



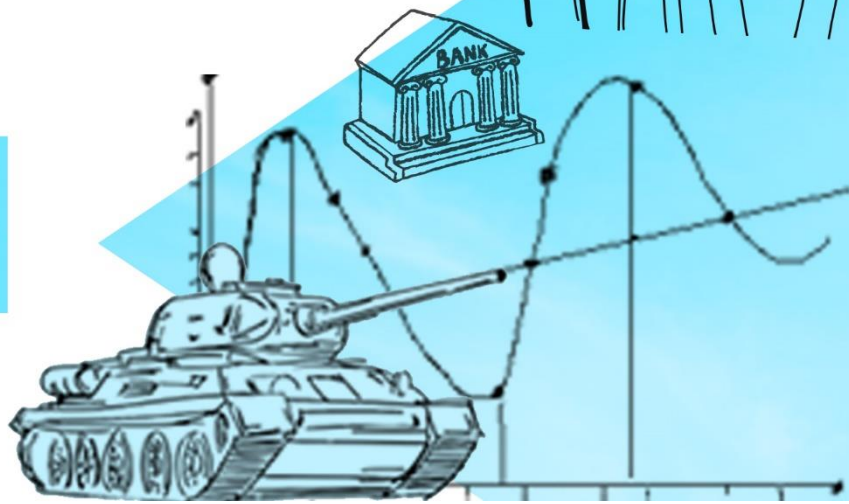
# Price of Conflict: Cost of the Russo-Ukrainian War for Ukraine

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*Research Assistant*



**Working Paper**



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2025

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CENTRE for AEROSPACE & SECURITY STUDIES

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## Abstract

*This study assesses the cost of the Russo-Ukrainian war for Ukraine from a financial and economic perspective. From February 2022 to December 2024, Ukraine's war-related cost is estimated at a minimum of approximately USD 370 billion. This figure includes the costs associated with GDP losses (lower-end estimate), destruction of physical and natural capital, and financial capital losses reflected in declining market capitalisation. To put this into perspective, this is more than the amount (over USD 220 billion) spent on rebuilding Iraq between 2003 and 2014, as well as the amount, i.e., USD 141 billion, spent by the United States government on reconstruction in Afghanistan between 2002 and 2021. The entire cost of Syria's reconstruction was also estimated to be anywhere between USD 250 billion and USD 400 billion in 2021. Second, Ukraine's government spending has surged dramatically, with defence expenditures alone rising by an extraordinary 794.6% in 2022. Although any specific expenditure amount cannot be classified as a direct and immediate cost for the Ukrainian government due to the heavy reliance on external budget financing, including grants and loans, during these years, loans have constituted a larger share of external support, reflecting a cost of war deferred to the future. Beyond the debt-servicing costs, the country faces other long-term financial commitments, including recovery and reconstruction needs (amounting to USD 524 billion from 2025 to 2035), higher defence spending requirements for a prolonged period, and social security needs to support veterans and war-affected citizens. Only through a lasting peace can Ukraine fully unlock its economic potential and rebuild a resilient and growth-driven economy.*

**Keywords:** Cost of War, GDP Losses, Loss of Capital, Defence Expenditure, Recovery and Reconstruction, Debt Servicing Costs, Social Security Costs.

## Introduction

Escalation of the Russo-Ukrainian conflict into a full-scale invasion in February 2022 has been termed the biggest threat to European peace and security since the end of the Cold War.<sup>1</sup> The costs of this war have been inevitably immense—far greater than the visible destruction seen in the media. Loss of loved ones, suffering of the wounded, and psychological scars on survivors are costs that are immeasurable and can never be truly compensated. Multiple cities in Ukraine have been completely destroyed, fertile farmlands have turned into battlegrounds, and a considerable amount of critical infrastructure has been damaged or destroyed.

Beyond that, the war's impact has been felt across the global economy, affecting both developing and developed nations. The war triggered one of the largest commodity shocks, leading to unprecedented price hikes globally. This, coupled with massive disruptions in trade and supply chains, plant stoppages, export controls, and sanctions, has affected producers and consumers worldwide. Not just this, it has also deepened the divide between economic blocs and continues to reshape global trade relationships and the financial system.

It is, however, most crucial, in terms of priority, to examine the price paid by the country that has borne the primary impact. While the greatest cost is always human suffering, evaluating the cost from a financial and economic perspective is also important as it underscores and reinforces why peace is essential. The immense economic and financial burden—manifested in destroyed infrastructure, diminished human capital, lost productivity, soaring public debt, and the diversion of funds from essential sectors such as education and health—reveals the unsustainable nature of prolonged conflicts. The analysis of this burden reinforces the critical importance of peace to foster stability, growth, and a better quality of life for citizens.

Given this, the present study evaluates the cost of the Russo-Ukrainian war for Ukraine. It adapts the framework utilised by the RAND Corporation that broadly looks at the cost of war in terms of losses in GDP, loss of capital, and direct costs of the military campaign.<sup>2</sup> However, rather than focusing on the direct costs of the military

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<sup>1</sup> Jeffrey Mankoff, *Russia's War in Ukraine: Identity, History, and Conflict*, report (Washington, D.C.: Centre for Strategic and International Studies, 2022), <https://www.csis.org/analysis/russias-war-ukraine-identity-history-and-conflict>.

<sup>2</sup> Howard J. Shatz and Clint Reach, *The Cost of the Ukraine War for Russia*, report (California: RAND Corporation, 2023), [https://www.rand.org/pubs/research\\_reports/RRA2421-1.html](https://www.rand.org/pubs/research_reports/RRA2421-1.html).



campaign for Ukraine, the study examines the overall increase in defence spending while not attributing any specific amount or percentage as an immediate cost of war to Ukraine, as a significant portion of the war-related expenditure has also been financed through external donor support. Additionally, the study also considers other factors that pose substantial future budgetary challenges for the government.

The major sources of data include the International Monetary Fund (IMF), the World Bank, Ukrainian state institutions, United Nations (UN) organisations and reputable international newspapers. The study is structured as follows: first, it quantifies the losses in Ukraine's GDP for 2022, 2023, and 2024 resulting from the war. This is followed by an analysis of capital losses, encompassing human, natural, physical, and financial capital. Lastly, it assesses the escalation in spending requirements, both immediate and projected, concluding with a summary of findings.

