educational institutions can resume regular operations only if equipped with bomb shelters capable of accommodating students and staff during air alarms, large shares of students still rely on online learning. Moreover, displacement of populations within and outside of Ukraine continues to disrupt the education process and to create education staff shortages.

Faced with the growing impact of the war, the authorities and partners are prioritizing reconstruction and restoration of access to in-person education. As the impact on the education and science sectors increases, students and scientists miss opportunities to learn, research, and innovate. Despite continued investments in education in 2023, the total needs increased by 30 percent between RDNA2 and RDNA3. Moreover, damage to education infrastructure increased by 26 percent over the same period. Nevertheless, local governments are actively reconstructing schools, preschools, and other educational facilities. Since January 2023, the share of educational institutions with shelters has increased from 68 percent to 80 percent, while the share of schools offering fully in-person education has increased from 25 percent to 57 percent. The Ukrainian science sector is also progressively integrating into the European research ecosystem, a step that provides greater collaboration opportunities for Ukrainian scientists and facilitates exchanges of knowledge, but also will help steer a smooth transition towards a digital and sustainable economy and society.

Damage and Loss Assessment

Between February 2022 and December 31, 2023, 13 percent of the education infrastructure was damaged or destroyed by the war, representing an estimated damage of US$5.6 billion (Table 8). The 13 percent share includes damage to 3,583 educational institutions and destruction of 394. While schools account for most of the damage, with 1,888 institutions affected, tertiary and research institutions face higher damage rates, with respectively 21 percent[183] and 31 percent of the total number of institutions damaged or destroyed. Moreover, although damaged educational institutions generally continue to operate online, the destruction of preschools often leads to the discontinuation of early childhood services, increasing pressure on caregivers and limiting their labor market participation. The destruction of educational assets is concentrated in eastern and southern oblasts: between 35 percent and 69 percent of all educational institutions in Donetska, Kharkivska, Khersonska, and Luhanska oblasts have been either damaged or destroyed. These estimates do not account for the destruction of educational equipment

[183] This figure covers vocational education and training institutions, professional pre-higher education institutions, and higher education institutions.

(i.e., school furniture, textbooks, computers, etc.), suggesting that the actual cost of damage is likely higher.

The invasion is causing economic, learning, and research losses in the sector, which are estimated to be US$6.9 billion (Table 8). The combination of online learning, stress, and trauma is leading to substantial learning losses for Ukrainian students. Comparing PISA 2022 and PISA 2018 results shows a clear deterioration in the proficiency of 15-year-olds in mathematics, reading, and science, equivalent to two years of schooling.[184] The accumulation of learning losses since February 2022 amounts to US$5.5 billion. Still, this figure will grow over the working life of today's students, negatively impacting their income potential and leading to additional billions in losses beyond the RDNA time frame. The war has also led to research capacity losses, characterized by smaller investments in research and a decline in the number of publications from Ukrainian scientists, which hint at the difficulties faced by the science sector in the current context. Finally, losses include items such as reduced private sector turnover, decreased tuition collection, additional costs for education institutions that are used as IDP shelters or community centers, and additional expenses for demolition and debris removal of damaged education facilities.

Human impact. The impacts in this sector are disproportionately affecting girls, students from the poorest families, and those living in rural areas. While important disparities were present before February 2022, the war has heightened inequalities between students, as demonstrated by PISA 2022 results.[185] Girls' scores in reading have declined more rapidly than boys', and students with lower socioeconomic status were found to be significantly less likely to attain basic mathematics proficiency than their peers. Moreover, the rural-urban gap across subjects has substantially widened—it amounts now to more than four years and a half of learning (92 PISA points on average), indicating entrenched inequalities between cities and rural areas. This uneven accumulation of learning losses since 2020 is putting Ukraine's reconstruction in jeopardy, as human capital is expected to be a key driver of the country's recovery.

Recovery and Reconstruction Needs, including Build Back Better

The needs related to infrastructure reconstruction and restoration of high-quality in-person education are estimated at US$13.9 billion for the period 2024–2033 (Table 9). The reconstruction of educational institutions is expected to cost US$9.8 billion over 10 years. This process must comply with the latest safety, green, and quality standards established by the GoU, including innovative approaches to teaching and learning, while also reflecting demographic patterns to ensure the sustainability of the education network. Meanwhile, the costs of restoring education service delivery are estimated at US$4.1 billion. A large share of needs is dedicated to the construction of bomb shelters and interim measures to provide access to in-person education (such as school transportation and digital learning centers). In addition, flexible catch-up programs and psychosocial support are necessary to mitigate learning losses and to ensure that students have the tools to recover from missed instruction and trauma. Finally, authorities must prioritize the provision of high-quality education and the resumption of prewar reforms at all education levels, from preschool to university, to build back better in the education sector and respond

[184] Ukrainian Center for Educational Quality Assessment, "National Report on the PISA 2022 Results." Link.
[185] Ibid.

to the needs of the postwar economy. It is important to note that these estimates assume that the situation does not deteriorate further.

Different levels of government and various partners are supporting students and teachers in the most affected areas, but the needs far exceed what is being supported. The highest needs are recorded in Donetska, Kharkivska, and Khersonska oblasts, where the rate of destruction has been high, and where many children have been studying online since 2020. Accordingly, partners are supporting students and teachers from these areas and providing them with educational materials, mental health support, and opportunities for catch-up learning. Meanwhile, the Ministry of Education and Science (MoES) is guiding the overall recovery of the education sector and providing financial support to local governments for meeting essential needs, such as the establishment of bomb shelters and the purchase of school buses. Finally, local authorities are key drivers of the recovery process. However, the needs of the education and science systems exceed by far what is currently being supported.

2024 Recovery and Reconstruction Priorities

The total recovery and reconstruction investment priorities for 2024 are estimated at US$1.2 billion (Table 10). These priorities reflect the continued importance of providing access to in-person education to mitigate learning losses and improve the quality of instruction. Four priorities have been identified for 2024, to be implemented jointly by the MoES, local governments, and partners:

- Reconstructing damaged education assets, in line with demographic projections
- Providing access to education, with the construction and rehabilitation of bomb shelters, the organization of school transportation, and the provision of online learning
- Ensuring the provision of high-quality education and the continuation of the reforms across education levels, including investments for the rollout of the New Ukrainian School
- Tackling the accumulation of learning losses and trauma, especially for vulnerable children, through the organization of catch-up classes and mental health support services

Combining both humanitarian activities and reconstruction efforts in 2024 is essential to the resilience of the Ukrainian education system. Education has a critical role to play in the wider reconstruction efforts, from building social cohesion to facilitating economic recovery and putting Ukraine onto an accelerated development path. Thus, even when integrated into a humanitarian response, education policy should from the onset not only address immediate needs but also adopt a developmental perspective to effectively reverse the long-term impact of the war. By supporting education, Ukraine invests in the well-being and development of its future generations, equipping them with the knowledge, skills, and nurturing environments they need to rebuild from the war. Therefore, the 2024 investment priorities not only aim to mitigate the immediate impact of the war but also contribute to the long-term resilience and prosperity of the country.

A total of US$280.3 million has been committed in the 2024 state budget to address these priorities. Municipalities have also dedicated important resources to address these challenges, reflecting the decentralized nature of the education system and the continued relevance of investing in students, teachers, and researchers. Moreover, continued partnerships with international organizations, donor countries, and civil society groups are essential for mobilizing resources, sharing expertise, and

implementing effective interventions. However, further support is urgently needed to ensure the return to in-person classes and limit the long-term impact of the war on education and science.

Limitations and Recommendations for Future Assessments

This assessment was conducted with available data from the MoES, the Kyiv School of Economics, and partners, but further analysis is needed. By relying on a variety of data sources, this assessment offers a comprehensive view of the state of the education and science sectors after close to two years of war. Future assessments could include the following:

- Assessment of the impact of the war on early childhood development and caregivers' labor market integration, with recommendations to build back better the current preschool system and provide alternative forms of early childhood education and care
- Analysis of the network of education infrastructure to collect data on reconstruction initiatives and identify the needs for priority reconstruction and optimization, considering access to education and demographic trends
- Analysis of the labor market needs at the oblast level, in cooperation with social partners, to modernize the curriculum of selected vocational and higher education specialties and identify avenues for adult education and recognition of qualifications
- Comprehensive assessment of the science system during the war, including losses in research capacity, and potential for postwar recovery and smart specialization to rebuild a more resilient innovation ecosystem
- Assessment of the long-term impacts of displacement outside of Ukraine on human capital, demography, and growth, and identification of strategies to promote brain circulation.

Table 8. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	9.6	178.1	87.5
Chernihivska	175.1	153.0	455.6
Chernivetska	0	162.9	69.0
Dnipropetrovska	417.3	493.6	1,101.9
Donetska	1,243.5	355.0	2,455.5
Ivano-Frankivska	0	234.7	55.4
Kharkivska	992.6	435.6	2,224.6
Khersonska	501.8	194.2	1,109.4
Khmelnytska	117.5	208.8	274.6
Kirovohradska	22.9	148.2	124.4
Kyiv (City)	202.8	763.0	524.1
Kyivska	280.2	405.6	592.2
Luhanska	343.3	107.4	790.0
Lvivska	24.2	413.2	193.3
Mykolaivska	361.6	200.3	881.1
Odeska	136.3	448.0	407.3
Poltavska	27.2	201.5	163.0
Rivnenska	2.3	241.3	85.3
Sumska	212.8	160.2	577.8
Ternopilska	3.4	165.9	62.7

Vinnytska	8.5	236.7	204.8
Volynska	0	211.4	70.6
Zakarpatska	0	242.8	55.4
Zaporizka	306.9	262.9	834.2
Zhytomyrska	167.9	206.5	407.1
Nationwide (no specific region)	0	37.0	116.9
Total	**5,557.8**	**6,867.8**	**13,923.9**

Source: Assessment team. *Note*: Damage covers 22 months of war between February 24, 2022, and December 31, 2023; loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months through June 30, 2025; total estimated needs cover the period 2024–2033.

Table 9. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Types of activities/investments	Total needs (2024–2033)
Reconstruction needs	Preschool education	1,441.4
	School education	4,597.0
	Extracurricular education	456.5
	Vocational education and training	1,146.8
	Professional pre-higher education	448.2
	Higher education	641.5
	Specialized education	48.2
	Special education	70.1
	Adult education	10.8
	Research infrastructure	910.0
	Total reconstruction	**9,770.5**
Service delivery restoration needs	Ensuring safe access to education for all	2,377.8
	Tackling learning losses and trauma	579.9
	Providing high-quality education at all levels	1,195.7
	Total service delivery restoration	**4,153.4**
Total		**13,923.9**

Source: Assessment team.

Table 10. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
Reconstructing damaged education assets	112.0
Providing access to education	722.0
Ensuring high-quality education across education levels	309.5
Tackling learning losses and trauma	49.5
Total	**1,192.9**

Source: Assessment team based on priorities defined by line ministry.

Health

Context

Since February 2022, the health sector in Ukraine has experienced war-related disruption and damage to infrastructure and service delivery. The number of damaged or destroyed health care facilities, and pharmacies, has increased by 27.0 percent and 32.0 percent, respectively, compared to the RDNA2 (dated February 2023),[186] while losses in the health sector have increased by approximately 8.3 percent. The collapse of the Kakhovka Dam in June 2023 had very substantial impacts on the health sector, disrupting delivery of essential health care and public health services.[187] Compared to RDNA2, the estimated recovery and reconstruction needs have decreased by 13.5 percent for the next 10 years, however, immediate reconstruction and service delivery restoration needs for the year remain high. Over the last year, GoU has continued its efforts to sustain the most essential and critical health services, which are desperately needed by the population. There has been a significant shift in the demand for health services in order to addressing the mental and physical traumas of the war. GoU has remained committed to the ongoing health sector reform (begun in 2017), with the aim of improving health outcomes, system efficiency, and the financial protection of the population. The reforms established the National Health Service of Ukraine (NHSU) as strategic purchaser of services from the public and private sectors; they have also sought to define health entitlements in the Program of Medical Guarantees (PMG), consolidate financing sources, digitalize medical records, and introduce output-based financing. Given the currently limited capacity of the country, however, there is a pressing need to be addressed with external assistance to close capacity gaps. The reforms provide a foundation for enhanced access to high-quality care and to service delivery that is more transparent and accountable. But without additional recovery efforts, interventions, and prioritized investments, applying systems thinking in both the human and infrastructural capacity, the invasion will continue to have serious negative consequences for the health and well-being of the country.

Damage and Loss Assessment

The war has caused approximately US$1.4 billion in damage to the health sector in Ukraine (Table 11). According to the data provided by the Ministry of Health, there were 9,925 public facilities in the health sector prewar. Of those, 1,242 (12.5 percent of all facilities) had been partially or fully damaged as of the current assessment. Compared to RDNA2, the number of damaged facilities increased by 27.0 percent. The largest share of damage in terms of number of affected assets is recorded in primary health care (PHC) centers (51.9 percent) and hospitals (26.2 percent), while the largest share of damage in terms of cost is observed in Donetska (33.9 percent), Kharkivska (18.2 percent), and Luhanska (15.6 percent) oblasts, where the level of war intensity is severe. Additionally, there were also 787 pharmacies damaged or destroyed. Recent data were not available for ambulances, so the current analysis assumes the same damage as in the RDNA2.

The losses in this sector are estimated to be US$17.8 billion. This figure includes the removal of debris, demolition of the destroyed facilities, losses from the financing of facilities, and additional losses to the

[186] World Bank, "Ukraine Rapid Damage and Needs Assessment: February 2022–February 2023," Link.
[187] For the impact of the dam collapse on the health system, see Government of Ukraine and United Nations, "Post-disaster Needs Assessment: 2023 Kakhovka Dam Disaster, Ukraine," 2023, Link.

population's health due to forgone care and increased public health threats (Table 1). Assumptions for the removal of debris and demolition of buildings remain the same as in RDNA1 and RDNA2.[188] The RDNA3 includes losses associated with the needed strengthening of the core essential public health functions to address country preparedness and response capacities to manage public health emergencies. As in the previous RDNAs, the losses in population health were estimated using disability-adjusted life years (DALYs) attributable to select conditions relevant to the ongoing war, such as increased communicable diseases, neonatal and maternal mortality, and mental health issues.[189] The RDNA3 estimated a loss of US$14.3 billion in DALYs for the 22 months since February 2022 and additional 18 months following. This is an increase of 8.3 percent compared to RDNA2, reflecting the increasing disability and loss of life due to the war.

The human impact of the war on the population's health and well-being is accounted for in this assessment. The war has impacted the provision of and access to healthcare because of added pressure on facilities and staff, and limited economic resources driven by inflation, further compounded with losses of livelihoods.[190] Before February 2022, the state of the populations' mental health was already a concern in Ukraine. The lasting war, internal displacement, and uncertainty about for the future all add barriers to accessing already limited mental health care for both adults and children.[191] In addition, Ministry of Health (MoH) data suggest that there has been a decline in access to high-quality sexual and reproductive health services for girls and women since the war started.[192] There is a need for a comprehensive strategy to provide the health-related support and services that are needed by the population.

Recovery and Reconstruction Needs, including Build Back Better

The total recovery and reconstruction needs are estimated to be US$14.2 billion over 10 years (Table 11 and Table 12). The estimates of needs for reconstruction of health facilities are based on improved designs and service delivery models (under the build back better framework) and were adjusted to reflect the MoH's updated estimates of destroyed and damaged health facilities. An estimated US$8.2 billion is required for reconstruction and refurbishment of damaged health facilities to address increased health needs resulting from the war. A general profile hospital may be reconstructed as a more efficient facility able to serve up to 300,000 individuals; or in specific situations it may be redesigned as a specialized hospital with the capacity to serve up to 750,000 individuals. Similarly, the rebuilding of PHC centers with enhanced functionality, also known as PHC+, involves transforming them into comprehensive PHC centers.[193] These upgraded centers offer not only multidisciplinary care but also extended diagnostic

[188] For destroyed assets, 14.1 percent of the full cost is added for demolition, and 1.875 percent of the cost is added for the removal of debris. For partially damaged assets, 1.25 percent of the cost is added for debris removal, with the understanding that there will be no cost associated with demolition.

[189] DALYs assess overall disease burden, expressed as the number of years lost due to mortality and morbidity. One DALY represents the loss of the equivalent of one year of full health.

[190] UN Human Impact Assessment. June 2023. Link.

[191] Violetta Seleznova et al., "The Battle for Mental Well-Being in Ukraine: Mental Health Crisis and Economic Aspects of Mental Health Services in Wartime," *International Journal of Mental Health Systems* 17, article 28 (2023), Link. *See also* Elvevåg, Brita, and Lynn E. DeLisi. "The Mental Health Consequences on Children of the War in Ukraine: A Commentary." Psychiatry Research 317 (November 1, 2022): 114798. Link.

[192] Internal analysis by United Nations Population Fund (UNFPA) of the 2022 sexual and reproductive health statistics from the MoH.

[193] World Bank, "Reshaping Ukraine's Health Service Delivery," 2023, Link.

capabilities and emergency services. For the restoration of service delivery, an estimated US$6 billion is needed. This includes adaptation of PHC, which is critical for addressing changes in health care needs, the movement of populations, and the disruption of health services caused by the COVID-19 pandemic. The consequences of damage, internal displacement, and continued insecurity also mean that essential preventive care services may be foregone. World Bank–financed projects are providing resources to support recovery and reconstruction and to improve the population's utilization of care.

2024 Recovery and Reconstruction Priorities

The urgent and implementable needs for 2024 are estimated to be US$872.6 million (Table 13). The immediate priorities include strengthening of PHC as the foundation for people-centered services, along with smaller-scale repairs to restore health facilities' functionality. These investments aim to expedite the renovation of damaged facilities, reconstruct outdated facilities to better support rehabilitation and mental health services, and upgrade infrastructure of critical importance to the overall health system. The allocated funds also support preparatory work and planning investments for major reconstruction and construction projects; increased financing for mental health services, particularly for veterans and survivors of gender-based violence; and expansion of rehabilitation services, assistive technologies, and initiatives addressing missed screenings for noncommunicable diseases. Priority needs also include the monitoring and follow-up of individuals with chronic conditions, along with scale-up of both child and adult vaccinations. Given the public health risks faced during this period and the needs for application of the International Health Regulations (IHR, 2005) requirements and EU health security frameworks, investments were considered to emphasize multi-hazard surveillance, preparedness, and response mechanisms.

Limitations and Recommendations for Future Assessments

The availability of reliable data continues to be limited. The data underlying this analysis come from the Damage Registry maintained by the Ministry of Health, which is the most comprehensive data source available. The quality of the data contained in the Damage Registry has improved over time. In RDNA3, the methodological approach has been calibrated for data analysis and allows more precise figures on the total damage costs. From this perspective, RDNA 2 appears to have overestimated the total damaged area and the total damage cost. In any future assessment, data may need to be further triangulated at the facility level by other sources, such as the national e-Health system and Health Resources and Services Availability Monitoring System (HeRAMS).[194] The recovery planning further needs estimates for the public health services to address the International Health Regulation Joint External Evaluation recommendations (2021), considering implications of the war. A detailed costed National Action Plan for Health Security needs to be elaborated to facilitate the process in the future.

Table 11. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	1.9	503.0	386.6
Chernihivska	109.6	481.6	355.2
Chernivetska	-	333.5	296.3
Dnipropetrovska	15.1	1,161.0	1,034.8

[194] World Health Organization, "Health Resources and Services Availability Monitoring System (HeRAMS)," Link.

Donetska	484.9	1,919.4	1,511.3
Ivano-Frankivska	-	506.2	449.6
Kharkivska	260.9	1,109.0	950.9
Khersonska	88.3	385.0	362.3
Khmelnytska	1.2	460.2	409.0
Kirovohradska	-	383.5	300.4
Kyiv (City)	34.2	1,811.2	993.7
Kyivska	34.6	859.3	609.3
Luhanska	222.1	994.7	773.3
Lvivska	-	928.0	824.4
Mykolaivska	54.5	414.9	381.1
Odeska	3.5	1,039.7	783.5
Poltavska	0.3	580.1	449.7
Rivnenska	1.5	427.8	380.3
Sumska	19.3	523.0	350.8
Ternopilska	-	382.6	339.9
Vinnytska	4.5	565.6	503.5
Volynska	-	382.6	339.8
Zakarpatska	-	466.1	414.1
Zaporizka	57.4	708.3	563.8
Zhytomyrska	7.3	442.2	394.5
Nationwide (no specific region)	30.3	69.1	10.1
Total	**1,431.3**	**17,837.3**	**14,168.1**

Source: Assessment team. *Note*: - = not assessed. Damage covers 22 months of war between February 24, 2022, and December 31, 2023; loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months through June 30, 2025; needs cover the period 2024–2033.

Table 12. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Component	Total needs (2024–2033)
Reconstruction needs	Demolition cost and debris removal	163.5
	Construction of new secondary care facilities	3,714.9
	Construction of new secondary care facilities—centers of excellence	1,848.3
	Reconstruction of damaged secondary facilities	174.6
	Refurbishment and equipping of ambulance stations	7.4
	Construction of new primary care facilities	158.7
	Reconstruction of damaged primary care facilities	17.2
	Construction of new rehabilitation centers	495.0
	Reconstruction of rehabilitation centers	848.1
	Mental health centers	642.3
	Rebuilding of dental clinics	2.2
	Reconstruction of dental clinics	2.6
	Rebuilding of pharmacies	13.9
	Reconstruction of pharmacies	0.4
	Replacement of destroyed and damaged ambulances	46.8
	Rebuilding and reconstruction of other institutions	45.9
Service delivery restoration needs	Additional primary health care services and medicines	3,968.8
	Health emergency preparedness and response	512.0
	Additional mental health services	553.2
	Additional rehabilitation services	522.4

	Education services	109.9
	Digitalization and telemedicine	200.0
	Emergency care equipment	120.0
Total		**14,168.1**

Source: Assessment team.

Table 13. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
Investments to build new secondary care facilities	376.0
Investments to build new centers of excellence secondary care facilities	43.3
Investments to reconstruct damaged secondary facilities	133.0
Investments to refurbish and equip ambulance stations	2.0
Investments to build new primary care facilities	73.3
Investments to reconstruct damaged primary care	4.2
Investments rehabilitation centers new	13.1
Investments rehabilitation centers reconstruction	48.2
Investments mental health centers	2.9
Additional primary health care services and medicines	6.0
Health emergency preparedness and response	36.9
Additional mental health needs	24.3
Education needs	0.7
Digitalization and telemedicine	0.8
Investments in emergency care equipment	107.0
Other	1.0
Total	**872.6**

Source: Assessment team based on priorities defined by line ministries.

Social Protection and Livelihoods

Context

As Ukraine is responding to the conditions since the invasion, the needs related to social protection and addressing impacts on livelihoods mount. The estimated number of internally displaced persons (IDPs) is 3.7 million (a decrease from 5.4 million at the time of RDNA2), while the number of returnees is 4.6 million as of September 2023.[195] Nevertheless, millions of people are pushed into poverty and the labor market situation remains highly uncertain. While the estimation of the number of jobs lost largely remains the same as in the RDNA2, compared to pre-war levels, employment has fallen by 15.5 percent (or 2.4 million jobs) and output per person has decreased by 13 percent).[196] Employment-related needs should also include people engaged in defense (which may exceed 1 million) and the needs for future recovery grow every month.

In 2023, expenditures on social assistance amounted to over UAH 179 billion (US$4.9 billion).[197] This includes spending on the Guaranteed Minimum Income (GMI), Housing Utility Subsidy (HUS), child and family benefits, disability and care benefits, and benefits to IDPs. A social assistance program for IDPs to cover living expenses introduced in March 2022 provides monthly support to around 2.5 million beneficiaries (as of January 2024). Total spending on social assistance for IDPs in 2023 amounted to UAH 73.3 billion (US$2 billion). Going forward, these expenditures are expected to decrease due to a review of the IDP support criteria and the introduction of means testing. HUS spending reached UAH 36 billion (US$1 billion) to finance energy subsidies for 3.6 million beneficiaries, while expenditures under the GMI program reached UAH 11.5 billion (US$0.31 billion) and covered 236,000 beneficiaries. A wage subsidy program aimed at encouraging employers to hire IDPs was introduced in March 2022. In 2022, 16,000 IDPs were hired under this program and employers received over UAH 200 million (US$5.5 million). With the support of this program, the number of employed IDPs amounted to 14,400 in 2023; the spending on the program was UAH 181 million (US$5 million).[198] Significant additional expenditures will be needed to facilitate the creation of jobs for IDPs who remain unemployed, as well as for people currently engaged in defense.

Damage and Loss Assessment

The total cost of damage to the sector is estimated to be US$0.2 billion (Table 14). Damage in the social protection area mostly consists of destroyed or damaged infrastructure, such as residential care units, sanatoriums, or social service delivery centers. As of December 2023, damage to facilities providing social services increased further with 161 social protection infrastructure assets damaged or destroyed. The total amount of damage is about US$220 million.[199] The greatest damage is sustained by Odeska (US$42.3 million) and Donetska (US$41.4 million) oblasts and the city of Kyiv (US$35.8 million).

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[195] IOM, "Ukraine—Internal Displacement Report—General Population Survey Round 14 (September–October 2023)," November 6, 2023, Link.

[196] International Labour Organization (ILO), "Multiple Crises Threaten the Global Labour Market Recovery," *ILO Monitor on the World of Work*, 10th ed., October 31, 2022, Link.

[197] Government Portal, "Ministry of Finance: In 2023, Social Benefits Worth UAH 450.1 Billion Were Fully Funded," January 15, 2024, Link.

[198] Government Portal, "In 2023, the State Compensated Entrepreneurs with UAH 181 Million for the Employment of More than 14,000 IDPs," January 8, 2024, Link.

[199] For RDNA2, these numbers were 158 infrastructure assets and US$241 million of damage.

The losses in the sector are estimated to be US$60.8 billion (Table 14). These very large losses stem from the nationwide loss of jobs and household income from wages, as well as from higher poverty, related increased expenditures under existing means-tested social protection programs (which did not incorporate sufficient adjustment to inflation due to rising poverty and reduced fiscal space), and additional needs for programs such as survivor's benefits, or payments and services to people with disabilities.

The largest share of losses comes from the permanent loss of jobs and workers. National polls report that 44 percent of individuals who were employed before the war are working at their regular workplaces, 14 percent are working partially or remotely, and 15 percent have found new jobs. While there has been a reduction in the overall unemployment rate, over a quarter of respondents are still unemployed.[200] Losses stemming from social protection programs are estimated at US$9.5 billion. The calculation of losses used the average monthly salary in Ukraine before the war (as of January 2022)—US$534—and assessed the losses for 22 months of the ongoing invasion and 18 months going forward.

Human impact. The human impact has been substantial. Loss of private sector jobs and income, high inflation, and asset loss brought on by the war have reversed 15 years of poverty reduction, especially for households with children, which is estimated to grow from 43.2 percent in 2021 to 65.6 percent in 2023.[201] According to initial estimates from a monthly phone survey conducted by the World Bank since April 2023, respectively 9 percent and 27 percent of households reported having ran out of food and eat fewer kinds of foods because lacking money at some point over a 30-day period in November 2023. In that period, 14 percent of respondents reported they had to borrow to cover basic needs while another 12 percent could not pay utilities.[202] The number of persons with disabilities is expected to increase, as the injuries sustained by members of the military as well as civilians can lead to devastating and long-lasting physical and psychological complications and disability. Between 2015 and 2021, the number of persons with certified disabilities in Ukraine gradually increased from 2.57 million to 2.73 million people (from 6.2 to 6.7 percent of the prewar population), including around 1 million women. Over a span of 18 months during the war, the number of persons with disabilities increased to 7.4 percent of the population (by 300,000 persons).[203] Actual numbers are likely to be close to the international disability prevalence rate of 16 percent.[204] Around 58 percent persons with disabilities report the need for financial assistance, and 20 percent report the need for employment services.[205]

Recovery and Reconstruction Needs, including Build Back Better

[200] Calculation of losses uses average income in the economy before the invasion for those who remain unemployed; for those working part-time, assumed income is 50 percent of prewar income. See Rating Sociological Group, "The Twenty-Fourth Nationwide Survey 'Ukraine in Times of War' Public Sentiment and Economic Situation of the Population (September 5–7, 2023)," September 28, 2023, Link.
[201] UNICEF. 2023. Child Poverty: Impact of the War on the Situation of Households with Children. Link
[202] World Bank, Listening to Ukraine phone surveys. Forthcoming.
[203] Ministry of Reintegration of Temporarily Occupied Territories, "There Are Three Million Individuals with Disabilities in Ukraine," September 25, 2023, Link.
[204] World Health Organization, "Roundtable Dialogue on Humanitarian Support for Persons with Disabilities in Ukraine," May 23, 2023, Link.
[205] Rating Sociological Group, "How Does Ukrainian Society Truly Perceive People with Disabilities?" November 15, 2023, Link.

The estimated needs in this sector amount to US$44.5 billion over 10 years (Table 15). It is important to note the following:

Restoration of jobs remains the key priority for recovery. Recovery efforts and restoration of the country's economic potential will require restoring both the output level per person (which is expected to happen with broad recovery across sectors) and the workforce potential. The latter poses significant challenges and drives large needs. According to a Centre for Economic Strategy, an increasing number of Ukrainian refugees are unlikely to return to Ukraine due to the ongoing invasion of Ukraine and their adaptation to life abroad.[206] Estimates of this group range from 1.3 million to 3.3 million people.[207] This contrasts with the increase in employment needed for Ukraine to return to its pre-invasion GDP trajectory. According to the International Labour Organization (ILO), even if labor productivity returns to pre-war levels, Ukraine would require employment to grow by 37 percent compared to 2021 numbers to achieve this goal. This means not only that the return of the refugee population is critical, but also that additional measures—impacting needs - would be needed to increase the participation of in the labor force (especially for women), both in terms of activation measures and through improvements in working conditions to render return more attractive.

The RDNA3 estimates that restoring the workforce potential would require measures aimed at increasing the labor force participation rates to add about 2.3 million workers. This is a midpoint value of the low and high estimates of the number of refugees who will remain abroad. According to ILO's calculations, adding to the remaining workforce by 2.3 million workers would require increasing employment-to-population ratio from 47.4 percent to 56.1 percent (8.7 pp change), and specifically increase in female employment-to-population ratio from 39.1 percent to 47.5 percent (8.3 pp change). This would require additional efforts and costs (through mobility grants, skilling programs, settling-in grants, or wage subsidies, and through return migration and immigration schemes to ensure access to needed skills, as well as ensuring availability of care services to support increased participation of women in the labor force). In addition, special programs are needed to bridge gaps created by geographical mismatches and changes in labor market needs due to structural adjustments.

The focus should be on the rehabilitation of war-affected groups, such as children (i.e., displaced children, orphans), IDPs, and persons with disabilities. This approach is critical for the reintegration of war veterans into society and could efficiently respond to the multidimensional challenges faced by survivors. It could include the restructuring and modernization of relevant benefits, as well as services to reintegrate veterans into civil life (e.g., psychological support, physical rehabilitation to improve functionality, social rehabilitation to ensure inclusion in the community). To support IDPs' and returnees' integration into the local labor market, there must be support for efforts to relocate businesses, build capacity of private and public employment services, including on the assessment of labor market imbalances, and provide skills training for IDPs (particularly on entrepreneurship). The budget for social protection of persons with disabilities, including rehabilitation and assistive technologies, increased from US$51 million in 2022 to US$94 million in 2023. The government expedited the adoption of the World

[206] Centre for Economic Strategy, "Ukrainian Refugees: How Many Are There, Their Intentions & Return Prospects," August 29, 2023, Link.
[207] Centre for Economic Strategy. 2023. Link.

Health Organization's International Classification of Functioning, Disability, and Health (ICF). In April 2022, the Ministry of Economy approved the ICF as a national classification (NC 030:2022) for cross-sectoral use in disability-related programming, policy making, and management information systems. This should allow the government to better assess the individual needs of beneficiaries and plan the rehabilitation interventions and expenditures needed to restore their ability to function and work. Further efforts are needed to ensure that vulnerable groups can fully realize their rights. These should include developing a long-term strategy for a complex deinstitutionalization reform involving all types of residential care institutions (for adults and children with disabilities and mental disorders, the elderly, palliative patients, etc.), reviewing and updating the National Strategy for Reforming the Institutional Care for Children and associated Action Plan to address new challenges and emerging needs, and enhancing the development of the family-based and home-based types of care as an alternative to residential care.

