



ORIGINAL

International investment as a factor of recovery and development of the post-war economy of Ukraine

La inversión internacional como factor de recuperación y desarrollo de la economía de posguerra de Ucrania

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Cite as: Yemets V, Petrunenko I, Frolov A, Orel Y, Naumov M. International investment as a factor of recovery and development of the post-war economy of Ukraine. Salud, Ciencia y Tecnología - Serie de Conferencias. 2025; 4:690. <https://doi.org/10.56294/sctconf2025690>

Submitted: 23-02-2024

Revised: 24-06-2024

Accepted: 29-10-2024

Published: 01-01-2025

Editor: Dr. William Castillo-González 

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ABSTRACT

Introduction: the relevance of the topic of studying international investment in the context of Ukraine’s post-war reconstruction is due to the need for rapid economic recovery and sustainable development of our country in the context of global economic instability.

Method: two types of research methods were used to achieve the main goal: general scientific and unique scientific methods. General scientific methods include analysis, synthesis, explanation and generalisation.

Results: as a result of the study, the structure and dynamics of international investment in Ukraine’s economy are examined. It is noted that the war in Ukraine has led to significant changes in the direction of international investment, with a decrease in investments in the agricultural sector and a reorientation towards public administration, defence and industry. These changes reflect the need to adapt investment strategies to new conditions and challenges. It is important to continue developing digital technologies and innovative industries, as they have significant potential for long-term economic growth.

Conclusions: the study concludes that international investment is a critical factor in recovering and developing Ukraine’s post-war economy. They not only provide additional resources for the implementation of infrastructure and economic projects, but also facilitate technology transfer and the introduction of best management practices. New financial instruments, such as green bonds, will play a unique role in attracting international investments to the sustainable recovery of Ukraine. Ukraine needs to develop the green bond market to diversify investors and attract green investors.

Keywords: Economic Recovery; Post-War Ukraine; Investment Attractiveness; Infrastructure Rehabilitation; Green Bond Market; Green Investors.

RESUMEN

Introducción: la relevancia del tema de estudio de la inversión internacional en el contexto de la reconstrucción de posguerra de Ucrania se debe a la necesidad de una rápida recuperación económica y un desarrollo sostenible de nuestro país en el contexto de la inestabilidad económica mundial.

Método: se utilizaron dos tipos de métodos de investigación para lograr el objetivo principal: métodos científicos generales y métodos científicos únicos. Los métodos científicos generales incluyen análisis,

síntesis, explicación y generalización.

Resultados: como resultado del estudio, se examina la estructura y la dinámica de la inversión internacional en la economía de Ucrania. Se observa que la guerra en Ucrania ha provocado cambios significativos en la dirección de la inversión internacional, con una disminución de las inversiones en el sector agrícola y una reorientación hacia la administración pública, la defensa y la industria. Estos cambios reflejan la necesidad de adaptar las estrategias de inversión a las nuevas condiciones y desafíos. Es importante seguir desarrollando tecnologías digitales e industrias innovadoras, ya que tienen un potencial significativo para el crecimiento económico a largo plazo.

Conclusiones: el estudio concluye que la inversión internacional es un factor crítico para la recuperación y el desarrollo de la economía de posguerra de Ucrania. No sólo proporciona recursos adicionales para la implementación de proyectos económicos y de infraestructura, sino que también facilita la transferencia de tecnología y la introducción de mejores prácticas de gestión. Los nuevos instrumentos financieros, como los bonos verdes, desempeñarán un papel único en la atracción de inversiones internacionales para la recuperación sostenible de Ucrania. Ucrania necesita desarrollar el mercado de bonos verdes para diversificar a los inversores y atraer a los inversores verdes.

Palabras clave: Recuperación Económica; Ucrania de Posguerra; Atractivo Inversor; Rehabilitación de Infraestructuras; Mercado de Bonos Verdes; Inversores Verdes.

INTRODUCTION

International investment plays a vital role in the recovery and development of any country's post-war economy, and Ukraine is no exception. The war, which has been going on in our country for three years now, has caused significant damage to infrastructure, led to a loss of capital and a decline in economic activity. And this is not all the consequences that our economy will face. In this context, attracting international investment to rebuild destroyed cities, restore industrial facilities and create new jobs is paramount. In addition, foreign investment will help to introduce the latest technologies, improve the skills of the workforce and strengthen international economic ties. With the help of foreign investment, Ukraine will have the opportunity not only to restore its economy, but also to lay the foundation for sustainable economic growth in the future. Given the global interest in Ukraine's stability and development, international investors are ready to provide financial support that will help speed up the country's recovery and modernisation.

The study of the role of international investment in the recovery and development of Ukraine's economy is highly relevant today and essential for developing strategies to overcome the crisis and ensure sustainable economic growth.

Domestic scholars have already studied the role of foreign investment in the recovery of the post-war economy. For example, Okhrimenko et al.⁽¹⁾ examine priority strategies for economic recovery in Ukraine and summarise the experience of other countries. The authors argue that attracting foreign financing in various formats (economic reforms; facilitating the resumption of private business) is an essential element of the country's recovery.