### **Losses in Economic Output**

A decline in economic output is invariably one of the major consequences of war. The IMF's pre-war estimates projected that Ukraine's real GDP would have grown by 3.6% in 2022, 3.4% in 2023, and 3.8% in 2024 (Table 1). In a counterfactual scenario where the war had not occurred and the status quo had persisted, real GDP could have been expected to follow the projected trajectory. However, the breakout of war led to a significant contraction of Ukraine's economy, with the real GDP contracting by -28.8% compared to the projected 3.6% growth, as the war interfered with many economic activities (Table 1). The components of real GDP, including net exports, domestic demand, investment, and private consumption, all declined (Table 2). Exports declined due to damage to production facilities and transportation networks, including railways and ports. The blockade of the Black Sea, which began with Russia's 'Special Military Operation', also remained in place till July 2022 before the establishment of the Black Sea Grain Initiative. Investment declined as economic uncertainty, geopolitical risks, disruption of supply chains, and damage to critical infrastructure eroded investor confidence. Domestic demand and private consumption declined due to heightened economic uncertainty, population displacement, widespread income losses, and inflation. The only uptick was recorded across public consumption (Table 2) as wartime activities led to a heightened demand for government spending. Based on the study's findings, the invasion is estimated to have cost Ukraine's economy at least UAH 1,766 billion or USD 63 billion in lost GDP in 2022

(Table 1). This is the lower end estimate of the loss, as it does not consider the effect of inflation, suggesting that the loss could be even larger.

In the second year, the economy exhibited resilience and returned to growth, with real GDP increasing by 5.3% compared to the previous year (Table 1). Domestic demand, private consumption, and investment resumed their growth trajectory (Table 2), driven in part by a looser fiscal policy that stimulated consumer and investment demand.<sup>3</sup> Private consumption grew as real household income started increasing again, while private sector investment also showed signs of revival. Net exports, on the other hand, decreased further as domestic production remained restrained and imports increased due to demand revival. The Black Sea Grain Initiative was also terminated in July 2023 after Russia backed out of it.<sup>4</sup> However, the positive real GDP growth in 2023 originated from a significantly lower base due to the sharp contraction in 2022, and the Ukrainian economy continued to operate well below its potential. According to the study's findings, the invasion is estimated to have cost the Ukrainian economy at least UAH 1,752 billion (USD 62 billion) in lost GDP in 2023 (Table 1), representing the lower-bound estimate of the economic loss. Notably, a substantial portion of the 5.3% growth in 2023 was driven by heightened defence and security expenditures rather than by factors typically associated with sustainable long-term growth, such as investment in education and innovation.

In 2024, real GDP grew by 3.5% (Table 1). Revised projections indicated a slower growth rate in investment, demand, and private consumption compared to 2023, while public consumption was expected to decline relative to the previous year (Table 2). By this time, the economy had regained some ground, leading to a moderation in the percentage growth of these indicators relative to 2023. However, decline in net exports was less pronounced than in 2023 (Table 2), likely due to improved agricultural production, stabilisation of seaports, and a recovery in the metallurgical sector, among other factors.<sup>5</sup> In monetary terms, the war is estimated to have cost the Ukrainian economy at least UAH 1,831 billion or USD 65 billion in lost GDP in 2024 (Table 1).

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<sup>3</sup> National Bank of Ukraine, "NBU Comment on Change in Real GDP in 2023," April 1, 2024, <https://bank.gov.ua/en/news/all/komentar-natsionalnogo-banku-schodo-zmini-realnogo-vvp-u-2023-rotsi>.

<sup>4</sup> National Bank of Ukraine, "NBU Comment on Change in Real GDP in 2023."

<sup>5</sup> Oleksii Artemchuk, "Ukraine's Export Earnings Increase by over 13% to US\$41 billion in 2024 – Ministry of Economy," *Ukrainska Pravda*, December 30, 2024, <https://www.pravda.com.ua/eng/news/2024/12/30/7491392/>.

The Ukrainian economy is expected to remain smaller than the pre-war level until the end of the decade.<sup>6</sup>

**Table 1: Losses in Economic Output Due to the War**

Description	2022	2023	2024
<b>Pre-War Projected Real GDP (Percent Change)</b>	3.6	3.4	3.8
<b>(Counterfactual) GDP (UAH Billions) based on Pre-War Growth Projections</b>	5,647	5,839	6,061
<b>Wartime Real GDP (Percent Change)</b>	-28.8	5.3	3.5
<b>GDP (in UAH Billions) based on Actual Growth Rates During Wartime</b>	3,881	4,087	4,230
<b>Lost GDP in UAH Terms (Billions)</b>	1,766	1,752	1,831
<b>Lost GDP in USD Terms (Billions)</b>	63	62	65
<b>Nominal GDP</b>			
<b>2021 (Actual in UAH Billions)</b>	5,451		

**Sources:** IMF Country Report No. 24/366, released in December 2024, for 2022's and 2023's wartime growth estimates,<sup>7</sup> International Monetary Fund, "IMF and Ukrainian Authorities Reach Staff Level Agreement,"<sup>8</sup> and IMF Country Report No. 21/250, released in November 2021, for pre-war figures.<sup>9</sup>

**Note:**

- $GDP_{Year\ 1\ (2022)}\ (\text{billions of UAH}) = \text{Nominal GDP}_{\text{baseline}\ (2021)}\ (\text{billions of UAH}) \times (1 + \text{Growth Rate})$
- $GDP_{Year\ n\ (2023, 2024)}\ (\text{billions of UAH}) = GDP_{Year\ (n-1)}\ (\text{billions of UAH}) \times (1 + \text{Growth Rate})$
- $\text{Lost GDP in UAH terms (billions)} = \text{Counterfactual GDP} - \text{Wartime GDP}$
- $\text{Lost GDP in USD Terms (billions)} = \text{Lost GDP in UAH terms} / \text{January 2022 Exchange Rate of 28.044 UAH to the Dollar}^{10}$

- <sup>6</sup> John E. Herbst, Olga Khakova and Charles Lichfield, *Reconstructing Ukraine at War*, report (Washington, D.C.: Atlantic Council, 2024), <https://www.atlanticcouncil.org/in-depth-research-reports/report/reconstructing-ukraine-at-war-the-journey-to-prosperity-starts-now/>.
- <sup>7</sup> International Monetary Fund, *Sixth Review under the Extended Arrangement under the Extended Fund Facility; Requests for Waivers of Applicability of Performance Criteria; Modification of Performance Criterion; Rephasing of Access; and Financing Assurances Review—Press Release; Staff Report; and Statement by the Alternate Executive Director for Ukraine*, report (Washington, D.C.: International Monetary Fund, 2024), <https://www.imf.org/en/Publications/CR/Issues/2024/12/20/Ukraine-Sixth-Review-Under-the-Extended-Arrangement-Under-the-Extended-Fund-Facility-559954>.
- <sup>8</sup> IMF, "IMF and Ukrainian Authorities Reach Staff Level Agreement on the Seventh Review of the Extended Fund Facility (EFF) Arrangement," press release No. 25/052, February 28, 2025, <https://www.imf.org/en/News/Articles/2025/02/28/pr25052-ukraine-imf-and-ukrainian-authorities-reach-sla-on-the-7th-review-of-the-eff-arrangement>.
- <sup>9</sup> IMF, *First Review under the Stand-By Arrangement; Requests for Extension and Rephasing of Access of the Arrangement; Waivers of Nonobservance of a Performance Criterion, Financing Assurances Review, and Monetary Policy Consultation—Press Release; Staff Report; and Statement by the Executive Director for Ukraine*, report (Washington, D.C.: International Monetary Fund, 2021), <https://www.imf.org/en/Publications/CR/Issues/2021/11/23/Ukraine-First-Review-Under-the-Stand-By-Arrangement-Requests-for-Extension-and-Rephasing-of-509855>.
- <sup>10</sup> Exchange-Rates.org, "US Dollar (USD) to Ukraine Hryvnia (UAH) Exchange Rate History for 2022," November 20, 2024, <https://www.exchange-rates.org/exchange-rate-history/usd-uah-2022>.