In this recovery phase, the utilization of new technologies, including cloud-based and online solutions, should be expanded to strengthen the adaptability of the overall system. Ukraine has already appreciably invested in digital solutions such as the Diia platform, the Pension Fund digital platform, and the Unified Information System of the Social Sphere, which allowed digitization of social benefits and services. However, new solutions—such as skill-based job matching at scale—are needed. The Diia, with almost 20 million users as of November 2023,[208] allows online enrollment through a web-based portal in six types of social assistance benefits, namely, HUS, birth and adoption grants, benefits for children with long-term adverse health conditions, benefits to persons with disabilities since childhood, and children with disabilities, and benefits for single parents. Enrollment in assistance for IDPs is available through the Diia mobile application. In 2024, the government will launch online enrollment in 10 additional social assistance programs to enhance access to benefits during the war. The Professional Education Online Platform, launched in 2022, has been a welcome addition to online training in technical and vocational skills. The platform, which includes virtual reality modules to partially bridge the practical learning gap arising from war-related disruptions in schools and firms, already covers 29 occupations and will be expanded by an additional 60.[209]

2024 Recovery and Reconstruction Priorities

The total recovery and reconstruction investment priorities for 2024 are estimated at US$3.9 billion (Table 7). In the medium term, there is a need to finance social protection expenditures that will protect poor and vulnerable households and individuals from additional long-term harm. For example, such programs help prevent mentioned groups from resorting to adverse coping strategies. These expenditures include support through a GMI-type program that provides low-income families with the income to cover basic needs, and through housing and utility subsidies that aim to prevent energy poverty, especially during the heating season. Costs associated with these and other social protection programs (such as benefits to IDPs and restoration of social services) are expected to reach over US$2.9 billion. However, this cost may grow based on the territory under government control, resumption of

[208] Anastasia Nesenyuk, "The Diia App Is Already Used by Almost 20 Million Ukrainians. What New Services is the Ministry of Digital Transformation Working On?" *Forbes*, November 23, 2023, Link.
[209] ILO, "'Professional Education Online'—A New and Innovative Digital Platform to Sustain TVET Education in Ukraine," February 21, 2023, Link.

welfare office operations, return of refugees from abroad, and/or lift of the freeze on tariffs. Adjusting tariffs alone could increase the needs for 2024 by about US$750 million.

Limitations and Recommendations for Future Assessments

This assessment does not incorporate the expected results of likely changes to social protection policies in the future aimed at higher efficiency of public funds use. The Ministry of Social Policy prepared a concept note that identified key problems in social protection and suggested relevant reform priorities (listed below), noting that addressing the problems would impact the social protection needs in the future:

- **Social insurance (pensions).** Unify and simplify the different pension guarantees, revise criteria for disability, and prepare for the introduction of a funded pension scheme to respond to declining pension benefit adequacy.
- **Social assistance.** Transform the subsistence minimum into an anti-poverty tool (de-linking it from fees, fines, and penalties, as well as salaries in the budget sector); optimize the number of and algorithms for social assistance benefits; separate social assistance payments from pensions; and strengthen labor incentives in social assistance programs to respond to insufficient targeting, weak behavioral incentives, and less adequate support. A better-designed GMI-type program could integrate several less effective benefits into the current Social Assistance to Low-Income Families. However, the government should continue to invest in the modernization of the benefits administration to address exclusion errors and non-take-up.
- **Social services.** Expand the use of complentary social services to help beneficiaries overcome difficult life circumstances; expand family-based and community-based modes of providing social services to respond to the underdevelopment of the social services system in Ukraine. Despite the progress Ukraine has made on its social service reform agenda, more efforts are still needed to improve the coverage of the poor and vulnerable population with social services. The capacities and budgets of the communities (which are, according to national legislation, responsible for social service financing and delivery) are stretched to the limit. To address these constraints, the government will temporarily co-finance some types of services that communities cannot afford from the state budget to ensure sufficient quantity and/or quality. As the first step, the government launched a pilot on the centralized financing of the “social services for resilience” with a focus on psycho-social services. Based on the results of the pilot, financing social services from the state budget is expected to scale up to include other types of services and linkages to job opportunities.

For social protection programs that depend on changes in incomes and the cost of basic needs, there is high uncertainty beyond the immediate/short term. Expenditures for means-tested programs may change significantly depending on the change in household incomes and their relation to the cost of basic needs, expressed by the legislatively set income threshold.

Table 14. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	0.0	0.0	0.0
Chernihivska	2.1	0.3	3.1

Chernivetska	0.0	0.0	0.0
Dnipropetrovska	10.7	1.5	15.9
Donetska	41.4	4.8	60.7
Ivano-Frankivska	0.0	0.0	0.0
Kharkivska	6.6	0.5	9.4
Khersonska	6.8	1.0	10.1
Khmelnytska	0.0	0.0	0.0
Kirovohradska	0.0	0.0	0.0
Kyiv (City)	35.8	0.8	49.1
Kyivska	8.3	0.1	11.3
Luhanska	19.9	0.5	27.3
Lvivska	0.0	0.0	0.0
Mykolaivska	10.3	1.0	14.9
Odeska	42.3	0.5	57.6
Poltavska	0.0	0.0	0.0
Rivnenska	0.0	0.0	0.0
Sumska	6.8	0.3	9.5
Ternopilska	0.0	0.0	0.0
Vinnytska	0.0	0.0	0.0
Volynska	0.0	0.0	0.0
Zakarpatska	0.1	0.0	0.1
Zaporizka	28.6	4.0	42.6
Zhytomyrska	0.2	0.0	0.3
Nationwide (no specific region)	-	60,571.2	44,230.4
Total	**220.1**	**60,766.3**	**45,542.6**

Source: Assessment team. *Note*: - = not assessed. Damage covers 22 months of war between February 24, 2022, and December 31, 2023; loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months until June 30, 2025; needs cover the period 2024–2033.

Table 15. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Types of activities/investments	Total needs (2024–2033)
Reconstruction needs	Demolition and debris removal	15.1
	Repair and reconstruction cost	297.1
Service delivery restoration needs	Employment-related measures	14,738.4
	Means-tested benefits	21,371.9
	Benefits to IDPs	2,760.1
	Restoration of social services	1,149.2
	Military pensions and other long-term benefits related to the war	4,210.8
Total		**44,542.6**

Source: Assessment team.

Table 16. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
Repair and reconstruction cost	91.8
Restoration of social services	277.4
Subtotal- reconstruction and recovery	**369.2**
Employment-related measures	250.0
Means-tested benefits	1,352.6
Benefits to IDPs	1,576.5

Military pensions and other long-term benefits related to the war	382.8
Subtotal- social transfers and employment support	**3,561.9**
Total	**3,931.1**

Source: Assessment team based on priorities defined by line ministries.

Culture and Tourism

Context

The war continues to have a significantly negative impact on the diversity and richness of culture and cultural heritage in Ukraine. It has damaged historic cities, cultural sites, built heritage, cultural institutions, and cultural collections; it has caused a loss of livelihood for cultural bearers, cultural creators and others employed in the creative sector; it has further impeded the practice and transmission of living heritage and has reduced access to culture and interfered with the enjoyment of cultural rights, especially among more vulnerable communities. Risk management remains critical as historic cities, built heritage, and monuments remain under daily threat of bombing. Physical damage to museums and their looting continues highlighting the urgent need for thorough inventory and improved collection management.

Increased attacks on cultural heritage have been documented since summer 2023, including—for the first time since February 2022—sites protected under the World Heritage Convention. On July 6, 2023, a missile hit the historic residential complex for teachers of the L'viv Polytechnic, located in the buffer zone of the World Heritage property of L'viv – the Ensemble of the Historic Centre. Since July 2023, attacks on Odesa have destroyed many cultural and religious establishments and endangered the city's cultural heritage, including those protected under the World Heritage Convention. Repeated strikes have made historic buildings more vulnerable to future damage caused by blast shock and vibration, even if they were not directly hit. The destruction of the Kakhovka Dam in southern Ukraine exposed cultural heritage to the dual threat of flooding and artillery shelling.[210] Khersonska is the most affected oblast, accounting for over 72 percent of the estimated damage. Still, the most critical losses include revenue losses from tourism in Odeska oblast. It is still necessary to assess the state of the archaeological sites exposed by the draining of the Kakhovka reservoir.

Cultural heritage close to or within areas of active hostilities remains under ongoing threat. Conditions of several cultural sites of national importance damaged in 2022 have worsened, making these sites particularly vulnerable to the direct or indirect effects of future attacks. For example, the Skovoroda Museum in the Kharkivska region has entered its second winter without protective measures. Some assets have also been repeatedly shelled, in some cases after repairs and urgent interventions were completed.[211] In addition to the Historic City of Odesa (inscribed in January 2023), in light of these threats, in September 2023 the World Heritage Committee added two Ukrainian sites to the List of World Heritage in Danger : (i) Kyiv: Saint Sophia Cathedral and Related Monastic Buildings, Kyiv-Pechersk Lavra; and (ii) L'viv – the Ensemble of the Historic Centre. The committee considered that protection of the Outstanding Universal Value of these properties could not be guaranteed due to the war. Twenty-five sites across Ukraine are now also registered under the enhanced protection regime under the Second Protocol of the UNESCO 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict.

[210] Total damage to identified cultural assets in the oblasts interested by the Kakhovka dam destruction was estimated at US$156.8 million, the majority of which (US$150.8 million) concerns sites and buildings with recognized cultural/social value. See GoU and UN, "Post-Disaster Needs Assessment: 2023 Kakhovka Dam Disaster, Ukraine" 2023, Link.

[211] For instance, the Kherson Regional Universal Scientific Library was damaged in August 2022 and again in November 2023. Similarly, the Church of the Intercession in Klishchiivka (Donetska region) has been damaged in March and September 2023. The Odesa Fine Arts Museum was damaged by a missile attack on the Port of Odesa in July 2022; it was repaired with support from UNESCO's Heritage Emergency Fund and then further damaged in November 2023 by a missile that hit in its proximity.

The destruction and forced massive displacement of populations have also severely affected the ability of bearers and communities to practice and transmit their intangible cultural heritage (ICH). While living heritage provides a foundation for the identity and well-being of all communities, it also provides livelihoods for many of its bearers and practitioners and their families. The destruction from the war has affected the workshops of intangible cultural heritage bearers and their access to raw materials and the places and spaces needed to practice their intangible cultural heritage, such as traditional markets, which are today non-existent or radically diminished.

Several key recovery efforts have been undertaken since February 2022. These include support for damage assessment and monitoring, both satellite imagery–based and on-site verification; training and capacity building in emergency documentation; risk prevention and management; in situ preventive works; winterization of damaged cultural and historic assets; stabilizations and urgent inventories; provision of energy and relevant supplies for collections; recovery and reconstruction of cultural heritage of Ukraine; support for the livelihoods of artists, especially female artists in country and abroad; and support for development of emergency cultural projects across the country, as well as for the integration of ICH into school-based education.

Damage and Loss Assessment

As of December 31, 2023, the total cost of damage in the sector was estimated at US$3.5 billion (Table 17). Damage concerns (i) buildings, historic cities, and sites imbued with recognized cultural/social values (US$2.41 billion); (ii) moveable cultural properties, collections, and repositories of culture (US$161 million); (iii) buildings/workshops/ateliers dedicated to cultural and creative industries (CCIs) (US$262 million); and (iv) tourism facilities (US$650 million). The most impacted oblast is Kharkivska, which accounts for more than 25 percent of the damage, followed by Donetska at about 14 percent and Odeska at 7 percent.

Between RDNA2 and RDNA3, 1,402 new damaged assets were detected, increasing the total number from 3,377 to 4,779. RDNA3 also achieved more accurate data derived from verified data for CCIs, which refers now to a baseline of 63,116 estimated entities engaged in cultural and creative practices, identified through focus surveys.[212] RDNA3 also provides more accurate damage calculations for museum collections, and new data have allowed damage calculation for privately owned/residential historic buildings; at this stage, they constitute 7.1 percent of the total cost of damage.

The losses in the sector—including revenue losses from tourism, art, entertainment, and recreation, CCIs, cultural education, debris removal, and valued asset protection—are estimated at US$19.6 billion (Table 17), representing an increase of 30 percent since RDNA2. The increase in losses since RDNA2 can be attributed to the increased number of damaged sites, ongoing attacks, and continuous deterioration of cultural assets and infrastructure, further compounding the sector's vulnerabilities and financial strain. The most significant losses are in tourism (US$9.9 billion) and CCIs (US$7.3 billion). Unlike damage, revenue losses remain highly concentrated in the capital; at US$10.64 billion, these losses amount to more than half of the total loss. Another US$2.2 billion is due to nationwide losses (not specific to a region).

[212] UNESCO, "Focus Study on War Impact on CCIs," July 2023.

The human impact within the culture and tourism sector has been significant. Culture is a powerful driving force in a country's emergency response, recovery, and post-war reconstruction. It is an essential people-centred tool for fostering and preserving community resilience, collective memory, social cohesion, and collective and individual well-being. Developing the conditions that allow cultural institutions and communities to resume activities is paramount. Professionals' technical and management skills must be enhanced to enable them to cope with emerging urgent challenges and adequately respond. By affecting efforts to safeguard Intangible Cultural Heritage (ICH), the war has also affected the social fabric and the daily practices and livelihoods of living heritage practitioners, producers, community members, cultural professionals, and artists. Many practitioners have left the country in the early stages and found refuge in the neighbouring countries, where they could find support to continue their practice. Most ceremonies, festivals, performances, markets, and fairs, many of which were organized regularly and provided livelihoods for those involved and their families, had to be put on hold. Furthermore, many craftspeople lost their workshops, along with their tools and materials, due to the shelling. Some raw materials are no longer available or not of sufficient quality, and only some ICH-related professions could replace the in-person markets with online sales possibilities. The National Registry of Intangible Cultural Heritage of Ukraine was completed after the beginning of the war and contains 77 elements today, the viability of which might become at risk and require urgent safeguarding measures.[213] The 'Culture of Ukrainian borscht cooking' was inscribed in July 2022 on the UNESCO List of Intangible Cultural Heritage in Need of Urgent Safeguarding.

In 2022, the GoU estimated that about 37 percent of workers employed in the creative industries had lost their jobs and that over 20 percent of creative industry professionals had left the country. Most CCI categories experienced an average decline of 20 percent in their employee numbers. Approximately 60 percent of cultural workers were female before February 2022, and this proportion has remained substantial, at around 53 percent. Interviews and data analysis highlight a gender pay gap across sectors and categories: on average, women in CCIs earn approximately 22 percent less than their male counterparts, even when holding the same positions. Additionally, according to Resolution No. 245 of the Cabinet of Ministers of Ukraine, dated March 10, 2022, most expenditures for the sector were directed to the state budget reserve fund, and expenditures for culture and art from local budgets were also reduced. These reductions represent a departure from the trend three years before 2022, registered when local budgets increased cultural spending by 3 percent.

Recovery and Reconstruction Needs, including Build Back Better

Over the next 10 years (2024–2033), the total needs for recovery and reconstruction, including service delivery restoration, amount to US$8.9 billion (Table 18). This represents an increase of 30 percent since RDNA2. This increase is mainly due to the escalating scale of destruction and the expanding scope of recovery efforts required, which now include more comprehensive reconstruction, service delivery restoration, and long-term rehabilitation of the affected areas. The recent increase in scale, intensity, and magnitude of attacks on cultural sites, including sites inscribed on the UNESCO World Heritage List, are

[213] Government of Ukraine, "Intangible Cultural Heritage of Ukraine [Нематеріальна культурна спадщина України]," Link.

particularly relevant. The oblast with the largest share of needs is Kharkivska, which accounts for more than 27 percent of total needs, followed by Donetska at about 14 percent and Odeska at 7 percent.

The needs prioritized in RDNA2 remain valid. In the first step, needs include damage assessment and documentation, as well as emergency and risk preparedness measures for immovable and moveable cultural properties; restoration and reconstruction; further safeguarding of CCIs and ICH; and operational costs associated with the rebuilding. Satellite-imagery-based verification of direct and indirect damage to cultural property—carried out by UNESCO in cooperation with the United Nations Satellite Centre (UNOSAT)—remains crucial to produce a verified, evidence-based database as well as a tool for prioritizing interventions at the community level.

It is highly recommended to increase the protection of cultural heritage and preventive conservation of sites and assets at risk of further damage or destruction. Assessment and documentation of cultural assets in need of protection remain a priority that designated authorities shall address through a more systematic approach and management structure.

Coordination among actors and partners remains crucial. The regular updating of the Action Plan for Safeguarding of Culture—finalized by international and national partners as a follow-up to the fourth international coordination meeting convened by the Ministry of Culture and Information Policy of Ukraine and UNESCO and the sessions of the six thematic working groups carried out from April to May 2023—remains an essential tool for international and national coordination. Integrating all dimensions of culture is critical to the recovery and reconstruction plans, city master plans, and territorial plans, especially for the 401 historic cities listed in the Ministry of Culture and Information Policy register**.**

Investing in the culture sector is now more essential than ever. A comprehensive recovery plan is still needed to rebuild the industry. This plan should include alignment with international standards, enhanced legal protection and governance, and protocols and guidelines for protecting and recovering cultural heritage. Revisions to state policies are necessary to support cultural heritage preservation, institutional capacity, and regulations, mainly to protect heritage from urban development pressures. Ensuring the quality of interventions and harmonization of practices also remains essential. Infrastructure and assets must be restored to pre-disaster levels with inclusive BBB to reduce risks and vulnerabilities to future disasters. All these priorities must be accompanied by a substantial inclusive capacity-building programme for the sector to sustain the results achieved. The recovery plan will require significant funding, including increased cultural expenditures from local budgets.

2024 Recovery and Reconstruction Priorities

Public investment priorities for recovery and reconstruction in 2024 are estimated at US$5.7 million (Table 19). In practical terms, this means that in 2024, line ministries will prioritize projects for activities related to (i) emergency and urgent conservation measures; (ii) reactivation of functions damaged assets and facilities; (iii) urgent repairs of key assets; and (iv) construction of shelters for key cultural facilities. While the Government's immediate priorities are focused on funding physical infrastructure, the key urgent actions that have been identified to amount to US$197 million and include (i) damage assessment, monitoring, detailed documentation, and harmonized digitalization; emergency measures, including debris removal (US$85.7 million); (ii) repair of assets as feasible to restore function; preservation of built

heritage, historic cities, and cultural infrastructures to prevent/mitigate demolition of sites/buildings of cultural significance (US$52 million) ; (iii) reinforcement of professionals' capacities (US$32 million); (iv) strengthening of legal protection of the cultural sector and normative frameworks during and after the war, including master plans (US$0.8 million); (v) Support for the restoration of the creative industry and safeguarding of intangible cultural heritage (US$26.5 million).

Limitations and Recommendations for Future Assessments

Monitoring cultural properties in inaccessible areas, especially smaller-scale properties with local significance, remains challenging. Assessing damage to underwater heritage remains difficult for Ukraine, with its 2,700 km coastline. Without initial baselines and data, identifying damage and losses for ICH is ongoing and will require further in-depth surveys and studies. Quantitative data on human resources in the sector is also generally unavailable. In particular, more investment is needed in gathering quality data and defying disaggregated data, including data on people with disabilities.

Table 17. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	6.7	80.8	13.1
Chernihivska	136.0	340.1	367.2
Chernivetska	2.4	19.8	4.7
Dnipropetrovska	90.4	262.4	212.0
Donetska	515.1	173.0	1,304.4
Ivano-Frankivska	3.0	63.5	5.8
Kharkivska	906.1	1,247.7	2,490.7
Khersonska	249.5	107.3	571.9
Khmelnytska	33.5	37.8	90.9
Kirovohradska	5.4	188.6	14.4
Kyiv (City)	195.1	10,643.4	460.4
Kyivska	133.5	517.0	374.0
Luhanska	264.6	81.1	637.1
Lvivska	58.6	1,966.6	123.0
Mykolaivska	221.7	152.6	623.3
Odeska	267.5	918.9	666.8
Poltavska	8.8	679.1	18.7
Rivnenska	2.3	27.0	4.5
Sumska	105.8	85.6	274.6
Ternopilska	2.1	72.9	4.2
Vinnytska	24.3	7.2	63.9
Volynska	3.6	68.2	7.7
Zakarpatska	2.2	318.7	5.0
Zaporizka	219.4	1,476.4	513.1
Zhytomyrska	27.3	111.7	66.0
Nationwide (no specific region)	5.0	2.2	19.6
Total	**3,490.0**	**19,649.6**	**8,936.9**

Source: Assessment team. *Note*: Damage covers 22 months of war between February 24, 2022, and December 31, 2023; loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months through June 30, 2025; needs cover the period 2024–2033.

Table 18. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Types of activities/investments	Total needs (2024–2033)
Reconstruction needs	Damage assessment, monitoring, detailed documentation, and harmonized digitalization	305.2
	Emergency measures for immovable cultural properties (shoring, propping, structural reinforcements, sheltering, and protection measures, including debris removal and demolition) and moveable properties (inventories, preparedness plans, storage management, etc.)	1,013.2
	Repair of assets as feasible to restore function; preservation of built heritage, historic cities, and cultural infrastructures to prevent/mitigate demolition of sites/buildings of cultural significance	675.5
	Reconstruction/restoration of assets	4,880.7
Service delivery restoration needs	Strengthening of legal protection of the cultural sector and normative frameworks during and after the war	50.9
	Reinforcement of professionals' capacities	525.9
	Support for the restoration of the creative industry and safeguarding of intangible cultural heritage	823.6
	Operational costs	662.0
Total		**8,936.9**

Source: Assessment team.

Table 19. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
Emergency measures	0.9
Reactivation of functions of damaged assets/facilities	0.5
Urgent repairs of assets	1.5
Shelter construction	2.8
Total	**5.7**

Source: Assessment team based on priorities defined by line ministries.

PRODUCTIVE SECTORS

Agriculture[214]

Context

Since February 2022, the war has had severe impacts on Ukraine's agriculture sector. Before the war, the sector played a significant role in the country's economy. It contributed 10 percent to GDP, employed 14 percent of the labor force, and accounted for 41 percent of total exports.[215] But the war, which began just before the start of the 2022 spring planting campaign, has had a very significant impact on the agriculture sector. The total planting area in 2022 decreased by 20 percent compared to 2021, and 15 percent of agricultural capital stock was already damaged within the first three months of the war. The grain and oilseed production in 2022 fell to 73 million tons, a decrease of 30 percent compared to the previous year.[216] The lower agricultural production, coupled with rising prices of inputs (particularly fertilizers and diesel), significantly reduced farm incomes. The blockade of the Black Sea during the early months of the war led to a sharp drop in agricultural exports, which primarily relied on Black Sea ports. Although alternative routes helped increase grain and oilseed exports in subsequent months, volumes were still below prewar levels. As a result, domestic farm gate prices for wheat and corn declined by 45 percent between January and June 2022, while global prices increased by 15 percent. The Black Sea Grain Initiative, launched in July 2022, increased exports; but the logistical costs remained high, putting pressure on farm gate output prices. Favorable weather conditions in 2023 led to the recovery of grain and oilseed production (79 million tons), but it remained much below the 2021 level (105 million tons).[217] In June 2023, the destruction of the Kakhovka Dam resulted in a threefold increase in damage to the aquaculture and fishery industries. Following the termination of the Black Sea Grain Initiative in August 2023, export volumes and farm gate prices fell. The low profitability of agriculture and uncertainty over export prospects will continue to affect production decisions, trade, and farm gate prices in 2024.[218]

Damage and Loss Assessment

The damage and losses suffered by Ukrainian agriculture are estimated to amount to US$80.1 billion, with losses accounting for 87 percent of the total (Table 20).

Total damage in the agriculture sector amounts to US$10.3 billion, while losses amount to US$69.8 billion; these figures include damage and losses related to destruction of the Kakhovka Dam. The *damage* includes the partial or complete destruction of storage facilities, fisheries and aquaculture, and perennial crops, as well as the forced slaughter of livestock. It also encompasses the destruction and theft of machinery and equipment and the theft of inputs and outputs. Machinery and equipment damage account for the largest share of total damage (57 percent), followed by stolen inputs and outputs (18 percent) and damaged storage facilities (18 percent). As of December 2023, the damage in the sector

[214] The agriculture sector includes crops, livestock, and fisheries/aquaculture. It excludes irrigation and forestry as well as the food industry and agro-logistics, which are included in other parts of the RDNA.
[215] Data from State Statistics Service of Ukraine, State Employment Center.
[216] Data from United States Department of Agriculture (USDA).
[217] Data from USDA.
[218] Ministry of Agrarian Policy and Food of Ukraine, "The Profitability of Grain and Oil crop Production Is Still Decreasing, While Exports by Sea are Slowly Recovering," December 11, 2023, Link.

increased by only 18 percent compared to February 2023, as most assets located in active war zones had already been damaged during the first year of the war. The highest damage values were recorded in Luhanska, Zaporizka, and Khersonska oblasts, collectively representing 65 percent of the total damage.

In contrast to RDNA2, which had to project damage values for livestock and perennial crops, RDNA3 based its estimates on published data. Specifically, it used State Statistics Service of Ukraine data available as of January 1, 2023, on changes in the number of animals and area under perennial crops. The use of actual figures to estimate damage leads to a minor decrease in damage in the livestock and perennial crop sectors and reduces the overall damage in the Kyivska, Sumska, and Chernihivska regions. The almost threefold increase in damage in the aquaculture and fisheries sector between RDNA2 and RDNA3 was a result of the destruction of the Kakhovka Dam.

The losses amount to US$69.8 billion. The war-induced *losses* include the following: loss of farm income (due to lower or forgone production); lower farm gate prices (due to export logistic disruptions); higher farm production costs (due to higher prices of fertilizers and fuel); the cost of land recultivation after mine-related surveying, clearance, and land release operations;[219] and the halt of fishing operations. The largest loss, accounting for 49 percent of the total losses, is attributed to the decrease in annual crop production. The loss caused by the decrease in farm gate prices of export-oriented commodities, such as wheat, barley, corn, and oilseeds, is the next largest, accounting for 35 percent of losses. Other significant losses include lower livestock production (8 percent), higher input costs (6 percent), lower perennial crop production (1 percent), and land recultivation–related losses as well as fisheries and aquaculture losses (1 percent combined). Compared to the February 2023 estimates, the losses have more than doubled. Kharkivska, Khersonska, Vinnytska, and Zaporizka oblasts experienced the largest losses. Losses in Vinnytska oblast stand out because the region plays a significant role in national agricultural production, though it has not been directly affected by ground battles.

Several factors contribute to the increase in losses. Unlike the February 2023 loss estimates, which considered only production in 2022 and winter 2023, the RDNA3 estimates include losses for the entire year of 2023. Considering that the war may not end before the 2024 planting season, the estimates also include projected crop production losses for all of 2024. The same applies to estimates of livestock production losses, which now cover three years of decreased production, compared to the one year covered in the February 2023 estimates. The estimated losses have also changed due to lower prices for export-oriented commodities. The February 2023 estimates assumed that only the 2021 ending stock and the 2022 harvest would be affected by lower prices. The RDNA3 estimates also include losses due to lower prices for export-oriented commodities from the 2023 harvest. Furthermore, RDNA3 uses more accurate price data that recently became available to estimate losses due to higher input costs in 2022. As input prices remain above the prewar level, the presented estimates as of February 2024 include losses due to higher input prices in 2023 as well.

Human impact. The invasion of Ukraine has also had a large human impact. A significant drop in the profitability of agricultural production has reduced farmers' incomes and the wages of millions of rural

[219] Note that the losses from mines on agricultural land and the need for the survey, clearance, and release of agricultural land are not included in the agriculture sector estimates. They are presented separately in the section on cross-cutting sectors.

Ukrainians. As a result of the 20 percent decrease in planting area and 10 percent decrease in livestock herds, the direct employment in the sector is estimated to drop by 18 percent. 3.4 million people are targeted in need of food security and livelihoods support.[220] The indirect impact is much higher, as the abovementioned collapse in agricultural profitability is reducing the demand for labor and reducing wages paid to farm workers.

Recovery and Reconstruction Needs, including Build Back Better

The total recovery and reconstruction needs in the public sector are estimated at US$56.1 billion over 10 years (Table 20, Table 21), including US$435 million in 2024 (Table 22).[221] To ensure that the agricultural sector recovers, drives the overall economic recovery, serves as a decent income source for farmers, and provides food for the Ukrainian population, several investments are especially important. These include addressing liquidity constraints, investing in resilience to disasters and climate change, investing in integrated food-energy systems, and strengthening the agricultural public institutions to effectively support recovery and reconstruction as well as EU accession. The near doubling of total recovery and reconstruction needs between RDNA2 and RDNA3—the increase is 89 percent—derives from the increase in total damage and losses during the same period.

Needs are concentrated in the following areas:

- Completing reconstruction or replacement of war-damaged assets while accommodating the build back better principle.
- Supporting a longer-term recovery in the sector to increase its diversification, inclusiveness, climate resilience, food-energy integration, and environmental and social sustainability in line with the European Green Deal requirements.
- Scaling up investment in agricultural public institutions for delivery of evidence-based agriculture and rural development policy making, which includes agricultural services (sanitary and phytosanitary measures, food safety, land monitoring **a**nd registration, soil testing for precision agriculture, agricultural research and extension services, training and retraining of farmers and staff of agribusinesses, etc.) so the institutions can better support the sector's climate-resilient recovery.

2024 Recovery and Reconstruction Priorities

The principal recovery and reconstruction focus for the year 2024 includes the following measures, which consider the implementation/absorption capacity of the government:

1. Provision of direct support to farmers through the public programs that were successfully in previous years. To relaunch agricultural production, this support combines grants and inputs for small farms, interest rate compensation for agricultural production loans, and matching investment grants for horticulture production.
2. Clearing of mines (estimated separately; not included in Table 20 or Table 21).

[220] OCHA. 2024. Ukraine Humanitarian Needs and Response Plan 2024. December 2023. Link

[221] The estimate of the needs is based on recent Government of Ukraine's documents, including the 2022 National Recovery Plan and the 2023 Recovery and Reconstruction Plan for Agriculture.

Donors have already made US$488 million—or 112 percent of the 2024 needs—available for the recovery of Ukrainian agriculture (Table 23**).** The donor financing focuses on addressing immediate needs of farmers, mainly access to affordable finance, especially for small farmers. Donors also prioritize investments in capacity building and provision of public services, including technical assistance for the EU accession.

Limitations and Recommendations for Future Assessments

While most of the damage was assessed using the results of farm and fishery/aquaculture surveys conducted in 2022, some damage, including stolen inputs and outputs, was estimated indirectly. It will be important to reassess these data in the future to ensure accuracy. Additionally, including estimates for irrigation, food processing, and agro-logistics as well as agricultural land survey, demining, and land release operations (all presented in other parts of the RDNA) will provide a more comprehensive understanding of the losses and needs in the agrifood sector.

Table 20. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	1	3,131	1,819
Chernihivska	234	3,785	2,484
Chernivetska	0	377	219
Dnipropetrovska	1	3,720	2,161
Donetska	912	3,700	3,752
Ivano-Frankivska	-	667	387
Kharkivska	1,360	6,000	5,366
Khersonska	2,050	5,660	6,649
Khmelnytska	-	4,063	2,359
Kirovohradska	1	2,900	1,686
Kyivska	456	3,206	2,458
Luhanska	1,747	2,799	4,682
Lvivska	-	1,072	623
Mykolaivska	476	3,385	2,583
Odeska	1	2,534	1,473
Poltavska	0	3,818	2,218
Rivnenska	-	1,008	585
Sumska	119	3,402	2,137
Ternopilska	-	1,782	1,035
Vinnytska	-	4,768	2,768
Volynska	-	1,013	588
Zakarpatska	-	316	183
Zaporizka	2,929	4,656	6,680
Zhytomyrska	0	2,003	1,163
Total	**10,288**	**69,763**	**56,057**

Source: Assessment team. *Note*: - = not assessed. Damage covers 22 months of war between February 24, 2022, and December 31, 2023; losses cover a total of 40 months, including 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months through June 30, 2025; needs cover the period 2024–2033.

Table 21. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Type of activities/investments	Total needs (2024–2033)

Reconstruction needs	Support for reconstruction	9,402
Service delivery restoration needs	Support for immediate agriculture production recovery	6,122
	Support for longer-term recovery of the agriculture sector	35,513
	Support for agricultural public institutions and programs, including for EU accession	5,020
	Total	**56,057**

Source: Assessment team.

Table 22. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities	Estimated cost
Support for immediate agriculture production recovery	**402**
Interest rate compensation (portion of 5-7-9 program)	320
Grants and inputs for agricultural production by small farms	71
Partial credit guarantees for agriculture	11
Support for longer-term recovery of the agriculture sector	**13**
Investment grants for investing in horticulture (portion of e-Robota program)	13
Support for agricultural public institutions and programs, including for EU accession	**20**
Total	**435**

Source: Assessment team based on priorities defined by line ministries.

Table 23. Actual donor support (US$ million)

Types of activities/investments	2023	2024	2025	Total
Support for immediate agriculture production recovery	**273.8**	**448.2**	**134.9**	**856.9**
Interest rate compensation (5-7-9 credit program)	180.0	250.0	70.0	500.0
Partial credit guarantee for agriculture	21.8	6.8	0.8	29.4
Additional liquidity for agricultural financing	3.5	3.5	3.5	10.5
Grants for production by small farms		173.2	50.0	223.2
Inputs and cash transfers for small farms	51.6	11.2	8.3	71.1
Storage bags and other storage equipment distributed to farms	2.3	2.3	2.3	7.0
Procurement of equipment	14.5	1.2		15.7
Support for longer-term recovery of the agriculture sector	**46.7**	**21.9**	**15.8**	**76.0**
Development of storage infrastructure	4.7	4.7	14.7	44.0
Investment grants for value chains	3.2	6.4	6.0	15.6
Investment grants for horticulture	30.0	2.0	2.0	34.0
Support for water use associations and restoration of irrigation systems	10.7	10.7	5.0	26.4
Financing of medium to long-term investments	2.8	2.8	2.8	8.4
Support for agricultural public institutions, including for accelerating the EU accession	**22.1**	**18.3**	**14.2**	**39.5**
Support for MAPF (including State Agrarian Registry maintenance)	3.2	4.3	3.3	10.8
Support for food safety	2.1	1.2	1.2	4.5
Support for agricultural research and education institutions	5.2	5.2	4.7	15.1
Support for policy dialogue and strengthening of the technical capacity of Ukrainian institutions	11.6	7.6	5.1	24.2
Total	**342.6**	**488.3**	**164.9**	**972.4**

Source: Assessment team. *Note:* MAPF = Ministry of Agrarian Policy and Food.

