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### Transformation of Ukraine's socio-economic development in the context of global turbulence and war: Challenges and opportunities

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**Abstract.** Global changes in modern Ukraine are destroying the usual way of life, but also opening up new opportunities. Assessing this potential and calculating the ways of its realization in advance is an extremely important task. The purpose of this paper was to study the social and economic development of Ukraine. The study analysed such indicators as the volume of foreign investment, the composition of the general fund of the state budget, and the financing of the defence sector before and after a full-scale invasion. Also, by synthesizing individual news reports, a generalized picture of the current situation at the front was formed. The work identified such challenges as a forced decline in maritime exports by 55% in 2022 (in 2024, Ukraine increased trade through seaports to 75% of the pre-war level); energy shortages, which reached 38% at the time; a 40% drop in harvest volumes; forced migration of 6.5 million Ukrainians from the country, etc. However, for each of the challenges, ways to overcome them and methods to turn them into additional opportunities were developed. In particular, these include diversification of logistics routes, increasing the value of human capital, developing alternative energy sources and moving closer to sustainable development goals. A separate proposal was made to create a global educational hub in Ukraine, where Ukrainian military and medical professionals with practical experience in combat and tactical medicine could train foreign colleagues. In addition, in order to increase the motivation of internally displaced persons (IDPs) to return to their homeland, it is proposed to develop an appropriate communication strategy. The practical significance of the study lies in the development of specific proposals for the post-war reconstruction of Ukraine, which should be of interest to the leadership of the departments of the Ministry of Community Development, Territories, and Infrastructure of Ukraine

**Keywords:** post-war recovery potential; human capital; alternative energy; foreign investment; transformation; socio-economic development; sustainable development

## Introduction

With the beginning of Russia's full-scale invasion of Ukraine in February 2022, the country entered a state of emergency – both at the legislative level with the declaration of martial law, and at the level of social relations within society, and at the level of finance, when the national economy could have collapsed without foreign assistance. Moreover, for the entire global community, which has been in a state of permanent turbulence since 2020 due to COVID-19 and its consequences, the outbreak of Russia's great war against Ukraine has added even more chaos and uncertainty.

Accordingly, the topic of Ukraine's further development in the context of existing challenges and the peculiarities of its interaction with the outside world is essential for the scientific community – both for Ukrainian specialists and the international community. O. Bokii & O. Kovalenko (2024), predicting the innovative aspects of the country's economic development, noted that the factors of extensive development have largely outlived their usefulness and the need to conserve natural resources, which are exhaustible, is driving the world's attention to intensive solutions. However, there is a certain restriction of access to the most relevant innovative developments by developed countries – by “dumping” outdated technologies into “Third World countries”, the competitive position of global technological leaders is maintained.

M. Dykha (2016) assessing Ukraine's place in modern civilizational transformations, note the destruction of numerous enterprises, logistics, and infrastructure facilities during the war and emphasize the impact of these processes on the economies of other countries. In particular, the destruction and contamination of arable land in Southern Ukraine has already significantly changed the balance of food supply and food security in the Middle East and Africa. Other examples of today's global turbulence include

a complete revision of the concept of European energy independence and diversification of supplies, which, in turn, has led to the development of innovative energy-saving solutions. All of this underlines the importance of Ukraine's early post-war recovery.

V. Strilets *et al.* (2024) focused on the mechanisms of rebuilding the Ukrainian economy and the role of the international community in these processes. Having studied the experience of other countries and financial and economic instruments of recovery, the authors developed their own methodology for calculating the integral efficiency coefficient and used it to form a roadmap for post-war construction. Particular attention was paid to the importance of foreign direct investment (FDI) in the project, the campaign to attract it, and the transparency of the mechanisms for its use. M.A. Orenstein (2023) pointed out the irreversibility of the transformation processes that took place within the European Union (EU) after the outbreak of a large-scale war. The severance of all economic and energy ties with the aggressor country, which initially seemed impossible, was implemented without catastrophic consequences for the European energy system. This project was made possible only thanks to the high managerial competence of the heads of the relevant international structures and the political will of the leaders of the leading EU countries.

In conformity with P. Žuk & P. Žuk (2022), the return to energy independence by Ukraine and other European countries is much more than just a change in energy logistics on the continent. In fact, the forced abandonment of fossil energy sources has given impetus to a much more intensive development of renewable energy and accelerated the common phase transition to the next technological mode. Decarbonization as a factor in the socio-economic development of Ukraine was also discussed by Z. Allam *et*

*al.* (2022). The authors put the war in Ukraine on a par with such global challenges as the COVID-19 pandemic and its consequences, and emphasized the growing role of financing the energy transition and restoring climate sustainability. The same conclusions, but on the example of the German concept of *Energiewende*, were reached in the work of T. Wiertz *et al.* (2023) – the energy discourse, which since February 2022 has a clear geopolitical context, increasingly considers Ukraine as a country that will have great potential for economic and social development after the victory.