**Table 2: Domestic Demand, Private Consumption, Public Consumption, Investment, Net Exports (Percent Change)**

Description	2022	2023	2024
	Wartime Actual	Wartime Actual	Wartime Projected
<b>Domestic Demand</b>	-22.9	13.9	6.5
<b>Private Consumption</b>	-16.8	5.5	3.3
<b>Public Consumption</b>	12.5	2.6	-0.1
<b>Investment</b>	18.6	5.8	3.3
<b>Net Exports</b>	-5.9	-8.6	-2.5

**Sources:** IMF Country Report No. 21/250, released in November 2021, for pre-war figures,<sup>11</sup> and IMF Country Report No. 24/366, released in December 2024, for wartime figures.<sup>12</sup>

## Capital Loss and Damage

The impact of war has extended across all four types of capital—human, physical, natural, and financial.

### Damage to Natural and Physical Capital

The widespread destruction in Ukraine resulting from the conflict has affected nearly every critical sector, highlighting the immense scale of damage (Table 3). As of 31 December 2024, social sectors suffered extensive losses, with housing being particularly impacted. The total damage to housing was estimated at USD 57.6 billion, as more than 2.5 million units were affected. The active shelling of cities with artillery and rockets has caused extensive destruction of housing in urban areas.<sup>13</sup> As shown in Table 3, the education and science sector sustained damages amounting to USD

<sup>11</sup> IMF, *First Review under the Stand-By Arrangement, Requests for Extension and Rephasing of Access of the Arrangement, Waivers of Nonobservance of a Performance Criterion, Financing Assurances Review, and Monetary Policy Consultation—Press Release; Staff Report; and Statement by the Executive Director for Ukraine*, report (Washington, D.C.: International Monetary Fund, 2021).

<sup>12</sup> IMF, *Sixth Review under the Extended Arrangement under the Extended Fund Facility; Requests for Waivers of Applicability of Performance Criteria; Modification of Performance Criterion; Rephasing of Access; and Financing Assurances Review—Press Release; Staff Report; and Statement by the Alternate Executive Director for Ukraine*.

<sup>13</sup> Kyiv School of Economics, *Report on Damages to Infrastructure from the Destruction caused by Russia's Military Aggression against Ukraine as of January 2024*, report (Kyiv: Kyiv School of Economics, 2024), [https://kse.ua/wp-content/uploads/2024/05/Eng\\_01.01.24\\_Damages\\_Report.pdf](https://kse.ua/wp-content/uploads/2024/05/Eng_01.01.24_Damages_Report.pdf).

13.4 billion, while the health sector incurred losses of USD 1.6 billion. In total, 3,373 educational institutions and 1,603 healthcare facilities were damaged or destroyed. The greatest share of damage in the health and education sectors, in terms of the number of affected assets, was concentrated in primary healthcare centres, hospitals, and schools. Meanwhile, damages to social protection and livelihoods were comparatively minor, totaling USD 0.4 billion, whereas the culture and tourism sectors suffered losses amounting to USD 4.1 billion.

The energy sector suffered losses amounting to USD 20.5 billion, while the transport sector incurred USD 36.7 billion in destruction. Telecommunications sustained losses of USD 2.2 billion, whereas water supply and sanitation reported USD 4.6 billion in damages. Municipal services were also affected, with losses totaling USD 2.9 billion (see Table 3).

Among the productive sectors, agriculture endured losses of USD 11.2 billion, while commerce and industry faced an estimated USD 17.5 billion in destruction. Irrigation systems and water resource management sustained USD 0.7 billion in losses. These figures account for assets that were either accidentally damaged or deliberately targeted as part of Russia's attacks.<sup>14</sup> In addition to physical attacks, Russia also reportedly carried out cyber-attacks against critical infrastructure, including communication and transportation networks, power grids, and military and dual-use production facilities.

Cross-cutting sectors were also severely impacted, with the environment and forestry suffering losses of USD 1.7 billion due to extensive burning. The difficulty in extinguishing forest fires in areas of active hostilities further exacerbated the destruction in this sector.<sup>15</sup> Emergency response systems sustained USD 0.4 billion in losses, while justice and public administration also reported USD 0.4 billion in destruction. Altogether, these factors contributed to a total combined loss of USD 176 billion (see Table 3).

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<sup>14</sup> Kyiv School of Economics, *Report on Damages to Infrastructure*, 11.

<sup>15</sup> Kyiv School of Economics, *Report on Damages to Infrastructure*, 13.

**Table 3: Damage by Sector (Billion USD)**

<b>Social Sector</b>	<b>Damage</b>	<b>Infrastructure Sector</b>	<b>Damage</b>
Housing	57.6	Energy	20.5
Education and Science	13.4	Transport	36.7
Health	1.6	Telecom, Digital & Media	2.2
Social Protection and Livelihoods	0.4	Water Supply & Sanitation	4.6
Culture and Tourism	4.1	Municipal Services	2.9
<b>Productive Sectors</b>	<b>Damage</b>	<b>Cross-cutting Sectors</b>	<b>Damage</b>
Agriculture	11.2	Environment and Forestry	1.7
Commerce and Industry	17.5	Emergency Response & Civil Protection	0.4
Irrigation & Water Resource Management	0.7	Justice & Public Administration	0.4
Finance and Banking	0.0	Explosive Hazard Management	0.0
<b>Total (USD Bn)</b>	<b>176</b>		

**Source:** The World Bank, *Ukraine Fourth Rapid Damage and Needs Assessment (RDNA4)*.<sup>16</sup>

**Note:** Damage covers the period between 24 February 2022 and 31 December 2024.

### Human Capital Loss

The full-scale invasion of Ukraine triggered a large-scale outflow of forced migrants from the country, representing a diminished labour force that could have otherwise contributed to the nation's economy. According to the United Nations High Commissioner for Refugees (UNHCR), 6.3 million individual refugees who fled Ukraine since 24 February 2022, were present in European countries as of 19 February 2025, while 0.56 million were present in countries beyond Europe.<sup>17</sup> To put this into

<sup>16</sup> The World Bank, *Ukraine Fourth Rapid Damage and Needs Assessment (RDNA4)*, report (Washington, D.C.: The World Bank, 2025), [https://www.undp.org/sites/g/files/zskgke326/files/2025-02/ukraine\\_fourth\\_rapid\\_damage\\_and\\_needs\\_assessment\\_rdna4\\_february\\_2022\\_december\\_2024.pdf](https://www.undp.org/sites/g/files/zskgke326/files/2025-02/ukraine_fourth_rapid_damage_and_needs_assessment_rdna4_february_2022_december_2024.pdf).