Irrigation and Water Resources

Context

The irrigation and water resources sector has been affected deeply by the war. With 41 million hectares (of which 33 million are under cultivation), agriculture plays a crucial role in the country's economy, contributing to 10 percent of the GDP, 41 percent to exports, and 14 percent to employment. While irrigation is used on only 1 percent of all agricultural land, it is vital for specific crops like potatoes (15 percent), tomatoes, and rice (almost all), and certain regions such as Khersonska Oblast (14 percent). Drainage systems, covering around 10 percent of the agricultural land, predominantly in the north and northwest, significantly enhance Ukraine's production capabilities, particularly in cereal and beef production, by providing usable pastures and forage land.

However, the irrigation and drainage (I&D) sector and flood protection and water resource management (WRM) faced persistent challenges even before the war. The I&D systems, developed initially for state-run farms during the Soviet era, were broken up during the economic and political transition after the collapse of the Soviet Union. The breakdown of large state structures led to a vacuum in ownership and funding, causing widespread deterioration and a dramatic decrease in irrigated areas. Prior to the invasion, out of 2.2 million hectares equipped for irrigation, only 738,000 hectares (33 percent) are operational without additional investment, and this number has further significantly decreased due to war-related impacts. This underutilization, coupled with poor maintenance, inadequate drainage, and rising energy costs, has substantially dropped sector productivity. In response, the Ukrainian government, with support from the World Bank, has been implementing a strategy since 2017 to improve the I&D sector. This includes reforms in national institutions and the creation of Water User Organizations (WUOs), alongside establishing a new agency within the Ministry of Agrarian Policy and Food to take over irrigation and fisheries management. As of January 2024, there are 32 established WUOs.[222] State support for WUOs is provided through the State Agrarian Register. Resolution No. 1110 (dated 20/09/23) amended the procedure for the use of funds provided for in the state budget for providing state support to agricultural producers who use reclaimed land and water user organizations. Budget subsidies will be provided for the reconstruction of existing and/or construction of new reclamation systems using sprinkler or drip irrigation, as well as for the rehabilitation of pumping stations.[223]

These steps are crucial for Ukraine to manage its water resources effectively in line with the EU Water Framework Directive, which emphasizes integrated water resources management and river basin management. Since February 2022, the I&D infrastructure has been severely damaged by the ongoing war, with targeted attacks on reservoirs, irrigation systems, dams (such as the Kakhovka Dam on June 6, 2023), and critical agency buildings. Other damage has occurred due to intense fighting around the water systems, vandalization of structures while the areas were temporarily not under government control, construction of barricades with material from the water systems, defensive inundations, and the

[222] Only one of them has been given wonership of the meliation system, while others are pending.

[223] Government of Ukraine. 2023. Cabinet of Ministers of Ukraine Decree dated October 20, 2023 No. 1110 Kyiv On making changes to the Procedure for the use of funds provided in the state budget for providing state support to agricultural producers who use reclaimed land and water user organizations. Link.

placement of mines around vital infrastructure. All of these further complicate the path to recovery and effective water management.

Damage and Loss Assessment

The estimated damage to Ukraine's irrigation and water resource sector is US$740.2 million (Table 24). This is considered as minimum/subject to further data as per the limitations section. This includes damage to movable assets, buildings, and agency premises from both the State Agency of Melioration and Fishery (SAMF) and the State Agency of Water Resources (SAWR), totaling US$15.6 million. Additional damages include on-farm infrastructure damage (48.5 percent), US$10 million damage to the Karachunivske and Oskilske reservoirs, and damage to the Kakhovka dam (48 percent) (Table 25). This estimate excludes damages to occupied real estate as these damages cannot be assessed yet. The most affected regions are Chernihivska (US$90.2 million), Zhytomyrska (US$63.9 million), Volynska (US$62.5 million), Rivenska (US$58.7 million), Kyivska (US$54.6 million), as well as Khersonska (US$363.2 million). It is expected that Dnipropetrovska and Zaporizka, for which the assessment was not completed, have also sustained major damage.

As of February 2023, the damage to the irrigation and water resource sector in Ukraine has escalated dramatically, showing a 95 percent increase. This substantial rise is primarily attributed to the destruction of the Kakhovka Dam in the Khersonska oblast, a consequence of the attack on June 6, 2023, with an estimated damage of US$359.3 million. Due to ongoing hostilities and occupation the losses as a result of destruction of the Kakhovka Dam have not yet been assessed. However, lower water levels in the Kakhovka reservoir will disconnect irrigation channels. It is estimated that a total of 350 irrigation pumping stations and 1.1 thousand kilometer of irrigation canals are not in use.

The losses in the sector are estimated to be US$716.8 million (Table 24). These are also considered minimal, as per noted limitations. As the war persists, the losses have surged, marking a staggering 233 percent increase compared to the earlier RDNA. The losses include operational losses based on lost profit as reported by the different operational state entities. A major factor is that in many areas, payment for water services by water users is hampered. The war resulted in a fast reduction of direct payment of water use rent to the state budget by industries and other water services. These operational losses also reflect the damage to government and management of the water systems, as the financial basis is having a serious setback.

These operational losses are the result of multiple factors, depending on the region in the oblasts. Data on farm level and evaluation of losses categories for the I&D systems use were obtained by the Institute of Water Problems and Land Reclamation and the NGO Primavera. Losses in profit for irrigated areas are accounted for in the agricultural sector's overall loss assessment. This section accounts for losses in payment for water services due to factors such as flooding (53 percent) —with river basins in Ukraine's northern regions inundated to fend off invasion—mining (35 percent) in border areas for defense, and deterioration of farm systems (12 percent) due to lack of maintenance, operational staff, inputs, and raw materials. The most significant losses are recorded in Zhytomyrska Oblast, amounting to US$132 million, followed by Volynska Oblast at US$129 million, and Sumska Oblast at US$121 million. The operational losses of farmers in the Khersonska, Dnipropetrovska, and Zaporizka regions due to the destruction of the

Kakhovka Dam and loss of irrigation sources have yet to be assessed, which could lead to changes in the overall estimate.

Human impact. The destruction of vital infrastructure such as the Kakhovka dam, irrigation canals, pumps, and reservoirs has severely disrupted water availability for agricultural and domestic purposes, significantly affecting communities reliant on these systems. This deterioration not only undermines local economies, especially in rural areas, but also elevates environmental and public health risks due to potential pollution and inadequate water treatment. Furthermore, the loss of governance in water resource management hampers restoration efforts, leading to extended service disruptions and challenges in recovery.

Recovery and Reconstruction Needs, including Build Back Better

The estimated total recovery and reconstruction needs for a building back better approach in irrigation, drainage, and flood protection assets stand US$10.7 billion over the next decade (Table 26). Investments not only encompasses the repair of damaged systems where feasible but also includes compensatory programs. These programs aim to maintain and enhance production levels through improved drainage and expanded irrigation in regions that have remained under government control. Priority should be given to safe regions where restoration can begin swiftly. The oblasts with the highest needs, according to current data, are Kyivska (US$3,944 million) and Khersonska (US$1,898 million). The latter is the result of the estimated needs of US$1,498 million to repair the Kakhovka dam construction and the damage to the pumping station for the command area of 780,000 hectares.

The significantly delay of institutional reforms, including the development and operationalization of WUOs, is adversely affecting the management of water resources. To fully understand the implications of transferring infrastructure to WUOs and to address their ongoing needs, a comprehensive assessment is imperative. The priority focus for modernizing I&D systems should be on operational systems, located in areas under government's control. This will make it possible soon to increase the area of irrigated land and agricultural productivity, without waiting for the moment when it becomes possible to implement such strategic projects as the restoration of the Kakhovka Dam. This modernization involves not just repairing damage but also updating and enhancing operational yet outdated infrastructure.

Investing in operational, undamaged infrastructure is essential for a rapid economic rebound and to compensate for losses due to direct physical damage. This strategy should simultaneously concentrate on modernizing operational irrigation systems for WUOs and restoring damaged infrastructure in war-impacted areas. Additionally, priority should be given to upgrading multi-functional drainage systems, which will broaden irrigation options during dry periods and bolster forest and natural area protections. Furthermore, farm rehabilitation is another crucial aspect in restoring productivity and should be prioritized in safe areas. Enhancing water quality is also a key focus, necessitating the installation or repair of monitoring stations and the implementation of advanced water treatment solutions.

Significant recovery efforts since the war's onset include SAWR's successful repair of the Shandor gate in the Kazarovytska Dam and the renovation and reactivation of the water monitoring laboratory in the Donetska oblast, after return under government control. These actions have already met some of the war-related needs identified in the previous RDNAs.

Moreover, broader sector reforms are imperative for the systematic improvement of management of hydro-technical melioration systems, including facilitating investment access, improving management efficiency, ensuring transparent tariff structures, and completing the transfer of melioration systems to relevant agencies and WUOs, crucial for modernization and expansion.

2024 Recovery and Reconstruction Priorities

The total recovery and reconstruction investment priorities for 2024 are estimated at US$43.6 million (Table 27). The most pressing investments involve restoration of damaged hydraulic facilities and water management systems and buildings, and the replacement of moveable assets in areas that were recently brought back under government control and areas that did not face hostilities. A feasibility study and inventory for this restoration and modernization (US$10 million) is a 2024 investment priority for Kyivska, Chernihivska, Sumy, Zhytomyrska, Rivenska, and Volynska. This is to help the irrigation and water resource sector rebound and address the lack of water supply and irrigation services to farmers.

Another priority for 2024 is starting with the restoration and building back better of on-farm irrigation technology and equipment support to the established WUOs (US$33.6 million) in the areas of Kyivska, Cherkaska, Poltavska, Vinnytska, Dnipropetrovska, Mykolaivska, and Odeska. A prior focus is required for technical infrastructure inventory and design of modernization projects, equipment for water management planning, accounting, and irrigation monitoring including training of the WUOs.

Limitations and Recommendations for Future Assessments

- **Findings of this assessment are preliminary**, have yet to be verified, and are based on limited data collection.
- **Regional data for some oblasts** that likely suffered from the war were unavailable and is therefore not included in this assessments, resulting in an unrepresentable distribution of damages, losses, and needs among oblasts
- **Differentation per asset** (i.e., canals, pumps etc.) class was not possible, instead this assessment differentiated by regional water management organisation including a mix of assets.
- **In subsequent assessments**, clearly delineate damage and restoration needs for reclamation systems and water management.
- **Financing priorities allocated for 2024 are provisional** and can only be utilized by the Ministry once VAT/tax code challenges are resolved. The World Bank and the MAPF are working closely together to resolve this issue to facilitate support and establishment steps for WUOs.

Future assessments are recommended to include losses stemming from reduced or absent governance functions, such as the destruction of monitoring infrastructure and challenges in establishing regimes for special water use management in inaccessible territories. Additionally, the impact of reduced water resources, potentially caused by the destruction of hydrological facilities at major reservoirs and main irrigation canals, should be considered.

Areas where active hostilities are taking place or areas not under government control are not included in this assessment, the inventory reporting is therefore incomplete as there is no (reliable) communication with the operation agencies. Recommendations for future assessments include:

- **Enhanced Water Quality Monitoring**: A significant decline in water quality necessitates comprehensive analysis and continuous monitoring, particularly in the aftermath of the Kakhovka incident, to address decline in water availability in the water bodies.
- **Expanded local field surveys**: To gain a more accurate understanding of the damages and losses, conducting additional local field surveys is recommended, focusing on both direct and indirect impacts on water resource management.
- **Make monetary estimates** of damage, losses, and needs for water resource management, specifically in relation to governance functions and loss of water resources.

Table 24. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	-	0.0	49.0
Chernihivska	90.2	0.0	184.9
Dnipropetrovska	0.5	0.0	339.7
Donetska	0.5	-	51.7
Kharkivska	5.7	0.0	52,8
Khersonska	363.2	-	1,897.7
Khmelnytska	0.0	52.0	0.0
Kirovohradska	0.0	0.0	0.0
Kyiv (City)	0.0	0.0	0.0
Kyivska	54.6	50.0	3,943.6
Luhanska	0.5	-	50.6
Lvivska	0.0	0.0	22.9
Mykolaivska	7.6	0.0	590.9
Odeska	0.0	52.9	364.2
Poltavska	-	0.0	27.3
Rivnenska	58.7	0.0	184.9
Sumska	32.0	121.0	184.9
Ternopilska	0.0	33.0	0.0
Vinnytska	-	0.0	1.7
Volynska	62.5	129.1	184.9
Zakarpatska	-	0.0	0.0
Zaporizka	-	52.9	63.4
Zhytomyrska	63.9	131.9	203.6
Nationwide (no specific region)	0.3	93.0	2,335.1
Total	**740.2**	**716.8**	**10,734.0**

Source: Assessment team. *Note*: - = not assessed. Damage covers 22 months of war between February 24, 2022, and 31 December 2023; Loss covers a total of 40 months, which includes 22 months between February 24, 2022 and December 31, 2023, and an additional 18 months until June 30, 2025; needs cover the period 2024–2033.

Table 25. Damage per category (US$ million)

Oblast	Damage				
	Property damage of SAWR	Property damage of SAMF	On farm infrastructure damage	Reservoir damage	Kakhovka dam damage
Cherkaska	-	-	-		
Chernihivska	0.24	-	90.00		
Dnipropetrovska	0.53	-	-		

Donetska	0.45	-	-		
Kharkivska	0.65	-	-	5.00	
Khersonska	3.73	0.19	-		359.31
Khmelnytska	-	-	-		
Kirovohradska	0.01	-	-		
Kyiv (City)	-	-	-		
Kyivska	1.20	-	48.42	5.00	
Luhanska	0.45	-	-		
Lvivska	0.01	-	-		
Mykolaivska	7.57	0.01	-		
Odeska	0.01	0.01	-		
Poltavska	-	-	-		
Rivnenska	0.03	0.15	58.56		
Sumska	0.03	-	31.98		
Ternopilska	0.002	-	-		
Vinnytska	-	-	-		
Volynska	0.06	-	62.49		
Zakarpatska	-	-	-		
Zaporizka	-	0.01	-		
Zhytomyrska	0.05	-	63.81		
Nationwide (no specific region)	0.25	-	-		
Total	**15.26**	**0.37**	**355.26**	**10.00**	**359.31**

Source: Assessment team. *Note*: - = not assessed. Damage covers 22 months of war between February 24, 2022, and December 31, 2023.

Table 26. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Types of activities/investments	Responsible agency	Total needs (2024–2033)
Reconstruction needs	Reconstruction, overhaul and modernization of state irrigation infrastructure	SAMF	2752.5
	Reconstruction of hydraulic structures of protective arrays of Dnipro reservoirs	SAWR	77.0
	Irrigation system upgrading and expansion in four priority systems: Kakhovska, Pivnichno-Rogachinska, Sirogozska and Priazovska	SAMF	1,254.7
Service delivery restoration needs	Restoration and modernization of water management infrastructure	SAWR	1,408.2
	Restoration of the functioning of the state water monitoring system	SAWR	1.5
	Restoration and construction of centralized water supply of rural settlements using imported water	SAWR	91.6
	Restoration of drainage systems	SAMF	1,080.0
	Flood risk management measures	SAWR	0.0
	Protection of floodplains of the Irpin River	SAWR	3,742.3
	On-farm irrigation technology/equipment support to WUOs	SAMF	321.1
Total			**10,734.0**

Source: Assessment team.

Table 27. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
Feasibility study and inventory for restoration and modernization of specific systems	10.0
Technical infrastructure inventory and design of modernization projects, equipment for water management planning, accounting, and irrigation monitoring including WUOs training	33.6
Total	**43.6**

Source: Assessment team based on priorities defined by line ministry.

Commerce and Industry[224]

Context

Commerce and industry stand as the backbone of the economy, contributing roughly one-third to Ukraine's GDP and supporting approximately 6.0 million jobs in the prewar period.[225] Between February 2022 and end-2022, the number of active enterprises fell by 15 percent, to about 760,000 entities; most (86 percent) were micro or small enterprises, with fewer than 50 employees.[226] Based on the 2021 Labor Force Survey, wholesale and retail trade employed the largest share of workers, with agriculture and industry as runners-up.[227] Evidence shows that the war impacted Ukraine's private sector in two main ways: first, through demand shocks, which were driven by reduction in consumer spending and access to crucial export markets; and, second, through heightened uncertainty about sales outlook and through supply shocks, which encompassed damage and asset theft, input shortages, logistical disruptions, and limited access to financing.[228] Some firms have been relocating from the war-affected regions; firms in the commerce sector (wholesale trade) account for 44 percent of relocated firms.[229]

Damage and Loss Assessment

Total damage to the commerce and industry facilities between February 2022 and December 31, 2023, is estimated at US$15.6 billion (Table 28), a 43 percent increase above the estimate of US$10.9 billion reported in RDNA2 as of February 24, 2023.[230] Most of the damage (83.6 percent) was to industry, with the rest to commerce. About half of the damage (56.0 percent) occurred to large and medium-size enterprises, both public and private (US$8.8 billion). Roughly half of the damage estimate for those firms (US$4.2 billion) was due to the destruction of two steel plants in Donetska oblast, the Azov Steel Plant and the Ilyich Iron and Steel Works in Mariupol. According to a recent survey,[231] 21 percent of firms in commerce and industry have reported war-related damage, and there has been an average 53 percent drop in sales across firms of all sizes. Almost half of firms in eastern Ukraine and slightly less than a third in southern Ukraine reported war damage; these firms also experienced the largest drop in sales (70 percent in the east and 63 percent in the south). By contrast, the west saw only a 39 percent drop. The largest shares of damage were reported in Donetska, Kharkivska, and Kyivska oblasts, where there is military activity and a high concentration of manufacturing firms.

[224] Industry, as defined by this chapter, covers manufacturing (including agro-processing) and services not covered elsewhere in the report. Services related to culture, tourism, finance, and creative industries, such as hotels, tour operators, and advertisers, are excluded. Restaurant and food services are included under commerce and industry. Commerce covers wholesale and retail trade and warehousing.

[225] State Statistics Service of Ukraine (SSSU), 2021 data.

[226] SSSU data. Of the 763,000 firms, almost half were not classified by size in the data, but most are likely individual entrepreneurs or small firms.

[227] SSSU, "Labor Force of Ukraine 2021: Statistical Publication," 2022, Link.

[228] World Bank, "Ukraine: Firms through the War," November 2023, Link.

[229] Opendatabot, "7820 Companies Have Moved across Ukraine Since the Beginning of the Full-Scale Invasion," November 30, 2023, Link. About 10 percent of relocations were financed by the government relocation program; see Prozorro, Link.

[230] Data for damage and losses were primarily provided by the Kyiv School of Economics. For RDNA3, damage estimates rely on comprehensive regional data coverage, while only 14 out of 25 regions were covered in RDNA2.

[231] World Bank, "Ukraine: Firms through the War," November 2023, Link.

Total losses across commerce and industry reached about US$173.2 billion (Table 28), estimated for 40 months ending June 30, 2025. Losses were calculated using an updated methodology;[232] as firms' financial reports and official statistics for 2022 became available, the analysis was recalibrated using actual data covering the first 10 months of the war. Actual sales data for 2022 for commerce and industry were used to calculate revenue losses and adjusted using the difference in IMF's growth scenarios for Ukraine with and without the war. Prewar intermediate consumption coefficients were used to estimate value added and net out inter-industry gross sales double-counting. Losses also include agreed estimates for demolition and debris removal, calculated based on the damage. Total losses are about US$116.9 billion for industry and about US$59.2 billion for commerce. Enterprises in the Kyivska, Dnipropetrovska, and Donetska oblasts (hosting large numbers of industrial enterprises and commerce entities) experienced the largest losses (accounting cumulatively for more than 60 percent of the aggregate losses for the sector). Missile attacks targeting Ukraine's power grid caused daily electricity blackouts, which had significant economic impacts,[233] particularly hurt sales in the sector. Around 15 percent of all firms and up to 20 percent of manufacturing firms experienced power outages.[234]

The human impact in the sector relates to loss of income and jobs, displacement of people, worker shortages, and service in the military. According to the International Labour Organization,[235] 2.4 million jobs, or 15.5 percent of the total, were lost in 2022. Firms in construction, manufacturing, and commerce saw the most significant drops in employment levels (reductions of 36 percent, 23 percent, and 21 percent respectively). Unemployment caused by war-induced displacement and damage hit internally displaced women the most; less than a third of such women remained employed or secured a new job.[236] Overall, enterprises in commerce and industry experienced labor shortages, with 46 percent of industrial enterprises mentioning labor shortages among their main challenges.[237]

Recovery and Reconstruction Needs, including Build Back Better

Total recovery and reconstruction needs for the commerce and industry sector are US$67.5 billion, estimated until 2034 (Table 29).[238] Reconstruction needs for infrastructure and assets under a build back better approach are estimated in total at US$20.7 billion (Table 29). This means that 31 percent of the estimated needs for this sector are for rebuilding and modernizing buildings, equipment, and inventory.

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[232] The updated methodology, which partly explains the increase in losses since RDNA2, allowed for much more comprehensive and granular geographical coverage of data than RDNA2, and it used firms' actual financial statements instead of estimated ones. Using firms' financial reports and official statistics for 2022, revenue losses in the sector were recalculated for the first 10 months of the war, and the results were adjusted using the difference in IMF's growth scenarios for Ukraine with and without the war. The estimates for the two different growth trajectories were based on the economic growth forecasts by the IMF before the war (the World Economic Outlook of October 2021) and on the updated growth trajectories (World Economic Outlook of October 2023). The commerce and industry income growth for both scenarios were estimated, and then the difference between the two for the period of 40 months (ongoing war plus next 18 months) was adjusted to net out inter-industry double-counting and focus on value added based on prewar intermediate consumption coefficients.

[233] O. Blinov and S. Djankov, "The Economic Toll of Attacks on Ukraine's Power Grid," Vox.EU, December 21, 2022, Link.

[234] World Bank, "Ukraine: Firms through the War," November 2023, Link.

[235] International Labour Organization "Care at Work in Ukraine" Brief, November 2023.

[236] InfoSapiens, "Research on the Economic Activity of IDP Women and Their Strategies Regarding the Restoration of the Source of Income," June 16, 2023, Link.

[237] Institute for Economic Research and Policy Consulting "Ukrainian Business Throughout the War (December 2023) 20th Monthly Survey of Ukrainian enterprises", Link

[238] Needs estimates for RDNA3 are a function of damages and losses estimates, and rely on the improved data coverage (for both damages and losses) and updated methodology (for losses).

In line with the damage and losses, the largest needs are in Kyivska, Donetska, and Dnipropetrovska oblasts. Some firms were able to recover by adapting their processes to the more challenging business environment—specifically by using digital tools, embracing supply chain optimization techniques, and targeting new clients. In the commerce and manufacturing sectors, around 17 percent and 15 percent of firms, respectively, incorporated new technology and processes into their supply chain management techniques and operations. Some shops and retail stores have recovered to higher levels of sales, although not necessarily to prewar levels; lack of reliable data, however, makes it impossible to quantify the extent to which sales recovery has contributed to repair and rebuilding efforts. Therefore, the build back better coefficient for commerce is slightly lower than for industry, 1.2 versus 1.3, as the outdated industrial assets that were damaged or destroyed need to be rebuilt according to the latest technologies and green standards. Needs to restore service delivery and to build back better have increased in line with the losses; they total US$46.8 billion—US$16.4 billion in the short term and US$30.4 in the long term—and include demolition and debris removal costs. The more comprehensive damage data in RDNA3 and the revised methodology for estimating losses (see footnote 8) help to explain the increased needs estimates in RDNA3.

Overall, the war has had diverse negative effects on businesses and Ukraine's private sector. These effects are due to several factors: disruptions in accessing domestic and international markets, curtailed access to finance, interruptions in the supply of essential resources, inadequate demand, and increased uncertainty. The extent of these impacts varies depending on firms' sector, location, market presence, and size. Firms in the main active war zones in the east and south experienced the most significant damage. Financial difficulties affected approximately 84 percent of firms, hampering sales, investment, and jobs. The collapse of Ukrainian exports was related to the closure of the Russian market and to disruptions in critical trade and logistics hubs. Three-quarters (75 percent) of exporters experienced supply chain disruptions. Approximately 43 percent of firms that closed temporarily or permanently cited insufficient demand as the main reason. Increased uncertainty linked to the war further dampened employment (-25 percent) and investment. Overall, throughout 2023, two-thirds of industrial enterprises have been operating at 75 percent of capacity or higher (including 12 percent operating at full capacity) in the territories remaining under government control.[239]

At the same time, Ukrainian firms that continued operation after the invasion have adapted their business strategies proactively and resiliently. They have sought new customers and markets (34 percent), leveraged digital tools (41 percent), changed their product/services mix (17 percent), and adopted supply chain optimization techniques (12 percent).[240] Although firms have been resilient, effective and efficient private sector support policies and programs will remain crucial drivers of the recovery. These will need to focus on access to finance and business advisory on market access, sustainable firm capabilities upgrading, and productivity increases through digitalization. Firms identified three primary areas requiring increased public support: financial assistance, regulatory improvements,

[239] Based on a survey of 535 enterprises in industry and retail sector; see Institute for Economic Research and Policy Consulting (IER), "The Economic Trends and Expectations in December 2023," 20th Monthly Enterprise Survey, January 2024, Link.
[240] World Bank, "Ukraine: Firms through the War," November 2023, Link.

and market access. Larger firms expressed a greater need for credit and grants to rebuild their damaged assets.

Revitalizing the commerce and industry sector is a priority, given that millions depend on this sector for their livelihoods, and given its contribution to critical needs during reconstruction, such as construction, food industry businesses, and key manufacturing. Ukraine's economic recovery is dependent on harnessing the dynamism of the private sector, and its multiplier effect, to sustain an export-led growth, contribute to job creation, innovation, and overall sustainable development. On average, 31 percent of firms would like to receive access to new credit for investments or working capital. Grants to rebuild destroyed assets are requested by 17 percent of large firms as opposed to only 9 percent of small firms. Assistance to access new markets, on the other hand, is more relevant to small and medium enterprises (SMEs) than to large firms (31 percent and 33 percent vs. 26 percent). Tax exemptions are a priority for 67 percent of firms in hospitality, while access to new credit is a priority for businesses active in commerce (42 percent). Grants to rebuild destroyed assets are a top priority for firms in the east (27 percent) and less relevant elsewhere (12 percent or below in other regions).

The following are priority recommendations to support commerce and industry in the short term:[241]

- Provide financial support to firms in the form of loans, grants, and guarantees to allow viable firms to survive, relocate if needed, and reconstruct and modernize assets; and to allow the emergence of new entrants, in particular small businesses owned women, displaced persons and veterans.
- Provide financial support to high-value manufacturing and agroindustry, and export-oriented enterprises in the form of loans, grants, and guarantees.
- Devise and deploy de-risking instruments and financial support to improve interest rates affordability across all sectors.
- Promote project finance and development finance (both for capital expenditure and working capital), as a way to catalyze equity investments as well.
- Enhance the financial and institutional capacity of public institutions to mobilize private investments (through PPPs, industrial parks, larger strategic investments, and others).
- Boost war-risk insurance and increase risk coverage for new investments.
- Support the retraining and upskilling of labor to address skills required by businesses to access new markets.
- Update eligibility criteria, in line with good international practice, for co-financing of capital-intensive projects.
- Enhance the financial and institutional capacity of public institutions to generate a pipeline of investment projects and new business opportunities through technical assistance and feasibility studies.

[241] While the recommendations provided in the main text represent equally important short-term priorities, it would be crucial to institutionalize a policy prioritization mechanism based on consensual and clear criteria. To this end, preliminary guidelines and prioritization criteria are provided in the report of the World Bank "Ukraine: Firms through the War," November 2023, Link.

- Help firms access new markets with tools to meet standards in international markets, ease customs constraints, facilitate international partnerships and learning, and expand the availability of trade finance and insurance instruments.
- Rebuild the logistics infrastructure needed for access to inputs and markets.
- Streamline business regulations and tax requirements to make it easier to start and restart businesses and to enter into new product lines and delivery models.
- Facilitate domestic and foreign investment to rebuild key industries.
- Build technical assistance capacity to identify projects with high private capital mobilization potential, and with significant multiplier effects beyond initial investment.
- Ensure private sector participation in reconstruction efforts and promote linkages with SMEs in priority sectors for recovery and investment, such as construction, transport, and logistics.
- Design market-enhancing programs to boost domestic demand for local goods and services.

Investments should seek to build back better, emphasizing green and digital technologies to build resilient businesses with products and processes aligned to EU standards. Financial support to firms, including efforts to facilitate access to credit, should also continue. While support to SMEs remains vital as they constitute the backbone of the economy, larger more capital-intensive investments in key industries (such as green metallurgy, machine building, pharmaceuticals, etc.) should also be encouraged through de-risking instruments and co-financing facilities with donors backing. Addressing business, investment, and trade climate obstacles that were present before the war—related to trade harmonization with the EU, competition issues, and state-owned enterprise (SOE) reform—should be a priority. Direct technical assistance, potentially focused on sectors critical to growth like agribusiness, metallurgy, machine building, and IT, could help firms enter new markets, move into higher-value-added products, and adapt more sustainable practices. Firms owned and managed by women could be targeted for financial and nonfinancial support.

2024 Recovery and Reconstruction Priorities

Priority recovery and reconstruction needs in 2024 for firms in the industry and commerce sector are estimated at US$5.8 billion (Table 30).[242] Priority recovery and reconstruction needs include financing for investments in new equipment, improved processes, repair of buildings, creation of new businesses to stimulate job creation, as well as working capital. Most firms, even those that suffered no physical damage, have seen revenue fall due to disrupted infrastructure and electricity blackouts, contracting domestic markets due to emigration, and broken supply chains. The private sector has also incurred costs for service delivery restoration via introduction of new business strategies and processes (e.g., digitalization), asset relocation and other working capital needs, training and reskilling of employees, and investments in quality standards and certifications to access new markets, including efforts to meet EU and other international standards. Some firms, particularly in active areas of hostilities, may be trying to stay afloat and require only working capital, either because they have lost their workforce or are facing huge uncertainty. Although firms will bear the cost of most investments, public sector support is vital to help firms survive and make the investments needed to adjust to the new realities as the war continues.

[242] Data sources and methodology for estimates are listed in the note to Table 30.

Working capital financing will also be a critical area of support to enable firms stay afloat, as increased risks will continue to constrain access to bank credit and dry up trade finance and supply chain credit.

Around US$3.1 billion of public support will be needed to close the private sector financing gap in the industry and commerce sector in 2024. This support will help mobilize domestic financing, stimulate direct firm investments, and underpin trade. The GoU has already committed more than US$750 million from the state budget to support these financing needs; donor and multilateral sources of financing are sought for the remaining needs. The instruments identified in Table 31 are aligned with government priorities, but the majority of funding has yet to be secured. Firm support programs deployed by the GoU immediately after the invasion proved beneficial and could be revamped and rationalized. Only 8 percent of all firms and 6 percent of SMEs participated in these programs, but participating firms performed better than nonparticipants in terms of sales and employee retention, showing the potential benefits of revamped SME support programs and of accelerating the adoption of climate and environmental standards to access the EU market. Firms also need support to address their constrained access to finance. Bank lending has been subdued as a result of the war—performing corporate loans in UAH have declined by 20 percent compared to prewar levels[243]—but demand for financing remains high. Some 84 percent of firms face constraints in accessing finance, in part because of high interest rates. The priority instruments to expand coverage include grants and matching grants, the e-Robota program, subsidized lending through the 5-7-9 program[244], lines of credit and other support from multilateral donors, and guarantees, reinsurance, and export support programs through the Export Credit Agency and donor programs. Technical assistance will also be essential to support the implementation of firm support programs and ensure that public-private partnership projects are ready for investment.

Alongside meeting urgent needs, it will be important to build program and institutional capacity and raise financing to enable successful programs to scale up quickly should conditions enable an increase in demand for private sector investment. Indicated financing needs for support programs presented in Table 31 reflect anticipated private sector demand for financing in 2024 alone. Should conditions on the ground evolve to allow for increased private investment, it will be important that financing is available to respond. Early engagement with donors to secure funding commitments for 2025 should be part of a forward-looking financial planning strategy to maintain momentum in the implementation of the programs launched in 2024. Among the various instruments, the subsidized credit and insurance support programs may be scaled up to meet the private sector demand, and the GoU has identified up to US$ 4 billion in potential opportunities for lines of credit to support investments in the short term. Technical assistance to strengthen program institutional capacity will also be critical to facilitate disbursement and enable scale-up.

