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The Impact of the Destruction of Ukraine's Industrial Infrastructure on International Cooperation and Investment Attractiveness

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ABSTRACT

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Full-scale military aggression against Ukraine has led to widespread destruction of industrial and critical infrastructure, causing profound economic and geopolitical consequences. The damage affects key sectors such as energy, metallurgy, machine building, and logistics. The destruction of production chains and energy systems complicates international cooperation, reduces the flow of foreign direct investment, and increases risks for business. The purpose of this article is to systematize the impact of industrial infrastructure destruction on international cooperation and investment attractiveness, analyze the mechanisms of influence, and offer recommendations to mitigate the negative consequences. The study uses methods such as content analysis and synthesis of secondary data, as well as logical and economic analysis of channels of influence (physical, financial, reputational, and institutional mechanisms). Public estimates of direct losses are used for quantitative illustration. In these conditions, the study of the mechanisms of the impact of destruction on international cooperation and the investment attractiveness of Ukraine is particularly relevant for the development of recovery policies and the formation of new economic development strategies. The analysis showed that the destruction of industrial infrastructure has a systemic impact on the economy through financial, institutional, and political-security channels. Increased risks and reduced confidence among foreign partners have temporarily limited investment flows. Direct losses in the energy sector (USD 14.6 billion), the metallurgical complex (USD 4.346 billion), and the machine-building sector (USD 1.183 billion) were assessed. The impact of the destruction of industrial and critical infrastructure on the country's investment attractiveness has been studied. The dynamics of investment volumes were analyzed. Directions for minimizing the consequences of the destruction of industrial infrastructure and increasing Ukraine's investment attractiveness were proposed: financial and investment instruments, restoration of critical infrastructure nodes, institutional and legal reforms, and innovative and "green" approaches. It has been established that the destruction of industrial infrastructure, despite significant short-term losses, can become a catalyst for long-term structural transformation of Ukraine's economy. Effective implementation of recovery mechanisms – through institutional reforms, reconstruction of critical facilities, increased transparency, and stimulation of private investment – will not only restore lost potential but also strengthen international cooperation and increase the country's investment attractiveness and competitiveness in the post-conflict period.

KEYWORDS

infrastructure, investment, industry, military aggression, destruction, international cooperation, losses.



Вплив руйнування промислової інфраструктури України на міжнародне співробітництво та інвестиційну привабливість

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СТАТТЯ

АНОТАЦІЯ

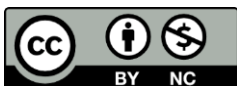
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Повномасштабна військова агресія проти України призвела до масштабних руйнувань промислової та критичної інфраструктури, що спричинило глибокі економічні та геополітичні наслідки. Збитки охоплюють ключові галузі – енергетику, металургію, машинобудування та логістику. Руйнування виробничих ланцюжків та енергетичних систем ускладнює міжнародне співробітництво, знижує потік прямих іноземних інвестицій та посилює ризики для бізнесу. Метою статті є систематизація впливу руйнувань промислової інфраструктури на міжнародне співробітництво та інвестиційну привабливість, проаналізувати механізми впливу і запропонувати рекомендації для пом'якшення негативних наслідків. У дослідженні використано такі методи як контент-аналіз і синтез вторинних даних, а також логіко-економічний аналіз каналів впливу (фізичні, фінансові, репутаційні та інституційні механізми). Для кількісної ілюстрації використані публічні оцінки прямих збитків. У цих умовах дослідження механізмів впливу руйнувань на міжнародне співробітництво та інвестиційну привабливість України набуває особливої актуальності для розробки політики відновлення та формування нових стратегій економічного розвитку. Проведений аналіз показав, що руйнація промислової інфраструктури надає системний вплив на економіку через фінансові, інституційні та політико-безпекові канали. Збільшення ризиків та зниження довіри іноземних партнерів тимчасово обмежили інвестиційні потоки. Здійснено оцінку прямих втрат енергетики (14,6 млрд дол. США), в металургійному комплексі (4,346 млн. дол. США), в машинобудівному секторі (1,183 млрд дол. США). Досліджено вплив руйнування промислової та критичної інфраструктури на інвестиційну привабливість країни. Проаналізовано динаміку обсягів інвестицій. Запропоновано напрямки для мінімізації наслідків руйнувань промислової інфраструктури та підвищення інвестиційної привабливості України: фінансово-інвестиційні інструменти, відновлення критичних інфраструктурних вузлів, інституційні та правові реформи, інноваційні та «зелені» підходи. Встановлено, що руйнація промислової інфраструктури, незважаючи на значні короткострокові втрати, може стати каталізатором довгострокової структурної трансформації економіки України. Ефективна реалізація механізмів відновлення – через інституційні реформи, реконструкцію критичних об'єктів, підвищення прозорості та стимулювання приватних інвестицій – дозволить не лише відновити втрачений потенціал, а й посилити міжнародне співробітництво, підвищити інвестиційну привабливість та конкурентоспроможність країни у постконфліктний період.