<sup>17</sup> United Nations High Commissioner for Refugees, "Ukraine Refugee Situation," <https://data.unhcr.org/en/situations/ukraine> [Accessed 27 February 2025].

perspective, the cumulative number of these refugees alone is more than two times the population of Ukraine's most populous city, Kyiv.<sup>18</sup> Estimates suggest that the two most represented age groups among forced migrants from Ukraine cover the active labour market, including individuals between 25 and 54 years of age. Most refugees have been found to have a high level of education and pre-war employment, with LinkedIn estimates of tertiary-educated Ukrainian migrants showing a positive correlation with UNHCR's official figures of Ukrainian refugees by host country.<sup>19</sup>

Furthermore, those killed due to the war represent a net loss to the labour force. According to RDNA4, conflict-related violence killed at least 12,456 civilians between 24 February 2022 and 31 December 2024.<sup>20</sup> The Ukrainian authorities have not made the soldier casualty figures public. The *Wall Street Journal*, however, reported that according to a confidential Ukrainian estimate from early 2024, 80,000 Ukrainian troops had been killed on the battlefield.<sup>21</sup> Whatever the actual numbers may be by now, prolonged wars inevitably lead to high numbers of casualties. The RDNA4 also reported that conflict-related violence injured at least 28,000 individuals in Ukraine between 24 February 2022 and 31 December 2024.<sup>22</sup> Likewise, the *Wall Street Journal* reported that according to a confidential Ukrainian estimate from early 2024, 400,000 soldiers had been wounded.<sup>23</sup>

Individuals with disabilities resulting from war-related injuries may encounter varying degrees of difficulty in rejoining the workforce. While some may successfully reintegrate, many struggle with reduced productivity. Those with life-altering disabilities may also require one or more family members to assume full-time caregiving responsibilities, necessitating their withdrawal from the labour market. Even when caregivers re-enter the workforce, they may face challenges that limit their full professional potential. Moreover, the war's impact on mental health has significant

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<sup>18</sup> Worldometer, "Ukraine Population (2024)," <https://www.worldometers.info/world-population/ukraine-population/> [Accessed 1 December 2024].

<sup>19</sup> Margherita Berte, Daniela Paolotti and Kyriaki Kalimeri, "From Ukraine to the World: Using LinkedIn Data to Monitor Professional Migration from Ukraine," *GoodIT '23: Proceedings of the 2023 ACM Conference on Information Technology for Social Good (2023)*: 213-222, <https://dl.acm.org/doi/10.1145/3582515.3609537#>.

<sup>20</sup> The World Bank, *Ukraine Fourth Rapid Damage and Needs Assessment (RDNA4)*.

<sup>21</sup> Bojan Pancevski, "One Million Are Now Dead or Injured in the Russia-Ukraine War," *Wall Street Journal*, September 17, 2024, <https://www.wsj.com/world/one-million-are-now-dead-or-injured-in-the-russia-ukraine-war-b09d04e5>.

<sup>22</sup> The World Bank, *Ukraine Fourth Rapid Damage and Needs Assessment (RDNA4)*.

<sup>23</sup> Pancevski, "One Million Are Now Dead or Injured in the Russia-Ukraine War."

implications for labour force productivity. According to the Ukrainian Health Ministry, the number of patients seeking mental health care in Ukraine doubled in 2023 alone, underscoring the widespread psychological toll of the conflict.<sup>24</sup>

Additionally, a shift to military expenditures at the expense of funding for human development represents an opportunity cost that can have implications for labour productivity in the medium and long run. The study's findings suggest that the government could have allocated an additional amount of more than UAH 400 million, UAH 550 million, and UAH 650 million to the education sector in 2022, 2023, and 2024, respectively, had there not been a war (Table 4). However, while these numbers provide reasonable estimates, these should not be taken as exact, as the precise spending levels might have varied. Other war-related factors that could affect labour productivity in the medium to long run include disruption in learning due to damage or destruction of schools (3,373 educational institutions destroyed or damaged as of 31 December 2024),<sup>25</sup> losses in workers' skills, psychological impact of the war on children, and lower household investment in education due to reductions in income and wealth.

**Table 4: Difference between Anticipated and Actual Education Expenditure (2022, 2023, 2024)**

Description	2022	2023	2024
Anticipated Education Expenditure Under Pre-War Conditions (UAH Billion)	69.85	76.43	83.63
Actual Wartime Education Expenditure (UAH Billion)	58.51	60.45	64.74
Difference between Anticipated and Actual Education Expenditure (UAH Billion)	11.34	15.98	18.89
Difference between Anticipated and Actual Education Expenditure (Million USD)	404.36	569.82	673.58
Education Expenditure 2021 (UAH Billion)	63.84		
Education Expenditure Growth Rate (Average of last 3 Years Pre-War) (%)	9.42		

**Source:** Official State Budget Web Portal of the Ministry of Finance of Ukraine.<sup>26</sup>

**Note:**

- Anticipated Expenditure<sub>2022</sub> = Actual Expenditure<sub>2021</sub> × (1+Average Growth Rate)
- Anticipated Expenditure<sub>n</sub> = Anticipated Expenditure<sub>n-1</sub> × (1+Average Growth Rate)
- Exchange rate = January 2022 Exchange Rate of 28.044 UAH to the Dollar

<sup>24</sup> Vitaly Shevchenko, "Our Husbands Didn't Go to War for Ukraine so We Can Sit Around Crying," *BBC News*, September 20, 2024, <https://www.bbc.com/news/articles/c20mn1z3vm6o.amp>.

<sup>25</sup> The World Bank, *Ukraine Fourth Rapid Damage and Needs Assessment (RDNA4)*.

<sup>26</sup> The World Bank, *Ukraine Fourth Rapid Damage and Needs Assessment (RDNA4)*.