Limitations and Recommendations for Future Assessments

The definitions and assumptions used for the commerce and industry sector are the same as those used in RDNA2. Industry, as defined by this chapter, covers manufacturing (including agro-processing)

[243] National Bank of Ukraine, "Financial Stability Report," December 2023, Link.

[244] Total needs for the 5-7-9 program are estimated at US$670 million for 2024, out of which approximately US$350 million will support firms in commerce and industry, and USD$320 million will support firms in agribusiness (reported under the agriculture chapter of the report).

and services not covered elsewhere in the report. Services related to culture, tourism, finance, and creative industries, such as hotels, tour operators, and advertisers, are excluded. Restaurant and food services are included under commerce and industry. Commerce covers wholesale and retail trade and warehousing. This chapter includes impacts on both public and private firms.

This analysis faced the following limitations, which hopefully can be addressed in subsequent analyses:

- A key recommendation is to establish an electronic system for registering damage, repairs, and losses. The system would ensure a transparent and verified method for reporting damage and assist the government and donors in aiding those in need, including businesses.
- Regional data were unavailable for some oblasts that likely suffered from the war.
- For commerce, no regional breakdowns of the data were available. An indirect method (primarily based on housing damage estimates) was used to assign damage and loss proportions based on the impacts on small firms, since most commerce firms are small.
- Damaged assets and values were not available for most firms, especially smaller ones. The assumptions used were based on financial reporting and led to best estimates.
- Losses were calculated based on sales losses. For large and state-owned enterprises, the sales losses likely did not cover the full scope of losses, since firms that did not suffer any physical damage likely still suffered economic losses (e.g., from business disruptions due to electricity blackouts and missile attack warnings). Ideally, data for estimating losses in productivity and other indirect costs, like rental fees, could be collected for subsequent analyses.
- Sector breakdowns of small firms were not available and could not be indirectly estimated.
- Needs calculations were based on calculated damage to the sector. Given the immense nationwide losses faced by this sector, these calculations may be underestimated.

Table 28. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	6.5	2,144.0	560.3
Chernihivska	131.7	1,140.9	464.9
Chernivetska	0.0	210.0	38.6
Dnipropetrovska	294.2	28,689.5	8,060.9
Donetska	6,172.5	15,515.0	12,834.1
Ivano-Frankivska	0.0	3,210.6	803.7
Kharkivska	2,455.7	8,466.2	5,573.9
Khersonska	182.5	358.6	345.3
Khmelnytska	18.3	1,167.8	329.6
Kirovohradska	8.3	1,282.3	351.1
Kyiv (City)	445.7	9,145.7	3,189.0
Kyivska	2,588.7	61,858.3	19,968.0
Luhanska	662.3	462.3	1,026.1
Lvivska	26.5	4,593.3	1,235.7
Mykolaivska	755.6	3,506.5	2,052.8
Odeska	199.2	7,569.0	2,192.4
Poltavska	425.7	4,766.9	1,794.2
Rivnenska	0.4	1,076.7	276.5
Sumska	133.4	1,734.0	655.1

Ternopilska	0.5	851.7	220.5
Vinnytska	5.3	2,334.1	629.5
Volynska	0.0	1,868.5	475.8
Zakarpatska	0.2	925.1	225.9
Zaporizka	981.4	9,022.3	3,683.9
Zhytomyrska	106.2	1,275.7	480.2
Nationwide (no specific region)	41.4	6.6	62.5
Total	**15,642.2**	**173,181.8**	**67,530.2**

Source: Assessment team. *Note*: Damage covers 22 months of war between February 24, 2022, and December 31, 2023; loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months through June 30, 2025; needs cover the period 2024–2033.

Table 29. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Types of activities/investments	Total needs (2024–2033)
Reconstruction needs	Industry	17,656.2
	Commerce	3,076.3
Service delivery restoration needs	Industry	29,020.5
	Commerce	17,777.3
Total		**67,530.2**

Source: Assessment team.

Table 30. Estimated 2024 recovery and reconstruction priorities (US$ million)[245]

Types of priority activities/investments	Estimated cost
Investment [a]	4,208
Working Capital	1,602
Total	**5,810**

Source: Assessment team based on priorities defined by line ministries. *Note*: [a] includes debris removal and demolition costs.

Table 31. Estimated public sector (GoU, IFIs, and donors) contribution to 2024 priorities (US$ million)

Types of instruments	Estimated total cost
Grants and matching grants for business repair, modernization, etc.[a]	424
Subsidized lending through 5-7-9 program[b] (industry and commerce portion only)	350
Lines of credit/investment projects pipeline[c]	1,645
Support to exporting enterprises [d]	110
War risk insurance [e]	400
Technical assistance [f]	10
Other support programs (industrial parks, PPP facilities, local development programs, investment nannies, etc.) [g]	175

[245] Estimates of the short-term investment and working capital needs of the private sector for 2024 are based on the analysis of multiple data: (i) World Bank survey data on investment plans by firms ("Ukraine: Firms through the War," November 2023, Link), (ii) official database with financial reports of 330,000 companies in 2021-2022 available at the government open data portal processed by the Kyiv School of Economics, (iii) GoU statistics reflecting demand trends for public programs supporting small and medium enterprises, (iv) pipeline of priority investment projects ready for implementation in 2024 compiled by Kyiv School of Economics within the Project "Potential Investment Opportunities and Funding Mechanisms in Ukraine", and (v) other available sources. Capital investment needs were estimated by merging the 2023 World Bank survey data on firms' investment plans for the following 12 months, extrapolating results to the entire population of firms included in the official database with financial indicators of active companies in 2022, and then adjusting for the actual share of firms that invested in 2022. Working capital needs were estimated using the financial indicators included in the official database of active companies in 2022.

Total	3,114

Source: Assessment team in consultation with the Government of Ukraine.

a. Based on the estimates of the Ministry of Economy (excluding US$13 million for horticulture, accounted under the agriculture chapter), adjusted for the 70 percent disbursement rate in 2023.

b. Based on the estimates of the Ministry of Economy (excluding US$320 million for agriculture, accounted under the agriculture chapter), adjusted for the 98 percent disbursement rate in 2023.

c. Based on two components: (i) the estimation of total demand for capital investment by firms, divided by the multiplier of the 5-7-9 credit program (based on the data of the World Bank project financing the program) to derive the needed public sector contribution to meet the overall demand for capital investments by firms; and (ii) the estimation of capital investment needs according to the pipeline of priority investments ready for implementation in 2024 (based on data from the Ministry of Economy).

d. Based on estimates by the Ministry of Economy, adjusted for an expected 30 percent disbursement rate in 2024.

e. Based on estimates by the Ministry of Economy, adjusted for an expected 50 percent disbursement rate in 2024.

f. Based on estimates by the Ministry of Economy for technical assistance, including a PPP facility, with an estimated average preparation cost of US$500,000 per project for the pipeline of PPP projects for 2024.

g. Based on estimates by the Ministry of Economy of the investment needs for industrial parks, PPPs, local development programs, and “investment nanny” projects, adjusted for an expected 20 percent implementation rate in 2024.

Finance and Banking

Context

The Ukrainian financial sector has been significantly impacted by the war. Since February 2022, the banking sector has accounted for US$2.9 billion of loan loss provisions for expected war-related credit losses,[246] while the nonperforming loan (NPL) ratio has risen from 27 to 37 (as of November 2023). About 82 percent of the sector's NPLs are concentrated in state-owned banks (SOBs). At the same time, the financial sector remains stable, operational, profitable, and liquid, helped by emergency measures and broader policies that have generated substantial interest earnings and a rising deposit base. In Q4 2023, the National Bank of Ukraine (NBU) successfully transitioned from an exchange rate peg to a managed exchange rate regime. As a result, most banks continue to be well capitalized; the capital adequacy ratio rose from 18 percent prewar to 21 percent as of end-2023.[247] The NBU's 2023 resilience assessment of the 20 largest banks (accounting for over 90 percent of banking system assets) shows that most banks adequately assessed potential credit losses and provisioned accordingly, though continued vigilance is warranted given that the banking system's true health remains opaque and that further shocks, including bank nationalizations, remain a risk. While a newly introduced windfall tax on bank profits is not likely to have immediate negative impacts on financial stability, it will potentially impact banks' ability to absorb losses if the situation deteriorates. The nonbank financial institution (NBFI) sector is also likely to be suffering significant losses as a result of the war (on top of prewar vulnerabilities), but data remain very limited. Given its small size, the NBFI sector is not expected to have systemic impacts on the overall financial system. Since RDNA2, updated information shows that damage has increased slightly, while loss estimations have been reduced amid the results of NBU's resilience assessment.

Damage and Loss Assessment

The total cost of damage to the banking sector is estimated to be US$20.8 million (Table 32). Damage was estimated using data on banks' fixed assets (in particular, bank premises and equipment), as well as NBU's bank survey on damage.[248] Khersonska, Donetska, Kharkivska, Luhanska, and Zaporizka oblasts, where active combat still continues, account for the largest amounts of damage. SOBs, which comprise 54 percent of net banking system assets as of November 2023, account for 55 percent of damage.

The losses in the banking sector are estimated to be US$5.7 billion (Table 32). Credit losses were estimated at 25 percent of the prewar net loan portfolio, which is the midpoint of the upper and lower range estimates outlined in NBU's Financial Stability Report (FSR) for the second half of 2022.[249] The estimate was lowered by 5 percentage points compared to RDNA2 based on the results of NBU's 2023 resilience assessment, which showed that most banks adequately assessed potential credit losses and provisioned accordingly. At the same time, additional provisions may be needed as regulatory forbearance

[246] This amounts to around 13 percent of the net loan portfolio the banks held at the end of February 2022, while the National Bank of Ukraine's financial stability report for the first half of 2023 indicates that losses might reach 30 percent.
[247] Since February 2022, seven banks have been declared insolvent, including two subsidiaries of Russian SOBs and five small private banks, together accounting for around 3.3 percent of banking sector assets. One systemic bank accounting for 3.1 percent of banking sector assets was nationalized on grounds of sanctions.
[248] Data are from a bank survey conducted by NBU and are as of July 2023.
[249] NBU, "Financial Stability Report," June 2022, Link.

measures are phased out and (once conditions allow) the independent asset quality review (AQR) is conducted. About 40 percent of credit losses are attributed to SOBs, and 45 percent of losses are attributed to the Kyiv city region (due to the specifics of registering enterprises in Kyiv). A third of credit losses were caused by direct destruction of borrowers' assets, while the remainder are attributed to the economic impacts of the war. The quantification of losses does not recognize the inherent risks posed to recent gains arising from reforms to the financial sector, which include emergency measures to address risks stemming from the war as well as the SOB strategic framework; nor does it recognize the potential delays to further legislative reforms, which could occur given the need to address postwar problems first.

Human impact. Despite a series of cyberattacks and a period of deposit withdrawal in anticipation of the invasion, the majority of bank branches have remained operational; online banking services are fully available to all clients with internet connectivity; the noncash payment system is functioning normally; and liquidity has recovered for most banks. To ensure the continuity of the banking network, in late 2022 NBU joined with banks to introduce so-called Power Banking,[250] a network of over 2,000 bank branches across the country that can provide banking services even during prolonged blackouts. However, access to credit has contracted due to banks' tightened lending standards and the high interest rate environment.

Recovery and Reconstruction Needs, including Build Back Better

The financial sector's total recovery and reconstruction needs are estimated at US$2.3 billion over 10 years (Table 33). A total of US$2.9 billion in war-related credit losses was already provisioned for in 2022 and 2023 and has been discounted from the overall needs. In addition, due to the outcomes of the 2023 resilience assessment, the estimated percentage of overall war-related credit losses has been reduced from 30 percent to 25 percent (compared to RDNA2) — the midpoint between NBU's baseline and adverse scenarios. Actual recapitalization needs can be determined only after the independent AQR has been conducted.

For the financial sector to recover and drive the overall economic recovery, a series of measures needs to be taken in different time frames. Financial sector policy reforms should focus on (i) preserving financial stability and maintaining public confidence (in the short to medium term), (ii) strengthening readiness for resolution (short term), (iii) safeguarding and strengthening institutional frameworks as well as capacity of the financial market regulators (short to medium term), (iv) enhancing the financial sector's contribution to addressing fiscal and private sector needs (short to medium term), and (v) aligning financial sector legislation with EU acquis (short to medium term). To ensure financial stability during the war and in the recovery/reconstruction phase, there is a need for coordinated efforts by all financial market players—financial institutions, the NBU, the National Securities and Stock Market Commission (NSSMC), and the Deposit Guarantee Fund (DGF)—and for effective support of public authorities, in particular, the Ministry of Finance.

2024 Recovery and Reconstruction Priorities

Recovery and reconstruction investment priorities for 2024 are estimated at US$3.1 million (Table 34). The reconstruction needs for 2024 relate to restoration of banking service infrastructure in the territories

[250] NBU, "Power Banking: NBU-Initiated Joint Banking Network Power Banking Has Been Created, Will Even Work in Blackouts," December 26, 2022, Link.

brought back under government control (Chernihivska, Kharkivska, Khersonska, Kyivska, and Sumska oblasts) as well as additional provisions for credit losses. In parallel to the investments listed in (Table 34), the principal recovery and reconstruction focus for 2024 includes the following activities:

- **Analyze the impact of the war on the financial sector (asset quality reviews).** NBU will implement its resilience assessment of the 20 largest banks followed by independent valuation of banks' assets when conditions allow.
- **Ensure the financial sustainability of the DGF.** The DGF should have sufficient funds to cover insured deposits at banks with the highest likelihood of becoming insolvent.
- **Develop an NPL resolution action plan** aimed at reforming NPL resolution mechanisms and create markets/mechanisms for distressed assets.
- **Enhance efficiency in the banking sector,** in part by strengthening the SOB governance framework with its majority-independent supervisory boards, initiating preparations to revert to a prewar SOB strategy, and reforming the underlying legal framework for SOB privatization.
- **Strengthen the design of time-bound financial support programs that target affected borrowers and sectors using transparent rules and governance mechanisms.** Policy responses will need to minimize opportunities for moral hazard and rent seeking and to adhere to sound credit risk management practices and independent governance arrangements at SOBs, while also facilitating the effective allocation of new credit. A special war insurance pool should be developed and the Partial Credit Guarantee Fund for small farmers operationalized.

Limitations and Recommendations for Future Assessments

This financial sector needs assessment is based on a wide range of inputs and data from such sources as NBU and surveys of financial sector institutions. The assessment also uses expert opinions and secondary data where possible. As in RDNA1 and RDNA2, the estimates are based on currently available information. More accurate estimates will be available once financial sector health diagnostics are completed. Moreover, as indicated above, the quantification of losses does not recognize the inherent risks posed to the recent gains arising from reforms to the financial sector, such as temporarily applied relaxation of prudential rules and changes to the SOB strategic framework; nor does it recognize the potential delays to further reforms as a result of the need to address postwar problems first.

Table 32. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	-	45.0	18.0
Chernivetska	0.4	15.0	6.5
Chernihivska	-	24.5	9.8
Dnipropetrovska	-	226.1	90.4
Donetska	4.5	191.3	83.2
Ivano-Frankivska	-	50.2	20.1
Kharkivska	3.4	933.9	377.6
Khersonska	5.8	201.6	87.4
Khmelnytska	-	47.4	19.0
Kirovohradska	-	30.7	12.3
Kyiv (City)	-	2,547.2	1,018.9

Kyivska	0.6	40.0	16.7
Luhanska	2.9	33.9	17.7
Lvivska	-	183.2	73.3
Mykolaivska	0.4	101.6	41.2
Odeska	-	226.8	90.7
Poltavska	-	58.6	23.4
Rivnenska	-	27.8	11.1
Sumska	0.3	41.7	17.0
Ternopilska	-	30.2	12.1
Vinnytska	-	48.9	19.6
Volynska	-	20.2	8.1
Zakarpatska	-	22.0	8.8
Zaporizka	2.5	457.5	186.7
Zhytomyrska	-	28.6	11.5
Nationwide (no specific region)	-	74.9	-
Total	**20.8**	**5,708.8**	**2,280.8**

Source: Assessment team. *Note*: Damage covers 22 months of war between February 24, 2022, and 31 December 2023; Loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months until June 30, 2025; needs cover the period 2024–2033.

Table 33. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Types of activities/investments	Total needs (2024–2033)
Reconstruction needs	Stated-owned banks	15.6
	Private banks (domestic and foreign banks)	12.4
Service delivery restoration needs	Stated-owned banks	825.5
	Private banks (domestic and foreign banks)	1,427.2
Total		**2,280.8**

Source: Assessment team.

Table 34. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments		Estimated cost
Restoration of banking service infrastructure in territories brought back under government control	Stated-owned banks	1.5
	Private banks (domestic and foreign banks)	1.6
Additional recapitalization needs	Stated-owned banks	TBD [a]
	Private banks (domestic and foreign banks)	TBD [a]
Total		**3.1**

Source: Assessment team based on priorities defined by line ministries. Notes: a. NBU's 2023 resilience assessment found that most banks adequately assessed potential credit losses and provisioned accordingly. Banks were able to offset losses mainly with operational profits. At the same time, there may be additional provisions and related recapitalization needs stemming from a possible deterioration of the macroeconomic situation as well as the upcoming independent AQR.

INFRASTRUCTURE SECTORS

Energy and Extractives[251]

Context

Since February 2023, the energy sector has sustained continued attacks on its infrastructure. In the period covered by the RDNA1, the energy sector suffered war-related (though mostly collateral) damage; however, intensified attacks on energy infrastructure beginning in early October 2022 caused extensive damage across the country, as recorded in the RDNA2. Since then, Ukraine's energy infrastructure has suffered multiple attacks, and energy companies have suffered cyberattacks. The attacks have resulted in significant damage to Ukraine's integrated energy system, including power generation and transmission infrastructure. During the period covered by RDNA3, the destruction of the Kakhovka hydroelectric power plant (HPP) dam also had severe effects, causing substantial harm to the energy sector and the Khersonska region in particular.[252] The report by the GoU and the United Nations provides more specific details on the destruction of the Kakhovka HPP dam, including quantification of the damage.[253] Throughout 2023, regular intense attacks on infrastructure occurred across all of Ukraine. Eastern and southern regions were more affected due to their proximity to the frontline, which runs from Kharkiv to Kramatorsk, Dnipro, Zaporizhzhia, Kryvyi Rih, Kherson, Mykolaiv, Odesa, and Izmail. During the summer months of 2023, the attacks across other Ukrainian regions were fewer. Attacks renewed during the 2023–2024 heating season. These factors are reflected in the changes in the damage and losses, especially between March and December 2023.

Before February 2022, the energy sector played a key role in Ukraine's economic growth as well as its national security, and increasingly supported the government's goal of modernizing the economy. The energy supply sector represented 7–8 percent of GDP,[254] with gas transit fees from Russia representing about 0.3 percent of GDP.[255] The entire population had access to electricity, and 94.9 percent had access to clean fuels for cooking.[256] Central heating had high penetration (about 47 percent), particularly in the

[251] In RDNA3, the energy sector assessment does not include district heating, which is considered under the municipal assessment. Where the current chapter cites energy sector figures from RDNA2 and RDNA1, these figures include district heating. Also note that under RDNA3, not all damage is recorded and assessed. Please refer to the limitations section below. Extractives refers to energy-related industries, noting limitations in data collection and assessment as noted in the chapter.

[252] The values of the damages and the needs related to Kakhovka HPP are included in the RDNA3 report based on the values provided by the Ministry of Energy and Ukrhydroenergo. This is an indicative level required to restore the power capacity as a whole, and not an endorsement of the decision on Kakhovka's dam restoration. This decision is very sensitive and requires an environmental impact assessment to address environmental concerns, a better understanding of its potential impacts on the environment, and an assessment of alternatives for rebuilding the power generation capacity.

[253] See GoU and UN, "Post-Disaster Needs Assessment: 2023 Kakhovka Dam Disaster, Ukraine," 2023, Link.

[254] National Institute for Strategic Studies under the Office of the President of Ukraine, "Determination of the Level of Energy Security of Ukraine," 2023, 35, Link.

[255] Gas transit via the territory of Ukraine has undergone substantial changes since independence. The construction of pipelines (Blue Stream in 2003, Nord Stream 1 in 2011, and TurkStream in 2020), gas disputes between Ukraine and Russia, and the development of the liquefied natural gas market have all served to reduce gas transit through Ukraine over the last few years.

[256] World Health Organization, "Proportion of Population with Primary Reliance on Clean Fuels and Technologies for Cooking (%)," Link.

bigger cities. The gas distribution network covered 74 percent of the population,[257] and 89 percent of the population had access to clean water, thanks to pumped water distribution systems.

Damage and Loss Assessment

Damage as of December 31, 2023, is estimated at US$10.6 billion (Table 35); this excludes damage to the district heating sector, which is estimated at almost US$2.1 billion.[258] In comparison, as of February 24, 2023 (under RDNA2), the total was estimated at above US$10 billion (including estimated damage to the district heating sector of about US$1.2 billion); as of June 1, 2022 (under RDNA1), damage was estimated at US$2 billion. The majority of the damage reported in RDNA3 occurred during the period covered by RDNA2. However, the continuing attacks have increased both damage and losses. Significant damage was caused by destruction of the Kakhovka HPP and its dam. New information has also been collected that specifies damage incurred in the energy sector in the preceding periods covered by RDNA1 and RDNA2.

The largest share of damage is in the power sector: US$7.5 billion (versus US$6.5 billion in RDNA2). Within the power sector, the largest contributor to damage is the generation segment at US$4.9 billion (versus US$3.9 billion in RDNA2), followed by the transmission segment (US$2.15 billion versus about US$1.9 billion in RDNA2). Damage to the power distribution sector is estimated at about US$430 million (versus about US$404 million in RDNA2), though this does not include assets in territories temporarily not under GoU control. Estimates of damage to the gas sector are at US$1.3 billion (versus US$1.2 billion estimated in RDNA2). Damage to the oil sector, including oil refinery facilities, fuel depots, and fuel stations, is estimated at around US$1.7 billion (the same level as for RDNA2). Damage to the coal and mining sector could not be newly estimated because there is a lack of information from the mines located in territories temporarily not under GoU control; RDNA1 figures are used for this sector.

Estimated war-related revenue losses in the power, gas production, gas transit, coal mining, and fuel oil sectors exceed US$54 billion (Table 35), compared to US$27 billion estimated by RDNA2.[259] The revenue losses are linked to regular attacks on energy infrastructure, displacement of a significant part of the Ukrainian population, economic contraction, and poverty increase. These losses are also combined with the decrease in collection rates (mainly in the regions close to the front line[260]). The losses (partly quantified so far) include the losses from the following sectors: the power sector (US$31.97 billion), the gas sector (US$8.11 billion), the fuel oil sector (US$7.74 billion), and the coal sector (US$6.09 billion). The remaining amount is the cost for debris removal/demolition (US$0.136 billion).

Human impact. Concerning human impact in the sector, the attacks on Ukraine's energy system have resulted in civilian suffering and general economic attrition.[261] The deprivations caused by unreliable

[257] State Statistics Service of Ukraine data.
[258] In RDNA3, the energy sector assessment does not include district heating, which is considered under the municipal assessment.
[259] The losses were estimated by comparing the level of production and revenues in 2021 and 2022 and taking into account the production decreases caused by the war.
[260] UA Energy, "The Communal Debts of Ukrainians Are Growing: What Should the Heating Workers Do? [Комунальні борги українців зростають: що робити тепловикам]," March 17, 2023, Link.
[261] J. Yaffa, "The Impact of Russian Missile Strikes on Ukraine's Power Grid," *The New Yorker*, February 20, 2023, Link.

access to electricity are highly disruptive to civilian life.[262] For some households and businesses, private investments in distributed power generation, mainly from small diesel generators, have offered partial short-term relief.[263] Attacks on energy infrastructure affect civilian life across the country and can wreak regionally concentrated civilian suffering. For example, the destruction of the Kakhovka Dam necessitated the evacuation of thousands of civilians.[264]

Recovery and Reconstruction Needs, including Build Back Better

The total recovery and reconstruction needs are estimated at US$47.1 billion over 10 years (Table 36). This amount includes US$40.4 billion necessary to rebuild the power generation sector, based on green transition principles and following the agreements with the EU, once the war ends. The regions with the largest estimated needs are Zaporizka, Kharkivska, and Donetska oblasts. The overall geographical distribution of the needs is presented in Table 35.

Some needs have already been met. The total amount of the met needs is US$1.73 billion in disbursed amounts and US$3.19 billion in the commitments received. Examples of the needs that have been met include repairing and replacing damaged power transmission equipment, constructing protective infrastructure (such as building protection against drones and missiles) to safeguard energy infrastructure, building transmission connections, installing STATCOMs (devices that help regulate voltage) required in line with the measures determined by ENTSO-E (European Network of Transmission System Operators for Electricity), repairing hydropower plants, installing distributed generation facilities, financing procurement for the heating season, and more.

Given the necessity of balancing short-term needs with long-term goals, Ukraine must focus first on policies that minimize fiscal liabilities in the sector, catalyze external financing, and enhance transparency and internal implementation capacity. It must not allow short-term emergency and recovery actions to impede progress on long-term international climate commitments and EU accession requirements.

Balancing short-term energy needs with long-term goals is very difficult in a context of high uncertainty. In the recovery phase, basic energy and utility services must be restored as quickly as possible, enabling the return of internally displaced persons—even if Ukraine's population and its spatial distribution will differ from what they were prewar. However, energy policy decisions made during recovery could impact long-term economic, energy security, and climate objectives. The postwar context will present an opportunity to rethink energy sector priorities in Ukraine, while also balancing the need for fast provision of enabling services with the need to build back better. The latter should also be aligned with systematic implementation of energy efficiency measures as part of the large-scale reconstruction that will occur across all sectors, public and private, including households. Careful planning will be required to ensure no-regret investments, and institutional processes will need to be simplified to attract financing flows

[262] J. Horncastle, "Russia Is Using Drones to Target Ukrainian Electricity and Erode Morale," *The Conversation*, January 16, 2023, Link.
[263] R. Olearchyk, "Ukraine Braced for Attacks on Its Power Grid as Winter Draws In," *Financial Times*, November 2, 2023, Link.
[264] A. Binley and P. Adams, "Ukraine Dam: Thousands Flee Floods after Dam Collapse Near Nova Kakhovka," *BBC*, June 7, 2023, Link.

from different public and private sources. Any planning advanced during the war period will likely require adjustments and reconsideration during the recovery phase.

During the reconstruction phase, Ukraine will need to adopt a build back better approach with policies that align its energy model with the EU energy policy and move toward a decarbonized economy. Decarbonization efforts are critical to meet the requirements under the EU accession and to increase energy security. Critical reforms will include the transposition of the Clean Energy Package, correction of institutional and market-related breaches, and the adoption of the REPowerEU approach to increase energy security. To meet this last goal, Ukraine should focus on (i) diversifying gas supply and promoting green gases and electrification when economically feasible; (ii) accelerating decarbonization of the power sector and implementing a just transition roadmap toward renewable energy generation; and (iii) boosting energy efficiency in demand sectors (housing, industrial, transport). Building on advances in digital development before and during the war, the reconstruction should take advantage of opportunities and synergies to decarbonize and digitalize the energy sector, thereby increasing its resilience to cyberattacks and natural hazards. These policies will also help attract support from donors, financiers, and investors to accelerate the restoration and reconstruction.

2024 Recovery and Reconstruction Priorities

The RDNA2 identified priority needs totaling US$3 billion for the year 2023. In 2023, the GoU secured financing and initiated implementation of projects across multiple areas. The identified commitments for 2023 totaled US$3.2 billion. As of the same period, US$1.8 billion had been disbursed, which is equivalent to 54 percent of the identified 2023 priorities. The gap in disbursement can be explained mainly by the time necessary (and lags) between funding mobilization, procurement, and implementation works, resulting in later payments and disbursement rate smaller than planned. Concerning amounts committed and disbursed, the energy sector has seen the most significant recovery efforts in the following areas: (i) developing protection structures for key power grid infrastructure; (ii) arranging restoration and emergency supply of equipment for the power transmission sector operator (TSO); (iii) securing gas purchasing for the heating season; and (iv) constructing new small-scale/distributed generation. Other areas for which commitments were received and implementation work started include the installation of STATCOMs to enhance import-export operations of electricity and restoration of large HPPs, among others.

Recovery and reconstruction priorities for 2024 are estimated at about US$2.7 billion (Table 37). This amount takes into account the priority needs, absorption capacity from the previous year, disbursement rate of the committed amounts, fundraising circumstances, and other related factors. Overall**,** 2024 recovery and reconstruction investment priorities include US$1.24 billion for the power sector, US$0.68 billion for the gas and oil sector, and US$0.74 billion for liquidity needs related to gas purchasing and electricity import.

Beyond the RDNA recovery and reconstruction projects identified above, the government has identified around US$3 billion in additional 2024 priorities[265] to support economic growth and modernization:

- To ensure sufficient generation capacities for economic development, the government plans to complete the construction works on one of Energoatom's units and start new construction under previously agreed contracts. The total cost for this work is US$8.89 billion, while the estimated cost for 2024 is US$2 billion.
- To achieve comprehensive modernization of Ukraine oil refinery production, a project led by the Naftogaz Group is planned. The total cost of this project is US$2.5 billion, with an estimated US$281 million needed for 2024.
- Finally, regarding the construction of high-level protection for substations, the GoU has estimated total need of around US$2.1 billion to be implemented in the short to medium term. US$300 million is included in the priority needs for 2024 since this funding is expected to be secured and disbursed; an additional US$700 million could be committed during 2024.

Limitations and Recommendations for Future Assessments

The main shortcoming of the current analysis is that it is based on limited information of some subsectors and regions:

- Power sector damage estimates in areas not controlled by the GoU are inaccurate. In areas partially controlled by the government, the accuracy of estimates varies. Full estimation of power sector damage in areas not fully controlled by Ukraine should be done at a later stage.
- The power TSO data are aggregated at the country level due to the extra sensitivity of the information.
- The gas sector does not include damage in the gas production sector. If the GoU provides data on this category, damage could be quantified.
- The coal mining sector was not quantified in detail due to the lack of data.
- Capture of energy extractives data requires setting up a nodal agency to collect data from the private and public, sector to triangulate and carry out the validation of the data as an ongoing process throughout the year. In addition, there is a need for a mechanism to ascertain and capture data for damage and losses in temporarily occupied territories and in territories very near to the battle zone.

The assessment includes a range of assumptions in addition to the general RDNA assumptions of geographic scope and timeline:

- Damage includes damage in territories fully or partially controlled by the GoU and in territories temporarily not under government control. Damage for distribution system operators is provided only for territories controlled by the GoU. Damage in territories temporarily not under government control is estimated if possible and based on information from the government and other sources on actual damage to facilities. Assets in territories temporarily not under

[265] Due to confidentiality reasons and the innovative nature of some of these projects the Bank cannot fully validated validate the cost estimates for this projects nor its implementation plan.

government control are not considered as definitely lost unless there is certainty that they have been completely destroyed.

- Damage quantification in the power sector is estimated as replacement cost (with similar equipment quality).
- Power generation damage is based on conservative assumptions and fragmented information—damage to thermal power plants may be larger than estimates. Some assets have been damaged and repaired multiple times.
- The transmission damage is calculated based on estimates from Ukrenergo that combine preliminary and actual estimates. The former apply until the end of hostilities and are based on available information from technical personnel (witnesses) on the asset's condition, degree of damage, and possibility of recovery. The latter are based on actual inspection, technical inspection, and full inventory in areas controlled by Ukraine where inspections are feasible. Ukrenergo has operational data on damage to the network and inspects and repairs damaged assets.
- Given the limitations on data sharing, direct detailed information on damage to most of the power distribution networks could not be obtained. In the future, the actual extent of damage will have to be assessed, and a power sector model will be needed to refine the needs estimates.
- Damage in the gas transmission sector is estimated using the book value provided by the gas TSO and adjustments to derive indicative market-based replacement costs. The values are preliminary and will need to be specified after the war ends or when the security situation allows.
- The quantification of the fuel oil sector is based on estimations provided by the Kyiv School of Economics, complemented by additional modeling by the World Bank. With additional data, these estimates should be refined and verified at a later stage.
- Where possible, damage to assets in areas temporarily not under government control has been estimated assuming partial damage instead of 100 percent damage. The degree of damage should be better quantified at a later stage.
- It is important to note that the indicated total needs are preliminary and that after the war ends more detailed studies and quantification will be required, in particular for the regions close to the front line or currently not under government control.