The temporary occupation of part of the territories has forced a review of regional policy, M. Getzner & S. Moroz (2022) proposed to introduce a territorial-capital approach to Ukraine's development and to increase the incentives for investors to invest in municipal projects. This idea to some extent overlaps with the initiative of T. Wołowiec *et al.* (2022), who propose to focus on the country's tourist attractions in the context of the socio-economic renaissance. Another idea about the prospects for Ukraine's development was expressed by A.L. Dumitrescu & V. Constantin (2022), who studied the employment of Ukrainian refugees in the EU. According to their observations, after the victory, Ukraine will see the return of numerous specialists who have undergone a forced but useful "practice" at European enterprises and thus improved their own qualifications.

Thus, the issue of Ukraine's future fate has been repeatedly raised by the scientific community, but it has lacked a more comprehensive consideration. The purpose of this paper is to fill this gap and explore the challenges and opportunities for Ukraine's socio-economic development in the current environment.

## Materials and Methods

In the course of this study, a number of examples of the transformation of Ukraine's social and economic development during the war and the impact of unstable conditions on the behaviour of society were considered. In particular, using the method of statistical analysis, the dynamics of changes in the build-up of Ukraine's military potential in the period from 2014 to 2022, as well as the structure of financing the country's defence sector, sources of supply, and the largest donors were studied. As one of the indicators of the involvement of external factors in the development and recovery of the Ukrainian economy, the dynamics of FDI in the country and investments of Ukrainian finances abroad were studied using statistical economic analysis. To illustrate the impact of a full-scale war on the agricultural sector of Ukraine's economy, the authors used the trend comparison method to compare the exports of agricultural products in 2021 and 2022, as well as changes in the routes of their transportation.

The challenges in the energy sector were studied separately, statistics on the loss of energy capacities and the deficit in electricity production were analysed, and mechanisms for effectively countering the challenges, such as large-scale purchases of generators and temporary energy

imports, were described. In the medium term, the report considers the possibilities of rebuilding Ukraine's energy system in accordance with the principles of sustainable development with the commissioning of additional renewable energy sources.

Based on data from a number of open sources, professional publications and expert opinions, a comprehensive assessment of the factors of global turbulence, as well as the opportunities that Ukraine faces in this context, including the unlocking of the state's potential in the construction, medical, military sectors, etc., as well as the mechanisms for realizing this potential, was formed. The materials used in this study included, in addition to the above, operational data from the National Bank of Ukraine (n.d.), the Ministry of Finance of Ukraine (2023; 2024, n.d.), the Report "Ukraine's economy in times of war" by O. Pogarska (2023), as well as information from the European Commission's statistical organization Eurostat (n.d.).

The study also modelled the future prospects of military operations, possible risks of deterioration of the tactical situation and new opportunities that would open up under such a scenario using the open-source intelligence (OSINT) method. Using the method of synthesizing disparate data on the conditions of Ukrainian refugees abroad and their reactions to forced resettlement, a holistic picture was built of changes in their psychological state, educational and professional level, and prospects for returning to Ukraine after the war. Applying the method of extrapolation, based on the statistics obtained, current trends and the studied prerequisites for socio-economic development, the author forecasts the direction of further transformation of Ukrainian society, as well as the prospects, opportunities and economic mechanisms of post-war reconstruction of Ukraine.

## Results

Since 2014, the development of Ukraine's economy has been taking place in extraordinary conditions and, accordingly, contains certain unique markers of scientific interest to the entire global community. The fact that Ukraine still exists as a state after ten years of aggressive war and temporary occupation of part of its territory and demonstrates development in certain economic and social areas is the result of internal socio-economic processes and external financial support.

The aggressor country, which started the war in 2014, despite calls for de-escalation, carried out a full-scale invasion of Ukraine in 2022, and in fact made it possible for the international community to be convinced of the seriousness of its intentions to annex the territories of Ukraine. Unfortunately, no preventive measures were taken at the level of the international community to prevent war, as Russia has repeatedly committed aggressive acts in the post-Soviet space (Moldova-1992, Georgia-2008).