Slavkova et al.⁽²⁾ note that the war has had a negative impact on the investment climate in Ukraine and identify promising sectors for investment: innovative technologies, construction, defence, metallurgy and metalworking, agriculture, electricity, pharmaceuticals, natural resources, logistics and infrastructure, furniture and woodworking, and manufacturing. Orel et al.⁽³⁾ outline the main stages of the economic recovery process in Ukraine after the war and analyse the main ways of post-war economic recovery. According to the authors, the recovery of Ukraine's economy requires comprehensive measures at all levels, including reform of the production structure, investment attraction, development of high-tech industries, etc.

At the same time, despite the rich scientific experience, the study of the role of international investment in economic recovery and development requires further comprehensive study to effectively attract international investment in the post-war economy of Ukraine.

The research aims to comprehensively analyze the role and effectiveness of international investment in the recovery and development of Ukraine's post-war economy. The purpose of this study is to determine the role of international investment in the recovery and development of the post-war economy of Ukraine.

METHOD

To achieve the research objective, we used the analysis of the structure and dynamics of international investment in Ukraine's economy and the forecasting method. The study was based on monographs, articles from peer-reviewed scientific journals Scopus and Web of Science, as well as reviews by the State Statistics

Committee and the Ministry of Finance of Ukraine.

The study also used general scientific and specialised scientific methods. General scientific methods include analysis, synthesis, explanation and generalisation. The method of abstraction was used to move from the analysis of general global challenges to the study of specific problems and prospects for attracting international investment in the recovery and development of Ukraine's post-war economy. The method of concretisation allowed for a detailed examination of the current state of attracting international investment and the Ukrainian economy.⁽⁴⁾ In addition, using the forecasting method, the author has formed some of his own judgements about the prospects for investment in Ukraine for the next three years. The author also offered his own vision of the advantages and disadvantages of investing in renewable energy in post-war Ukraine.⁽⁵⁾

An important aspect of our research was to update the reference database before the articles were published, as well as to take into account the qualitative characteristics of the information sources. To research the market of green bonds in Ukraine, an analysis of secondary sources, such as national and international financial reports, articles in scientific journals, was used.

RESULTS

The recovery of Ukraine's economy after the war is one of the most pressing research topics of our time. The invasion of Russian troops caused significant losses in human, financial, and economic resources⁽⁶⁾, which led to numerous demographic, economic, environmental, and other threats. This, in turn, provoked the development of crisis phenomena and processes, a decrease in the innovation activity of enterprises and a decline in the investment attractiveness of the domestic economy.⁽⁷⁾ Unfortunately, many enterprises that have become uncompetitive are now bankrupt.⁽⁸⁾ And investors who have invested in these enterprises are currently unable to recover their investments.⁽⁹⁾

In the post-war reconstruction period, this issue will become even more urgent, as internal mechanisms of capital accumulation cannot ensure the transformation of money into assets. Given that "the financial depth of the market and the financial stability of enterprises reflect the country's ability to endogenous economic development, and in times of war and post-war reconstruction, the ability to effectively ensure defence and economic and socio-humanitarian recovery"⁽¹⁰⁾, the success of reconstruction depends on addressing the issue of investment support. Investments and financial resources will be needed to not only cover current costs, but also provide significant injections to create new production facilities on a modern technological basis.^(11,12)

Investors should become Ukraine's main strategic partners in the recovery process. Russia has caused at least USD 150 billion in direct damage. USD in direct damage, with almost 60 per cent of this amount related to damage to housing and infrastructure.⁽²⁾ Usually, foreign investors decide to invest their capital only if they are convinced that there is a stable political environment and reliable mechanisms to ensure the security of capital flows in the country.⁽¹³⁾

The economic factors that influence international investment attraction can be divided into two categories. The first category relates to the needs of the investor and includes market, resource and efficiency factors, as well as the goals that he pursues with his investment. The second category is associated with aspects of state economic management, which is also divided into two subgroups. The first of these is related to the stability and growth of the economy in the host country and includes such aspects as:

- balance of the general budget;
- balance of payments;
- maintaining low inflation rates;
- low exchange rates;
- high interest rates.

The second subgroup is related to the country's economic policy and includes such aspects as:

- tax policy;
- openness of trade;
- Privatisation of strategic sectors;
- financing policies designed to attract international investment.⁽¹⁴⁾

The interaction of these elements with each other will certainly help attract international investment.

The legal rules and administrative procedures that affect international investment can be viewed from different perspectives. First and foremost, these elements include rules governing the entry of global investment, foreign property laws, protection of foreign investors and their investments, and regulations relating to the protection of intellectual property. In addition, a country that simplifies and improves its administrative procedures, adopts special laws that facilitate foreign ownership and strengthens intellectual

property laws and regulations will certainly attract international investment.^(14,15)

The algorithm of state policy implementation can be divided into certain stages. The first stage in the implementation of economic policy considers the state and economic problems of the state, the second stage develops a strategy and plan for their solution, as well as legislates (legalises) the policy, the third stage takes measures to solve these problems, and the final stage is the state evaluation of the results and determination of the directions of future actions.⁽¹⁶⁾

Thus, taking into account the importance and impact on the flow of international investment in Ukraine, the factors can be categorised as follows:

- political stability;
- economic growth and economic stability;
- economic policy;
- legal framework and administrative procedures;
- investor needs.