Table 35. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	0.0	-	0.0
Chernihivska	30.3	-	58.0
Chernivetska	0.0	-	-
Dnipropetrovska	150.2	-	135.8
Donetska	811.8	-	332.8
Ivano-Frankivska	0.1	-	0.1
Kharkivska	221.1	-	403.1
Khersonska	303.0	-	48.8
Khmelnytska	5.0	-	0.1
Kirovohradska	12.2	-	-
Kyiv (City)	34.5	-	77.9
Kyivska	111.1	-	149.7

Luhanska	322.0	-	113.4
Lvivska	48.9	-	46.1
Mykolaivska	108.3	-	175.2
Odeska	22.7	-	22.8
Poltavska	32.5	-	52.5
Rivnenska	13.2	-	-
Sumska	77.4	-	130.3
Ternopilska	-	-	-
Vinnytska	17.5	-	24.4
Volynska	6.5	-	0.6
Zakarpatska	179.5	-	322.1
Zaporizka	1,132.9	-	765.2
Zhytomyrska	14.6	-	4.1
Nationwide (no specific region)	6,947.7	54,040.3	44,212.9
Total	**10,603.0**	**54,040.3**	**47,076.0**

Source: Assessment team. *Note*: - = not assessed. Damage covers 22 months of war between February 24, 2022, and December 31, 2023; loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months through June 30, 2025; needs cover the period 2024–2033.

Table 36. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Types of activities/investment	Total needs (2024–2033)
Reconstruction Needs	Power sector reconstruction, including transmission system operator, distribution system operators, power generation facilities	40,410.6[a]
	Gas transportation system reconstruction, including gas transmission system operator and distribution system operators	2,950.6
	Fuel oil sector reconstruction, including oil refinery facilities and distribution networks	3,394.8
	Coal mining sector (urgent closure works on flooded mines, currently not under government control)	320.0
Service Delivery Restoration Needs	Electricity import liquidity needs	-
	Gas purchasing liquidity needs	-
Total		**47,076.0**

Source: Assessment team. *Note*: - = not assessed. [a] Renewable energy will require 74 percent of the total amount, which is approximately $29.8 billion for hydro, wind, and solar sectors.

Table 37. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
Power sector	1,240
Gas sector	241
Oil sector	435
Gas purchasing	540
Electricity import	200
Total	**2,656**

Source: Assessment team based on priorities defined by line ministries.

Transport

Context

Since the completion of RDNA2 in February 2023, the context for transport sector damage in Ukraine has remained relatively stable, as the intensive military operations have been mostly contained along the steady front line in the east and south of the country. Although no significant territories were returned to government control during 2023, transport networks have been continuously exposed to movements of heavy weaponry and supply vehicles. In addition, transport infrastructure has continued deteriorating due to very limited maintenance beyond repair of damage.

Several major disruptions to the transport sector have occurred since February 2023: (i) the shutdown of the Black Sea Grain Initiative (BSGI) in July 2023; (ii) the continuous intensive aerial strikes on port infrastructure in the Odeska and Mykolaivska oblasts, including on Danube River ports; and (iii) limitations to the Solidarity Lanes Initiative caused by blockade of the Ukrainian-Polish border by Polish truckers from November 2023 till January 2024. The BSGI allowed approximately 33 million tons of Ukrainian grain to be exported via Ukraine's ports from August 2022 to July 2023, but after the BSGI shutdown, grain exports continued with the support of Romania and Bulgaria through the Ukrainian export corridor, allowing shipment of about 15 million tons of products from August 2023 to December 2023. Continued attacks have damaged 184 port facilities in Odeska and Mykolaivska, but numerous measures were taken to upscale the Danube ports' capacity, leading to a record transshipment of about 3.5 million tons a month. The Solidarity Lanes Initiative has helped to scale transport via logistics chains that run through the EU, and it remains critical for export of goods other than grain (e.g., steel, manufactured products, ore) and for import of critical needs (e.g., fuel, humanitarian aid). Between May 2022 and the end of September 2023, the total value of trade via the Solidarity Lanes is estimated at around €108 billion.[266] Over two months of blockade of some Ukrainian-Polish road border crossing points (BCPs)—at one point more than 3,000 trucks queued on the four border crossings in the direction to Ukraine— has caused significant delays and losses.[267]

Almost two years after the invasion of Ukraine, Ukraine's transport sector institutions are demonstrating a high degree of resilience, specifically in maintaining and repairing transport infrastructure. Key recovery efforts since the start of the war were aimed at restoring the basic road and rail connectivity in the territories returned to government control, with the largest concentrations of recovery efforts in Kharkivska, Chernihivska, Kyivska, and Sumska oblasts. Most road repairs consisted of urgent measures to ensure connectivity; over 2,000 km of emergency repairs were made on motorways, highways, and other national roads. In addition, road and rail bridges were fully reconstructed: (i) 115 road bridges were restored with temporary structures, including 29 modular bridges donated by country partners; (ii) 46 road bridges were repaired or newly constructed; and (iii) about 25 km of railways lines were rebuilt (out of more than 50 km destroyed) and 769 km of overhead catenary lines were restored (over 1,413km damaged and destroyed).

[266] European Commission, "Factsheet on EU-Ukraine Solidarity Lanes Joint Coordination Platform," September 1, 2023, Link.
[267] Y. Grigorenko, "The Blockade of Road Crossings Will Cost the Ukrainian Economy at Least $1 Billion," GMK Center, December 6, 2023, Link.

Damage and Loss Assessment

The total cost of damage to the sector is estimated to be US$33.6 billion (Table 28**).** The largest concentrations of damage are (i) local oblast, village, and communal roads combined (26 percent); (ii) railway infrastructure, rolling stock, equipment, and other assets combined (24 percent); and (iii) motorways, highways, and other national roads (23 percent). Overall, no substantial shift in damage to transport infrastructure has been observed, mainly because the front line was steady in 2023; most additional damage in 2023 was to Ukraine's ports. Damage distribution by oblast remains similar to what was reported in RDNA2: Donetska, Khersonska, Zaporizka, and Luhanska oblasts together account for over 70 percent of damage.

This estimate is slightly lower than that in RDNA2 (US$35.7 billion), this decrease results from upside and downside factors. On the upside, damage to Ukraine's port infrastructure has doubled since RDNA2, while there has been a 20 percent increase in damage to the railway network, urban public transport, and combined local oblast, village, and communal bridges. Increased port and rail infrastructure damage reflects increased attacks on the critical logistics infrastructure for Ukrainian export, while the increase in damage to urban public transport and local oblast, village, and communal bridges combined should be attributed to improved and more-available data at the local level. On the downside, a better understanding of the road infrastructure's prewar baseline condition led to a 34 percent reduction in the damage estimate for local oblast and village roads, and to a 16 percent reduction for communal roads. Almost all damage, except damage to private vehicles, relates to public sector assets.

Before the invasion of Ukraine, road networks in Ukraine were not in perfect condition. In 2016, an assessment of the Ukrainian core road network[268] (20,760 km of international, national, and regional roads) found 46 percent in good condition, 38 percent in fair condition, and 17 percent in poor condition. The launch of the Road Fund in 2018 and the State Road Rehabilitation Program in 2020 led to a dramatic increase in road expenditures—US$4.5 billion in 2020 and US$5.0 billion in 2021. This funding enabled the rehabilitation of the key transport corridors and slowed down the overall network deterioration; but it has not returned the whole network to an overall state of good repair.

The losses in this sector are estimated to be US$40.7 billion (Table 38**).** The largest concentrations of losses are attributable to (i) disrupted Black Sea port access (65 percent), which severely hampered Ukraine's trade despite the BSGI (operating until July 2023) and despite the Ukraine maritime corridor (operating since September 2023); (ii) closure of Ukraine's aviation industry and loss of overflight revenues (23 percent combined); (iii) disruption to road transport (7 percent); (iv) disruption to rail transport (4 percent); and (v) disruption to public transportation due to fleet damage and service interruption (1.4 percent). The share of the private losses is estimated to be about 80 percent of the total, largely driven by the disrupted access to Black Sea ports.

This assessment considers the positive impact of the BSGI and the Ukrainian export corridor. These helped unlock maritime transport routes for approximately 45 million tons of Ukrainian exports, including about 40 million tons of agriculture products between August 2022 and December 2023. Over this period,

[268] World Bank Group, "Strategy for prioritization of investments, funding and modernization of Ukraine's road sector", June 1, 2018, Link.

these two initiatives mitigated about US$7 billion in losses by providing maritime transport access. The EU's Solidarity Lanes Initiative has also been critical for facilitating alternative trade routes, although this assessment has not separately calculated the impact attributable to the Solidarity Lanes.

The human impact of disrupted transport services is deemed to be significant but could not be quantified at this point. Qualitatively, this is about reduced access and time lost by people seeking to reach hospitals, schools, markets and shops, and jobs, particularly in the frontline oblasts. As air space remains closed, travelers—mostly women and children—experience significant delays on the western road BCPs, where waiting times can reach up to 12 hours in busy periods. In addition, transport operators face serious issues with the safety of their employees: as of December 2023, 1,427 railway staff had been injured and 555 killed, and there have likewise been reports of casualties and injuries of people involved in port operations.

Recovery and Reconstruction Needs, including Build Back Better

The total recovery and reconstruction needs are estimated at US$73.7 billion over 10 years (Table 39**)**. The largest concentration of reconstruction needs remains the same as in RDNA2; decarbonization, transport efficiency and multimodality are important drivers of the transportation sector Build-Back-Better perspective. Needs includes (i) motorways, highways, and other national roads (29 percent); (ii) railways infrastructure, rolling stock, equipment, and other assets combined (24 percent); and (iii) local oblast, village, and communal roads combined (17 percent). Donetska, Khersonska, Zaporizka, Kharkivska, and Luhanska oblasts together account for 73 percent of recovery and reconstruction needs.

This assessment finds that the total needs amount has decreased by about 20 percent compared to RDNA2. This reduction results from refining the estimation methodology, which now differentiates core and noncore railway networks with different standards for building back better—that is, reduces the standard for noncore networks. The overall principle is that most investment and upgrade should focus on core networks; noncore networks still factor in BBB reconstruction, but to a lower standard than in RDNA2. For railways, within RDNA3, 40 percent of the Ukrainian rail network is considered core and therefore eligible for the higher BBB standards (which typically feature higher design speed, higher capacity, and in some cases electrification). Conversely, needs for noncore railways lines do not drastically modify current functional features. A similar approach has been applied to roads: while the core network— "M" roads—has EU-level motorway standards, the main functional features of the noncore road network are assumed to remain the same. The same as for railways, noncore roads still include BBB elements—safety, climate resilience, and in some cases capacity increase. This approach is based on the understanding that the network of international highways in Ukraine (M roads) will continue to be the core transport network, while the national road network will function primarily to distribute vehicular traffic flows.

In addition, the needs estimates were discounted by US$2.1 billion, corresponding to the reported 2023 expenditures to the transport sector. While some repairs are "quick fixes" aiming to restore the basic operational capabilities of the infrastructure, several assets have been repaired permanently (although probably to a standard below the full BBB standard). Repair works to restore connectivity depend on the type of asset, its prewar condition, and the type and severity of damage. Linear infrastructure (such as

streets, roads, and railway lines) represents a significant share of the damage database and is usually damaged at specific points, requiring spot measures to restore connectivity. Such measures are considered quick fixes that do not improve the quality of the link and cannot be associated with the build back better approach; for these measures, needs are not considered met, despite repairs. Due to the severity of their damage, however, some road and rail bridges were either replaced with temporary bridges or rebuilt permanently.

2024 Recovery and Reconstruction Priorities

During 2024, transport assets call for a US$2.24 billion investment, supplemented by just under US$0.1 billion to restore postal services (Table 40). Overall, priority projects for 2024 aim at increasing Ukrainian export capacity, strengthening lifeline connectivity, and restoring services. These estimates factor in the readiness of projects. About 150 transport projects at different stages are planned for 2024; of these, national road and bridge temporary repair makes up 28 percent, local road and bridge temporary repair 18 percent, railway infrastructure emergency repair 12 percent, BCP expansion 11 percent, urban transport rolling stock 9 percent, railway rolling stock and equipment 7 percent, and inland waterways infrastructure repair and Danube River port expansion 2 percent. In addition, three major projects are planned rural post office development as well as restoration of the Ukrposhta postal network.

RDNA2 envisaged US$3.4 billion for 2023 recovery and reconstruction priorities in the transport sector. But reported expenditures at the end of 2023 amounted to about US$2.1 billion. During 2023, efforts aimed to address immediate needs. The effort to restore basic connectivity secured access to over 130 road and rail bridges; the effort to expand westward logistics chains transferred 29 road BCPs to the State Agency for Restoration and Development of Infrastructure of Ukraine, allowing further upgrade; upscaled rail BCP capacity; and reconstructed rail tracks to BCPs. Finally, the effort to address port operations led to the development of the Ukrainian export corridor and Danube ports, modernization and repair of port infrastructure, 23 new transshipment terminals, an increased fleet, and other improvements.

While key priorities during 2024 remain similar to those in 2023, there is currently an urgent need to (i) prioritize the reconstruction projects, (ii) mobilize project preparation for reconstruction and prepare teams for delivery, and (iii) continue the work on institutional reforms to accelerate future rebuilding.

Limitations and Recommendations for Future Assessments

RDNA3 considers roads, railways, bridges, aviation assets, ports, inland waterways, and urban public transport as part of the transport sector assessment. Specific limitations in the approach include the following:

- **Data sets and completeness.** Like RDNA1 and RDNA2, RDNA3 calculates damage to road, rail, aviation, and urban transport assets using data provided by Ukraine's Ministry for Communities, Territories and Infrastructure Development, Ukrainian Railways, the State Agency for Restoration and Development of Infrastructure of Ukraine, oblast administrations, and municipal authorities. The accuracy of these data varies according to the security situation—that is, according to whether government representatives can access sites and validate (at least approximately) locations and actual levels of damage. Precise data on damaged assets in areas not currently under government control remain unavailable. Hence the resulting analysis of damage and needs is inherently uncertain.

- **Assumptions regarding extent of damage.** As with RDNA1 and RDNA2, the assessment of damage does not include detailed engineering work or testing. Definitive assessment of damage levels is needed to determine appropriate mitigation strategies; for example, some assets assumed to be fully damaged might turn out not to require full replacement/rehabilitation. Remaining security threats and budgetary constraints have prevented detailed engineering assessments in most instances.
- **Cost estimates.** Estimates for reconstruction needs use unit costs or approximations for specific assets rather than detailed engineering assessments; actual costs will vary by the extent of damage, location within Ukraine, and market factors that may affect pricing of works at the time of reconstruction. Unit costs also reflect assumptions regarding the nature of works required for reconstruction, and actual technical solutions may differ from those assumed. The detailed site-by-site engineering analysis that would substantially reduce uncertainty may not take place in the near future, given wartime constraints on budgets and capacity.
- **Continuation of airspace closure and limited access to the Black Sea ports.** Calculation of losses in RDNA3 reflects the partial restoration of transportation through Black Sea corridors under the BSGI and Ukrainian corridor. However, the future of the Ukrainian corridor remains uncertain, and RDNA3 therefore makes no assumption on the future volumes that could be transported through the Black Sea after 2023. RDNA3 continues to assume that Ukraine's airspace will remain fully closed during this time. These assumptions are inherently linked to Ukraine's military gains or the effectiveness of international diplomacy efforts, both of which are outside the scope of RDNA3 analysis. Projected losses incurred or avoided are accordingly subject to high levels of uncertainty.
- **The foremost recommendations for future assessment are as follows:** (i) once security conditions allow, intensify field-level investigations and engineering work needed to identify and classify damage; and (ii) in parallel with field validation of data, expand consideration of losses, which will require more complex calculation methodologies.

Table 38. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	27.7	975.5	43.4
Chernihivska	1,568.7	1,174.5	4,393.6
Chernivetska	7.1	371.1	21.3
Dnipropetrovska	257.4	3,653.1	784.8
Donetska	8,758.6	2,551.0	16,510.4
Ivano-Frankivska	5.0	816.3	10.0
Kharkivska	3,596.9	2,942.8	8,577.9
Khersonska	5,159.4	945.6	10,444.6
Khmelnytska	3.1	779.2	7.3
Kirovohradska	49.0	668.0	96.1
Kyiv (City)	-	-	-
Kyivska	1,811.6	11,203.4	4,537.8
Luhanska	4,244.1	620.8	7,582.1
Lvivska	27.2	2,003.9	44.0
Mykolaivska	1,135.0	1,047.3	2,971.2
Odeska	218.8	1,883.2	497.8
Poltavska	8.0	1,744.0	26.7

Rivnenska	5.1	630.8	8.2
Sumska	1,327.5	936.6	3,413.3
Ternopilska	-	519.5	-
Vinnytska	48.6	1,224.5	276.6
Volynska	2.0	708.6	1.9
Zakarpatska	2.7	556.6	3.5
Zaporizka	5,116.8	1,850.1	10,265.1
Zhytomyrska	243.0	871.7	927.5
Nationwide (no specific region)	-	-	2,239.7
Total	**33,623.3**	**40,678.0**	**73,684.9**

Source: Assessment team. *Note*: - = not assessed. Damage covers 22 months of war between February 24, 2022, and December 31, 2023; loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months through June 30, 2025; needs cover the period 2024–2033.

Table 39. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Component	Total needs (2024–2033)
Reconstruction needs	Road bridges (national roads)	7,270.6
	Road bridges (local roads)	898.0
	Motorways, highways, and other national roads	21,526.8
	Oblast and village roads	5,091.5
	Communal roads	7,065.0
	Airports	1,677.5
	Railway tracks, bridges, stations, and electrical	13,637.9
	Railway rolling stock	2,522.4
	Railway equipment and other assets	1,430.7
	Private vehicles	4,205.4
	Ports and inland waterways infrastructure	688.8
	Urban public transport (rolling stock, infrastructure, depots, maintenance vehicles)	5,241.4
	Debris removal	189.1
Service delivery restoration needs	National road and bridge repair	624.2
	Local road and bridge repair	413.9
	Communal road and bridge repair	201.1
	Equipment for repair and maintenance of national and regional roads and bridges	0.8
	Railway infrastructure repair	272.2
	Railway rolling stock and equipment	148.2
	Urban transport infrastructure repair	72.1
	Urban transport rolling stock and equipment	197.8
	Border crossing point expansion	255.4
	Inland waterways infrastructure repair and Danube River port expansion	52.5
	Aviation	1.5
Total		**73,684.9**

Source: Assessment team.

Table 40. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
National road and bridge repair	624.2
Local road and bridge repair	413.9
Communal road and bridge repair	201.1
Railway infrastructure repair	272.2
Railway rolling stock and equipment	148.2
Urban transport infrastructure repair	72.1
Urban transport rolling stock and equipment	197.8
Border crossing point expansion	255.4
Inland waterways infrastructure repair and Danube River port expansion	52.5
Equipment for repair and maintenance of national and regional roads and bridges	0.8
Aviation	1.5
Postal service	94.3
Total	**2,333.9**

Source: Assessment team based on priorities defined by line ministries.

Telecommunications and Digital

Context

Since the war began in February 2022, the telecommunications and digital sector has been significantly impacted. Another wave of significant cyberattacks was carried out at the end of 2023 against the providers of critical services and infrastructure including Ukraine's leading mobile operator (serving over 50 percent of the country's population) and the largest national oil and gas company of Ukraine. This has resulted in widespread service disruptions and damage to information technology (IT) infrastructure. The attacks have underscored the vulnerability of telecommunications services in a war context and highlighted the continued need for investments in cybersecurity. The overall impact of war on the telecommunications and digital sector as of December 31, 2023, is estimated at over US$2 billion in damage, US$2.27 billion in losses, and US$4.67 billion in needs. The damage estimates in RDNA3 are 29 percent higher than those in RDNA2, and losses are 47 percent higher due to the ongoing attacks on and destruction of infrastructure. Needs estimates increased by 3 percent. The recovery efforts by mobile and fixed internet service providers and by postal service providers have been ongoing and have resulted in continued service provision to the population. For example, mobile operators had restored 45 percent of damaged mobile towers as of February 24, 2023, and 54 percent as of June 2023.[269]

Damage and Loss Assessment

The total cost of damage to the sector is estimated to be US$2.1 billion (Table 41).[270] This figure includes damage of US$950 million among fixed broadband operators, US$899 million among mobile operators, US$192 million among postal providers, and US$51 million in the broadcasting sector.[271] The largest share of damage is incurred by fixed broadband operators (45.4 percent), followed by mobile operators (43.0 percent), postal service providers (9.2 percent), and broadcasters (2.5 percent). Concerning the geographic distribution of damage, the following regions have sustained the largest shares of damage: Donetska oblast (17 percent of damage), Kharkivska oblast (17 percent), Zaporizka oblast (13 percent), Khersonska oblast (13 percent), and Kyivska oblast (11 percent). Public assets account for 100 percent of the assets damaged in the broadcasting sector and 5 percent of those damaged in the postal sector; the remaining damage has been incurred by private companies.

The losses in the sector are estimated to be US$2.3 billion (Table 41). This figure includes revenue losses due to disruptions of postal services and mobile and fixed internet services, as well as increased costs of the backup electricity generators needed for uninterrupted internet service provision. The most significant losses in the sector have been incurred by postal service providers (65 percent), followed by mobile operators (30 percent), fixed operators (3.2 percent), and broadcasters (1.6 percent). Concerning the geographic distribution of losses, 30 percent of losses have been incurred in Kyivska oblast, 16 percent in Donetska oblast, 16 percent in Kharkivska oblast, and 10 percent in Zaporizka oblast; these figures

[269] Data on restored assets are not available for December 2023.

[270] Damage is the estimated monetary value of destroyed or damaged physical assets, valued at prewar prices. Losses are a change in economic flows resulting from the war (e.g., decline in revenues of internet operators, increase in operational costs, etc.).

[271] The data for broadcasting sector is based on 49 broadcasting stations that were damaged or destroyed. We thank the International Telecommunication Union (the ITU) for sharing their assessment of rehabilitation costs of five broadcasting stations in Ukraine.

highlight the impact of lost revenue and greater costs in those regions. Most of these losses accrue to private providers.

Human impact. By affecting communication, the war has had a significant human impact. Communication is vital for both the Ukrainian war effort and the maintenance of economic activities. The war's impact on civilians has been considerable; approximately 12.2 percent of households have lost mobile service connections, and there has been an 11 percent reduction in the functioning of mobile operator base stations.[272] This disruption in communication services affects not only personal communication but also critical services and economic activities. In response to these challenges, foreign companies like SpaceX (which operates Starlink) have played a crucial role in maintaining connectivity, particularly for humanitarian purposes and essential services like those of grocery stores, banks, and hospitals.

Other adverse effects of the communication disruptions include effects on vulnerable populations, education, and gender equality. In particular, inequality is likely to increase, as the least protected parts of the population are more likely to stay behind in areas with destroyed infrastructure (broadband, etc.), and to suffer from adverse effects of having no internet access and hence no access to government services provided via internet. The adverse educational effects for students forced to study online are also more likely to be felt by those who remain in territories temporarily not under government control or in areas of active fighting. Finally, any opportunities that previously existed for vulnerable populations and women, due to easy internet access (e.g., social protection, online work) are also less likely to materialize for those remaining in territories with damaged or destroyed digital assets.

Despite the impacts on communication and broadcasting infrastructure, Ukrainian media outlets and journalists have continued their operations, providing access to information amidst financial pressures, particularly for local media due to decreased advertising revenue. The war has presented considerable difficulties for the media sector, affecting the right to seek, receive, and impart information, with UNESCO recording 14 journalist deaths since the invasion's escalation.

Recovery and Reconstruction Needs, including Build Back Better

The total recovery and reconstruction needs in the sector are estimated at US$4.7 billion over 10 years (Table 42). The needs reflect the vital role of telecommunications for the maintenance of socioeconomic activity in the country. Reconstruction needs account for 43 percent of total needs, and restoration of service delivery for 57 percent. This split reflects the specifics of the sector, which relies heavily on infrastructure but also has significant costs associated with service disruptions (reduced revenue and increased costs of mobile operators; opportunity costs of lost economic activity). The associated interventions would therefore require both hard investments in infrastructure (e.g., for fixed and mobile internet providers) and capacity building in cybersecurity and other areas.

Most needs are concentrated in Kyivska oblast (28 percent of total needs), Kharkivska oblast (16 percent), and Donetska oblast (16 percent). Some of these needs have been met by private mobile operators. For example, of 3,285 mobile towers damaged as of February 24, 2023, 1,796 had been

[272] Center for Strategic International Studies (CSIS), "Rebuilding and Modernizing Ukraine's ICT Infrastructure Will Be Essential to Attract Private Investment," October 2, 2023, Link.

restored by private operators as of June 2023. Private providers undertake these recovery efforts on an ongoing basis. However, continued strikes on infrastructure mean many of these assets will likely be damaged again; accordingly, the restored assets were not deducted from total needs.

2024 Recovery and Reconstruction Priorities

The total recovery and reconstruction investment priorities for 2024 are estimated at US$399.5 million (Table 43). The recovery and reconstruction priorities highlighted by the GoU include (i) Social Assistance to restore access to the Internet in the de-occupied territories, (ii) Increasing the resilience of communication in Ukraine by local communities, (iii) Restoration of access to online education, medicine, culture and social services in settlements without communication in the de-occupied, front-line and border territories. Other priorities include upgrades of the digital infrastructure resilience, such as uninterrupted operation of critical information systems of Centers for the Provision of Administrative Services (CPAS), and development of a confidential communication system for emergency services – meeting the urgent needs of telecommunications and operators, as well as restoring the broadcasting infrastructure. To provide the estimates by type of investment, the assessment relied on the estimated shares of investment types in the RDNA2.

Limitations and Recommendations for Future Assessments

The key data used for these estimations are from the GoU (sourced from postal service providers, public broadcasters, and internet service providers) and from the Kyiv School of Economics. The figures for the period June 1, 2022, to December 31, 2023, rely on extrapolations in case of the postal sector,[273] while figures for broadcasting are available from the government. The figures for the sector are partially available from operators, and partially extrapolated from prior RDNA assessments,[274] using the data on war intensity by oblast.[275] There are two key recommendations for further assessments: (i) hold direct consultations with the private sector and provide direct funding for recovery projects, particularly those originating on the ground in Ukraine; and (ii) have the GoU develop a list of specific cybersecurity interventions that could be funded in 2024.

Table 41. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage		Loss		Needs	
	Public	Private	Public	Private	Public	Private
Cherkaska	0.0	13.9	0.0	1.6	0.0	22.4
Chernihivska	2.4	107.8	2.1	105.1	7.76	203.8
Chernivetska	0.0	3.2	0.0	2.1	0.00	6.4
Dnipropetrovska	0.0	89.6	0.0	52.6	0.00	132.7
Donetska	6.6	351.0	7.0	354.8	25.39	738.6
Ivano-Frankivska	0.0	55.9	0.0	3.0	0.00	82.8
Kharkivska	7.5	319.1	7.8	346.6	27.94	737.1

[273] Damage and losses in the postal sector were estimated by computing the increase in damage suffered by mobile operators between RDNA2 and RDNA3 (6 percent) and applying this increase to project damage and losses by oblast in the postal sector.
274 Where data for the fixed broadband operators were not available, the assessment relied on extrapolations by computing the increase in damage suffered by mobile operators between RDNA2 and RDNA3 (6 percent) and using this increase and the relative proportions of damage and losses by oblast to project damage and losses for the fixed operators.
[275] The Telecom sector's assessment did not include media-related damages and there is a need for more detailed research to determine the full scope of the Ukrainian media sector's damages, losses, and needs.

Khersonska	7.2	267.7	3.2	173.5	14.6	313.9
Khmelnytska	0.0	0.3	0.0	1.2	0.0	2.2
Kirovohradska	0.0	12.0	0.0	1.4	0.0	18.9
Kyivska	3.3	223.5	26.9	646.0	55.2	1273.4
Luhanska	17.3	141.6	7.8	124.0	35.1	224.3
Lvivska	0.0	15.7	0.0	3.7	0.0	27.5
Mykolaivska	3.6	52.7	2.7	89.1	10.5	165.5
Odeska	0.0	29.7	0.0	15.8	0.0	40.1
Poltavska	0.0	0.3	0.0	2.3	0.0	4.4
Rivnenska	0.0	15.0	0.0	2.7	0.0	23.4
Sumska	1.8	29.8	0.7	53.0	3.4	49.3
Ternopilska	0.0	0.3	0.0	1.4	0.0	2.7
Vinnytska	0.0	2.3	0.0	3.4	0.0	6.7
Volynska	0.0	0.3	0.0	1.9	0.0	3.5
Zakarpatska	0.0	34.3	0.0	3.1	0.0	51.9
Zaporizka	10.8	266.2	4.9	225.9	21.8	335.7
Zhytomyrska	0.0	0.7	0.0	1.8	0.0	3.3
Total	**60.6**	**2,032.9**	**63.1**	**2,215.2**	**201.8**	**4,469.9**

Source: Assessment team. *Note*: Damage covers 22 months of war between February 24, 2022, and December 31, 2023; loss covers a total of 40 months, including 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months through June 30, 2025; needs cover the period 2024–2033.

Table 42. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Component	Total needs (2024–2033)	
		Public	Private
Reconstruction needs	Telecom	0.0	1,652.9
	Post	12.4	252.5
	Broadcasting	72.2	0.00
Service delivery restoration needs	Telecom	0.00	726.6
	Post	90.1	1,837.9
	Broadcasting	27.1	0.0
Total		**201.8**	**4,469.9**

Source: Assessment team.

Table 43. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
Telecom	333.3
Broadcasting	15.3
Digital and cybersecurity	50.9
Total	**399.5**

Source: Assessment team based on priorities defined by line ministries.

Water Supply and Sanitation

Context

Since the onset of the war, the water supply and sanitation (WSS) sector has experienced damage and losses and has struggled to provide services in difficult circumstances. The ongoing fighting and attacks on critical civil infrastructure during 2022 and 2023 have significantly affected WSS service provision. WSS infrastructure was damaged both in territories under government control and in those not under government control, but most significantly along the shifting front lines. In those areas, water services provision is operating in emergency mode with the aim of preventing disruption or restoration of basic services to affected populations. In addition, the power outages and problems with electricity supply have significantly affected service delivery throughout the country. Two years after the start of the war, millions of Ukrainians continue to receive intermittent WSS services or services that do not satisfy required standards—and this despite the ongoing efforts of emergency and communal service providers.

Compared with the situation assessment completed in February 2023 (RDNA2), the current assessment shows a further significant increase in damage and losses primarily due to the ongoing war. This highlights the increasing risk of service deterioration, given the difficult financial situation of the water utility sector that is particularly affecting the resilience of service providers in the frontline areas exposed to continuous attacks. Additionally, no significant priority reforms to WSS provision or sector management could be achieved, as the activities undertaken during 2023 have mostly been focused on ensuring basic WSS services, replacing destroyed equipment, completion of previous investments, as well as emergency investments needed to restore mainly water supply services provision.

Access to centralized piped water supply in Ukraine before the war was estimated to be at 70 percent, and access to centralized wastewater collection and treatment services at around 50 percent; 10 million people lacked access to safely managed water services. There is significant inequality between urban and rural areas in piped water access (80 percent in urban areas versus 34 percent in rural areas), flush toilet access (86 percent versus 26 percent), and sewer connections (75 percent versus just 2 percent). For a country like Ukraine that seeks to align the WSS sector requirements with the key requirements of the European Union Water Directives,[276] this level of WSS services is still relatively low. However, those numbers are close to the average for the region, and the prewar level of service provision in Ukraine did not deviate much from that in neighboring countries. The situation has significantly deteriorated since February 2022, as a good deal of water infrastructure maintenance has been deferred. This situation will create significant challenges for ensuring long term sustainable WSS services and will need to be addressed in planning for the sectoral reconstruction efforts. Some of the key challenges identified include low cost-recovery, poor quality of drinking water and effluents released into the environment, coupled with the lack of adequate water quality monitoring systems, the capacity of service providers to gradually reach EU standards.

The WSS sector governance framework is highly fragmented, with administrative and legislative shortcomings that limit coordination between national and local administrations and hamper

[276] These include the Water Framework Directive 2000/60/EC, Urban Wastewater Directive 91/271/EEC, and Drinking Water Directive 2020/2184.

efficiency. At the national level, the government is responsible for developing countrywide WSS policies that improve and increase the sustainability of WSS services. However, municipalities are in charge of WSS service provision (through their own WSS utilities) at local or regional level. A national economic regulator oversees prices for WSS services for utilities serving more than 100,000 people, but its influence is limited, and the sector is in general insufficiently funded; it relies on water tariffs that often do not meet cost recovery needs. This situation had been significantly aggravated since February 2022: the WSS tariffs are effectively frozen and have not followed the increase in costs for delivering WSS services, which, coupled with massive revenue losses, leads to significant financial difficulties for water utilities, which are unable to cover operating costs. Overall, there is a strong need to optimize operation and service provision of existing WSS systems and facilities (developed before the war) in order to gradually improve performances to meet required national and EU standards and achieve sustainability and climate change resilience.

Damage and Loss Assessment

The total cost of damage to the sector is estimated to be almost US$4 billion (Table 44). Out this amount, around US$1.8 billion was due to damage between February 24 and December 31, 2023. This increase is a consequence of war-associated destruction during 2023, mostly from artillery shelling and rocket/drone attacks but also from direct destruction as in the case of the Kakhovka Dam in June 2023. Given the various challenges in data collection (especially in oblasts with ongoing military actions and those that are not currently under government control), this is a conservative figure and could underestimate actual damage by up to 30 percent; however, it provides a fair assessment of the magnitude of WSS infrastructure damage up to this point. Based on the received data, the most affected oblasts are Kharkivska, Luhanska, Khersonska, Zaporizka, and Donetska. It can be expected that much more damage will be found in Luhanska and Donetska oblasts once they are accessible to the government and damage can be safely reassessed. In terms of infrastructure, the greatest damage has been observed in large surface infrastructure, primarily wastewater treatment plants (26 percent of total damage) and wastewater collection networks (26 percent of total damage). Drinking water networks, mostly located underground, have also suffered significantly (accounting for 25 percent of total damage). The damage to this type of WSS infrastructure is mainly due to its length and wide distribution across urban and rural areas.