КЛЮЧОВІ СЛОВА

інфраструктура, інвестування, промисловість, військова агресія, руйнування, міжнародне співробітництво, збитки.

1. Introduction

Full-scale military aggression has led to large-scale destruction of industrial facilities, transport and energy infrastructure of Ukraine, which has far-reaching economic, social and geopolitical consequences.

The destruction of production facilities and logistics routes caused a disruption in supply chains, limited the country's export potential and significantly complicated Ukraine's integration into global production and distribution networks [13]. The loss of access to the seaports of the Black Sea and the temporary closure of sea trade routes led to a reduction in export volumes, which negatively affected the receipt of foreign exchange earnings and investment activity.

Strikes on thermal power plants, hydroelectric power plants and power lines exacerbated the problem on the industrial front, leading to interruptions in the supply of electricity and an increase in the cost of production. As a result, there is a significant drop in production efficiency, rising unemployment and a decline in business activity at the regional level, which only increases the country's economic vulnerability and creates additional risks for external partners who consider Ukraine as a potential investment client.

The destruction of the material, technical base and institutional conditions for the functioning of industry affected international cooperation. Many representatives of foreign businesses were forced to stop or revise investment programs, move factories out of the conflict zone, or change their operating strategies in conditions of unprecedented uncertainty, adapting them to unusual realities [11]. At the same time, those international institutions with which Ukraine has worked before are gradually shifting the emphasis from humanitarian aid to investing in future reconstruction and restructuring to meet new realities [3; 12].

The destruction of Ukraine's infrastructure has a multifaceted effect that affects not only the country's internal economic realities, but also foreign trade relations, regional markets, and even the international security system. This problem requires a comprehensive scientific understanding, since not only the economic stability of the country, but also the ability to integrate into the world economy under new conditions depend on the effectiveness of future reconstruction.

2. Literature Review

V. Antonenko et al. [2] carried out a thorough analysis of scientific approaches to the development of investments in force majeure conditions caused by the war and the destruction of the economy. A. Slavkova and D. Kolisnyk [9] came to the conclusion that the hostilities have significantly worsened the investment climate in Ukraine, at the same time they considered the government's measures aimed at restoring investor confidence and increasing the investment attractiveness of the state in the context of the conflict. D. Zatonatskyi and S. Leonov [16] developed proposals for the implementation of public-private partnership (PPP), determining the importance of each of its components for the effective implementation of such projects, which is of particular relevance for Ukraine at the stage of post-war reconstruction of critical infrastructure. O. Myhal et al. [7] studied the investment potential of Ukraine in the post-war period in the context of European integration processes, focusing on determining strategic directions of development, forming mechanisms for stimulating investments and ensuring sustainable economic growth. L. Vankovych and I. Yamshchikov [14] analyzed the impact of a full-scale invasion on the key macroeconomic indicators of the country and the state of the energy infrastructure. A. Magomedov [5] determined the priority of short-term restoration of transport and social infrastructure facilities, and also emphasized the need to develop and implement long-term programs and projects for the reconstruction and integration of Ukrainian infrastructure into the European transport network. A. Abullaieva et al. [1] analyzed the key factors influencing the attraction of foreign direct investment, in particular military risks, legal and macroeconomic instability, as well as large-scale destruction of infrastructure. O. Markushyn [6] revealed the contribution of the international community to the restoration of urban infrastructure damaged as a result of Russia's full-scale aggression and presented successful examples of cooperation between public authorities and international partners in attracting investments at the local level.