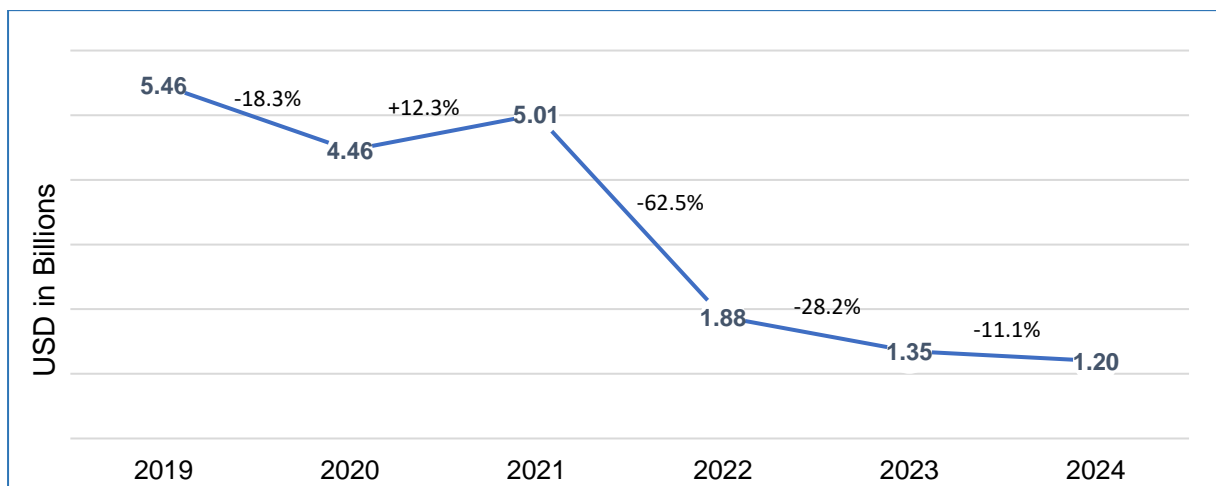


## Financial Capital Loss

Market capitalisation, referring to the value of a country's publicly traded companies, is a commonly employed lens to assess financial capital.<sup>27</sup> In 2020, Ukraine's market capitalisation decreased by -18.3%, erasing approximately USD 1.0 billion in value (Figure 1), reflecting the initial economic uncertainty triggered by the COVID-19's onset. The following year, 2021, saw a partial recovery with a 12.3% gain, adding USD 0.55 billion in market value. In 2022, however, market capitalisation plummeted by a staggering -62.4%, destroying USD 3.13 billion in value, reflecting, among other things, disruption in business operations, loss of investor confidence, market uncertainty, and capital flight resulting from the war. Business confidence in Ukraine decreased drastically to 72.6 points in the second quarter of 2022 from 108.2 points in the first quarter.<sup>28</sup>

In 2023, market capitalisation continued to decline, falling another -28.5% and resulting in an additional USD 0.53 billion loss. Market capitalisation dropped by a further -11.1% in 2024, wiping out USD 0.15 billion in value. These ongoing losses underscore the profound and enduring financial damage inflicted by the war.

**Figure 1: Change in Market Capitalisation (2019-24)**



**Source:** Statista, "Stocks - Ukraine," Accessed November 25, 2024, <https://www.statista.com/outlook/fmo/stocks/ukraine>.

<sup>27</sup> Shatz and Reach, *The Cost of the Ukraine War for Russia*, 10-12.

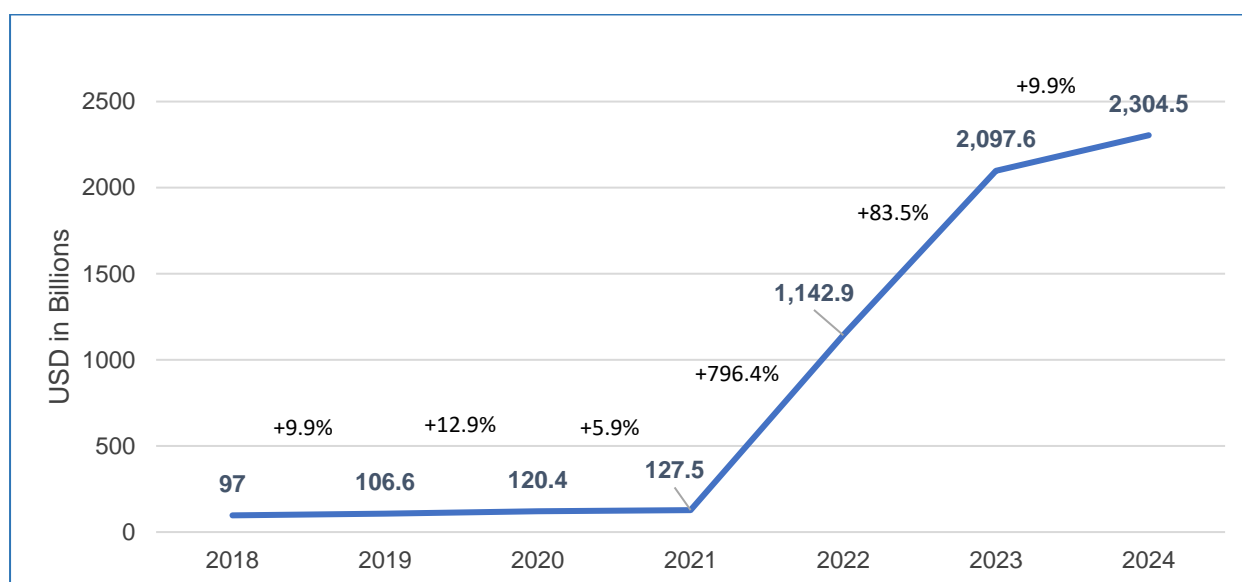
<sup>28</sup> Trading Economics, "Ukraine Business Confidence," Accessed January 13, 2025, <https://tradingeconomics.com/ukraine/business-confidence>.

## Surge in Spending Requirements

### Defence Expenditure

Following the onset of the war, the Ukrainian government's defence spending requirements surged exponentially. Figure 2 illustrates the percentage change in defence spending from 2018 to 2024, indicating a tremendous surge in defence spending in 2022 compared to 2021. The spending covers expenses for a wide range of purposes, from purchasing defence equipment and constructing military engineering and fortification structures to training personnel and troops and providing one-time financial assistance to the families of fallen servicemen.

**Figure 2: Percentage Change in Defence Spending (2018-24)**



**Source:** Official State Budget Web Portal of the Ministry of Finance of Ukraine.<sup>29</sup>

According to the study's findings, peacetime defence allocations would have remained below UAH 170 billion annually over the three-year period (Table 5). In contrast, defence expenditures incurred due to the war far exceeded this baseline. Compared to pre-war conditions, the government's additional defence spending amounted to approximately UAH 1,003 billion (USD 36 billion) in 2022, UAH 1,944 billion (USD 69 billion) in 2023, and UAH 2,135 billion (USD 76 billion) in 2024 (Table 5). These figures should not be taken as exact as defence spending levels might have varied, and certain other expenditures linked to the military, including pensions and spending on paramilitary and border guards, appear elsewhere in the budget. Still, these offer reasonable estimates highlighting the immense cost of warfighting.

<sup>29</sup> Ministry of Finance of Ukraine, "Official State Budget Web Portal."