Between 1999 and 2014, the national defence expenditures from the State Budget of Ukraine did not exceed 1% of gross domestic product (GDP), and at its peak in 2012, amounted to a record-breaking UAH 16.4 billion, while in

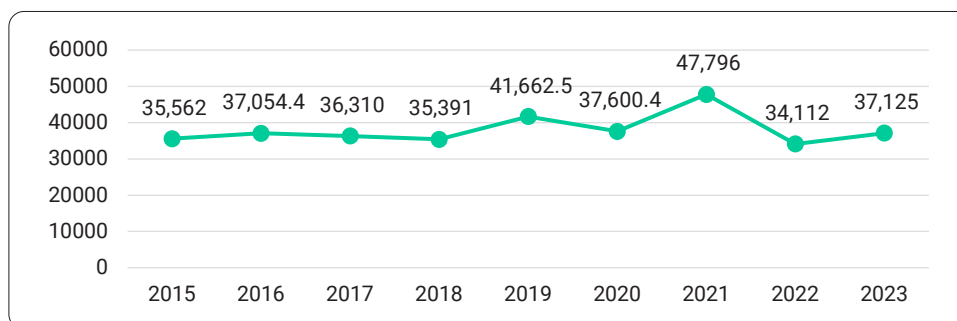
2015 they increased to UAH 52 billion. According to the Ministry of Finance of Ukraine (2023), Ukraine's defence spending has increased significantly since 2022. In particular, in 2023, the resources allocated to the national security and defence of Ukraine reached UAH 2.097 trillion, which corresponds to 52.25% of GDP and is UAH 0.95 trillion higher than in 2022. The structure of expenditures of the

state budget of Ukraine is presented in Table 1. Defence expenditures currently account for more than 50% of Ukraine's state budget expenditures, and there is still a need for additional funding. It is worth noting that macro-financial international assistance is directed to the general fund of the budget, from which all expenditures are financed. The dynamics of FDI in Ukraine in recent years is shown in Figure 1.

**Table 1.** Structure of state budget expenditures of Ukraine (functional classification)

Expenses	2021	2022	2023	2024 (as of 1 April 2024)
State functions	13.87%	7.47%	7.38%	6.61%
Defence	8.56%	42.24%	52.25%	50.37%
Public order, security, judiciary	11.7%	16.39%	14.31%	16.65%
Economic activity	12.14%	3.53%	3.35%	1.58%
Environmental protection	0.55%	0.17%	0.13%	0.2%
Utilities	0.01%	0.02%	0.21%	0%
Health care	11.44%	6.81%	4.47%	4.91%
Spiritual and physical development	1.07%	0.41%	0.29%	0.3%
Education	4.28%	2.16%	1.51%	1.61%
Social protection and social security	22.77%	15.75%	11.69%	13.45%
Interbudgetary transfers	13.6%	5.06%	4.42%	4.31%
Total	100% (UAH 1,490,258.9 million)	100% (UAH 2,705,423.3 million)	100% (UAH 4,014,418.1 million)	100% (UAH 841,145.5 million)

**Source:** compiled by the authors based on Ministry of Finance of Ukraine (n.d.)



**Figure 1.** Dynamics of FDI in Ukraine in 2015-2022 (USD million)

**Note:** excluding the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and the temporarily occupied territories in Donetsk and Luhansk regions

**Source:** compiled by the authors based on Ministry of Finance of Ukraine (n.d.)

As it can be seen from the graph, after the relative stabilization of the frontline in 2015, investment flows to Ukraine recovered. Global investors saw the prospects of the Ukrainian economy and resumed FDI, which had an almost linear growth trend over the next four years. Unfortunately, the coronavirus pandemic in 2020 and the uncertainty of its economic consequences of that time nullified investment attractiveness around the world, and Ukraine was no exception. Already in 2021, the flow of investment to Ukraine exceeded pre-coronavirus levels, but in 2022, with the outbreak of a full-scale war, the FDI indicator

again showed a significant drop, as foreign investors were not confident that Ukraine would retain its identity during these crucial months. Finally, in 2023, after a series of counter-offensive measures and the consolidation of the front line, Ukraine again became a potential source of socio-economic development and was able to resume the attraction of foreign investments.

As for the financing of the general fund of the state budget in 2023, according to the Ministry of Finance of Ukraine (2024), its volume amounted to almost USD 60 billion, half of which was provided by the US and EU in the

form of grants and loans, and another USD 15 billion was provided by the population of Ukraine through the mechanisms of domestic government bonds and military bonds. Doing Business (World Bank, 2020) is also quite informative in the context of studying Ukraine's socio-economic development. Although it covers only the first six years of the war in Ukraine, the dynamics are quite revealing: over a decade and a half, Ukraine has managed to move up 60 positions in the ease of Doing Business ranking. In addition, as of 2020, Ukraine was ranked 61<sup>st</sup> out of 190 in terms of ease of registering a company, 20<sup>th</sup> in terms of ease of obtaining a construction permit, 37<sup>th</sup> in terms of ease of obtaining a loan, and 45<sup>th</sup> among countries that protect investors' rights.