3. Problem Statement

The purpose of this study is to systematize the impact of industrial infrastructure destruction on international cooperation and investment attractiveness, to analyze the mechanisms of influence and offer recommendations for mitigating negative consequences.

4. Methods and Materials

The study is based on a comprehensive analysis of data and developments at both international and national levels. The study was based on publications and analytical reports from international organizations such as the World Bank, the European Bank for Reconstruction and Development (EBRD), the United Nations Industrial Development Organization (UNIDO), the Organization for Economic Cooperation and Development (OECD) and the United Nations (UN). These sources provided assessments of the scale of destruction, economic growth and opportunities for rebuilding Ukraine's industrial infrastructure in the context of global cooperation and attracting investments.

In the course of the study, the results of national analytical reports prepared by the Kyiv School of Economics (KSE Institute) and specialized scientific institutes of Ukraine were used, which analyzed the structure of losses at the industry level, assessed investment risks and institutional barriers to investment for foreign partners.

The publications of Ukrainian academics published in 2020–2025 were used to substantiate the theoretical part related to the impact of the destruction of industrial infrastructure on the economy, including various types of risks – physical, financial, reputational and institutional. This approach made it possible to identify the relationships between destruction, the dynamics of foreign investments, the opportunities for cooperation between international donors and the formation of Ukraine's investment image in the global market.

For quantitative illustration and comparison of data, the study used public assessments of direct damage and recovery needs published within the framework of the Rapid Damage and Needs Assessment (RDNA), KSE Institute, UNIDO and EBRD initiatives. This provided a reliable empirical basis for analyzing the consequences of destruction and developing proposals for mechanisms to mitigate their impact on international cooperation and investment attractiveness of the country.

5. Results and Discussion

The destruction of industrial infrastructure, which damages not only production capacities, but also destroys the balance of the entire economic system of the country. Destruction or damage to industrial enterprises turns into a disconnection of horizontal and vertical production links, leads to a reduction in exports and imports, as well as to the loss of technological competencies. The significance of the problems is not limited to the manufacturing sector: transport corridors, energy networks, telecommunications and financial services are being destroyed – the basis for international trade and investment interaction.

The logistics infrastructure, consisting of railway junctions, seaports, highways, is of critical importance for the export of metallurgical, agricultural and machine-building products. The destruction of this infrastructure caused delays in deliveries and increased transport costs, and posed a threat to the competitiveness of Ukrainian goods in the international market. The decrease in the stability of the energy system and its termination caused breakdowns of productive processes, which further complicated the implementation of foreign trade contracts.

Supporting Ukraine's industrial potential always requires a coordinated and unified approach. In this regard, synergy between the efforts of state institutions, international donors, private investors and financial institutions plays an extremely important role. The effectiveness of this process depends largely on a number of key aspects:

- objective risk assessment, which includes an accurate description of the hazards inherent in the safety and stability of the business environment;
- the availability of guarantees for the preservation of capital, including the formation of political and military insurance of investments;
- introduction of long-term forecasts that give an idea of the acceptable profitability of projects, as well as the possibility of reviving regional industrial clusters.

One of the main prerequisites for attracting foreign capital is the development of a significant and constantly updated regulatory framework, the development of public-private partnership mechanisms, as well as ensuring proper control over the use of assistance from international donors. It is on such ideas that the concept of the “recovery economy” is based, where the direction of investment flows is provided not only by the restoration activities of abandoned infrastructure facilities, but also by medium-term renovation, as well as the digitalization of production and integration into international value chains.

The process of restoring industrial infrastructure is not only a technical task for reconstruction, but also a strategic tool for the formation of a new model of economic growth that combines sustainability, innovation and international competitiveness.