The losses in the sector are estimated to be US$11.6 billion, which is a 53 percent increase (US$4 billion) compared to February 2023. It should be noted that collection of reliable data for losses represents an even bigger challenge for this assessment, which reminds of the need to prioritize the establishment data system in order to inform sector programing in a reliable manner. Around 40 percent of the total losses stem from the lost revenues from WSS services provision. The war has significantly reduced water consumption, particularly in the industrial sector, because many industrial activities have stopped or been reduced. In addition, the collection rate and the number of consumers fell significantly (especially in war-affected oblasts) and is hardly recovering over time. The next biggest loss category is additional costs for WSS service provision due to increased energy and fuel costs;[277] energy is the second biggest cost

[277] As per the 2024 Ukraine Humanitarian Needs and Response Plan, the costs of key WSS sector inputs, such as treatment chemicals, and energy, and other inputs have increased significantly – by 200 per cent on average – while both demand and the customers' ability to pay have decreased substantially from 12 per cent to 95 per cent, depending on the intensity of hostilities in different locations and/or the concentration of displaced or vulnerable people.

component (at around 30 percent) for Ukrainian WSS utilities. The rest of the economic losses are associated with increased prices of materials and equipment, lack of maintenance, water losses, and required demolition and debris management. As noted above, the WSS tariffs remain effectively frozen since the beginning of the war, which is increasing the gap between service provision costs and revenue even further. Geographical distribution of losses mostly corresponds to the geographical distribution of damage. Based on the received data, the most affected oblasts are Kharkivska, Luhanska, Chernihivska, Khersonska, and Donetska, with only Kyivska oblast having proportionately less in losses then in damage. Some areas, like the area affected by the Kakhovka Dam collapse (part of Khersonska oblast), have suffered almost complete destruction of WSS infrastructure.

Human impact. In terms of impacts on populations, the war has left millions of Ukrainians with interrupted, limited, or no access to safe water and sanitation services. The WASH Cluster estimated that 9.6 million people in need for essential WSS services for 2024 alone. Local WSS utilities are doing their best to address the problems, but with decreasing revenues and increasing costs, they lack sufficient resources; they are often limited to implementing emergency solutions aimed at restoring basic services or completing ongoing investments. This is particularly true in the oblasts in the east of the country, where damage and losses are the largest.

Recovery and Reconstruction Needs, including Build Back Better

The total reconstruction and recovery needs are estimated at US$11.1 billion for the 10 years from 2024–2033 (Table 45). These estimated needs factor in costs associated with inflation and building back better in alignment with Ukraine's reconstruction strategy, which prioritizes decarbonization as well as reforms and institutional capacity building to meet European Union accession criteria. The short-term needs emphasize maintaining service delivery and strengthening local technical and operational capacity to allow for subsequent reconstruction. The most pressing needs in the short term therefore relate to (i) the upkeep of service delivery, which could also include repair and reconstruction of critical assets; and (ii) formulation of local reconstruction and recovery strategies and action plans. The projection of long-term needs primarily focuses on (i) reconstruction of water supply and wastewater infrastructure (the largest investments are needed in reconstruction of wastewater treatment plants, and sewerage and water supply networks); and (ii) associated facility operational costs. Initiating recovery and reconstruction also hinges on the explicit prioritization and sequencing of investments based on technical assessments and data collection at the local level, and on an enabling institutional and legal environment for implementing plans. Looking at geographical distribution, the oblasts with larger needs include some that are most affected by war activities, plus some with below-average service level before the war, and include Luhanska, Khersonska, Kyivska, Zaporizka, Mykolaivska, and Donetska oblasts.

2024 Recovery and Reconstruction Priorities

The total recovery and reconstruction investment priorities for 2024 are estimated at US$241.9 million (Table 46). While efforts in 2024 should focus on infrastructure recovery and ensuring WSS service provision, there should also be efforts to prepare a project pipeline for the required future investments, aligned to the recommended phased approach. Considering the current situation in the country, the priority reconstruction needs include provision and improvement of water supply (including water intake, treatment, storage, and distribution) in order to provide the population with an adequate quantity of

drinking water. This need represents 64 percent of the total value of 2024 priorities, with the largest part being allocated to recovery and reconstruction of water supply networks (52 percent). The structure of identified recovery and reconstruction needs mostly reflects the need to (i) restore service provision by reconstruction of damaged infrastructure; and (ii) complete previously planned WSS development schemes. Priority needs for 2024 include preparation of project documentation and construction works as well as equipment purchase; they also consider costs for establishing the foundational architecture and groundwork to commence recovery and reconstruction and include essential activities such as technical and engineering studies, updating of spatial plans, and recovery planning and prioritization at the local level. Service delivery restoration needs also represent an important part of total needs and mostly include demolition and debris management and facility operational costs. Recovery and reconstruction efforts should make use of the build back better approach to deliver better results and ensure sustainability of WSS assets and services. This also shows the technological priorities for the WSS sector recovery, notably the need to decentralize the WSS facilities, and to favor low-cost and easy to maintain infrastructure relevant for Ukraine, learning from the global experience, notably in neighboring and EU countries.

A key priority for 2024 should also be equipping the relevant government and municipal departments, that deal with WSS services, with the adequate human resources and capacity to develop a medium-term sector recovery roadmap in consultation with other line ministries and key local and international partners. This roadmap requires careful planning and sequencing of priorities to remain accountable for providing basic services in war-affected areas while working toward the gradual achievement of EU standards in a structured and constructive recovery process.

Limitations and Recommendations for Future Assessments

The damage and losses presented here were to a large extent extrapolated from analyzing the severity of the war across regions and were based on informed assumptions and information from multiple sources. The estimated numbers are indicative and not to be taken as precise values. Future data collection efforts and assessments would benefit from segregating infrastructure assets into urban and rural, and from collecting and aggregating verified data at the national level. Categorizing data by the degree of urbanization would yield a better understanding of context-specific policy and financing requirements. Strengthening collection of data on locally maintained and owned assets for periodic aggregation at the national level could also be beneficial.

To develop and improve WSS service delivery and meet EU requirements, the WSS sector needs to be reformed. The difficulty in obtaining data for the RDNA3 demonstrates sectoral challenges and suggests that the sector is not receiving the required level of attention and support. Currently, the WSS sector's responsibilities are transferred to the local level but without sufficient financial resources, which is not an ideal approach for a country as big and diverse as Ukraine. In 2021, the World Bank developed a WSS sector Policy Note that recommended reform efforts to tackle three key sector issues simultaneously: (i) improving governance to increase access, transparency, and accountability; (ii) enhancing regulation to improve performance and service quality; and (iii) reforming the funding approach to ensure cost recovery

and sustainability, as well as to diversify funding options.[278] These WSS reforms remain relevant, and they should be combined with the postwar build back better approach to deliver significant improvements in service quality and sustainability.

In addition, it is recommended to explore and collect data which is currently not available on the impacts of the deterioration of the local water quality due to the disruption to service and/or inadequate protection, including data on health of affected population and the negative impact on the environment due to disruption in wastewater collection and treatment (surface and ground waters). This data may be used to fully assess the impact of the war and design the reconstruction and recovery measures in the future.

Table 44. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	0.6	0.1	1.1
Chernihivska	320.4	49.8	602.4
Chernivetska	-	-	-
Dnipropetrovska	47.1	1.4	82.5
Donetska	475.7	43.3	863.8
Ivano-Frankivska	-	-	-
Kharkivska	769.6	93.7	1,421.2
Khersonska	262.9	35.2	488.8
Khmelnytska	-	-	-
Kirovohradska	-	-	-
Kyiv (City)	-	-	-
Kyivska	167.5	17.0	306.0
Luhanska	1,547.9	247.3	2,917.3
Lvivska	-	-	-
Mykolaivska	76.1	6.1	137.4
Odeska	31.3	0.4	54.4
Poltavska	14.8	0.2	25.7
Rivnenska	0.0	0.0	0.1
Sumska	16.3	0.4	28.6
Ternopilska	-	-	-
Vinnytska	-	-	-
Volynska	-	-	-
Zakarpatska	-	-	-
Zaporizka	239.6	32.2	445.6
Zhytomyrska	2.0	0.0	3.5
Nationwide (no specific region)	-	11,034.6	3,692.3
Total	**3,971.8**	**11,561.6**	**11,070.8**

Source: Assessment team. *Note*: - = not assessed. Damage covers 22 months of war between February 24, 2022, and 31 December 2023; Loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months until June 30, 2025; needs cover the period 2024–2033.

Table 45. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Component	Total needs (2024–2033)

[278] World Bank, "Ukraine Water Supply and Sanitation Policy Note: Toward Improved, Inclusive, and Sustainable Water Supply and Sanitation Services," World Bank, Washington, DC, 2021, Link.

Reconstruction Needs	Water treatment facilities	532.5
	Sewage treatment plants	1,539.0
	Water pumping stations	362.8
	Sewage pumping stations	499.5
	Water supply networks	1,460.3
	Sewer networks	1,311.4
	Wells	23.9
	Laboratories	2.2
	Clean water tanks	51.9
	Water towers	174.3
Service Delivery Restoration Needs	Demolition and debris management	527.1
	Facility Operational costs	893.7
	Increased energy/fuel consumption support	3,692.3
Total		**11,070.8**

Source: Assessment team.

Table 46. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
Sewer networks	37.9
Sewage treatment plants	20.5
Water pumping stations	4.9
Water supply networks	144.8
Water treatment facilities	33.7
Total	**241.8**

Source: Assessment team based on priorities defined by line ministries.

Municipal Services

Context

Continued damage to communal infrastructure has widened gaps in service delivery and has further strained the capacity of local governments. Prior to the war, service provision of utilities and infrastructure across all regions was irregular and had low coverage rates. The solid waste management (SWM) sector was especially in need of urgent investment and reforms, with an estimated coverage of only 79 percent.[279] The gaps in infrastructure and service delivery can also be seen in commonly delayed repairs to local roads,[280] the low (50 percent) maintenance rate of public green spaces,[281] a significant gap of 500 cemeteries in urban areas,[282] and the need for better coverage of street lighting and better sidewalks. Central heating systems, however, had high penetration (about 47 percent), particularly in Ukraine's larger cities. The gas distribution network covered 74 percent of the population,[283] while 89 percent of the population had access to clean water, thanks to pumped water distribution systems. Local governments in Ukraine, responsible for delivering a wide range of services and infrastructure, face numerous capacity constraints.[284] Overall regulatory functions are at the local level in Ukraine, and provision of communal infrastructure and services directly impacts citizens' quality of life, local economic development, and sustainability. Since the war began, the burden on local governments has grown exponentially, as they are expected to implement emergency recovery works, ensure continued service delivery to residents, create conditions for resilience, and develop urban recovery plans for coordinated recovery at the local level.

In contrast with the previous assessments, RDNA3 includes district heating in the municipal service sectoral assessment. However, considering the distinct nature of its service delivery network and infrastructure and its relation to the energy sector, district heating[285] is separated out from the other sector assets and is further discussed under a separate subheading. In addition to district heating, the sectoral assessment continues to cover mainly five categories of assets: SWM, public infrastructure and facilities, local administrative buildings, sports facilities, and local mobility assets.[286] Within each asset category, not all asset types are included, given data limitations; but the categories do reflect the diverse range of infrastructure and services that fall under the remit of local governments.

So far, within the sector, the GoU has prioritized recovery of critical infrastructure and emergency repairs and investments to ensure continued service delivery, yet absorption of funds has been low. Efforts were focused on the reconstruction of heating infrastructure, including heat-only boiler houses, heating points, and combined heat and power plants (CHPPs), as well as on the emergency equipment for

[279] Ministry of Communities, Territories and Infrastructure Development of Ukraine (MCTID), "State of the Field of Household Waste Management in Ukraine for 2021," As reported during RDNA1.
[280] MCTID, "Analysis of the State of the Road and Bridge Industry in 2021". As reported during RDNA1.
[281] MCTID, "State of the Field of the Green Economy for 2021," As reported during RDNA1.
[282] MCTID, "State of the Burial Industry in Ukraine in 2020," As reported during RDNA1.
[283] State Statistics Service of Ukraine data.
[284] Local governments deliver "hard" municipal services (like local roads, solid waste management, utilities, public facilities, and urban amenities) along with social services, while also fulfilling their civil and environmental protection duties.
[285] The district heating infrastructure in Ukraine sustained major damage, particularly the combined heat and power plants (CHPPs). Since early October 2022, when attacks intensified on the energy infrastructure, damage to the district heating sector was also incurred indirectly through damage to the power sector and power grid.
[286] All other utilities and housing are covered by infrastructure and housing sectoral assessments respectively.

heating infrastructure and solid waste management. However, only part of the funding made available for these activities was actually disbursed, and even the disbursed amounts were not fully utilized, as commitments were made late in the year. The slow implementation can be attributed to shortcomings in coordination mechanisms and organizational arrangements, significant delays in procurement processes, and more importantly the overarching capacity constraints at the local level.

Notwithstanding the limitations on capacity, municipalities have demonstrated a dedication to continued service provision. Local budgets have had an average increase of 50 percent in expenditures related to housing and communal services since February 2022. This increase in expenditure indicates that municipalities are consistently directing resources toward additional services (including temporary housing) for IDPs and other groups; and that they are undertaking necessary repairs and operations to ensure continued delivery of services to residents.

Damage and Loss Assessment

The total damage to the municipal services sector is estimated at US$4.9 billion (Table 47). The damage estimate has more than doubled since the RDNA2 due to the inclusion of district heating in the current assessment. Damage to district heating amounts to almost US$2.1 billion and represents the largest share of overall sector damage at 42 percent of the total. Among the district heating assets, CHPPs were subject to the most damage (estimated at US$1 billion),[287] followed by damage to the heating network (US$770 million), boiler houses (US$174.7 million), and central heating points (US$27.4 million). The local mobility category, estimated at US$930 million, has the second largest share of damage at 19.2 percent and includes damage to sidewalks and street lighting. The category of public spaces and facilities, which includes municipal assets like recreation centers, libraries, cemeteries, urban parks, and public squares, accounted for 17 percent of the total damage to the municipal sector. Sports facility assets, such as sports schools, stadiums, swimming pools, sports halls, and ice rinks, suffered damage valued at US$561.1 million.[288] Local administrative buildings and service centers that house municipal service functions and operations faced US$320 million in damage. Finally, the cost of damage in the SWM subsector continued to escalate and reached US$126.8 million as of the end of December 2023. However, it is worth noting that the GoU has been dedicating resources to the recovery of SWM assets to ensure critical waste management services continue to be delivered.

Damage is concentrated in the frontline regions. The most damaged oblasts are Donetska, Luhanska, Kharkivska, Khersonska, and Zaporizka (Table 47). Together they account for over 70 percent of the total cost of damage in the municipal services sector. In the district heating subsector, three oblasts together

[287] The Ministries of Infrastructure and Energy provided information on damage to CHPPs. The total damage was estimated based on the replacement value which is assumed to be 1 USD million per MW of installed capacity of the CHP. However, some of the reported damages may represent the book value of damaged assets or the cost of replacement or value of repairs already done. If the damages described were light, estimates from the reporting authorities were taken instead of using the replacement cost to estimate damages, to avoid overestimations. Damaged thermal power plants providing district heating are not included in the section on district heating damages and needs but considered in the energy sector section. The list of damaged CHPPs also includes two CHPPs that provide heating services for industrial consumers, not residential.

[288] The level of damage reported for many asset types, and predominantly sports facility assets, changed between RDNA2 and RDNA3. Specifically, many asset types reported as destroyed in RDNA2 are reported as damaged in RDNA3. This shift may indicate verification of damage on the ground or better data collection for assets that were previously assessed as having more than 40 percent damage.

represented 67.7 percent of the total damage incurred by district heating infrastructure across all regions of Ukraine: Donetska, with damage estimated at US$559.6 million; Kharkivska, with damage of US$425.4 million, and Luhanska, with damage of US$408 million.

The losses in this services sector are estimated at US$6.8 billion (Table 47). Over one-third (35 percent) of the sectoral losses are from the district heating subsector; these losses are valued at US$2.3 billion and include revenue losses of domestic companies as well as costs associated with debris removal.[289] However, the highest losses in the municipal services sector, as in RDNA2, relate to revenue losses borne by local governments, valued at US$3.2 billion and accounting for 47 percent of the total losses in the sector. These losses are tied to the estimated loss of locally collected and retained revenues, including local taxes, administrative fees, charges, and tariffs during the 22 months of the war and 18 months thereafter.[290] Estimations of revenue losses for local governments included both local shares of personal income taxes (PIT)[291] and own-source revenues (OSR)[292]. Debris removal (including in the district heating subsector) and loss of revenue from waste collection are accounted for at US$375.6 million and US$68.1 million, respectively.[293] Sectoral loss estimations relied on available local budget data and assumptions derived from analysis of war intensity, the military budget code, and prewar baseline information on household waste collection and disposal tariffs and volumes.

Human impact. Damage to local infrastructure and communal facilities has had significant impacts on the quality of life of residents. Reduced waste collection due to significant subsector damage offers a prime example of impact on people's lives. A reliable SWM system is fundamental for the safety and health of residents and IDPs in urban areas; it is also essential for debris removal in critical sites and for the commencement of reconstruction activities. Many private waste collection companies have temporarily ceased operations due to significant losses to capital and revenues, and local governments do not have sufficient capacities or infrastructure to fill this gap. Moreover, given limited waste pickup (and in many cases its complete absence), ad hoc open dump sites are being created for the disposal of damaged assets and household waste. These may pose significant health risks to the community. Damage to local roads, sidewalks, and streetlights have constrained mobility in cities and towns, which in turn has limited the timely procurement of critical household goods and services and has also dampened employment opportunities for IDPs. The damage to the heating infrastructure has made winters harsher for residents. Ukraine experiences 105 frost days per year on average, and portions of the country require some form of heating for half the year.[294] Thus damage to heating infrastructure entails hardships for the affected

[289] The losses were estimated based on statistical information from the State Statistics Service of Ukraine on the total revenues of domestic companies based on their core sector. Total revenues were available for both 2021 and 2022, allowing the estimation of expected revenues in a no-war scenario. The revenues for 2021 were paired with economic forecasts from the International Monetary Fund (IMF) to estimate for further periods in the no-war scenario; in the war scenario, the revenues of 2022 were paired with updated economic forecasts from IMF to estimate for further periods. The losses were estimated at nationwide level without regional distribution.

[290] The loss was estimated by comparing prewar monthly local revenues with those reported during the months of the war.

[291] In some cases, personal income taxes registered an increase and as such registered no loss in PIT revenues. This increase can be likely attributed to the increase in salaries in the defense and IT sectors and a corresponding increase in military enrollment.

[292] Municipal own-source revenue is composed of local taxes (e.g., single tax, property tax and fees), non-utility user fees, administrative fees, and any local capital revenue.

[293] Loss of revenue from waste collection relates to both municipal and private entities.

[294] R. Ruiz, E. Brown, and O. Fokaf, "Ukraine's Home Heating Network Threatened by Russian Attacks," *Wall Street Journal*, October 22, 2022, Link.

populations and poses risks to health and life.[295] Loss of heating infrastructure can exact an especially grave toll on the health of vulnerable groups such as young children and the elderly.[296] This situation is exacerbated by the fact that many households live in damaged houses that are yet to be repaired.

Recovery and Reconstruction Needs, including Build Back Better

The total reconstruction and recovery needs are estimated at US$11.4 billion over a period of 10 years. It is crucial to acknowledge and prioritize the role of municipalities in the recovery process. Local governments play a vital role in leading the recovery efforts and ensuring service delivery to communities, including vulnerable residents. This role is particularly critical for big cities that serve as hubs for IDPs. To address this situation effectively, a comprehensive, place-based strategy at the local level is needed. This strategy should also include robust coordination among different levels of government, sectors, and municipalities. Careful planning will be required to ensure no-regret investments, and institutional processes will need to be simplified to attract financing flows from different public and private sources. Any planning advanced during the war period will likely require adjustments and reconsideration during the recovery phase.

In the medium-term, it will be important to consider: (i) debris processing and disposal; (ii) technical preparation work; and (iii) reconstruction of assets. The restoration of service delivery encompasses the maintenance and deployment of services, repairs and stabilization of prioritized public and service delivery infrastructure, debris removal, and operational costs for goods, equipment, and infrastructure. The long-term needs consist of equivalent tasks, with a primary focus on the reconstruction of damaged assets using the build back better approach. The highest needs are concentrated in Donetska, Luhanska, and Kharkivska, which collectively account for 52 percent of the country's overall needs. Although municipalities are allocating substantial funds toward asset repairs, only a very small portion of the total needs has been met so far;[297] however, this effort may be underestimated and could be tied to a fragmented reporting system on the municipal sector assets.

The recovery across sectors, is closely linked to debris removal and waste management which is typically carried out by local governments, and it is crucial for GoU to prioritize reduction of environmental impacts. Recovery projects should adhere to the principles of the Green Deal, such as promoting a circular economy. The EU Waste Directive, which sets a target of 60 percent recycling for municipal solid waste by 2030, should be considered in all future investments in the sector. It is essential to prioritize waste sorting at the source, foster markets for recycled materials, and enhance public awareness of recycling in national, regional, and municipal waste plans.

Finally, the role of local governments goes beyond just municipal assets and their centrality in the overall recovery and reconstruction across all sectors needs to be acknowledged and supported. Local governments are critical for the implementation, coordination, and planning of measures stipulated by individual functional sectors and line ministries. This reality necessitates not just adopting an integrated and place-based approach at the local level and ensuring the presence of strong coordination mechanisms

[295] World Health Organization, "The Escalation of the Humanitarian Emergency Requires an Escalation of the Humanitarian Response," October 14, 2022, Link.
[296] E. Ducke, "'Ordinary Russians Want Us to Freeze to Death,'" *New York Times*, February 11, 2023, Link.
[297] An estimated at 0.31 percent.

but also continued support in terms of capacity and financing for the local governments. Considering the significant revenue losses and increased expenditures municipalities continue to face, it is necessary to ensure that a functional and predictable financing and support mechanism for the implementation of projects is made consistently available to them. In addition, to overcome the likely challenges of resource constraints and unstable cash flow during the recovery period, local governments will at the outset need to undertake evidence-based identification of prioritized needs and associated sequencing of recovery and reconstruction measures.

In the district heating subsector, the total cost for reconstruction and recovery over the next 10 years (2024–2033) is estimated at US$4.7 billion (Table 48). This includes costs related the reconstruction of district heating, including heat supply networks, heating points, heat-only boiler houses, and combined heat and power generation facilities, as well as demolition and debris removal in the district heating sector. In the medium-term, the Ministry of Communities, Territories and Infrastructure Development (MCTID) has estimated that about US$790 million is needed to cover the district heating sector liquidity needs caused by the war. The immediate focus will be on restoring and securing services and energy security for the heating season, i.e., ensuring enough gas and electricity are available, and that the basic infrastructure is rebuilt to ensure an adequate level of services to the residential and key infrastructure sectors (hospitals, airports, schools, railway facilities, etc.) Addressing part of the losses can also be considered as pressing for the sector's short-term operations.

As indicated in the energy sector chapter, balancing short-term energy needs with long-term goals is very difficult in a context of high uncertainty. This also is true for the district heating sector, where in the recovery phase, basic energy and utility services must be restored as quickly as possible to enable the return of internally displaced persons—even if Ukraine's population and its spatial distribution will differ from what they were prewar. In the meantime, the postwar context will present an opportunity to rethink the sector priorities in Ukraine, while also balancing the need for fast provision of enabling services with the need to build back better. The latter need should also be aligned with systematic implementation of energy efficiency measures as part of the large-scale reconstruction, which will occur across all sectors, public and private, including households.

The heating sector will need to reduce dependency on gas to avoid gas imports in the short term while setting the pace for decarbonization in the long term. With proper energy efficiency and electrification investments, primary energy demand could remain below prewar levels for decades, decoupled from economic growth. On the supply side, biofuels (including biomass and biogases) and hydrogen will need to replace gas as a main fuel source in the industrial and heating sectors, even if the electrification of industry and heating contributes to the move away from gas.

The Ukrainian government policy for district heating needs to be aligned with EU policy, including a clear focus on upgrading and a complete transition to green technology. The following are more specific recommendations for the short-term needs in the district heating sector:

- Addressing clean heat and electricity cogeneration to support the government's agenda of decentralized power generation for critical infrastructure like water treatment and sewage treatment plants while supporting district heating.

- Enacting new laws to ensure that use of new technology is more efficient and cost-effective with special focus on boiler houses, CHPPs.
- Addressing upgrades to the district heating system across a range of assets including pumps, boilers, and control systems for individual heating systems to ensure energy efficiency in production, distribution, and usage.
- Increasing energy efficiency of district heating in terms of generation, distribution, and regulation. In addition to the methodology developed by the GoU for cities and towns that have more than 20,000 people, the local municipalities and district heating companies should suggest ways to make district heating more energy efficient, with a focus on reducing costs and increasing the optimization of consumption.
- Comprehensively reviewing the district heating system to ascertain the condition of the facilities for generation, transmission (main feeder pipelines), and distribution (branch pipelines) as well as individual heating substations with the goal of reducing heat loss and enhancing heat control and temperature management with clean technology.

2024 Recovery and Reconstruction Priorities

The total recovery and reconstruction investment priorities for 2024 are estimated at US$462 million for the municipal services, including the district heating sector (Table 49). This amount is expected both to cater to urgent needs and to prepare the necessary conditions for subsequent investments. It is also crucial that local governments have the assets necessary to continue providing critical services including waste management services.[298] The investment in waste management assets is also vital for continued debris removal efforts. These investments are particularly important in frontline regions, which also host large share of IDPs: they require urgent debris removal on the one hand and have additional waste management needs on the other. As indicated by the local government budget data, there has been an increase in expenditures related to the provision of services. As such, priority needs in the estimated amount of US$233 million would enable local authorities to, in the face of the ongoing invasion, continue to repair and stabilize prioritized public and service delivery infrastructure for continued service provision in their jurisdictions. Similarly, liquidity gaps in the district heating sector have been provisioned in the amount US$789 million to ensure continued district heating delivery. Reconstruction needs for the immediate timeframe is in the estimated amount of US$48 million for the recovery of key assets such as local service and administrative centers, municipal facilities, streetlighting and US$158.6 million for heat supply infrastructure. At present, the 2024 state budget allocates US$ 429 million for investments in the municipal services sectors (including district heating and waste management).

Limitations and Recommendations for Future Assessments

The key limitation is the lack of data on the assets covered by the sector and the limited access to reliable data, especially in frontline regions. The data collection gap can be attributed to bottom-up asset-based reporting which is lacking for many of the asset categories in this sector and the absence of a verification process. For this assessment, the data were in most cases either incomplete or not verified, suggesting that data reporting systems for communal assets could be improved. The damage and loss

[298] These include collection trucks, container bins, and sanitary and safe dump sites and landfills.

figures are therefore to a large extent extrapolated from analyzing the severity of the war across regions and use informed assumptions and information from multiple sources. The estimated numbers are indicative and are not to be taken as precise values.

Regular data collection at the local level is necessary for better monitoring of local service delivery and investment prioritization at the national level. Documenting damage at the local level would facilitate better monitoring of municipal assets and enable informed decision-making, project design, and recovery planning under the supervision of the relevant local authority. Regular tracking of damage and needs data at the local level would also ensure needs and damage are adequately reflected in and aligned with the comprehensive recovery programs and spatial plans that hromadas are currently in the process of formulating or updating.

Future data collection efforts and assessments would benefit from the segregation of infrastructure asset data across urban and rural settlements. Infrastructure and service needs, delivery approaches, and costs in urban areas widely differ from those in rural areas. More importantly, local capacities are substantially different in cities as compared to smaller settlements or rural areas. Categorizing data across the degree of urbanization would yield a better understanding of context-specific policy and financing requirements. Overall, the data collection of locally maintained and owned assets remains weak, with irregular aggregation at the national level.

Table 47. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	9.8	69.5	24.6
Chernihivska	240.6	78.8	521.2
Chernivetska	3.9	42.3	10.2
Dnipropetrovska	49.9	387.7	120.5
Donetska	1,245.3	657.0	2,714.8
Ivano-Frankivska	0.6	68.7	3.2
Kharkivska	741.4	503.9	1,556.2
Khersonska	343.9	274.3	804.3
Khmelnytska	5.7	47.0	13.8
Kirovohradska	31.7	26.9	77.3
Kyiv (City)	270.8	372.1	530.5
Kyivska	196.9	149.3	443.2
Luhanska	764.0	462.3	1,624.8
Lvivska	3.9	138.2	12.2
Mykolaivska	169.2	125.3	394.6
Odeska	27.7	140.6	67.6
Poltavska	158.8	75.8	308.0
Rivnenska	1.2	40.1	3.5
Sumska	140.2	69.0	309.3
Ternopilska	1.2	32.8	3.9
Vinnytska	9.8	45.0	25.0
Volynska	1.1	159.0	3.2
Zakarpatska	33.8	45.3	82.0
Zaporizka	344.2	310.2	812.0
Zhytomyrska	47.4	68.9	110.9

Unknown	1.4	0.0	3.3
Nationwide (no specific region)	10.0	2,385.1	814.0
Total	**4,854.4**	**6,775.0**	**11,394.3**

Source: Assessment team. *Note*: Damage covers 22 months of war between February 24, 2022, and December 31, 2023; Loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months until June 30, 2025; needs cover the period 2024–2033.

Table 48. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Component	Total needs (2024–2033)
Reconstruction needs	Reconstruction of municipal and communal assets including for waste management, local mobility, public spaces, and other facilities	4,377.7
	Debris processing and disposal of communal assets	336.6
	District heating reconstruction, including heat supply networks, heating points and heat-only boiler houses, combined heat, and power generation facilities	3,923.6
	Demolition and debris removal of district heating sector assets	39.0
Service delivery restoration needs	Technical works and policymaking including planning, assessments and engineering and analytical studies	187.6
	Repair, and stabilization of prioritized public and service delivery infrastructure for continued service provision including in IDP hubs	1,302.1
	Operational costs and organizational arrangements	437.8
	District heating sector liquidity needs	789.8
Total		**11,394.3**

Source: Assessment team. *Note*: IDP = internally displaced person.

Table 49. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
Repair, and stabilization of prioritized public and service delivery infrastructure for continued service provision including increased service delivery in IDP hubs	233.3
Reconstruction of municipal and communal assets including solid waste management, local mobility, public spaces and other facilities	48.4
Organizational arrangements and operational costs	1.5
Technical works and policymaking including planning, assessments and engineering and analytical studies	20.2
Heat supply (including heat-only boiler houses, district heating network, heating points, CHPs)	157.1
Emergency equipment for the heating infrastructure (mobile units)	1.5
District heating liquidity needs	789.8[a]
Total	**462.0**
Total (incl. liquidity needs)	**1,251.8**

Source: Assessment team based on priorities defined by line ministries. *Notes*: CPH = combined heat and power plans.

a. The GoU is proposing a budget amendment to make a provision to partly address liquidity needs in the district heating sector through Naftogaz. These needs are not included in the total 2024 priorities presented elsewhere in this report.

CROSS-CUTTING AREAS

Environment, Natural Resource Management, and Forestry

Context

The war's negative impact on all aspects of the environment continues to grow and accumulate. Damage to infrastructure—including hazardous industrial facilities and energy installations (e.g., power plants, oil storage depots, and refineries) along with residential and commercial buildings potentially containing asbestos—all contributes to the war-related burden of environmental pollution to air, water, soil, and biota. Protected areas, agricultural lands, natural grasslands, forests, and aquatic and other ecosystems have been directly and indirectly impacted, including through the presence of minefields or unexploded ordnance, water and air pollution, forest fires, and lack of access for monitoring and management. In a country that already had environmental challenges prior to the war (including poor urban air quality, poor waste management, and ineffective environmental controls),[299] the long-term impact of additional and incremental damage could be even more destructive than the immediate effects, not only for the population's health, safety and economic prosperity, but also for ecosystems and biodiversity, economic prosperity, and living standards. Since the beginning of the war, multiple environmental damage assessments have been performed; an overview of the results can be found in the comprehensive report by the informal inter-agency coordination group on environmental assessments for Ukraine.[300] Recovery needs assessments and rebuilding efforts must take into account the unknowns concerning environmental impact, since they do not speak for themselves—unlike human or economic suffering arising from the invasion. In addition, large parts of the environmental damage have taken place in areas close to the frontline, which makes an assessment challenging. Importantly, reconstruction efforts will have to reflect the need for Ukraine to transform to a green and net-zero economy, harmonized with EU environmental and climate goals.