The war in the country has created many difficulties for potential investors, causing a deterioration in the situation and serious changes in the investment environment. Thus, according to the Global Innovation Index 2023, in 2023, Ukraine ranked 55th among 132 economies surveyed, up two positions from the previous year, but among European countries, it was only 34th among 39 economies.⁽¹⁷⁾ The main challenges include:

- Low stability of enterprises;
- lower labour productivity and GDP;
- insufficient formation of gross capital;
- low market capitalisation of companies;
- attracting loans from microfinance institutions;
- weak influence of global corporate investors.⁽¹⁷⁾

Kovalchuk⁽¹⁸⁾ notes that recent trends in the innovative development of the national economy demonstrate a complex political situation:

1. Lack of consistency in the regulatory and legislative framework.
2. Weak innovation basis for various sectors of the economy.
3. Excessive loading of the domestic market by foreign companies.
4. Focus on the development of IT outsourcing.
5. Loss of labour and scientific potential.
6. Low activity in implementing environmental innovations.

The 2020 global economic crisis caused by the COVID-19 pandemic has had a significant impact on foreign investment in Ukraine. The volume of attracted international investment fell sharply and showed the worst performance in the last 10 years (table 1).

Year	FDI in Ukraine	Increase/decrease for the year	FDI from Ukraine	Balance
2014	410	-4 089	111	+299
2015	-458	-868	-51	-407
2016	3 810	+4 268	16	+3 794
2017	3 692	-118	8	+3 684
2018	4 455	+763	-5	+4 460
2019	5 860	+1 405	648	+5 212
2020	-868	-6 728	82	-950
2021	6 687	+7 555	-198	+6 885
2022	1 152	- 5 535	529	+623
2023	4 247	+3 095	42	+4 205

Source: compiled from⁽¹⁹⁾.

It is also worth noting that the most significant volumes of transactions were carried out through Cyprus, the Netherlands, Switzerland and Austria (figure 1).

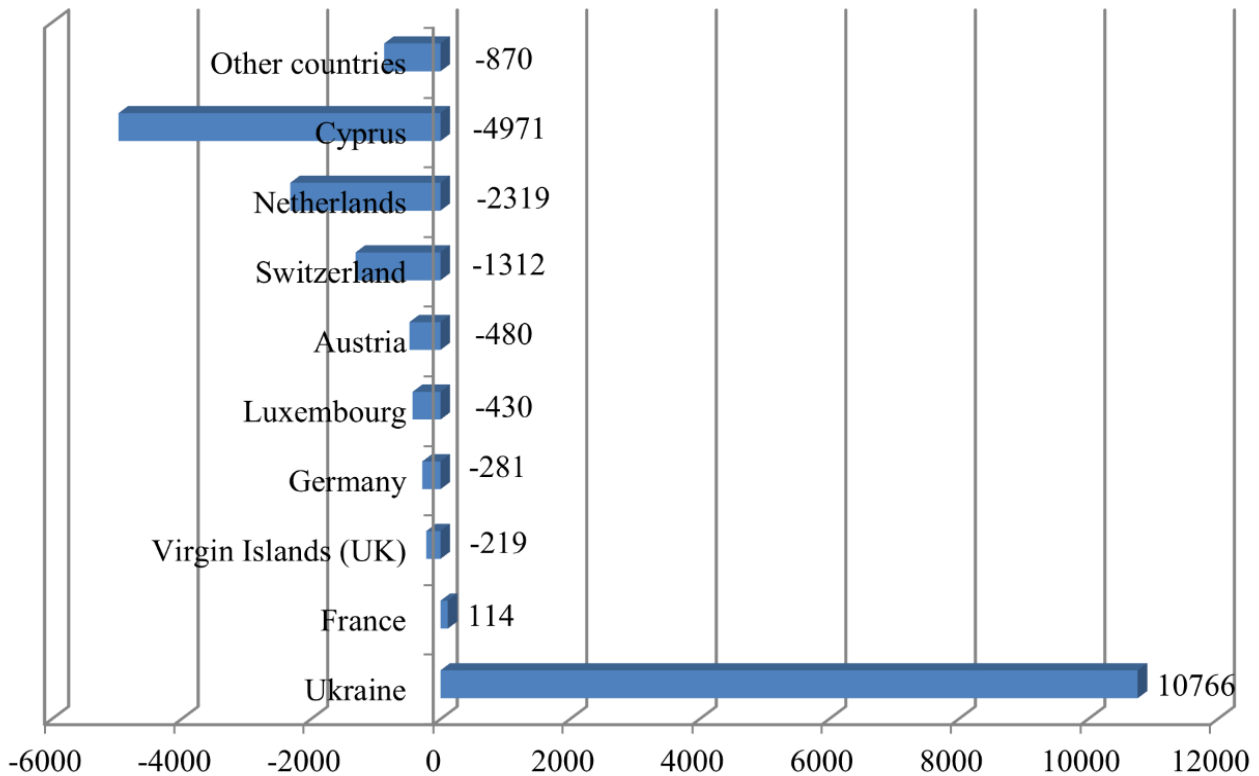


Figure 1. Redistribution of FDI inflows in 2010-2023 by country of final investor (compared to the country of direct investor), USD

Source: compiled from ⁽²⁰⁾.