According to the World Bank and the European Bank for Reconstruction and Development [3; 15], the total damage caused to trade and industry facilities in the period from February 2022 to December 31, 2024 is estimated at USD 17.5 billion, and the total recovery and reconstruction needs are USD 64.4 billion, calculated for 10 years. Key industrial centers – Donbas, Dnipropetrovsk, Zaporizhzhia, Kharkiv and Mykolaiv regions, where metallurgy, mechanical engineering, chemical industry and energy are concentrated, were especially affected. At the same time, about a third of the total amount of losses falls on the industrial sector and energy infrastructure, which ensures the functioning of production chains and international trade.

The country’s energy system suffered enormous losses: dozens of thermal and hydroelectric power plants, substations and main power lines were damaged or completely destroyed (Table 1). Large-scale attacks on electricity generation and distribution facilities led to temporary blackouts, disruption of industrial production and a decrease in the export potential of the energy sector. Disruption of the energy balance has a multiplier effect on all sectors of the economy, as industry remains one of the largest consumers of electricity [3; 4].

Table 1. Estimation of direct energy losses

Types of losses	Loss estimate (billion USD)
Electric power industry, in particular:	12.0
Power generation	9.0
Power transmission	2.2
Power distribution	0.8
Oil and gas sector, in particular:	1.3
Gas transportation	0.8
Gas distribution	0.2
Storage of oil and petroleum products	0.3
Coal mining industry	0.4
Heating	1.0
Total	14.7

Source: Developed by the authors based on the data given in [3; 4].

The analysis of the presented data demonstrates large-scale direct losses suffered by the energy sector of Ukraine as a result of military aggression. Total losses are estimated at USD 14.7 billion. This makes the energy sector one of the most affected and strategically vulnerable sectors of the national economy. The destruction of energy infrastructure is systemic, affecting all key segments – from electricity generation and transmission to coal mining, gas transportation and heat supply.

The largest losses fall on the electric power industry, the total loss of which is estimated at USD 12.1 billion. Losses in the amount of USD 9 billion. Electricity production facilities – power plants, thermal power plants, substations, which were hit hard. The loss of energy resources led to significant interruptions in energy supply, increased dependence on backup schemes and the attraction of international technical assistance. Damage to electric transport infrastructure is estimated at USD 2.2 billion, which reflects the losses of power lines and transformer substations. Another USD 0.8 billion goes to distribution, making it difficult for both industrial and residential consumers to access energy.

In the oil and gas sector, losses are estimated at almost USD 1.2 billion, including 0.8 billion – massive strikes on gas pipelines, 0.2 billion – losses on distribution networks and 0.3 billion – shortages at fuel and lubricant storage facilities. This leads to a disruption in the stability of energy supplies and an increase in the vulnerability of the country’s fuel market.

Additional losses were recorded in coal mining (USD 0.4 billion) and heat supply (USD 1.0 billion). Damage to mines, boiler houses and heating networks complicates energy security and creates additional social risks in winter.

In general, the data in the table show that destruction in the energy sector covers different segments and constitutes a chain reaction. Losses in one link (generation or transmission of electricity) cause complications in other links of the energy system, which increases the overall losses. Large-scale restoration of energy infrastructure requires capital expenditures, international cooperation and understanding of modern technologies aimed at increasing the resilience and decentralization of the energy system.

Direct financial losses in the amount of USD 14.7 billion show not only the physical destruction, but also the challenges of the strategic plan facing the Ukrainian energy sector: the transition to a more sustainable, decentralized and “green” model of energy supply, in line with the requirements, ensuring energy security and investment attractiveness in the post-conflict period.

Serious destruction is also observed in the metallurgical complex, which historically provided a significant part of the country’s foreign exchange earnings. The loss of production facilities in Mariupol, Zaporizhzhia and Kryvyi Rih caused a reduction in steel production and exports of rolled metal products (Table 2). This, in turn, has affected employment, taxation, and related industries, including transportation, logistics, and equipment maintenance [4].

Table 2. The most affected metallurgical assets

Enterprise	Status	Estimated losses (million USD)
MMK them. Ilyich	Destroyed	2,385
Azovstal	Destroyed	1,777
Mykolaiv Alumina Plant	Damaged	97
Dnipropetsstal	Damaged	87
Total		4,346

Source: Developed by the authors based on the data given in [4].