The transformation of Ukraine's economic development in the crisis became most noticeable with the start of the full-scale invasion – all sectors and industries faced unprecedented challenges and worked at the limit of their capabilities. According to O. Pogarska (2023), in particular, the enemy's blocking of traditional Black Sea grain transport routes reduced exports of goods by 55% in 2022. However, the relevant Ukrainian agencies managed to partially overcome this challenge and reorient logistics routes to road and rail transport, which resulted in an increase of more than 35% in alternative transport routes. And in 2024, Ukraine increased trade through seaports to 75% of the pre-war level.

Another challenge of the first year of the full-scale invasion was the problems with electricity supply caused by the aggressor's deliberate destruction of civilian energy infrastructure. According to O. Pogarska (2023), the electricity shortage at its peak was up to 38% of total needs. This challenge was also turned into an opportunity, and over time, the deficit was eliminated, on the one hand, by importing electricity from friendly countries, and on the other hand, by popularizing autonomous mobile generators, which Ukrainians used in small and medium-sized businesses and in their own households.

Prime Minister of Ukraine D. Shmyhal noted that “the situation in the energy sector is very difficult. 42 power units were actually destroyed. 27% of large thermal power plants remain in working condition, and 73% are destroyed or damaged, so they are not working today. In fact, 20 hydropower units are also out of operation, damaged, which is another 1.3 GW of capacity. Russia destroyed 50% of Ukraine's power generation capacity. Due to missile and drone attacks, Ukraine has lost 9.2 GW of electricity today, which is half of the power with which Ukraine passed last winter” (Bovsunovskaya, 2024).

This state of affairs in the energy sector is threatening to the functioning of the national economy. However, the medium- and long-term prospects in Ukraine's energy industry look more optimistic. The destruction of the existing fossil fuel supply system and the termination of transport obligations to the aggressor country open the way to fundamental energy reform. Traditional routes, which the government has been afraid to change for decades, will be forced to be replaced by “green” energy facilities – solar and wind generation, and tidal power plants. Paradoxically, the war will nullify the usual principles of traditional “dirty”

energy in Ukraine and the remnants of its infrastructure, while the country will have a unique opportunity to build energy security in line with the goals of sustainable development. Moreover, the full-scale invasion had a fundamental impact on the European energy market: the policy of “cheap gas” was finally rejected, and there was a significant diversification of risks and suppliers.

However, there are still challenges that, for objective reasons, could not be overcome as quickly. For example, the temporary occupation of southern Ukraine, the high intensity of hostilities, and the contamination of arable land have significantly affected grain production – according to O. Pogarska (2023), the harvest in 2022 was 40% lower than the previous year, and the winter crops in 2023 decreased by 25%. The solution to this problem could be a shift to intensive farming, where losses in the area are compensated for by increased yields, but this transition will take more time. However, in the context of turning challenges into opportunities in the face of global turbulence, the reorientation of the Ukrainian agricultural sector towards more efficient and productive grain varieties may become a significant competitive advantage in the future, which might not have been initiated in normal, non-crisis conditions (Garafonova *et al.*, 2023).

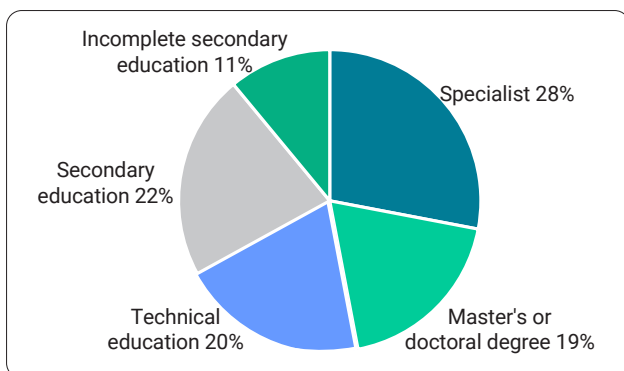
Among such potential impetus for forced development is the construction potential that has been developed in Ukraine over the ten years of war. All this time, residential buildings, businesses, educational institutions, and civilian infrastructure have been destroyed with varying degrees of intensity. Many of these buildings were constructed during the Soviet occupation and were already at the end of their useful life. Thus, the destroyed buildings, neighbourhoods, and even entire settlements will be transformed into large-scale construction sites where Ukraine's infrastructure will be rebuilt in accordance with the latest innovative principles and technologies. Taking advantage of the opportunities created by the challenges of the war will also include attracting investment in construction projects, expanding the networks of construction materials companies, inviting foreign specialists and increasing the value of human capital in the industry.