As a rule, investment activity is the first to suffer during such crises.⁽²¹⁾ In 2021, the situation improved, with a significant increase in investment to USD 6 687 million,⁽²²⁾ but in 2022 (due to the invasion of Russian troops), the country’s investment attractiveness declined again, leading to a sharp drop in international investment to USD 1 152 million.

In 2023, there was a certain recovery in investment activity, with a positive trend in the volume of investments increasing to USD 2 943 million. In particular, in January-September 2023, foreign investors invested USD 4 095 million in the Ukrainian economy and withdrew USD 6 million in direct investment. It is worth noting that the most significant increase in international investment in the period under review was recorded in 2021.

It is worth noting that during the war period, Ukraine experienced some changes in the directions of foreign investment.⁽²³⁾ For example, by 2022, the following sectors were prioritised by international investors: manufacturing, financial and insurance activities, wholesale and retail trade, as well as mining and quarrying (table 2). Quite significant amounts of investment were also channelled into the agricultural sector. As organic agriculture has been a long-term global trend in recent years, many foreign investors have been interested in developing organic agriculture in Ukraine. Before the war, Ukraine was one of the largest suppliers of food in the world, and this also applied to organic production.⁽²⁴⁾

Economic Activity	2020	2021
Agriculture, forestry, and fishing	484,6	1806,3
Mining and quarrying	4411,6	6822,7
Manufacturing	8675,3	10674,0
Electricity, gas, steam, and air conditioning supply	1825,8	2342,5
Water supply; sewerage, waste management	33,1	51,2
Construction	507,9	566,6
Wholesale and retail trade	5317,1	6310,2
Transport, storage, postal, and courier activities	1453,5	1504,8
Accommodation and food service activities	205,7	153,9
Information and communication	2400,2	2660,6

Financial and insurance activities	3992,3	4951,0
Real estate activities	3109,7	3057,3
Professional, scientific, and technical activities	1350,2	1332,9
Administrative and support service activities	725,7	731,9
Education	17,4	20,5
Public administration and defence; compulsory social security	-	0,1
Human health and social work activities	71,8	87,4
Arts, entertainment, and recreation	122,4	138,1
Other service activities	18,7	11,1
Other	2877,4	2989,5
Total	37600,4	46212,8

Source: compiled from ⁽²⁰⁾.

The hostilities in Ukraine have led to foreign investors redirecting their funds to the development of slightly different sectors of the economy (figure 2).

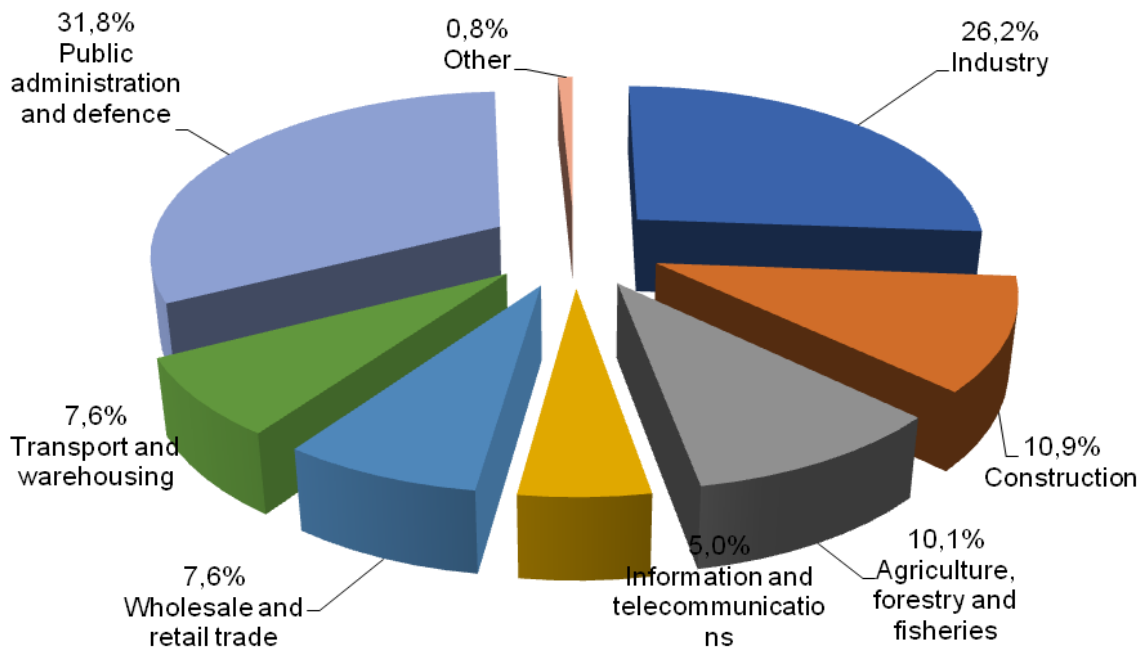


Figure 2. Main areas of FDI in the Ukrainian economy by international investors in 2023

Source: compiled from ⁽¹⁹⁾.