The analyzed data reflect the scale of destruction in one of the basic sectors of Ukrainian industry – the metallurgical complex, which traditionally plays a key role in the structure of national exports and the formation of foreign exchange earnings. The total volume of estimated losses of the largest enterprises in the industry is about USD 4,346 million. This makes metallurgy one of the most affected industries in Ukraine.

The most significant losses were suffered by the Ilyich Iron and Steel Works of Mariupol and the Azovstal Iron and Steel Works, which were completely destroyed as a result of hostilities. Losses of MMK. Ilyich is estimated at USD 2.385 billion, and Azovstal – USD 1.777 billion. These enterprises were strategic assets of the Metinvest Group and provided a significant part of Ukrainian exports of steel, rolled products and metallurgical products. Their destruction led to the loss of a significant share of the country’s production capacities, the termination of metallurgical exports from the Azov region and the rupture of technological chains between mining and processing enterprises.

In addition, the Mykolaiv Alumina Plant and Dnipropetsstal, which suffered damage (losses – USD 97 million and USD 87 million, respectively), suffered significant restrictions in production activities. These enterprises specialize in the production of high-tech materials and alloys that are needed by metallurgy, mechanical engineering, and energy, and the loss of these opportunities, on the one hand, reduces Ukrainian opportunities to meet domestic needs and export products with high added value.

In its totality, the destruction of metallurgical capacities has a multi-level economic effect. Firstly, it directly collapses the industry and export and production capabilities of the country. Secondly, it undermines the sustainability of the related sectors of transport, energy, and mechanical engineering. Thirdly, it creates severe socio-economic consequences for industrial settlements dependent on the metallurgical industry.

In total, more than USD 4.3 billion losses are a clear reflection of the challenges faced by the recovery process of the metallurgical sector. Its renewal requires large-scale international investments, technological modernization, transition to environmentally sustainable production, which will compensate not only for lost capacities, but also to become a modern, competitive, integrated into global supply chains industry, and add significant variations in its new production plan.

The machine-building sector suffered not only from direct destruction of factories, but also from the rupture of technological chains (Table 3). Many enterprises lost access to suppliers of raw materials, components and markets, which led to a massive curtailment of production or its evacuation to safer regions of the country. In the face of war risks and disrupted logistics, enterprises are forced to switch to localized production models, which reduces efficiency and competitiveness in foreign markets.

Table 3. The greatest damage to the machine-building sector

Enterprise	Status	Estimated losses (billion USD)
Motor Sich	Damaged	450
Zorya – Mashproekt	Destroyed	264
Ukrainian Energy Machines	Damaged	181
Novokramatorsk Machine-Building Plant	Damaged	113
Energomashspetsstal	Damaged	76
Kakhovka Electric Welding Equipment Plant	Destroyed	57
Kharkiv Tractor Plant	Destroyed	42
Total		1,183

Source: Developed by the authors based on the data given in [3; 4].

The analysis of the presented data indicates large-scale losses suffered by the machine-building complex of Ukraine as a result of armed aggression. The total amount of estimated losses of the largest enterprises in the industry is about USD 1.183 billion. This indicates a deep crisis in one of the key sectors of the national industry.

The most affected were enterprises that provided strategic directions of the economy – aircraft and energy engineering. Thus, PJSC “Motor Sich” (Zaporizhzhia), which is one of the leading manufacturers of aircraft engines, estimates losses at USD 450 million, while the company received significant damage, which significantly limited its production capabilities. Complete destruction of the enterprise “Zorya – Mashproekt” (Mykolaiv) with losses of USD 264 million dealt a serious blow to the energy engineering and export potential of Ukraine, as the plant provided the production of turbines for energy systems and shipbuilding.

Significant losses were also recorded in JSC “Ukrainian Energy Machines” – USD 181 million, Novokramatorsk Machine-Building Plant – USD 113 million, PJSC “Energomashspetsstal” – USD 76 million. Their damage negatively affected the production chains of the metallurgical and energy complexes.

Special attention should be paid to the cases of complete destruction of production facilities: Kakhovka Electric Welding Equipment Plant (losses – USD 57 million) and Kharkiv Tractor Plant (losses – USD 42 million). These enterprises had a high socio-economic significance, providing employment in the regions and the production of equipment for the agricultural and industrial sectors. Their destruction created additional challenges for the domestic market of equipment and supplies to related industries.