**Table 5: Avoidable Defence Spending Had There Been No War**

Description	2022	2023	2024
<b>Anticipated Defence Spending Under Pre-War Conditions (UAH Billion)</b>	139.91	153.76	168.98
<b>Actual Wartime Defence Spending (UAH Billion)</b>	1,142.87	2,097.62	2,304.47
<b>Avoidable Defence Spending Had There Been No War (UAH Billion)</b>	1,003	1,944	2,135
<b>Avoidable Defence Spending Had There Been No War (USD Billion)</b>	36	69	76
<b>Defence Spending 2021 (UAH Billions)</b>	127.53		
<b>Defence Expenditure Growth Rate (Average of Last 3 Years Pre-War) (%)</b>	9.58		

**Source:** Official State Budget Web Portal of the Ministry of Finance of Ukraine.<sup>30</sup>

**Note:**

- Anticipated Spending<sub>2022</sub> = Actual Spending<sub>2021</sub> × (1+Average Growth Rate)
- Anticipated Spending<sub>n</sub> = Anticipated Spending<sub>n-1</sub> × (1+Average Growth Rate)
- Avoidable Defence Spending = Actual/Planned Wartime Defence Spending - Anticipated Defence Spending Under Pre-War Conditions
- Exchange Rate = January 2022 Exchange Rate of 28.044 UAH to the Dollar

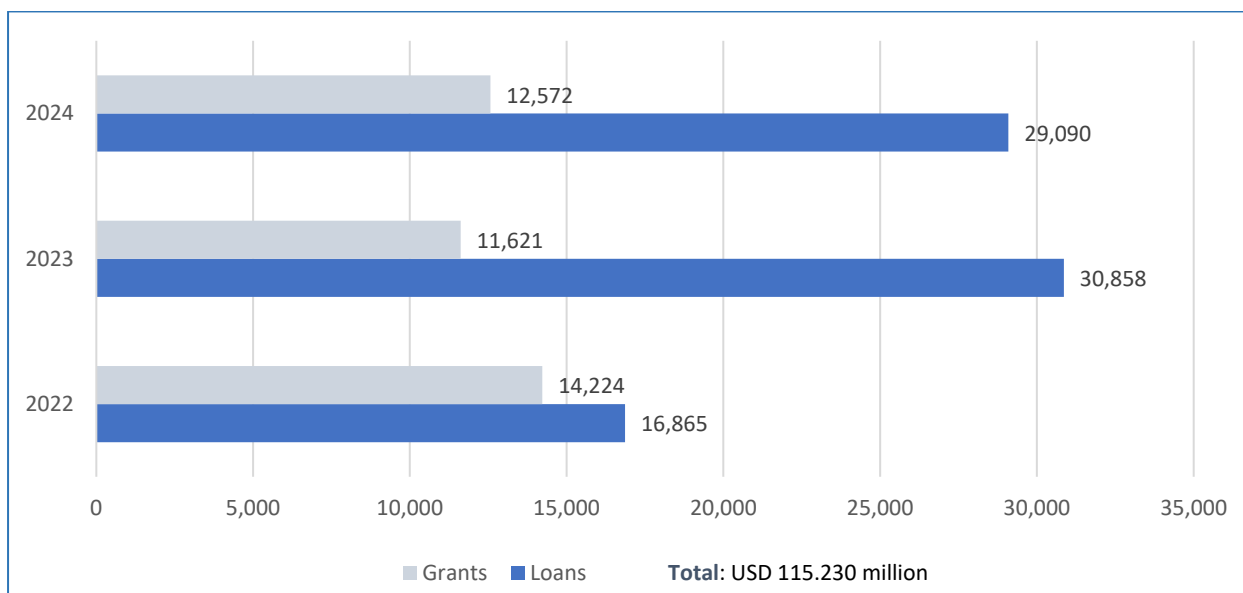
However, it is worth noting that all war expenses during these years cannot be treated as direct and immediate costs for the Ukrainian government, as external support remained a significant source of financing. Figure 3 illustrates the received budget financing to Ukraine, amounting to USD 115.23 billion between February 2022 and 31 December 2024. In the short run, external support helped alleviate pressure on Ukraine's domestic financing mechanisms and mitigate inflationary pressures while ensuring the continuity of essential public services and maintaining broader economic stability. In this context, in August 2024, Ukraine's Finance Minister called on Western allies to accelerate disbursement of the USD 50 billion loan, claiming that the delays were contributing to a widening budget deficit.<sup>31</sup> However, while non-repayable support, including grants, does not impose a direct financial burden on the government, external support in the form of loans constitutes a cost of war deferred to the future. Figure 3 illustrates that the larger share of the external budgetary

<sup>30</sup> Ministry of Finance of Ukraine, "Official State Budget Web Portal."

<sup>31</sup> Isobel Koshiw and Alice Hancock, "Kyiv Blames US Aid Delays for Widening \$43bn Deficit," *Financial Times*, August 10, 2024, <https://www.ft.com/content/5a1a4a1e-9e1b-4ea6-b2f0-257651bac62f>.

support has been disbursed in the form of loans, amounting to USD 76.81 billion between February 2022 and 31 December 2024, resulting in long-term repayment obligations.

**Figure 3: Received External Budget Financing since February 2022 (USD in Millions)**



**Source:** Ministry of Finance of Ukraine.<sup>32</sup>

**Note:** As of 31.12.24.

The higher defence spending requirements will continue to pressurise the state budget for a prolonged period. The lost and damaged equipment will require replacement, while munitions, fuel reserves, and other logistics being depleted rapidly due to the war will require major funding for replenishment. At this stage, the major financial burden will fall on the government in the form of current and future obligations, as donor support in non-repayable assistance will play a diminished role.

### Recovery and Reconstruction Needs

Ukraine’s post-war recovery and reconstruction needs have been projected at USD 524 billion over ten years, i.e., 2025-2035 (Table 6)—approximately 2.8 times the estimated nominal GDP of Ukraine for 2024. Reconstruction needs are approximately aligned with the extent of the damage sustained. The highest needs are across the housing sector, followed by transport, energy, commerce and industry, agriculture, social protection and livelihoods, and explosive hazard management. The most urgent

<sup>32</sup> Ministry of Finance of Ukraine, “Received External Budget Financing since February 2022 (General Fund),” Accessed February 13, 2025, [https://mof.gov.ua/storage/files/Financing\\_en\\_v31122024%20\(2\).pdf](https://mof.gov.ua/storage/files/Financing_en_v31122024%20(2).pdf).



priorities identified by line ministries require more than USD 17 billion in public funding in 2025, with particular focus on the social sector, infrastructure reconstruction, demining and civil protection.<sup>33</sup> The current recovery and reconstruction activities are a multi-source effort, with contributions from international assistance and the country's resources. As such, they cannot be entirely treated as a part of direct cost for the Ukrainian government.

However, while the reconstruction plans for Ukraine emphasise that assistance, at least in the initial stages of reconstruction, should be in grants, they also mention that an indefinite extension of assistance would undermine Ukraine's ability to achieve self-sufficiency.<sup>34</sup> This suggests that the government may also have to face the formidable challenge of covering the costs of reconstruction needs over the long run.