In 2023, the majority of international investment was directed to public administration and defence (31,9 % of total investment) and industry (26,2 %). Only 10,9 % of the total amount was invested in construction. Even smaller investments (only 5 %) were made in information and telecommunications. It is worth noting that in the current environment, this sector is only beginning to gain momentum, with particular attention being paid to information technology, the development of social networks and the reproduction of modern news.

The development of any modern company takes place in an unstable external environment and fierce competition, so the use of innovative technologies is the key to successful market promotion and strengthening of competitive positions.⁽²⁵⁾ Today, the process of introducing digital technologies into the economy is stimulated by current trends in the latest technological solutions and capabilities, as well as the period of globalisation.⁽²⁶⁾ In our opinion, international investment plays an important role in the recovery and development of Ukraine's post-war economy because: It can help to rebuild damaged and expand existing infrastructure (roads, bridges, railways, ports), which is critical for the resumption of economic development in our country.

By the end of 2023, the need for restoration and reconstruction will create a large recovery market for Ukraine, estimated at more than USD 486 billion. The market is estimated at over USD 486 billion (table 3).

Table 3. Amounts of damages, losses and needs for the recovery of the economy of Ukraine as of the end of 2023

Sector	Damage, billion dollars USA	Losses, billion dollars USA	Need, billion dollars USA
Social sectors			
Residential buildings	55,9	17,4	80,3
Education and science	5,6	6,9	13,9
Health care	1,4	17,8	14,2
Social protection and means of livelihood	0,2	9,5	44,5
Culture and tourism	3,5	19,6	8,9
Infrastructure			
Energy and extractives	10,6	54,0	47,1
Transport	33,6	40,7	73,7
Telecommunications and digital technologies	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
Industry and commerce	15,6	173,2	67,5
Irrigation and water resources management	0,7	0,7	10,7
Finances	0,0	5,7	2,3
Other sectors			
Environmental protection, management of natural resources and forestry	3,3	26,5	2,3
Emergency response and civil protection	0,4	0,5	2,3
Management and public administration	0,3	1,7	0,7
Explosion hazard management	34,6	34,6	34,6
In total	152,5	499,3	486,2

Source: compiled from⁽²⁷⁾

We see that about \$278 billion of the total amount is for reconstruction. USD are for reconstruction needs, and the remaining USD 208 billion is for the restoration of production and services. The remaining USD 208 billion is for the restoration of production and services. The most significant needs are in housing construction (over USD 80 billion, or 17 % of the total), transport infrastructure (almost USD 74 billion, or 15 %), industry, construction, services and trade (USD 67,5 billion, or 14 %), agriculture (USD 56 billion, or 12 %), and energy (USD 47 billion, or 10 %; however, due to the constant Russian aggression, the most significant needs are in the energy sector. However, due to Russia's ongoing attacks on Ukraine's energy structure, these needs are constantly growing).

This study will attempt to forecast the growth of international investment in Ukraine. The creation of forecast scenarios for changes in economic development and international investment in Ukraine during the war is complicated by uncertainty and the dependence of these indicators on the duration of active hostilities, which cannot be accurately predicted.⁽²⁸⁾ Therefore, in our study, we model a hypothetical situation based on projected GDP and FDI volumes, assuming that the active phase of the war in Ukraine ends in 2024.

Using data on Ukraine's GDP in actual prices over the past five years, we obtain forecast GDP values for 2024-2026. Based on this data, we build a GDP trend for the period 2019-2026. To obtain the forecast values of Ukraine's GDP for 2024-2026, we extrapolate the trend for the next three periods using a second-order polynomial function,⁽²⁹⁾ which has a high probability of the forecast scenario (98,07 %) (figure 3).

Using the trend extrapolation method, we will determine the forecast values of this indicator in 2024-2026 based on a second-order polynomial function: 2024 - USD 178 605,64 million; 2025 - USD 185 056,60 million, for 2026 - USD 191 631,84 million.

As for international investments, the stochastic dynamics of changes in their volumes in the Ukrainian economy allow us to use only a second-order polynomial function to forecast this indicator (the probability is 7,8 %). Based on the second-order polynomial function, the forecast values of this indicator in 2024-2026 are

USD 2 272,32 million in 2024, USD 2 192,89 million in 2025, and USD 2 115,32 million in 2026.