In general, these tables reflect the structural losses of Ukrainian mechanical engineering caused by both direct physical destruction and secondary effects – loss of human resources, technological lines and export contracts. The most vulnerable were enterprises located in the eastern and southern regions of the country, which confirms the territorial concentration of risks.

Destruction in the machine-building sector not only causes direct economic damage, but also significantly limits Ukraine’s ability to restore production and export potential without large-scale international support, investment and technological re-equipment.

The destruction of port infrastructure – in particular, facilities in Mariupol, Berdiansk and partially in Odesa – increased logistical restrictions and led to the reorientation of export flows through railway and road routes in the western direction (Fig. 1). However, the capacity of these routes is limited, and transportation costs have increased several times. This makes the export of Ukrainian industrial products less profitable and reduces its attractiveness for international counterparties.

The vast majority of the country’s seaports have either completely stopped working or are operating with significant restrictions. The main reasons are occupation, blockade, mine danger and the threat of piracy from Russia.

The southern and eastern ports (Mariupol, Berdyansk, Kherson, Skadovsk, Sevastopol, Kerch, Feodosia, etc.) are either occupied or blocked. This means the loss of key export routes, along which a significant part of Ukraine’s foreign trade flows passed before the war, primarily grain, metal, coal and

industrial equipment. The ports of Odesa, Chornomorsk and Pivdenny have partially resumed work thanks to international agreements on the “grain corridor”, but they continue to function under constant threats and restrictions. Danube ports (Reni, Izmail, Ust-Dunaisky) have become a temporary alternative for export. They now operate as logistics hubs, but their throughput capacity is much lower than that of the major seaports of the Black Sea.

ПОРТИ УКРАЇНИ ПІД ЧАС ВІЙНИ

TOP
LEAD

Українські порти майже не працюють через окупацію, блокаду, мінну небезпеку та небезпеку піратства з боку росії.



Figure 1. Status of Ukrainian ports

Source: [3].

Thus, the destruction and blockade of Ukraine’s port infrastructure have a powerful negative impact on international cooperation and the investment attractiveness of the country: investor confidence decreases due to the instability of transport routes and security threats; limited exports and imports, which leads to a drop in foreign exchange earnings and a deterioration of the trade balance; international partners are forced to look for alternative supply routes, which makes cooperation with Ukraine less profitable and predictable; logistics costs are increasing, especially for agricultural and metallurgical exports; The recovery of industry is slowing down, since some of the raw materials and equipment cannot be delivered by sea. In general, the destruction of Ukraine’s port and industrial infrastructure not only weakened the country’s economic position in the world, but also temporarily deprived it of the opportunity to integrate into international production and logistics chains, which reduced the investment attractiveness of the state and the pace of its post-war recovery.

The destruction of the energy, transport and manufacturing sectors has created a kind of “systemic collapse” effect of industrial infrastructure, in which disruptions in the field (for example, the power system) automatically interfere with the work of other industries. This interdependence underscores the critical importance of comprehensive restoration, which takes into account individual objects and entire institutional and technological structures of the industrial environment.

The above-mentioned destruction of Ukraine’s industry has a noticeable impact on international cooperation, posing new challenges to the industry and the country in the field of foreign economic activity, investment flows and integration into global value chains. Deficiencies in the operation of industrial zones, ports and transport cause cargo delays, increased transaction costs and reduced trust of foreign consultants. As a rule, foreign enterprises are forced to adjust the planning of their presence in the Ukrainian market: some temporarily slow down their activities, others move their production to safer regions, and still others completely withdraw from certain industries.

At the same time, the destruction of critical infrastructure increases the level of uncertainty, which negatively affects the investment attractiveness of the country. Investors not only assess risks in terms

of direct financial damage, but also take into account long-term interruptions, lack of protection of facilities and instability of the legislative field. Reducing such risks is a specific mechanism of support from international financial institutions and donors. These are multi-donor funds, and insurance of political and military risks, and credit lines with state guarantees.