Since RDNA2, the scope of analysis has broadened to additional environmental receptors. Since the previous RDNA, and among the many environmental impacts of the war as a whole, the breach of the Kakhovka Dam on June 6, 2023, stands out in terms of scale and devastation, as hundreds of square kilometers were flooded, causing major pollution of water courses, and thousands of square kilometers of reservoir and important wetlands desiccated as well as many biodiversity-rich protected areas deeply affected.[301] Otherwise, fire continues to be the main source of impact to forests and natural landscapes, although at a much-reduced level when compared to the previous 12 months. In addition to an assessment of ecosystem service losses due to the dam breach, RDNA3 includes the effects of fire on natural landscapes in the assessment of losses, as well as the damage due to GHG releases from fires.

Damage and Loss Assessment

[299] European Union, European Union Environment Agency, and Slovak Environment Agency, "Country Briefing on State of the Environment Information in Ukraine," 2018, Link.

[300] T. Grygaski, "Comprehensive Report on Ukraine Environmental Damage Assessments" [unpublished report], informal inter-agency coordination group on environmental assessments for Ukraine, 2023.

[301] Including Ukrainian National Natural Parks and Regional Landscape Parks, the Black Sea UNESCO Biosphere Reserve, Wetlands of International Importance protected under the Ramsar Convention, and Emerald Network areas protected under the Bern Convention.

The total cost of damage to the forest sector is estimated to be US$3.3 billion (Table 50). The cumulative total of fire-damaged forests in war zone areas rose from 183,181 ha to 211,574 ha between RDNA2 and RDNA3. Donetska, Khersonska, and Luhanska account for 68 percent of the forest damage, with damage to forests in Khersonska much more extensive in RDNA3 than in RDNA2. For the first time, damage related to GHG emissions is included in the assessment of damage (Table 50), totaling US$1,074 million for forests, "other natural landscapes,"[302] agricultural land, and settlements. This was calculated using oblast-specific emission factors where possible[303] and the 2023 World Bank shadow price of carbon at US$76/t$CO_2$ (average of low and high scenarios), and its accounts for 62 percent of the increase in damage between RDNA2 and RDNA3. Another driver of the increase in the economic cost of damage is annual inflation, which averaged about 14 percent annually in Ukraine in 2021–2023.

The total losses to the forest sector, including burned areas, air pollution, and Protected Areas damaged by the Kakhovka Dam breach, are estimated at US$26.5 billion. This is a very significant increase over the RDNA2 estimate of US$523 million, which included only losses from reduced forest carbon sequestration and a limited range of forest ecosystem services. The increase is due to an increase of 16 percent in the burned forest but also due to the addition of several significant new categories of loss. These include air pollution losses (US$9.9 billion); lost ecosystem services from protected areas resulting from the Kakhovka Dam breach (US$9.6 billion);[304] and the loss of ecosystem services from "other natural landscapes" (US$6.5 billion). Even though only seven months have elapsed since the Kakhovka Dam breach, 36 percent of all losses originate in the damage to 333,041 ha in 12 Protected Areas located in the Zaporizka, Mykolaivska, and Khersonska oblasts.[305] When unit area values from the literature are applied to the more than 543,000 ha affected, lost ecosystem services of burned natural landscapes are significant at 25 percent of the total.[306] Because these areas have not recovered, ecosystem service and carbon sequestration losses are calculated on a cumulative monthly basis; the overall average elapsed time since burning of forests and natural landscapes is 17 months and 12 months, respectively. Losses due to air pollution from fires are included in the calculation of losses for the first time and account for 37 percent of the total. Emission volumes are determined in accordance with the Technical Manual for the Preparation of National Emission Inventories (EEP/EEA Guidelines),[307] and are multiplied by coefficients considering the hazard, environmental impact and scale of event, and a unit cost. The unit cost corresponds to the tax rate for emissions from stationary sources (Order 4/13/2022 No. 175[308] and Article 143 of the tax code[309]).

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[302] Defined as open forest (15–70 percent tree canopy), shrubs, herbaceous vegetation, bare/sparse vegetation, herbaceous wetland, and unknown vegetation under annual dynamic Copernicus Global Land Service Land Cover map at 100 m spatial resolution (CGLS-LC100).

[303] L. De Klerk et al., "Climate Damage Caused by Russia's War in Ukraine," December 1, 2023, Link.

[304] While the Kakhovka dam breach had many other negative effects on environment, most notably water pollution, it was out of scope of this assignment to assess these losses and damages.

[305] The methodology used for calculating the effects of the Kakhovka Dam breach aligns with that used in GoU and UN, "Post-Disaster Needs Assessment: 2023 Kakhovka Dam Disaster, Ukraine," 2023, Link.

[306] R. de Groot et al., "Global Estimates of the Value of Ecosystems and Their Services in Monetary Units," *Ecosystem Services* 1, no. 1 (2012): 50–61, Link.

[307] European Environment Agency, "EMEP/EEA Air Pollutant Emission Inventory Guidebook 2019: Technical Guidance to Prepare National Emission Inventories," EEA Report No. 13/2019, 2019, Link.

[308] The Ministry of Environment and Natural Resources Order is available at Link.

[309] The tax code is available at Link.

The human impact from forest and environmental damage is severe and profound. The Kakhovka Reservoir played a crucial role in providing energy, drinking water, irrigation, and river transport to various regions in southern Ukraine, as well as supplying water for industries. The dam breach directly affected 100,000 inhabitants, with up to 1 million losing access to drinking water. The flooding poses additional long-term health risks due to discharge of hazardous chemicals from manufacturing plants located downstream. The floodwaters were also contaminated with biological hazards such as sewage wastewater and dead wildlife, raising the risk of waterborne diseases, including cholera, diarrhea, and others. Direct employment in the forest sector is estimated to drop 29 percent due to the 29 percent decrease in the accessible area and the destruction or redeployment of equipment. Each direct forestry job can be associated with 1.5–2.5 jobs in the wider economy, and so the effect on employment could be much greater.[310] Over the short term, air pollution due to fires is estimated to have affected up to 1 million people. Nonmarket services such as biodiversity, recreation, and services related to cultural and amenity value are highly valued by the population, but they have now all ceased in the 750,000 ha of burned forests and natural landscapes.

Recovery and Reconstruction Needs, including Build Back Better

The total recovery and reconstruction needs are estimated at US$681 million over the next four years and US$2.3 billion over the next 10 years (Table 51). Recovery and reconstruction needs have been updated for the forestry sector and estimated for capacity building in environmental governance. Nearly half (49 percent) of needs are for the reforestation of burned areas and the construction of modern nurseries to meet the demand for seedlings during this period. Reinstatement costs (with build back better provision)[311] are also estimated for damaged roads, buildings, equipment, and vehicles. In addition, modern harvesting equipment will be required to enable salvaging of harvests in burned areas. It is estimated that 2.8 million ha, or 30 percent of the forest land, is affected by mines or otherwise made inaccessible.[312] The oblasts with the highest degree of forest fire damage are also those where needs are greatest (Donetska, Luhanska, Kharkivska, and Khersonska). Forestry staff need capacity building in order to understand the risk from mines, manage war-related forest fires, and maintain forest certification in wartime.

Capacity-building activities for strengthening environmental governance will require an estimated US$665 million, mostly for emergency containment and cleanup of environmental pollution. Capacity-building activities should focus on training Ukrainian personnel as a basis for (i) the reestablishment of environmental monitoring networks and laboratory infrastructure to analyze key environmental media (air, surface water, groundwater, soils, etc.); (ii) prioritized environmental cleanup actions to remove contamination sources and eliminate contaminant pathways for the sensitive receptors as well as mine clearance not causing greater environmental damage;[313] (iii) the construction and commissioning of

[310] C. T. S. Nair and Rebecca Rutt, "Creating Forestry Jobs to Boost the Economy and Build a Green Future," 2009, Link.
[311] For a definition of "build back better" please refer to Box 26 of this document. In terms of the environment, this also means compliance with key tenets of EU environmental and climate acquis.
[312] Note that the cost of remediation is not included in this analysis, and that the need for the survey and clearance is not included in the agriculture sector estimates. The RDNA presents them separately in the discussion of cross-cutting sectors.
[313] The integration of environmental considerations across all mine clearance activities is critical as mechanical mining, stripping of topsoil, and onsite detonation of mines may remove mines more quickly but can result in significant and irreparable harm and the release of additional pollutants.

environmental pollution control infrastructure (for example, hazardous waste treatment facilities, engineered recycling plants and – as a subsidiary option – landfills, wastewater treatment plants) following the principle of build back better and using green technologies; (iv) the establishment of a follow-up environmental monitoring program to assess remediation effectiveness; and (v) environmental training related to other cross-cutting sectors.

The establishment of a national environmental protection agency is essential to protect the environment and biodiversity in Ukraine. While Ukraine's current environmental legislation is quite good also from an EU perspective, implementation and follow-up of this legislation remains deficient. The establishment of such an agency is included in the Ministry of Environment and Natural Resources' long-term plans but has not happened due to budgetary constraints. It will be essential for better environmental protection, implementation of environmental legislation and also for ensuring building back better in environmental terms.

2024 Recovery and Reconstruction Priorities

The total recovery and reconstruction investment priorities for 2024 are estimated at US$34.5 million (Table 52), of which US$7.55 million relates directly to the forestry sector. In 2024, salvage of existing equipment and its relocation to safer zones should continue to be prioritized. The Ukrainian State Forest Management Planning Association (Ukrderzhlisproekt) should be reestablished or relocated; and its ability to support centralized strategic forest planning, and hence to minimize the long-term impact of the war on forest and ecosystem resources, should be strengthened. In coordination with strategic planning, modern closed root nursery capacity should be reestablished or relocated as necessary; the focus should be on achieving a balanced recovery, addressing the long-term needs of the wood-processing sector, and providing other climate-resilient ecosystem services. The administrative functioning and mobility of staff should be addressed, including through the repair and provision of offices, vehicles, and equipment.

The capacity-building investment priorities for 2024 are estimated at US$24.1 million. The following are immediate priorities for a science policy–based green and resilient recovery program for Ukraine: (i) conducting assessment(s) of war-related environmental impacts in Ukraine to inform the immediate risk reduction and medium- and long-term integrated green recovery and reconstruction; (ii) promoting and supporting a systemic and coordinated approach for a green and resilient recovery; and (iii) implementing and advocating appropriate risk reduction, remediation, and restoration actions with the potential to be scaled up, as applicable. These actions will include the following: (i) stakeholder consultations; (ii) policy advice; (iii) information exchange; (iv) technical assistance in project preparation; (v) identification and implementation of measures to reduce risks to human safety and the environment at selected sites; (vi) demonstration of remediation and restoration actions; and (vii) dissemination of results and lessons learned.

The needs for 2024 identified by the Ukrainian State Environmental Inspectorate are estimated at US$2.85 million and include measurement equipment and vehicles. The Inspectorate needs to update the material and technical base to restore the environment in Ukraine, to record and calculate the damage and losses arising from the war, and to measure contamination of priority pollutants.

Limitations and Recommendations for Future Assessments

The capacity-building analysis is largely qualitative but provides some estimates for future needs. Needs related to natural landscape fires can be assessed only after a detailed damage assessment. Estimating the needs for reducing air pollution requires further evaluations for each sector or subsector (energy, transport, extractives, metallurgy, chemical, urban, etc.) based on the planned application of best practices and modern technologies.

The RDNA3 is hampered by gaps in the data on various aspects of war-related environmental impacts in Ukraine. The data available are incomplete or lack validation of field data integrity. This means that it was not possible to assess the damage and needs due to pollution of soil, water, and ecosystems, including pollution of the marine environment (such as downstream effects of the Kakhovka Dam breach), or the long-term consequences for climate change and biodiversity. It was also not yet possible to assess actual health costs of pollution, including air pollution or asbestos pollution, since no data on exposure are known. There are also limited baseline data on the timber-harvesting fleet prior to the invasion. It is likely that a large number of machines and vehicles, including trucks, have been commandeered, destroyed, or damaged.

Forests and natural ecosystems will take much longer than 18 months to recover their ecosystem service capacity. The minimum recovery period for provisioning services in the fire-damaged forest areas will be 20 years or more (longer for ecological services), and not the 18 months indicated here. New nurseries alone will require at least four years to establish. The area of Emerald Network sites affected by fire was not treated separately from other forest and natural sites under this analysis, an approach that should be reviewed in future.[314] Also in the future, establishing ecosystem service values for the Ukraine context could avoid the need to utilize global or regional averages.

Table 50. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	-	-	12.3
Chernihivska	164.9	962.2	83.8
Chernivetska	-	-	1.9
Dnipropetrovska	10.9	12.2	4.7
Donetska	628.9	3,864.5	239.5
Ivano-Frankivska	-	-	2.2
Kharkivska	828.0	2,962.3	331.8
Khersonska	405.6	8,003.0	141.7
Khmelnytska	0.2	0.0	12.0
Kirovohradska	0.0	0.0	3.1
Kyiv (City)	-	-	-
Kyivska	323.5	1,525.9	137.5
Luhanska	664.0	3,540.6	292.2
Lvivska	-	-	5.5
Mykolaivska	48.8	756.2	27.6
Odeska	0.0	0.0	1.8
Poltavska	0.0	0.1	3.8
Rivnenska	-	-	4.6

[314] For information on the Emerald Network, see European Environment Agency, "Emerald Network Data—The Pan-European Network of Protected Sites," January 4, 2024, Link.

Sumska	8.7	101.3	17.7
Ternopilska	-	-	7.9
Vinnytska	-	-	5.9
Volynska	-	-	12.4
Zakarpatska	-	-	10.7
Zaporizka	96.8	4,466.8	18.9
Zhytomyrska	86.2	337.7	39.9
Nationwide (no specific region)	-	-	844.1
Total	**3,266.6**	**26,532.8**	**2,263.3**

Source: Assessment team. *Note*: - = not assessed. Damage covers 22 months of war between February 24, 2022, and December 31, 2023; loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months until June 30, 2025; needs cover the period 2024–2033.

Table 51. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Types of activities/investments	Total needs (2024–2033)
Recovery and reconstruction needs in the forestry sector	Reforestation	1,002.49
	Forest roads	28.65
	Buildings	4.66
	Buildings—debris removal	0.19
	Vehicles	58.23
	Equipment	30.67
	Office equipment	17.66
	Harvesting equipment	172.80
	Nurseries	103.90
	Recovery needs for staffing and maintenance, capacity building, forest information system	176.00
Recovery and reconstruction needs for capacity building	Assessment of contaminated sites	71.00
	Assessment of impacted sites in Protected Areas	9.00
	Environmental monitoring costs	15.00
	Training	5.25
	Environmental cleanup	500.00
	Equipment supply component of capacity building	65.00
Recovery and reconstruction needs for State Environmental Inspectorate	Measurement equipment	1.35
	Vehicles	1.50
Total		**2,263.3**

Source: Assessment team.

Table 52. Estimated 2024 recovery and reconstruction priorities (US$ million) [a]

Types of priority activities/investments		Estimated cost
Recovery and reconstruction needs in the forestry sector for building two nurseries and procuring harvesting equipment	Reconstructing/relocating modern closed root nursery capacity	0.6
Recovery and reconstruction needs in the forestry sector for service delivery	Repairing/reconstructing offices, assets, and vehicles; reestablishing "Ukrderzhlisproekt" forest management planning association	6.95
Recovery and reconstruction needs for State Environmental Inspectorate	Procuring measurement equipment/vehicles	2.85

Recovery and reconstruction needs for capacity building, environmental assessments, and monitoring[b]	Assessing contaminated sites and protected areas; building capacity of staff to address environmental contamination; cleaning up a few urgent sites; reestablishing environmental monitoring programs	24.1
Total		**34.5**

Source: Assessment team based on priorities defined by line ministries. *Note:* Estimated costs for nurseries and service delivery restoration based on RDNA2, with figures adjusted for inflation.

a. This sector is not included among the Government's RDNA priority sectors, so the figures presented here are not included in the totals

b. Kakhovka Dam recovery estimates are not included; some environmental equipment supply might be included.

Emergency Response and Civil Protection

Context

This sector has been at the forefront of meeting emergency response needs arising from the war. Through the State Emergency Service of Ukraine (SESU),[315] the National Police of Ukraine,[316] and other institutions and sector stakeholders, the GoU has provided essential and immediate support to affected populations since February 2022. Within the sector, the war has caused damage to emergency response buildings and vehicles, affecting the capacity for response. Since February 2022, there has been a substantial increase in the provision of emergency services, including fire rescue, specialized response, and response to chemical, biological, radiological, and nuclear (CBRN) threats. This situation strains the provision of services and exacerbates prewar challenges facing the sector—for example, the stock of emergency response–related buildings, vehicles, and specialized equipment was in need of updating prior to February 2022. The war has also increased the risk of industrial and other accidents linked to damaged infrastructure and has disrupted services. Since February 2022, some immediate sectoral needs have been met through public, donor, and private means; however, these are limited compared to the needs for recovery/reconstruction and broader modernization. Modernization needs are not considered in this sectoral assessment beyond the BBB approach.

Damage and Loss Assessment

The total damage is estimated to be US$385.7 million (Table 53), a 114.6 percent increase from RDNA2. This increase relates to the fact that damage data for the police are included in RDNA3 but were not included in RDNA2 and RDNA1. The majority of the total damage—79.8 percent—was recorded in buildings; this share consists of 40.8 percent for police buildings and 39.0 percent for SESU buildings (including hydromet and rescue/response centers). The remaining 20.2 percent of damage was attributed to vehicles that were destroyed or seized—11.7 percent applies to police vehicles and 8.5 percent to SESU vehicles (including hydromet and response centers). The largest shares of damage were found in the Luhanska (11.3 percent), Khersonska (14.4 percent), and Kharkivska (17.2 percent) regions.

Loss is estimated to be US$489.8 million (Table 53). Loss includes operational losses (US$473.3 million, or 96.6 percent of the total loss) and debris removal (US$16.5 million, or 3.4 percent). Estimated loss is highest in the Donetska (9.8 percent), Kharkivska (6.5 percent), and Dnipropetrovska (7.5 percent) regions. Kyiv (city) accounts for similar percentages of losses at 7 percent.

Human impact. This sector provides essential and immediate support to the affected populations and contributed to the efforts to alleviate direct impacts. In 2023, SESU responded to 404,368 calls for help and rescued 4,846 people. In comparison, in 2021, SESU responded to 356,561 calls for help and rescued

315 As part of SESU, 25 oblast-level bodies govern emergency response services, including firefighting, rescue units, and operation-communication centers. The early warning system under SESU is supported by the Ukrainian Hydrometeorological Center and covers both hydrometeorological conditions and geophysical processes. SESU has a staff of 58,640, of whom 12,126 (20.7 percent) are female and 46,512 (79.3 percent) are male.

316 The National Police employs 135,075 persons—including 36,727 women (27 percent) and 98,348 men (73 percent). The police structure consists of 25 territorial bodies, which include district offices and police departments/divisions; interregional territorial bodies with regional subdivisions; and several state institutions, including the National Police Service Center, the Aviation Support Center, professional (vocational) education with specific training conditions, preschool educational institutions, children's health and recreation facilities, and dormitories.

1,779 people. Within the National Police, more than 7,100 police teams, including car patrols, were involved in the protection of public safety and order every day (compared to 4,700 in 2021). Police explosive ordnance disposal (EOD) experts made more than 30,000 visits in specialized vehicles, compared to 11,000 in 2021. Lastly, it is important to acknowledge the impact on the sector personnel, who experience heightened levels of stress and trauma.

Recovery and Reconstruction Needs, including Build Back Better

The total recovery and reconstruction needs are estimated at US$2.3 billion over 10 years (Table 54). The increase in the needs since RDNA2 derives from the inclusion of police data in RDNA3 and from the increased demand for emergency response services. Police-related needs (linked to the damage to buildings and vehicles) account for US$381 million. The largest shares of needs are in the Khersonska (9.1 percent), Luhanska (8.8 percent), and Zaporizka (7.9 percent) regions.

There are various considerations for recovery and reconstruction planning and investments within this sector. First, in parallel with procuring vehicles—including specialized vehicles for CBRN—SESU should consider the needs for specialized buildings for operational forces. These include training centers, logistic hubs, platforms, hangars for helicopters, 112 centers, and shelters in civil protection facilities. Second, investments should consider BBB by incorporating green, resilient, and inclusive recovery principles and by increasing institutional capacities. In line with this approach, RDNA3 calculates needs using damage data from the field provided by SESU and the police (divided by asset type, level of damage, and oblasts), and then applying a BBB coefficient to cover energy efficiency measures and needs for furniture and equipment. Third, reconstruction efforts should also be linked to multi-hazard considerations to enhance the overall resilience of critical sector infrastructure. Fourth, because emergency services continue to be provided in the vicinity of combat areas, there is a potential risk of additional damage to infrastructure and vehicles/equipment. Fifth, short-term planning should consider that market limitations have inhibited the procurement of and access to specialized vehicles/technical equipment.

Some immediate needs within the sector have been addressed by the GoU as well as ongoing efforts by partners (see also the chapter entitled "Toward Recovery and Reconstruction"). In 2023, 186 damaged buildings and structures were repaired at an estimated cost of US$5.2 million, including US$1.6 million paid by SESU and US$3.6 million by the police.[317] Also in 2023, 182 units of fire rescue and special equipment were procured, estimated to cost over US$103.9 million. In addition, the Ukrainian Hydrometeorological Center procured vehicles, computers, and hydrometeorological equipment in the amount of US$0.3 million. In 2023, 976 vehicles, estimated to be worth US$35.5 million, were received as donations.[318] Since February 2022, the EU Emergency Response Coordination Centre has channeled various assistance, including items and equipment related to CBRN, shelter and shelter-related items, and over 900 vehicles, among them ambulances and fire trucks. All these efforts focus on immediate needs rather than meeting recovery/reconstruction needs. UNDP is supporting first responders, including SESU, the National Police, firefighting brigades, and volunteers, with a focus on local SESU departments in

[317] Given that these needs accounted for less than 1 percent of overall reconstruction needs and were related to repairs without considering emergency efficiency or build back better principles, these elements were not deducted from the overall needs.
[318] Given that the data did not distinguish between vehicles and equipment, or clearly disaggregate estimated damage by oblast, the value of the vehicles was not deducted from overall needs.

selected oblasts. GIZ's Special Assistance Programme, the UDU/U-LEAD with Europe II project, and "Strengthening of State and Municipal Emergency Management in Ukraine" project have supported the procurement of emergency response equipment, including firefighting robots, mobile facilities for disasters and emergencies, turntable ladders, working platforms/lifts, evacuation buses, and operational clothing for women in the fire department.

2024 Recovery and Reconstruction Priorities

The recovery and reconstruction investment priorities for 2024 are estimated at US$272.3 million (Table 55). In line with the sector's highest priority—namely, to meet the safety and security needs of the population—the focus in 2024 is on procuring vital equipment (vehicles) that will ensure continued operationality, thereby helping affected areas and civilians in the context of the war. The 2024 priorities also include US$25.1 million in service improvement for the 112 system in Odesa and Dnipro City (Dnipropetrovska region) to increase the speed and quality of response due to the higher number of requests for emergency services.

Limitations and Recommendations for Future Assessments

This assessment follows the same principles and assumptions as RDNA1 and RDNA2. RDNA3 includes new baseline and damage data provided by the police. As in RDNA1 and RDNA2, there are many data limitations. Additional challenges relate to the change of ownership from national to local level which also may impact data. Given data limitations, no additional operational losses were assessed in relation to the increased emergency response demand. It is noted that, in accordance with Resolution No. 168 of February 28, 2022, SESU received a one-time financial benefit (UAH 720 million), which is not considered in the loss calculation in keeping with the RDNA methodology.[319] The extra monthly of payment of UAH 30,000 for military and police personnel ceased as of February 2023, so the payment is not included in the RDNA3 needs.

Table 53. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	0.2	13.4	3.2
Chernihivska	36.2	12.4	150.3
Chernivetska	0.0	10.3	2.1
Dnipropetrovska	34.5	36.6	99.3
Donetska	34.4	47.9	131.0
Ivano-Frankivska	0.1	15.6	2.0
Kharkivska	66.3	31.9	132.0
Khersonska	55.7	13.4	210.2
Khmelnytska	11.9	14.3	25.9
Kirovohradska	0.0	10.4	2.2
Kyiv (City)	5.2	34.4	13.9
Kyivska	28.2	22.2	76.8
Luhanska	43.7	28.8	204.0
Lvivska	0.9	28.6	3.9
Mykolaivska	10.9	12.7	44.7

[319] Cabinet of Ministers of Ukraine, "The Issue of Certain Payments to Military Personnel, Rank and File Officers, Police Officers and Their Families During Martial Law," Resolution No. 168, February 28, 2022, Link.

Odeska	3.0	27.2	27.2
Poltavska	0.5	15.6	3.8
Rivnenska	0.1	13.2	3.2
Sumska	8.1	12.4	20.4
Ternopilska	-	11.8	2.0
Vinnytska	0.0	17.4	2.0
Volynska	0.0	11.8	2.0
Zakarpatska	0.1	14.4	2.8
Zaporizka	26.9	19.2	183.5
Nationwide (no specific region)	17.5	0.2	954.1
Total	**385.7**	**489.8**	**2,305.9**

Source: Assessment team. *Note*: - = not assessed. Damage covers 22 months of war between February 24, 2022, and December 31, 2023; loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months through June 30, 2025; needs cover the period 2024–2033.

Table 54. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Types of activities/investments	Total needs (2024–2033)
Reconstruction needs	Buildings	615.7
	Debris removal	16.5
Service delivery restoration needs	Vehicles/equipment	1,479.0
	Service improvement	194.7
Total		**2,305.9**

Source: Assessment team.

Table 55. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
Buildings	24.6
Debris removal	0.7
Vehicles/equipment	221.9
Service improvement (112 system in two regions)	25.1
Total	**272.3**

Source: Assessment team based on priorities defined by line ministries.

Justice and Public Administration

Context

Since February 2022, the justice and public administration sector has been significantly impacted by the war. Nonetheless, Ukraine's courts, specialized anticorruption institutions, prosecution service, State Customs Service (SCS), state bailiffs, notaries, and penitentiary staff have continued to operate, maintaining law and order and providing essential public services. The war has caused considerable damage to infrastructure. More than 900 sector buildings were seriously damaged or destroyed, many of them belonging to the penitentiary service, SCS, and courts. The penitentiary subsector, with stock of penitentiary facilities in need of renovation before the war, has suffered the most damage. Other entities under the Ministry of Justice (state bailiffs, notaries, probation service) are less affected. The economic cost of the war on the justice and public administration sector is estimated at over US$0.34 billion in damages and US$1.66 billion in losses, with reconstruction needs estimated at US$0.72 billion. Trade with Russia and Belarus has ended, and Ukrainian markets are now fully reoriented toward Western markets. Since RDNA2, damage has increased (by more than 15 percent) and the loss and needs estimations have risen accordingly. Since February 2022, some immediate sectoral needs have been met, mostly through public or donor means. However, these are very limited compared to the sector's recovery and reconstruction needs and broader modernization needs.

Damage and Loss Assessment

The total value of the damage to the sector is estimated to be US$343.6 million (Table 56), a 15.6 percent increase from RDNA2. This figure includes US$140 million in damage to institutions under the Ministry of Justice (of which US$128 million represents damage to the penitentiary subsector, including probation institutions). It also includes US$119 million in damage to the judiciary (mostly to courts); US$62.2 million in damage to SCS; and US$22.4 million in damage to the prosecution service. The penitentiary subsector suffered the largest share of damage (37.4 percent). Most (95.0 percent) of the total damage is to buildings: 41.6 percent to Ministry of Justice buildings (mostly penitentiary entities), 36.2 percent to the judiciary (mostly courts), and 16.0 percent to SCS. The remaining 5.0 percent is damage to vehicles (US$6.8 million) and to furniture, equipment, or other types of inventories (US$10.2 million). Damage includes partial damage, destruction, or theft by occupants. Damage is concentrated in eastern Ukraine: Kharkivska (30.2 percent), Donetska (14.9 percent), Luhanska (13.9 percent), Zaporizka (9.4 percent), and Khersonska (8.3 percent) oblasts.

The losses in the sector are estimated to be US$1.7 billion (Table 56). Loss of customs fees amounts to almost US$1.63 billion, or 98.0 percent of all losses in the sector. The drop in customs revenues from the supply of gas, petroleum products, and electricity alone amounts to about US$820 million. By region, substantial losses of customs fees are greatest in Mykolaivska (US$254 million), Khersonska (US$178.5 million), and Zaporizka (US$102.4 million) oblasts. The remaining losses include almost US$11.0 million for the judiciary, US$9.4 million for institutions under the Ministry of Justice (with US$6.3 million for penitentiaries and probation institutions), and US$1.9 million for the prosecution service. Losses other than customs fees include: removal of debris and demolition of damaged and destroyed buildings (valued at US$10.9 million in the judiciary, US$8.1 million in SCS, US$6.6 million in the Ministry of Justice, and US$1.1 million in the prosecution service); loss of destroyed or damaged assets in the process of

enforcement of court judgments (US$2.7 million in the Ministry of Justice); loss of destroyed or damaged goods seized by the Customs Service in administrative proceedings with the aim of confiscation (US$0.8 million in CSC); and the cost of purchasing or renting vehicles, furniture, equipment, and other inventory for repaired premises (US$0.6 million in the prosecution service).

Human impact. The human impact in this sector relates to the burden of investigating and prosecuting war crimes on top of carrying out normal responsibilities. This sector is vital for ensuring the rule of law (through courts, prosecutors, free legal aid lawyers), providing administrative services to citizens (administrative services centres, notaries, bailiffs), contributing to budget revenue (customs), and incarceration of convicted felons in appropriate conditions (penitentiary service). War crime cases have increased the workload of the prosecutor's office, the courts, and the system of free legal aid. It is also important to acknowledge the heightened levels of stress and trauma experienced by the investigators and prosecutors working on these cases.

Recovery and Reconstruction Needs, including Build Back Better

The total reconstruction and recovery needs in the justice and public administration sector are estimated at US$721.3 million over 10 years (Table 57). The overall needs for the Ministry of Justice constitute US$293.9 million (41 percent of total needs in the sector); of this amount, US$269.6 million is related to penitentiary institutions. Needs for the judiciary are US$249.8 million, or 34 percent of total needs; for the SCS they are US$130.7 million, or 18 percent; and for the prosecution service they are US$46.9 million, or 7 percent. Needs mostly relate to new construction or repairs and to purchase of new vehicles, furniture, equipment, or other inventory. The BBB approach includes the need to ensure security and digitalization of newly built court houses. This increases the replacement cost to US$1.200 per square meter. The geographic distribution of needs shows that most needs are concentrated in Kharkivska (30.2 percent), Donetska (14.8 percent), Luhanska (13.9 percent), and Zaporizka (9.4 percent) oblasts. It is important to note that these estimates assume that the situation does not deteriorate further.

Some immediate needs within the sector have been addressed by the GoU as well as ongoing efforts by partners. In 2023, buildings with minor damage that were located far away from the front lines were repaired, mostly by the government or the institutions themselves. Given lack of funds in the state budget, the government did not reconstruct destroyed buildings that required capital investments and significant resources. In two oblasts, Donetska and Kharkivska, the prosecution service procured new vehicles (at a cost of over US$200,000) and new furniture, equipment, or other inventory (over US$430,000).

2024 Recovery and Reconstruction Priorities

The total recovery and reconstruction investment priorities for 2024 are estimated at US$22.0 million (Table 58). The recovery and reconstruction priorities highlighted by GoU are related to reconstruction of two detention centers and a penitentiary facility (US$19.1 million for 2024), and completion of the construction of another penitentiary facility (US$ 1.9 million for 2024). The total cost to finance priorities in the penitentiary subsector in 2024 is US$22 million. 2024 priorities also include maintaining operation at other key justice sector institutions. Based on the information from the State Judicial Administration, more than 120 court buildings have been damaged, and some require only minor repairs like replacement of windows or doors to be functional. However, no funds have been committed in the 2024 state budget

to address any of these priorities. The 2024 priorities should also include an assessment of capacity needs of judicial staff with regard to war crimes.

Limitations and Recommendations for Future Assessments

This assessment follows the same principles and assumptions as RDNA1 and RDNA2. RDNA3 includes new baseline, damage, loss, and needs data from other entities under the Ministry of Justice, such as state bailiffs, notaries, and centers for administrative services, in addition to the data from penitentiary and probation institutions. The data used in the assessment are from the GoU.

As in RDNA1 and RDNA2, there are still many data limitations. The lack of data on assets in territories not under government control poses a great challenge to assessing damage and determining future recovery needs. Even after border oblasts (e.g., Kharkivska, Sumska) were returned to government control, it has been practically impossible to access customs facilities there for a thorough assessment of damage to buildings and movable property.

The key recommendations for further assessments include the following: (i) consult with GoU on how to ensure more consistency in the information for analysis (e.g., through less turnover among the focal points in each subsector); (ii) consult with private sector actors to get their view of recovery and reconstruction implementation priorities in the sector; and (iii) have GoU develop a list of specific priority needs in the sector that could be funded in 2025.