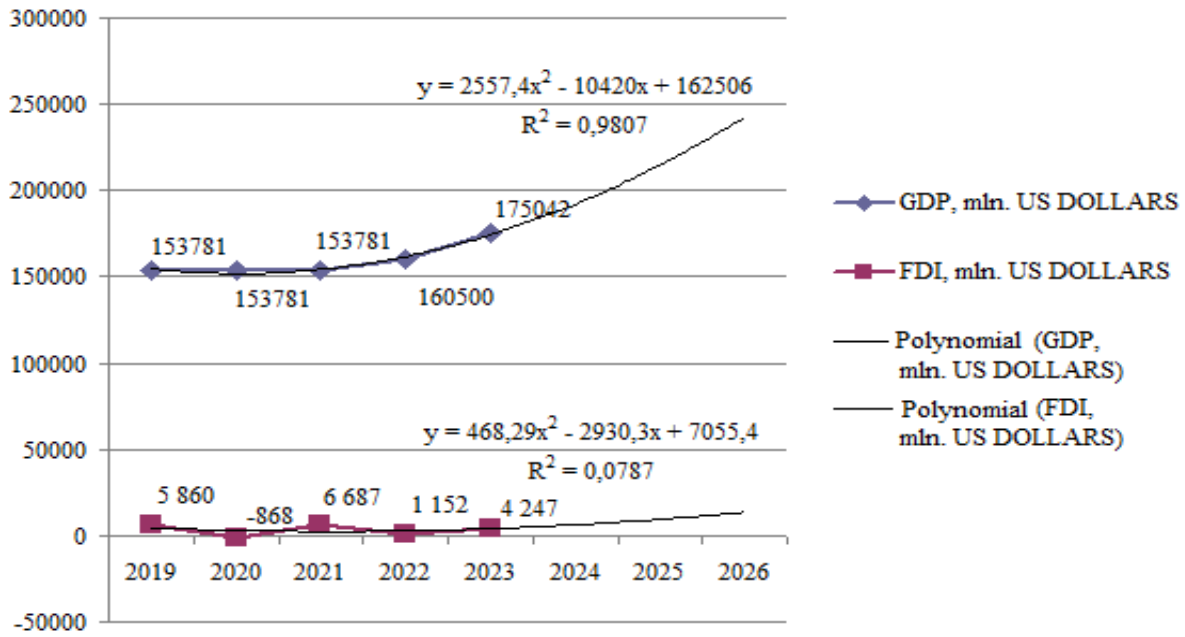


Figure 3. Dynamics and forecast trend of Ukraine's economic growth and international investment in Ukraine in 2019-2026
Source: compiled from ⁽¹⁹⁾.

We can conclude that the projected international investment for 2024-2026 is significantly less than the total damage to Ukraine's infrastructure caused by the war. Even if international investment remains at the same level for several years, it will take decades to rebuild the infrastructure. Thus, to fully restore Ukraine's infrastructure, additional funding will be needed from other sources, such as public funds, international assistance, and domestic resources that can also be mobilised for this purpose. It should be noted that the growth of global investment in Ukraine's economy in 2024-2026 is only possible if active hostilities cease and investment projects involving international investors begin.

Therefore, based on the projected values of international investment in Ukraine's economy for 2024-2026, it can be concluded that a certain level of steady or moderate growth in international investment is expected over the period. These forecasts provide a basis for understanding trends in the development of the investment climate in Ukraine and can serve as an essential information resource for economic and political decision-making.

Attracting international investment in the post-war economy will help to open new businesses and modernise existing ones, which means creating new jobs, increasing production capacity and growing our country's export potential. The transition to green investments, which directs capital to areas that will contribute to environmentally friendly production and sustainable development, can further increase the efficiency of these processes. Ukraine was one of the first countries to adopt the Paris Agreement and join the EU4Climate programme, which promotes the implementation of effective climate policies by governments.

However, today, due to the war, our country has suffered serious damage to critical infrastructure (primarily energy) and significant economic losses. Therefore, Ukraine's future recovery will largely depend on the energy sector. To finance all decarbonisation measures, it is necessary to develop a new industry in Ukraine - the green finance market. The «green transition» should become one of the cornerstones of Ukraine's post-war economic recovery, thanks to the priorities of domestic national policy and external factors.⁽²⁷⁾

In recent years, green bonds have become one of the fastest-growing financial instruments in the world. Attracting financing to renewable energy and energy efficiency projects and other environmentally friendly projects through the issuance of green bonds has acquired the status of an essential element of the global capital market, which provides countries with access to a large and diverse pool of investors and helps fulfil their international obligations.⁽³⁰⁾

Among the main areas where green bonds can be used in the restoration and development of post-war Ukraine, we note the following.

1. Infrastructure projects, i.e. the restoration of destroyed or damaged infrastructure facilities (roads, bridges, public buildings) with the introduction of environmental technologies.
2. Investments in energy efficiency in buildings, industrial facilities, and municipal infrastructure will

help reduce energy costs and greenhouse gas emissions.

3. Renewable energy sources.

Ukraine has significant potential for investing in renewable energy. Still, currently, its share of the domestic energy system using renewable energy sources (RES) is just over 6 %, which remains below the global standard of 25 %. Table 4 provides a SWOT analysis of renewable energy investments in post-war Ukraine.