The need for coordination between the state, international organizations and private investors is practically natural against the background of these challenges. Only such a combination will make it possible to cope with the task of restoring critical infrastructure nodes, ensuring transparency of investment flows, introducing corporate governance and modernizing the military-industrial complex. The successful implementation of such steps opens up chances not only for new foreign investments, but also for integration into international production chains, for strengthening Ukraine's economic position on a global scale.

The impact of destruction in the industrial sector on international economic interaction is systemic and multi-level – this means on the economic, logistic, financial, institutional and legal structures of external interaction, thereby forming the potential for long-term transformation and modernization of Ukrainian industrial and other structures in the post-conflict period.

The existing destruction of industrial and critical infrastructure significantly affects the investment climate of the country, directly and multi-level. Firstly, it increases financial risks for foreign investors, because mine mines, a broken logistics management apparatus, fragmented energy supply systems make investments less predictable and increase the likelihood of risk (loss). International financial institutions, the EBRD and the World Bank emphasize that private investors demand significant risk premiums or state guarantees so that they are much closer than now to the implementation of similar investments on the territory of Ukraine. [3; 4].

In some cases, the impact of destruction on infrastructure hinders the fulfillment of foreign economic obligations, which worsens the reputation of Ukrainian partners. Disruptions in the supply of imported components, delays in the supply of finished products and insufficient predictability of production and transport cycles slow down the desire of international companies to create partnerships, i.e., reduce investment attractiveness. There is a risk of some investors leaving the Ukrainian market, a decrease in the volume of foreign direct investment.

There is a political and security channel of influence, since the uncertainty and instability of the military situation inside the country are now becoming an important factor in making a decision on investment. The blurring of borders creates problems in ensuring compliance with foreign economic contracts. Many mechanisms that competitors do not have suddenly become necessary here: multilateral donor programs, political risk insurance, incentive participation in reconstruction projects. As a result, foreign direct investment in an unstable and politically unpredictable situation becomes riskier, and Ukraine's instability causes even greater uncertainty.

On the other hand, the destruction of industrial infrastructure provides new sources of investment inflows – in the segment of reconstruction and modernization. Interest among numerous international donors and private investors should focus not on the state, but on the future, hence new digital and green technologies, adapted industrial solutions and investments in energy and logistics hubs (Table 4). Such projects allow combining financial returns with increasing the resilience of the economy and strengthening Ukraine's international reputation as a state capable of structural transformation in the post-conflict period.

Table 4. Dynamics of investment volumes

Indicator	2022	2023	2024	Changes from 2022 to 2024
Capital investments, thousand UAH	409,659,973	627,280,766	743,016,315	333,356,342
Foreign direct investment in Ukraine, million USD	531.4	4,484.7	3,551.1	3,019.7

Source: Developed by the authors according to [8; 10].

The analysis of the dynamics of Ukraine's investment indicators for 2022–2024 indicates a gradual recovery of investment activity after a significant decline caused by the full-scale war and the destruction of industrial infrastructure.

The indicator of capital investments demonstrates a stable positive dynamic: from UAH 409.7 billion in 2022 to UAH 743.0 billion in 2024, which is an increase of UAH 333.4 billion or approximately 81%. This growth reflects the intensification of the processes of restoring production capacities,

infrastructure facilities and housing construction, as well as the gradual recovery of domestic demand and business confidence in economic stability. The increase in capital investments also indicates the increased participation of the state, international donors and private investors in projects for reconstruction and modernization of the economy.

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The dynamics of foreign direct investment (FDI) is characterized by a more volatile trajectory. In 2022, against the backdrop of an intensifying military crisis and sharply increased risks, the volume of FDI decreased to USD 531.4 million, reflecting a significant decline in investment activity of foreign firms. In 2023, FDI doubled due to the partial stabilization of the situation, the implementation of international support programs, and the growing interest of investors in those recovery projects that have already been implemented. However, in 2024, there is a decrease in FDI volumes to USD 3551.1 million, which is caused by the high sensitivity of investors to risks related to security and institutional uncertainty. Despite this, the total growth of FDI for the analyzed period amounted to USD 3019.7 million, which confirms the trend of gradual restoration of confidence of international partners and the return of investment activity to the Ukrainian market.