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<sup>33</sup> The World Bank, *Ukraine Fourth Rapid Damage and Needs Assessment (RDNA4)*.

<sup>34</sup> Dave Skidmore, David Wessel and Elijah Asdourian, "Financing and Governing the Recovery, Reconstruction, and Modernization of Ukraine," *Brookings*, November 3, 2022, <https://www.brookings.edu/articles/financing-and-governing-the-recovery-reconstruction-and-modernization-of-ukraine/>.

**Table 6: Total Needs by Sector (USD Billion)**

<b>Social Sector</b>	<b>Needs</b>	<b>Infrastructure Sector</b>	<b>Needs</b>
Housing	83.7	Energy	67.8
Education and Science	32.9	Transport	77.5
Health	19.4	Telecom, Digital & Media	5.9
Social Protection and Livelihoods	38.9	Water Supply & Sanitation	11.3
Culture and Tourism	10.5	Municipal Services	6.9
<b>Productive Sectors</b>	<b>Needs</b>	<b>Cross-cutting Sectors</b>	<b>Needs</b>
Agriculture	55.5	Environment & Forestry	2.8
Commerce and Industry	64.4	Emergency Response & Civil Protection	2.4
Irrigation & Water Resource Management	10.9	Justice & Public Administration	0.9
Finance and Banking	2.1	Explosive Hazard Management	29.8
<b>Total (USD Bn)</b>	<b>524</b>		

**Source:** The World Bank, *Ukraine Fourth Rapid Damage and Needs Assessment (RDNA4)*.<sup>35</sup>

**Note:** Needs cover the period 2025-2035.

## Debt Servicing

Before the onset of the war, Ukraine's general government gross debt (as a percent of GDP) was recorded at 48.9% in 2021. The IMF's pre-war forecasts set the general government gross debt at 49.6% in 2022, 46.8% in 2023, and 44.6% in 2024.<sup>36</sup> The war caused a sharp increase in the country's debt levels. In 2022 and 2023, the general government gross debt was recorded at 77.77% and 82.3%, respectively, and reached 95.6% in 2024 (Figure 4).<sup>37</sup>

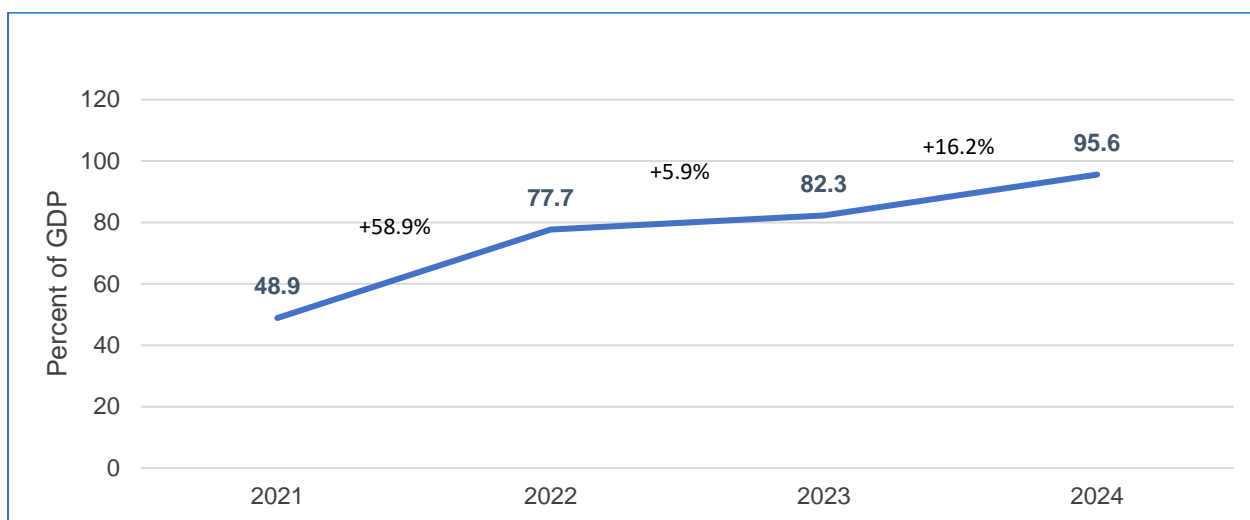
<sup>35</sup> The World Bank, *Ukraine Fourth Rapid Damage and Needs Assessment (RDNA4)*.

<sup>36</sup> IMF, *First Review under the Stand-By Arrangement*.

<sup>37</sup> International Monetary Fund, "General Government Gross Debt," Accessed February 13, 2025, [https://www.imf.org/external/datamapper/GGXWDG\\_NGDP@WEO/UKR?zoom=UKR&highlight=UKR](https://www.imf.org/external/datamapper/GGXWDG_NGDP@WEO/UKR?zoom=UKR&highlight=UKR).

On 20 July 2022, the Group of Creditors of Ukraine from G7 countries and Paris Club members announced the suspension of interest payments and principal amount on bilateral debts from 1 August 2022 until the end of 2023.<sup>38</sup> The agreement was later extended to the end of March 2027.<sup>39</sup> Ukraine’s Western creditors also signed a debt suspension agreement through March 2027 in late December.<sup>40</sup> While such factors have helped soften the government’s future debt servicing burden to some extent, the rapid accumulation of debt will significantly inflate debt servicing costs in the long run, consuming a substantial portion of the government’s resources.

**Figure 4: Ukraine General Government Debt (2021-24)**



**Source:** International Monetary Fund.<sup>41</sup>

### Spending on Social Security

The state’s budgetary spending on social security has increased following the war but has not burgeoned.<sup>42</sup> However, the impact of the war on social security needs may likely become more visible when the focus shifts away from the immediate defence needs. Every additional month of the war translates into a higher number of veterans

<sup>38</sup> Ministry of Finance of Ukraine, “International Partners of Ukraine in the G7 and Paris Club Announce Suspension of Debt Service Payments for Ukraine,” Accessed December 4, 2024, [https://mof.gov.ua/en/news/international\\_partners\\_of\\_ukraine\\_in\\_the\\_g7\\_and\\_paris\\_club\\_announce\\_suspension\\_of\\_debt\\_service\\_payments\\_for\\_ukraine-3532](https://mof.gov.ua/en/news/international_partners_of_ukraine_in_the_g7_and_paris_club_announce_suspension_of_debt_service_payments_for_ukraine-3532).

<sup>39</sup> Federal Ministry of Finance, “Statements by the Group of Creditors of Ukraine,” Government of Germany, August 9, 2024, <https://www.bundesfinanzministerium.de/Content/EN/Standardartikel/Topics/Europe/War-in-Ukraine/debt-service-suspension-for-ukraine.html>.