Table 56. Damage, loss, and needs by oblast (US$ million)

Oblast	Damage	Loss	Needs
Cherkaska	-	-	-
Chernihivska	11.4	9.5	23.8
Chernivetska	-	-	-
Dnipropetrovska	3.6	0.1	7.5
Donetska	51.1	4.9	107.1
Ivano-Frankivska	0.6	0.1	1.2
Kharkivska	103.8	11.9	218.0
Khersonska	28.4	179.8	59.6
Khmelnytska	0.9	-	2.0
Kirovohradska	-	-	-
Kyiv (City)	5.3	820.1	11.2
Kyivska	21.3	3.2	44.8
Luhanska	47.8	50.0	100.3
Lvivska	3.3	0.1	7.0
Mykolaivska	16.9	255.2	35.4
Odeska	2.4	88.4	5.1
Poltavska	2.7	0.1	5.7
Rivnenska	-	-	-
Sumska	9.0	61.9	19.0
Ternopilska	-	-	-
Vinnytska	0.5	-	1.0
Volynska	-	-	-
Zakarpatska	-	-	-
Zaporizka	32.2	103.1	67.6

Zhytomyrska	2.4	72.7	5.1
Nationwide (no specific region)	-	-	-
Total	**343.6**	**1,661.1**	**721.3**

Source: Assessment team. Note: - = not assessed. Damage covers 22 months of war between February 24, 2022, and 31 December 2023; Loss covers a total of 40 months, which includes 22 months between February 24, 2022, and December 31, 2023, and an additional 18 months until June 30, 2025; needs cover the period 2024–2033.

Table 57. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Component	Total needs (2024–2033)
Reconstruction Needs	Judiciary	199.8
	Ministry of Justice	235.1
	Prosecution	37.5
	Customs	104.6
	Judiciary	50.0
Service Delivery Reconstruction Needs	Ministry of Justice	58.8
	Prosecution	9.4
	Customs	26.1
Total		**721.3**

Source: Assessment team.

Table 58. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
Ministry of Justice – restoration of the detention and prison capacity	22
Total	**22**

Source: Assessment team based on priorities defined by line ministries.

Explosive Hazards Management[320]

Context

Ukraine, affected by war since 2014, is one of the most heavily mined countries in the world. The National Mine Action Authority (NMAA) estimates that more than a third of Ukrainian territory (174,000 km^2) is potentially contaminated with explosive ordnance as a result of the invasion in 2022 (see Figure 26).[321] Satellite imagery, enhanced by artificial intelligence along with new nontechnical survey (NTS) techniques, has revealed that large areas of the land suspected of contamination are free of mines. However, even if only a small percentage of this territory is contaminated, it would still represent one of Europe's most significant clearance challenges since the end of the Second World War. Contamination patterns fall mainly into two categories: (i) large areas of land with *potential/suspected* contamination, where the bulk of the area is not contaminated but some smaller areas show light contamination; and (ii) territories along the current front line and areas again under government control. The areas along the front line are heavily contaminated, and clearance efforts there will be complex, costly, and time-consuming, requiring application of the highest technical standards. In 2023, NTS resulted in the comprehensive assessment of over 50,000 km^2 of land over which the GoU had regained control (including more than 21,000 km^2 in Mykolaivska, Khersonska, and Kharkivska oblasts) and allowed for the further definition of the nature and extent of contamination.[322] Investments of close to US$20 million in NTS throughout 2023[323] allowed for the updating of the needs assumptions, which has resulted in a potential cost reduction of US$3.0 billion for mine action needs.

Human impact. The clearance of explosive hazards (landmines, unexploded ordnance, and improvised explosive devices) is a precondition for safe rebuilding, resumption of service provision, and return to normality in Ukraine across all sectors of the economy and social life. Effective and efficient mine action efforts, in particular NTS,[324] technical survey (TS),[325] and clearance,[326] are essential to land release.[327] In addition to removing explosive hazards to allow for safe use of land, there is both a need to educate the population on the dangers of tampering with explosive remnants of war (ERW) and a duty to support surviving victims of explosive incidents. The OHCHR indicates that as of January 15, 2024, there were 339

[320] In RDNA1, this sectoral assessment was labeled "Land Decontamination."
[321] Cabinet of Ministers of Ukraine, "Demining Ukraine in a Few Years, Not Decades, Is the Best Response to the Aggressor: Yuliia Svyrydenko," August 18, 2023, Link.
[322] NMAA data.
[323] Estimate provided by the United Nations Development Programme.
[324] NTS is the starting point for identifying, accessing, collecting data on, reporting on, and using information to define where mines/explosive remnants of war (ERW) are to be found, as well as where they are not. It also aids in identifying Suspected Hazardous Areas (SHA) and Confirmed Hazardous Areas (CHA) where further investigation and/or clearance need to take place.
[325] TS techniques and methods involve a physical intervention and use survey or clearance assets to enter a hazardous area to (i) confirm the presence, or absence, of mines/ERW and identify the type of hazards present; (ii) better define the boundaries of the SHA or CHA that require clearance; and (iii) collect information to support land release decision-making. TS can be broadly characterized as either targeted or systematic depending upon the information gathered about hazard and threat. TS assets must provide a high probability (near certainty) that the presence of expected hazardous items will be indicated by the equipment and methodology in use and that TS personnel are safe to conduct the activity.
[326] The most familiar and visible part of mine action is the clearance of mines and ERW. It is also the most expensive. Clearance refers to an intrusive information-gathering and threat-removal process that fully defines a hazardous area while removing explosive hazards.
[327] Land release describes the process of applying all reasonable efforts to identify, define, and remove all presence and suspicion of explosive ordnance.

civilian victims of mines and explosive remnants of war and 757 were injured.[328] The costs of supporting those injured, a responsibility that will extend across generations, are comprehensively addressed in the social protection and livelihoods chapter.

Recovery and Reconstruction Needs, including Build Back Better

Based on data collected and on prior land release in 2023, the current total costs for the clearance of explosive ordnance across Ukraine are an estimated US$34.6 billion (Table 59). Based on the results of a comprehensive survey in several hromadas in 2023, the share of land projected to require technical survey and clearance was adjusted from the results in RDNA2. Specifically, there is a reduction of 1,179 km^2 for TS and a reduction of 826 km^2 for clearance, amounting to a reduction in cost of US$3.0 billion. The cost projection includes significant investments needed for demining equipment, salaries, and the training necessary to ensure qualified staff to meet demand. Concerning land release, US$50–200 million is needed for NTS,[329] US$8.95 billion is needed for TS, and an estimated US$25.5 billion is needed for comprehensive land clearance. Concerning geographic distribution of mine action needs, the oblasts most affected are those in the south and east, as well as oblasts in the north that were temporarily not under GoU control. Indications are that most victims of explosive incidents are concentrated in the southern and eastern oblasts.[330]

To ensure that land clearance serves Ukraine's most critical recovery and reconstruction needs, prioritization of resources remains essential; the focus should be on large population centers and vulnerable exposed groups such as small-scale farmers, as well as critical infrastructure with a view to rebuild the Ukrainian economy. The use of aerial technology and remote sensing can speed up the survey of vast but lightly contaminated areas and will significantly lower costs. At the same time, it is expected to result in release of large areas for productive use and to assist in defining with further precision which areas are heavily contaminated and in need of advanced clearance efforts. Managing the risks arising from ERW and landmine contamination on this scale will require more than just the resources for survey and clearance needs. It will also require resources for deliberate and organized buildup of Ukraine's mine action capacity, including a full suite of human, financial, and technical resources. Needs range from training of trainers to acquisition of demining equipment; from arrangements for life-cycle support for sustainable equipment to identification and recruitment of deminers; and from the expansion of information management capability to establishment of efficient certification procedures. All this and more will be necessary to allow the Ukrainian authorities to expand their current demining capacity and meet the demand. Clearing residential areas of mines is also crucial for the return of displaced populations, the revitalization of communities as well as for implementing recovery and reconstruction.

2024 Recovery and Reconstruction Priorities

[328] OHCHR. 2024. Protection of Civilians in Armed Conflict — December 2023. Link.

[329] If applied on a large scale, the innovative integration of aerial surveys and AI analysis has the potential to significantly expedite NTS processes, potentially reducing projected costs from US$200 million to US$50 million. Pilot activities have shown this approach is particularly effective in areas suspected of having low levels of contamination. However, it is not applicable for nonhumanitarian tasks or in areas within 20 km of the front line.

[330] Victim numbers are classified in light of the ongoing invasion. Data collected by the UN contain civilian victims only and—in light of the ongoing invasion and access challenges—are likely incomplete. Trends indicate that most incidents involving civilians occurred in Kharkivska, Khersonska, and Mykolaivska.

In restoring access to areas previously contaminated by explosive ordnance, mine action is an enabler that allows the delivery of humanitarian aid and recovery and reconstruction activities. Demand for mine action services is therefore high, and provision of services will have to follow the priorities of the Revised Ukraine Winter Response plan 2023–2024[331] as well as the 2024 Humanitarian response plan.[332] More importantly, the work in Ukraine will follow the NMAA's first National Mine Action Strategy, to be finalized within 2024 and likely to include three key priorities: returning the land to productive use; protecting the people from explosive ordnance; and strengthening the Mine Action Management System.[333] Concerning methodology, the intent is to increase use of technology in NTS in 2024 in order to eliminate currently suspected land that has no evidence of contamination. The use of community liaisons can be helpful in collecting reports of explosive ordnance from the communities affected. These Explosive Ordnance Risk Education teams will also be important in communicating to populations that their land is safe for use if no evidence of explosive ordnance is found. In terms of most direct investment needs, the GoU wants to prioritize training and equipping of relevant authorities to build the necessary capacity to accomplish its priorities (Table 61). Additionally, the GoU has expressed its intention to increase the number of well-trained and well-equipped humanitarian deminers in order to meet the increasing demand for TS and clearance as progress continues to be made in the area of NTS.

Limitations and Recommendations for Future Assessments

The operational costs—simplified for the purpose of the RDNA3—represent an average of the cost for clearance of *current* levels of explosive contamination in Ukraine. Under the phased approach to land release, government units of the Ministry of Defense and SESU conduct emergency clearance—that is, explosive ordnance disposal "spot tasks;" this is then followed by more systematic clearance in accordance with international standards. In addition, though the area used in the calculation includes both land and aquatic settings, no differentiation between terrestrial and underwater clearance is made, and the inclusion of the cost of aquatic equipment should be assumed. Of special concern is the destruction of the Kakhovka Dam on June 6, 2023, which caused extensive flooding and may have displaced and/or submerged mines and ERW, and thus increased the risk of future injuries and death for the surrounding population.[334] Clearance efforts may damage the fragile ecosystems in the river delta, while lack of demining will keep the river channel and surrounding delta difficult to use for years to come. Costs associated with the removal of anchored and floating sea mines in the Black Sea are yet unquantified. However, until clearance of the Black Sea and Ukrainian harbors is completed, the risk of this contamination will impact the price of shipping and affect Ukraine's agricultural exports.

In the south and east, parts of Ukraine are temporarily not under the GoU's control, with ongoing fighting. For this reason, comprehensive survey of those areas is not possible, while the most heavily contaminated parts of Ukraine's territory are adjacent to the front line and are still at risk of being re-

[331] UN OCHA, "Revised Ukraine Winter Response Plan, October 2023–March 2024," September 2023, Link.
[332] UN OCHA, Humanitarian Country Team, and partners, "Humanitarian Needs and Response Plan 2024," January 3, 2024, Link.
[333] Based on the work of the Workshop on Strategy Development, co-organized by the Ministry of Economy of Ukraine and the Geneva International Centre for Humanitarian Demining, October 3–5, 2023.
[334] UN Environment Programme, *Rapid Environmental Assessment of Kakhovka Dam Breach: Ukraine, 2023* (Nairobi: UNEP, 2023), 41, Link.

exposed to fighting and further contamination. Access for humanitarian mine action is not feasible or expected in the short term. Rather it will be an ongoing effort lasting decades after the end of the war.

Table 59. Explosive ordnance contamination and estimated clearance cost (US$ million)

Oblast	Km²					US$, million			
	Oblast area	Land exposed to war (%)	Estimated area			Estimated cost for HMA			
			Nontechnical survey	Technical survey	Clearance	Nontechnical survey	Technical survey	Clearance	Total
Kyiv (City)	836	0	0	0	0	-	-	-	-
Cherkaska	20,916	0	0	0	0	-	-	-	-
Chernihivska	31,903	80	25,481	764	382	30.8	573.3	1,146.6	1,750.8
Chernivetska	8,096	0	0	0	0	-	-	-	-
Dnipropetrovska	31,923	0	0	0	0	-	-	-	-
Donetska	26,517	64	16,964	1,696	1,272	20.5	1,272.3	3,816.9	5,109.7
Ivano-Frankivska	13,927	0	0	0	0	-	-	-	-
Kharkivska	31,418	46	14,444	1,083	812	17.5	812.5	2,437.4	3,267.4
Khersonska	28,461	95	27,074	2,707	2,031	32.8	2,030.6	6,091.7	8,155.0
Khmelnytska	20,629	0	0	0	0	-	-	-	-
Kirovohradska	24,588	0	0	0	0	0	0	0	0
Kyivska	28,121	37	10,404	312	156	12.6	234.1	468.2	714.9
Luhanska	26,683	100	26,673	2,667	2,000	32.3	2,000.4	6,001.3	8,034.0
Lvivska	21,831	0	0	0	0	-	-	-	-
Mykolaivska	24,585	14	3,442	103	52	4.2	77.4	154.9	236.5
Odeska	33,314	0	0	0	0	-	-	-	-
Poltavska	28,750	0	0	0	0	-	-	-	-
Rivnenska	20,051	0	0	0	0	-	-	-	-
Sumska	23,832	70	16,677	500	250	20.2	375.0	750.0	1,145.8
Ternopilska	13,824	0	0	0	0	-	-	-	-
Vinnytska	26,492	0	0	0	0	-	-	-	-
Volynska	20,144	0	0	0	0	-	-	-	-
Zakarpatska	12,753	0	0	0	0	-	-	-	-
Zaporizka	27,183	74	20,105	1,910	1,432	24.3	1,432.5	4,297.5	5,754.3
Zhytomyrska	29,827	14	4,174	188	94	5.1	140.9	281.7	427.7
	603,549		**165,437**	**11,932**	**8,482**	**200.2**	**8,949.2**	**25,446.6**	**34,596**
US$/km²						**1,210**	**750,000**	**3,000,000**	

Sources: Oblast area: European Space Agency WorldCover 2020 Land Cover, Link. Area exposed to war: Information Management System for Mine Action (IMSMA) database, February 22, 2023. Estimated NTS cancellation of hazardous area percentages and operational costs: Assessment team.

Note: HMA = humanitarian mine action; NTS = nontechnical survey; TS = technical survey. For Chernihivska, Kyivska, Sumska, Zhytomyrska, and Mykolaivska, the determination was that 95 percent of land surveyed through NTS will be cancelled, leaving 5 percent for TS; and then 50 percent of land surveyed through TS is foreseen for the actual clearance. For other oblasts the determination was that 90 percent of land surveyed through NTS will be cancelled, leaving 10 percent for TS; and then 75 percent of land surveyed through TS is foreseen for the actual clearance. Due to limited data on "reduced" area, this methodology has been maintained. However, based on a review informed by actual data from incomplete NTS, the TS numbers have been adjusted for Chernihivska, Kyivska, Sumska, and Mykolaivska to 3 percent and for Kharkivska to 8 percent.

a. The total territory of Ukraine includes the regions of Crimea and Sevastopol, which are temporarily not under government control. Although these regions were not included in the RDNA assessment, their areas are counted toward the total territory of Ukraine.

Table 60. Total recovery and reconstruction needs (US$ million) as of December 31, 2023

Category	Types of activities/investments	Total needs (2024–2033)

Service delivery restoration needs	Nontechnical survey	200.2
	Technical survey	8,949.2
	Mine clearance	25,446.6
Total		**34,596.0**

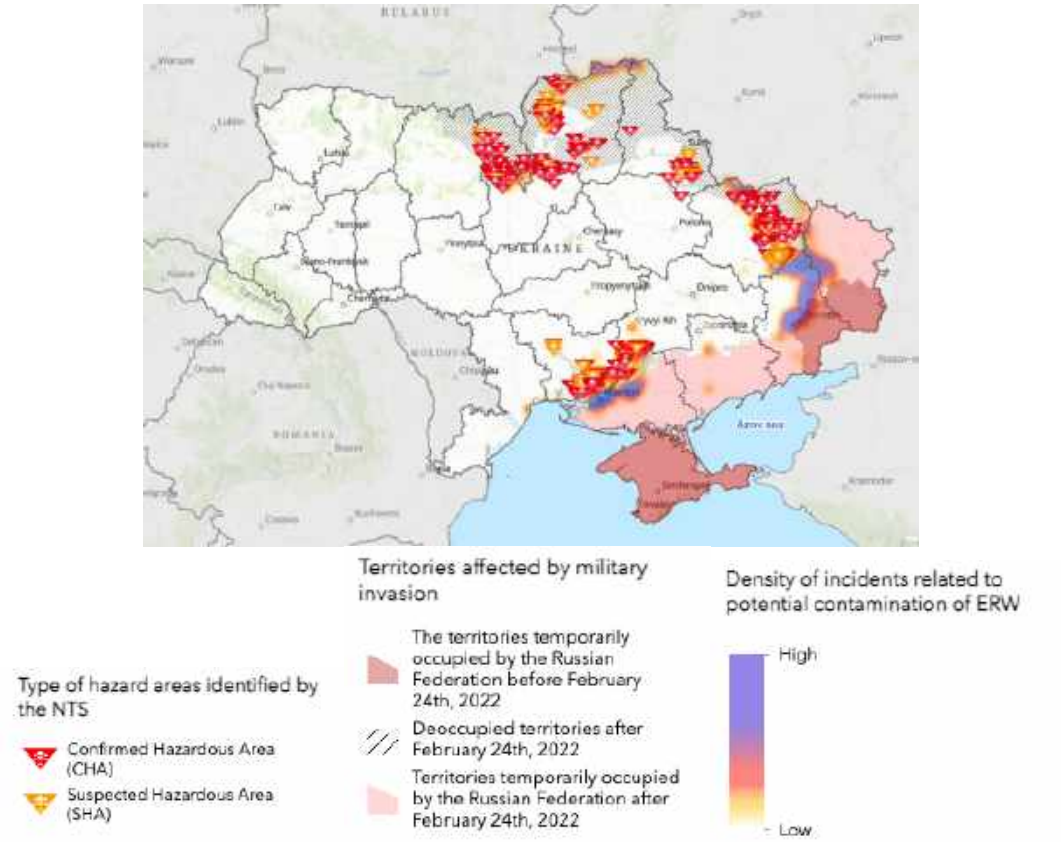
Source: Assessment team.

Table 61. Estimated 2024 recovery and reconstruction priorities (US$ million)

Types of priority activities/investments	Estimated cost
Ministry of Defense: Machinery and equipment for humanitarian demining units; capacity building for a demining equipment certification system	241.8
Ministry of Internal Affairs: Equipping of new and existing pyrotechnic units of SESU, NPU, and NGU with vehicles, demining machines, and equipment	202.10
Funding for nongovernmental mine action operators for NTS[a]	48.4
Total	**492.3**

Source: Coordinated by Ministry of Economy; data provided by Ministries of Defense and Internal Affairs. *Note:* NGU = National Guard of Ukraine; NPU = National Police of Ukraine; NTS = nontechnical survey; SESU = State Emergency Service of Ukraine. a. The calculation represents the estimated cost of nontechnical surveys for 2024. Nongovernmental mine action operators also conduct many other activities, such as mine risk education, victim assistance, etc. The cost of these activities is not included; thus, the indicated number represents only a part of operators' needs.

Figure 26. Reference map and areas exposed to war used as baseline



Source: Ukrainian Mine Action Portal, "Implementation of Humanitarian Demining Activities: Interactive Map" (accessed December 2023), Link. *Note:* ERW = explosive remnants of war; NTS = nontechnical survey.

Annex 1. RDNA3 Team

The RDNA3 team would like to express its deep appreciation to all individuals and organizations who contributed to this assessment (listed below and in Table 62).

From the Government of Ukraine, support was provided under the guidance of Oleksandr Kubrakov, Deputy Prime Minister for Restoration of Ukraine and Minister for Communities, Territories and Infrastructure Development of Ukraine; Anna Yurchenko, Deputy Minister for Communities, Territories and Infrastructure Development of Ukraine for European Integration; Nataliia Kozlovska, Deputy Minister for Communities, Territories and Infrastructure Development of Ukraine, and Olga Zykova, Deputy Minister for Ministry of Finance of Ukraine, with support from the ProSteer Office under the MCTID, and the Reforms Delivery Office of the Cabinet of Ministers of Ukraine (RDO).

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Table 62. RDNA3 Team

Core level
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United Nations: Aliaksei Vavokhin, Hana Daoudi, Ildar Gazizullin, Yaroslava Babych
Human Impact Assessment (social sustainability and inclusion; displacement/fragility, conflict, and violence)

Government: Darina Marchak, Andriy Chesnokov, Tetiana Borshchenko, Serhii Sobchuk, Olena Kolchyk, Anhelina Oliynychenko, Ihor Kostrikov,Bohdan Dzyaman, Anastasia Kozhemyakina, Inna Ivanova, Mykola Boyarkin
World Bank: Erik Johnson, Oleksandra Shatyrko, Farwah Qasim, Charlotte Vuyiswa McClain-Nhlapo, Mirjahon Turdiev
European Union: Martin Schroeder, Oyvind Opland, Mira Didukh, Tetiana Shulha
United Nations: Nynne Warring, Karen Whiting, Michael Newson, Federica Dispenza, Olena Ivanova, Noriko Takahashi, Sabine Freizer, Yaroslava Babych, Julia Broussard, Tetyana Kudina, Clara Bastardes Tort, Tetiana Grytsenko, Ruth Kirui, Theresa Chorbacher, Noushik Etyemezian, Felicia Dahlquist, Swirri Aboringong, Eliza Silvia Galos, Valeriia Taran-Gaiduk, Anastasiia Kolomiiets, Liudmyla Shevtsova, Sofiia Kornieieva, Petra Wenitzky
Housing
Government: Natalia Kozlovska,Nadia Bihun, Svitlana Kashenets, Oleksandr Petroshchuk, Inna Vakhovych, Evhen Plashchenko, Iryna Oleynikova, Yuliya Podyuk, Oleh Topiha, Roman Kropyvnytskyi, Serhii Pakholchuk, Olena Nedyba, Kateryna Samsoniuk, Ihor Korkhovyi, Viktor Martsinyshyn, Olena Osmolovska
World Bank: Debashree Poddar, Pol Nadal, Tengiz Gogotishvili
European Union: Krzysztof Gierulski, Ulyana Rudnytska, Andriy Bandura, Christian Ben Hell
United Nations: Andrri Sphak, Marian Schilperoord, Leandro Jardon, Thamara Fortes, Simon Darke, Arun Narayanan, Olga Liuta
Education and Science
Government: Yevhen Kudriavets, Oleksandra Azarkhina, Khystyna Faichak, Yurii Malashenko, Natalia Viniarchuk, Andrii Bondarenko, Olena Prokopenko
World Bank: Enrique Alasino, James Gresham, Adrien Olszak-Olszewski, Nalin Jena
European Union: Vira Rybak, Fernando Fonseca, Janis Aizsalnieks, Marta Skrzynska
United Nations: Veera Mendonca, Emmanuelle Abrioux, Manan Kotak, Daniel Cuturic, Yayoi Segi-Vltchek, Paul Cruickshank
Health
Government: Petro Yemets, Oleksii Iaremenko, Tetiana Gotsyenko Kateryna Samsoniuk, Natalia Viniarchuk, Inna Harts, Natalia Makhynia, Maryna Petrovska
World Bank: Akiko Kitamura, Jakub Jan Kakietek, Oleksandr Zhynas, Khrystyna Pak, Arthur ten Have, Olena Doroshenko
European Union: Rene Steiner, Mira Didukh, Fernando Fonseca
United Nations: Kateryna Fishchuk, Nataliia Piven, Guillaume Simonian, Aron Aregay, Ihor Perehinets, Kateryna Ryabchiy
Social Protection and Livelihoods
Government: Dariia Marchak, Svitlana Kashenets, Olena Kulchytska, Nina Pidluzhna, Tatiana Borshchenko, Bohdan Matviychuk, Oksana Sulima, Maria Sakuta, Olena Kolchyk, Serhii Sobchuk, Serhii Pakholchuk, Ruslan Prykhodko, Ihor Kostrikov, Inna Hryhorenko, Natalia Viniarchuk, Antonina Mandrikina, Svitlana Afanasieva, Tetiana Berezhna, Kateryna Samsonyuk
World Bank: Roman Zhukovskyi, Anna Baranova, Iryna Kalachova, Liudmyla Cherenko
European Union: Mira Didukh, Fernando Fonseca, Oyvind Opland
United Nations: Chrissey Mueller, Marian Schilperoord, Michael Newson, Noriko Takahashi, David Mosler, Steven Kapsos, Sara Elder, Sergiy Savchuk, Paul von Kittlitz, Carlota Rego, Satinderjit Singh Toor, Frederic Wiesenbach
Culture and Tourism
Government: Taras Shevchenko,Nataliya Voytseshchuk,Kristina Yefimenko, Maryna Matviienko, Natalia Viniarchuk,Kateryna Samsonyuk
World Bank: Jae Kyun Kim,
European Union: Tetiana Shulha
United Nations: Chiara Dezzi Bardeschi, Joe Kallas, Maïssa Acheuk-Youcef, Darya Levchenko
Agriculture
Government: Markiian Dmytrasevych, Oleksandr Krasnolutskyi, Oleksii Pinchuk, Iryna Olinkevych, Kateryna Nazarenko
World Bank: Sergiy Zorya, Oleksandr Muliar, Roman Neyter

European Union: Christian Ben Hell, Philipp Max Lehne
United Nations: Anna Burka, Dragan Angelovski, Elyse Battistella, Kjell Sundin, Aleksa Mirkovic
Irrigation and Water Resources
Government: Markiian Dmytrasevych, Oleksandr Krasnolutskyi, Oleksii Pinchuk, Iryna Olinkevych, Kateryna Nazarenko
World Bank: Ranu Sinha, Femke van Woesik, Frank van Steenbergen, Poolad Karimi, Ana Cecilia Escalera Rodriguez
European Union: Christian Ben Hell, Olga Simak
United Nations: Nicolas Osbert, Anna Burka
Commerce and Industry
Government: Volodymyr Kuzio, Viacheslav Ovechkin, Serhii Hrom, Inna Hryhorenko
World Bank: Alberto Criscuolo, Iryna Piontkivska
European Union: Iryna Hubarets, Stanislav Toshkov, Panagiotis Stamoulis, Janis Aizsalnieks
United Nations: Nicola Cantore, Dorina Nati, Noriko Takahashi, Marco Matteini, Serhiy Porovskyy
Finance and Banking
Government: Nadia Bihun, Andrii Strashnyi, Dmytro Vasylyna, Pervin Dadashova, Inna Hryhorenko, Olena Yaroshchuk
World Bank: Johanna Jaeger, Yevhen Hrebeniuk, Klym Naumenko
European Union: Vitaliya Mudruk, Agne Metelionyte, Marta Sadel
United Nations: n/a
Energy and Extractives
Government: Svitlana Hrynchuk, Nadia Bihun, Roman Andarak, Antonia Volska, Valerii Bezus, Yevhen Nazarenko, Pavlo Tkachenko, Roman Kropyvnytskyi, Nika Cherneha, Yevhen Khovailo, Sofia Kakhnovets. Olexandr Petroschuk, Anton Buiar, Andriy Vedmid, Oleg Pavlenko, Maria Bishko, ykhailo Kopach, Mykola Hevpa, rina Zdorovetska, Lyudmila Prybytkova
World Bank: Silvia Martinez, Koji Nishida, Roman Novikov, Sandu Ghidirim, Wolfhart Pohl
European Union: Torsten Woellert, Ulyana Rudnytska, Andriy Bandura, Ingrid Sager, Krzysztof Gierulski, Marcus Lippold, Janis Aizsalnieks
United Nations: Anna Piwowarska, Tetiana Tavlui, Joseph Busch, Prashant Kumar, Marco Matteini, Serhiy Porovskyy
Transport
Government: Anna Yurchenko, Serhii Derkach, Oleksandra Azarkhina, Oleksii Serheiev, Addrii Danyk, Mykola Yavon, Sofia-Anna Kakhnovets, Kateryna Shtauberg, Yuliana Sidliarova, Valentyna Poliakova, Dmytro Klets, Anna Kopynets, Oleksii Okarsky, Yurii Vaskov, Oleksandr Pavlichenko, Volodymyr Shemaiev, Roman Melnychenko, Anna Mazur, Oleksandr Lemeshkin, Maryna Babii, Yevhen Korniev, Ihor Blinov, Andrii Berbeka, Natalia Pervak, Mykola Melnyk, Olena Starikova, Serhii Vasylyha, Dmytro Mikov, Yevhen Smuryhin, Olena Belska
World Bank: Gregoire F. Gauthier, Yevhen Bulakh, Anna Vazhnenko, Anton Hagen
European Union: Svitlana Didkivska, Daniel Jacques
United Nations: Nicolas Rallo, Mekki Lahlou, Sarantis Poulimenakos, George Paltakis, Elene Aglazde, Arun Narayanan
Telecommunications and Digital
Government: Anatolii Komirnyi, Maksym Paliy, Maksym Polishchuk, Olha Zadorozhna, Nadia Martynova, Yuriy Matsyk, Olena Osmolovska, Olena Yaroshchuk
World Bank: Maria Claudia Pachon, Thomas Chalumeau, Mykhailo Koltsov, Marta Khomyn
European Union: Svitlana Didkivska, Sergiy Ladnyy, Jenni Lundmark, Tanel Tang
United Nations: Tomoyoshi Koume, Volodymyr Brusilovskyi, Elind Sulmina
Water Supply and Sanitation
Government: Oleksandr Butenko, Iryna Perehinchuk, Oleksandr Petroshchuk, Oleksandr Shpytko, Olena Osmolovska, Volodymyr Nahornyi, Oksana Nahorna, Anna Dmytrenko, Artem Ratiev, Olha Mikhailova, Sviatoslav Chubarev, Marharyta Shumeiko, Dmytro Kovalchuk, Oleksandr Okhota
World Bank: Stjepan Gabric, Ivaylo Hristov Kolev

European Union: Olga Simak, Marjukka Porvari
United Nations: Mario Bianco, Nicolas Osbert
Municipal Services
Government: Oleksandr Butenko, Andrii Vedmid, Anton Buiar, Oleksandr Petroshchuk, Olena Osmolovska, Volodymyr Nahornyi, Oksana Nahorna, Anna Dmytrenko, Artem Ratiev, Olha Mikhailova, Marharyta Shumeiko, Dmytro Kovalchuk, Serhii Vlasenko, Natalia Kozlovska, Diana Novikova, Pavlo Krapyvnytskyy, Oleksandr Okhota, Yevhenia Popovych, Oleksandr Horoshko, Anna Dmytrenko, Sviatoslav Chubarev, Marharyta Shumeiko, Dmytro Kovalchuk, Oleksandr Shpytko, Ruslan Metil
World Bank: Debashree Poddar, Oleksandr Dovbnia, Roman Novikov
European Union: Krzysztof Gierulski, Natalia Starostenko, Tomasz Ostropolski
United Nations: Teshager Tefera, Olena Ruditch, Steffen Kaeser, Noriko Takahashi, Alexey Paschenko
Environment, Natural Resource Management, and Forestry
Government: Yevhenii Fedorenko, Olena Kramarenko, Victor Smal, Taras Lymar
World Bank: Arno Behrens, Susanna Dedring, Oksana Rakovych, Myles McDonagh
European Union: Christian Ben Hell, Olga Simak, Marjukka Porvari
United Nations: Mohammad Haris Sherzad, Br Ravishankar, Pier Carlo Sandei, Hassan Partow, Atila Uras
Emergency Response and Civil Protection
Government: Mykhailo Hryb, Ihor Sheliuk, Mykola Fedoseev, Yuliia Nemchenko, Kateryna Samsonyuk, Tetiana Shkolnik, Lobko Anatoliy
World Bank: Zuzana Stanton-Geddes, Krunoslav Katic, Farah Soraya Ridanovic
European Union: Alejandro Eggenschwiler, Stanislav Topolnytskyy
United Nations: n/a
Justice and Public Administration
Government: Yurii Skakalskyi, Nataliia Panchuk, Irina Galivets, Nataliia Zalevska, Olena Kovalenko, Zurab Adeishvili, Oleksii Boniuk, Nadiia Polishchuk, Olena Vysotska
World Bank: Laura Pop, Vitaliy Kasko, Daniela V. Felcman, David Bernstein
European Union: Panagiotis Stamoulis, Clemens Mueller, Manfredas Limantas, Ingrid Sager, Jenny Lundmark, Ekaterina Yakovleva
United Nations: Arezou Farivar, Vitalii Krysko, Kei Fukagawa, Olena Kulikovska
Explosive Hazard Management
Government: Oleksii Serheiev, Addrii Danyk, Ihor Bezkaravainyi, Yurii Koreva, Mykhailo Hryb, Dmytro Panshyn, Nadia Martynova, Yevhenia Bodnia, Viktoria Khomenko, Vladyslava Vyshniakova, Andriy Kondor
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European Union: n/a
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