These data indicate the two-tier nature of investment recovery: domestic investment grows more steadily due to the mobilization of national resources and government programs, while foreign investment is highly dependent on the level of security, transparency of regulation and international guarantees. Gradual growth of investments for 2023–2024 indicates a gradual improvement in economic resilience and opens up prospects for investment in the post-crisis period.

Ukraine demonstrates low investment attractiveness in the short term due to significant uncertainty and destruction, but in the medium and long term, its investment attractiveness may increase significantly with the implementation of unified strategies for rehabilitation and further modernization of the economy, effective coordination of external finances and attraction of international assistance, as well as with the implementation of modern standards of corporate and public administration. The destruction of the Ukrainian economy is a complex phenomenon, that is, risks are simultaneously received and opportunities open up for the transition to updated locations for integration strategies into global production and investment chains.

However, in the process of minimizing the destruction of Ukrainian industrial infrastructure and raising the country's investment attractiveness, complex and coordinated mechanisms planned in four main areas are key:

1. Financial and investment measures. International financial institutions and donors create opportunities for investors to protect themselves from potential risk. These are, for example, multi-donor funds, state and international guarantees, political and military risk insurance, preferential credit lines for strategic industries. These tools allow private companies to participate in recovery with minimization of monetary losses, stimulate the flow of foreign direct investment in strategically important sectors of the economy.

2. Restoration of vulnerable critical infrastructure. The urgent restoration of energy infrastructure nodes, ports, railways, key transport corridors and production sites leads to the restoration of supply chains and the normalization of production processes. This allows you to reduce the supply gap, reduce transaction costs and restore the confidence of domestic and international consumers.

3. Institutional and legal reforms. Transparency of government procedures, protection of property rights, implementation of corporate governance practices and digitalization of public services are the main factors that ensure investor confidence. The presence of an effective regulatory framework and monitoring tools in the field of the use of international assistance makes it possible to establish long-term mutually beneficial relations with foreign corporations.

4. Innovative and “green” approaches. If the reconstruction and modernization of industrial facilities are carried out using digital technologies, energy-saving developments and the latest “green” technologies, this, in addition to the struggle for the stability of the Ukrainian economy, opens up the boundaries for new investments. Such projects not only increase the resilience of the economy, but also provide a competitive advantage in global markets, motivating investors focused on ESG standards and long-term business sustainability.

Summing up all these factors helps not only to compensate for the losses incurred by Ukraine as a result of the destruction of the industrial complex, but also creates space for the structural development of the economy, technological transformation and its integral involvement in global production and international financial flows.

6. Conclusions

The destruction of Ukraine’s industrial infrastructure has a systemic impact on the country’s economy, international cooperation and investment attractiveness. Losses in energy, metallurgy, mechanical engineering and logistics lead to the disruption of production and logistics chains, increased financial, political and legal risks for foreign investors, as well as a decrease in the confidence of international partners.

The main channels of impact of destruction on international cooperation are highlighted:

- functional – interruptions in logistics, energy supply and production processes;
- financial – increased risks and requirements for risk premiums;
- political and security – the uncertainty of the military and political situation, the need for guarantees for foreign investment.

Despite the short-term negative consequences, the disruption creates a unique potential for structural modernization of the economy: the introduction of green and digital technologies, the reconstruction of critical infrastructure nodes and integration into new global production chains. These processes can increase the long-term investment attractiveness and sustainability of the Ukrainian economy.

A number of recommendations have been proposed to mitigate the negative impact:

- creation of multi-donor funds, insurance of political and military risks, as well as provision of state and international guarantees for investors;
- priority restoration of critical infrastructure – energy systems, ports, transport corridors and industrial facilities;
- transparent legal and institutional reforms to protect property rights and increase investor confidence;
- introduction of innovative and “green” technologies in the reconstruction of industry to increase its sustainability and competitiveness.

The combination of all these mechanisms will allow the country not only to compensate for economic losses suffered as a result of the destruction of industrial infrastructure, but also to create favorable conditions for long-term economic transformation, sustainable international partnership and attracting sustainable flows of foreign investment. Thus, the restoration of industrial potential can be a strategic tool to increase economic stability and Ukraine’s international position in the post-conflict.

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