<sup>40</sup> Rodrigo Campos and Marc Jones, “Ukraine Western Creditors Sign Debt Suspension Agreement through March 2027-Finance Ministry,” *Reuters*, December 22, 2023, <https://www.reuters.com/world/europe/ukraine-western-creditors-sign-debt-suspension-agreement-through-march-2027-2023-12-21/>.

<sup>41</sup> International Monetary Fund, “General Government Gross Debt.”

<sup>42</sup> Ministry of Finance of Ukraine, “Official State Budget Web Portal.”

disabled due to the war, deceased servicemen, and civilians killed or wounded due to the military conflict.

In just a year and a half after the beginning of the war, persons with disabilities in Ukraine increased by 300,000, with war-related casualties being the major underlying factor.<sup>43</sup> Many in Ukraine have sustained complex and long-term injuries due to the war, including, but not limited to, spinal cord injuries and traumatic brain injuries.<sup>44</sup> According to investigations, Russia frequently applies high-energy weapons such as cruise missiles, artillery shells, and drones, as well as the expansive bullets prohibited under International Humanitarian Law (IHL), which cause gunshot injuries that present a major clinical challenge in most cases and can lead to enduring effects over time.<sup>45</sup> Many of these individuals may become dependent on state support in one form or another for the rest of their lives decades after the war.

The Ukrainian social security system includes disability pension based on the assessed disability group. A disability caregiver allowance is also paid to an unpaid caregiver of a person with severe disability. Moreover, family members of deceased insured individuals are provided survivor pensions. These pensions are calculated as a percentage of the old-age pension the deceased would have received, with amounts varying based on the number of eligible survivors.<sup>46</sup> These benefits represent long-term annual costs to be paid for many years with automatic cost-of-living adjustments.

## Conclusion

According to the study's findings, from February 2022 to December 2024, Ukraine's war-related cost is estimated at a minimum of approximately USD 370 billion. This figure includes costs associated with GDP losses (lower-end estimate), destruction of physical and natural capital, and financial capital losses reflected in declining market capitalisation. To put this into perspective, this is more than the amount (over USD

<sup>43</sup> The World Bank, *Ukraine Rapid Damage and Needs Assessment (RDNA3)*, report (Washington, D.C.: The World Bank, 2024), <https://documents1.worldbank.org/curated/en/099021324115085807/pdf/P1801741bea12c012189ca16d95d8c2556a.pdf>, 180.

<sup>44</sup> ReliefWeb, "Providing Holistic Care to Ukraine's War Injured," November 18, 2024, <https://reliefweb.int/report/ukraine/providing-holistic-care-ukraines-war-injured>.

<sup>45</sup> Igor Lurin, Oleksandr Burianov, Yurii Yarmolyuk, Yurii Klapchuk, Serhii Derkach, Maksym Gorobeiko and Andrii Dinets, "Management of Severe Defects of Humerus in Combat Patients Injured in Russo-Ukrainian War," *Injury* 55, no. 2 (2024): 111280, <https://doi.org/10.1016/j.injury.2023.111280>.

<sup>46</sup> Social Security, Office of Retirement and Disability Policy, "Old Age, Disability, and Survivors," Accessed December 6, 2024, <https://www.ssa.gov/policy/docs/progdesc/ssptw/2018-2019/europe/ukraine.html>.



220 billion) spent on rebuilding Iraq between 2003 and 2014,<sup>47</sup> as well as the amount, i.e., USD 141 billion, spent by the US government on reconstruction in Afghanistan between 2002 and 2021.<sup>48</sup> As another case in point, the entire cost of Syria's reconstruction was estimated to be anywhere between USD 250 billion and USD 400 billion in 2021.<sup>49</sup>

Beyond the immediate destruction of physical and natural capital, losses in GDP, and loss of financial capital, the ramifications extend to other areas, such as lost human capital. The war's financial burden has also manifested in the form of a surge in spending requirements, primarily defence expenditures. While non-repayable external budget financing, including grants, to support defence spending requirements does not impose a direct financial burden on the government, external financing in the form of loans constitutes a cost of war deferred to the future. The larger share of the external support has been disbursed in the form of loans, amounting to USD 76.81 billion between February 2022 and end December 2024. Besides the debt servicing burden, reconstruction efforts, persistently higher defence spending requirements, and the need to support veterans and other war victims will demand a sustained and significant investment over the long term. Opportunity costs—what could have been achieved had resources been directed toward development—represent another layer of losses that will continue to impact future generations.

The international community must adopt a coordinated and forward-thinking approach to support Ukraine's recovery and long-term stability. A shared international platform involving states, multilateral institutions, Non-Governmental Organisations (NGOs), and private sector actors could help facilitate comprehensive planning, streamline funding, minimise overlap of efforts, maximise resource efficiency, and create opportunities to introduce innovative solutions for Ukraine's recovery efforts. Debt restructuring should be facilitated through global platforms such as the Paris Club to ease Ukraine's financial strain. Moreover, the Ukrainian government should tap into

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<sup>47</sup> Hideki Matsunaga, "Getting reconstruction right and wrong: Lessons from Iraq," *Brookings*, October 1, 2019, <https://www.brookings.edu/articles/getting-reconstruction-right-and-wrong-lessons-from-iraq/>.

<sup>48</sup> U.S. Government Accountability Office, "U.S. Spending on Afghanistan Reconstruction at Risk of Fraud, Waste, and Abuse," February 9, 2021, <https://www.gao.gov/products/gao-21-32r#:~:text=Fast%20Facts,or%20abuse%20of%20these%20funds.>

<sup>49</sup> Majdolin Hasan, "Investigating What Assad's Regime Did with Money to Rebuild Syria," *Global Investigative Journalism Network*, September 21, 2021, <https://gijn.org/stories/investigating-what-assads-regime-did-with-the-money-meant-to-rebuild-syria/>.

innovative financing strategies/mechanisms, such as green bonds (bonds used to raise funds for environmentally friendly projects), Public-Private Partnerships (PPPs), or diaspora bonds (bonds targeted at diaspora to raise funds for national development) to mobilise resources effectively. Regional development banks such as the European Bank for Reconstruction and Development (EBRD) can be engaged to finance sector-specific projects.

Additionally, cities, municipalities, and local actors should be empowered to lead recovery efforts, ensuring that solutions are tailored to the needs of specific regions. An independent reconstruction authority can be established to oversee projects and ensure transparency. Above all, it is crucial to recognise that establishing durable peace in Ukraine is not just a necessity but also a prerequisite for meaningful recovery and reconstruction. By fostering dialogue and cooperation, the international community can lay the foundation for a sustainable and enduring peace in the country. Wars, by their very nature, not only disrupt economies and devastate societies but also erode the very principles of progress and humanity. A concerted global effort that prioritises diplomacy, economic resilience and institutional rebuilding is essential to mitigate the consequences of this conflict.



## ABOUT THE AUTHOR

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