Table 4. SWOT analysis of investing in renewable energy in post-war Ukraine	
Strengths	Weaknesses
<ol style="list-style-type: none"> 1. Great potential of wind and solar energy. 2. Interest of international investors. 3. State support and stimulation of investments. 4. The possibility of reducing dependence on imported energy. 	<ol style="list-style-type: none"> 1. Damage to energy infrastructure during hostilities 2. High costs of infrastructure restoration. 3. Repeated changes in legislation alternative energy sources. 4. High degree of potential corruption, which can negatively affect the implementation of projects.
Opportunities	Threats
<ol style="list-style-type: none"> 1. Attracting international funds and financing. 2. Technological innovation and cost reduction. 3. Development of new jobs and economic growth. 	<ol style="list-style-type: none"> 1. Political and economic instability. 2. Potential problems with environmental safety. 3. Competition with other energy sources.

Overall, Ukraine has significant potential for renewable energy investment after the conflict. The advantages include substantial wind and solar energy potential, international investor interest and government support. However, there are challenges, such as damaged infrastructure, high restoration costs, unstable legislation and corruption. Renewable energy investments can contribute to economic growth, reduce dependence on imported energy and create new jobs.

It is worth noting that there are several cases of green bonds being issued in Ukraine today. For example, in November 2019, DTEK Renewables successfully issued its first green Eurobonds worth €325 million at 8,50 % for a 5-year term. The transaction was the first ever Euro-denominated Class I green bond issue and the first bond issue by a renewable energy company in Central and Eastern Europe. DTEK Renewables is an operating company that manages DTEK's renewable energy assets. DTEK, as a leading national investor in Ukraine's energy sector, has invested more than USD 10 billion in the industry over the past 15 years, including EUR 1,2 billion in the development of green generation.

On 3 November 2021, NPC Ukrenergo placed five-year sustainability Eurobonds on the London Stock Exchange in the amount of USD 825 million with a yield of 5,75 %. The bonds bear a yield of 6,875 %. The majority of the UAH 19,3 billion raised was used to repay the debt to the State Enterprise 'Guaranteed Buyer', which supports the generation of renewable energy at a feed-in tariff. The Eurobonds were backed by an unconditional and irrevocable sovereign guarantee of Ukraine, and their credit rating was assessed by Moody's and Fitch at the level of Ukraine's sovereign credit rating. Overall, green bonds can be an essential tool in the recovery and development of post-war Ukraine, providing financing for environmentally sustainable projects and contributing to a sustainable and environmentally friendly future. However, there are at least three significant obstacles to the issuance of green bonds by Ukrainian companies today:

- Low institutional capacity and lack of knowledge. Potential issuers need comprehensive training on the green bond market, legal aspects, issuance strategies, project management, and environmental impact assessment. Best practices include engaging market experts and consultants to provide step-by-step training and support to issuers, as well as partnering with academic institutions to create e-learning programmes and certified training;
- Lack of support for pilot projects. Businesses in Ukraine need support for implementing environmental projects, which could be obtained from EU assistance programmes, foreign governments, international financial institutions, and state institutions. This will help improve the credit quality of green bonds and encourage investment in these securities by demonstrating the benefits of greening business;
- Lack of incentives for businesses to issue green bonds: There are no incentive programmes in Ukraine to support green bond issuers, which may affect the interest of businesses in such issues. A number of countries have subsidy programmes to compensate for additional verification costs and other support measures that could be adapted to Ukraine's conditions to stimulate this market.⁽³¹⁾

In general, the development of the green bond market will allow Ukraine to compete more actively on the international level and define itself as a country working on sustainable development and green energy. This will help attract the attention of global investors and positively impact the country's overall image in the context of environmental initiatives. Diversification of green bond market participants is a key aspect, as it attracts both corporate and government issuers. This allows us to expand the base of potential issuers and investors, and to attract new industries and sectors that have not been previously considered in the context of post-war recovery.

Attracting green investors to Ukraine is an important step towards integration into international capital markets and increasing the transparency of financial markets. They will bring not only capital but also international experience and expertise in implementing green bond standards. This will help increase investor confidence in local projects and reduce risks to the market as a whole. In addition, attracting green investors can be a catalyst for creating new jobs in high-tech and innovative sectors of the economy. Thus, the development of the green bond market in Ukraine has significant potential to support sustainable development, economic growth and international integration of our country.

We expect fundamental policy changes to be implemented to stimulate investment in renewable energy. These changes may include increasing the transparency of companies in the transition to green practices, protecting the rights of small private investors and pension fund beneficiaries through disclosure of information on investment areas and their impact on social and environmental issues, ensuring that investment products and strategies are aligned with investor preferences, and preventing unfair advertising of investment products.

DISCUSSION

Ukraine currently faces numerous obstacles that need to be addressed to strengthen its economy. Key factors such as GDP growth, foreign direct investment flows, government efficiency, interest rates, R&D investment, and trade openness all have a significant impact on diversification.⁽³²⁾ We agree that in order to strengthen Ukraine's economy, it is necessary to work actively to increase GDP and attract foreign investment. An active marketing campaign to attract investors may be important.

The recovery of Ukraine's economy will require comprehensive measures at all levels, including reforming the structure of production, attracting investment, and developing high-tech industries.⁽³⁾

Reforming the structure of production, particularly to develop high-tech industries, requires significant financial resources. These resources not only provide the material and technical basis for production but also stimulate research and innovation, which is an essential factor in a competitive world.

By combining different types of investment, technology parks create favourable conditions for cooperation between business, science and the state. This can lead to an increase in investment in high-tech industries, which in turn will contribute to production growth and increase budget revenues.⁽³³⁾

In our opinion, attracting investment in such innovative projects will not only stimulate the development of high-tech industries but also contribute to production growth and the creation of new jobs. In addition, this could also lead to an increase in budget revenues through taxation and other ways of raising funds for the state fund.

A liberal land sales market will encourage all interested producers to move to long-term business models and invest in land and technology.⁽³⁴⁾ However, it is important to ensure that land market liberalisation is accompanied by effective regulatory policies that protect the rights of owners, avoid market monopolisation, and promote sustainable development of the agricultural sector.

The format of post-war reconstruction assistance depends on the level of damage, which can be complete or partial, including job losses, health problems and environmental pollution. Reconstruction covers such areas as industry, infrastructure, social facilities, housing, ecosystems, defence, etc.⁽¹⁾

Currently, international support remains the primary source of funding for Ukraine's basic needs. Since the beginning of the war, the country has needed up to USD 5 billion per month to cover the state budget deficit. Since the start of the war, the country has needed up to USD 5 billion per month to cover the state budget deficit, and since mid-July 2022, this amount has increased to USD 9 billion. This amount has increased to USD 9 billion. In the third quarter of 2022, grant funds totalled USD 7,8 billion. This exceeded 40 % of state budget revenues.⁽³⁵⁾

Given the many cases of post-war reconstruction around the world, Ukraine should take into account best practices and develop its strategy. Reducing the tax burden, creating conditions for investment inflows, developing human capital, promoting fair competition, accelerating privatisation, and modernising are the areas that Ukraine should focus on in its post-war reconstruction.⁽³⁶⁾ Attempts to raise taxes or further increase state intervention in the economy may scare away human capital and investors. The focus should be on innovation and education, as these are the keys to progress.⁽³⁷⁾ The value of knowledge lies in its ability to provide people and companies with innovative solutions and competitive advantages in the market.⁽³⁸⁾

We also agree that taking these aspects into account and developing appropriate strategies can help Ukraine

to effectively navigate the path of reconstruction and achieve sustainable economic development after the war. However, it is also important to note that the implementation of such strategies may face a number of challenges and obstacles. For example, reducing the tax burden may create a shortfall in funding for public programmes and services that are important for social protection and development. Furthermore, it is necessary to avoid an excessive increase in public debt when implementing strategies to attract investment and development.

It should also be remembered that innovation and human capital development require significant investment and time to achieve significant results.^(39,40)

The analysis provided by Zolotova et al. (2023) highlights the significant challenges faced by the Ukrainian economy during martial law, focusing on factors such as falling GDP, resistance, and transformation as a path to recovery.⁽⁴¹⁾ This is closely aligned with the interest of international investment in Ukraine's digital post-war economic recovery, which is critical to overcoming these challenges and accelerating the transition to a resilient, digital economy that can quickly adapt to new realities and deliver sustainable growth while promoting integration into global markets.

The government may need to continuously commit resources and implement long-term strategies.

Finally, it is essential to strike a balance between encouraging innovation and preserving stability and social justice. The post-war reconstruction strategy should be flexible and adapted to the specific needs of the country.

The limitations of this study can be seen in the context of several vital circumstances:

- limited sample of sources. The selected sample comprises only 37 sources, which may limit the representativeness of the study and not take into account all possible opinions on the research topic. For greater reliability and objectivity, a more comprehensive list of sources and approaches should be considered;
- the need to keep the data up to date. Given the rapid changes in the current economic and political environment, this analysis may become outdated within a short time.

To ensure the highest level of relevance and validity of data and results, information sources must be constantly updated and expanded, and new research and data collection methods must be used.

CONCLUSIONS

Thus, international investment is a critical factor in the recovery and development of Ukraine's post-war economy. It provides additional resources for infrastructure and economic projects and facilitates technology transfer and the implementation of best management practices.

Attracting foreign investment can also help expand international markets for Ukrainian goods and services, contributing to the country's export potential. However, it is important to ensure the transparency and stability of the investment climate and develop effective mechanisms to control the use of investment funds.

In addition, understanding investors' needs and expectations and creating favourable conditions for their activities are important steps in promoting Ukraine as an attractive investment destination. Today, investments have the potential to become a catalyst for sustainable economic growth and improve the living standards of the Ukrainian population.

The scientific novelty of this study is that we have complemented the existing knowledge on the recovery of the country's post-war economy by focusing on the critical role of international investment in this process.

This study's main research problem is to examine the role of international investment in the recovery and development of Ukraine's post-war economy, namely in rebuilding the country's infrastructure after the war developing green bonds market.

Further research could focus on the effectiveness of different strategies for attracting international investment in the post-war economy, including an analysis of their impact on infrastructure development, export potential, and changes in the social and economic environment.

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FINANCING

The authors did not receive funding for the development of this research.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest.

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