Another significant economic boost that the state will experience after the victory is a significant increase in the qualifications of Ukrainians in such narrow but much-needed areas as military affairs, tactical medicine, and demining (Bunyk, 2023). Ukrainian specialists who have gained practical experience on the battlefield and in other difficult conditions will be highly valued in today's global turbulence, and will be able to fulfil relevant contracts in other countries and act as advisers and instructors.

When analysing opportunities for Ukraine's economic and social development in the current environment, it is important not to forget that as of spring 2024, the war is still ongoing, the front line is unstable, and the temporarily occupied territory is slowly but surely expanding. During the aggressor's new offensive in the north, several Ukrainian settlements were destroyed, the front line is approaching Kharkiv (Defence forces stop..., 2024), and the shelling of the city itself is intensifying. All of this indicates that there are significant risks of losing Ukrainian statehood that still exist.

According to regular official reports from the Ministry of Defence of Ukraine, after a certain stabilization of the enemy's casualty figures in the spring and summer of 2023, which illustrated a decrease in active hostilities and stabilization of the front line, the number of occupants killed began to increase again on a monthly basis in early 2024, reaching a historic high in May. Accordingly, the enemy's active offensive adds uncertainty to the timing of Ukraine's post-war reconstruction and forces us to revise our forecasts for socio-economic development. However, even such a difficult and critical situation can be viewed from the point of view of realizing new opportunities – the EU is aware of all the risks of Ukraine's theoretical loss in the war and is ready to expand the format of its assistance from purely technical and financial to a full-fledged contingent presence if such a scenario is unlikely. In addition to the obvious benefit of preserving its sovereignty, Ukraine will be able to integrate more fully into NATO standards and improve the combat capability of its army.

The social component of Ukraine's development has also undergone a significant transformation in the wake of the war. Since February 2022, numerous people with refugee status have left the country and settled in European countries. According to the official statistics of the United Nations High Commissioner for Refugees (2024), over 6 million Ukrainians were forced to move to Europe in the first two years of the full-scale war, and another 480,000 people were forced to move to other countries. Given that there are at least 5 million internally displaced persons fleeing the approaching frontline, the social migration crisis has reached a scale never seen since the restoration of independence. The negative effect of forced migration is exacerbated by the fact that, according to a survey conducted by the UN High Commissioner, the most productive age groups left the country first and foremost – almost half (47%) of Ukrainian refugees in Eastern Europe are aged 35-59, and another 25% fall into the 18-34 age group. With regard to the education of forced Ukrainian migrants, the loss of human capital seems to be the highest: 47% of internally displaced persons (IDPs) have a university degree, and another 20% have vocational education (Fig. 2).



**Figure 2.** Structure of education among Ukrainian refugees in Europe

**Source:** compiled by the authors based on United Nations High Commissioner for Refugees (2024)

Thus, the loss of so many able-bodied and educated people to Ukraine's domestic labour market has only exacerbated the social crisis caused by the full-scale war. However, even educated, able-bodied Ukrainians face the challenge of language barriers abroad. In Ukraine, most people with a university degree are fluent in English, but living and working in Poland, the Czech Republic, Germany, etc. requires knowledge of national languages. As a result, IDPs are forced to either look for work in international companies where English is the official language of communication or accept a significant decline in their standard of living and low-paid jobs such as courier, cleaner, or farmworker during harvest. In addition, competition in the labour market of developed countries is intensified by an extensive system of permits, certificates, and licences that confirm the qualifications of potential workers at the international level. Forced migrants from Ukraine find it difficult to navigate this system and are, a priori, at a greater disadvantage than their European counterparts.

Another factor in the loss of human capital by Ukrainians is the forced deportation of citizens from the temporarily occupied territories to the occupying country. According to the data released by the former Ukrainian Parliamentary Commissioner for Human Rights L. Denisova (2022), almost one and a half million Ukrainians have been forcibly deported, of whom almost a quarter of a million are children. Moreover, evidence suggests that prior to this "evacuation", the aggressor country was preparing for a large-scale invasion, creating concentration camps for temporary detention for forcibly deported persons as early as 2021. The conditions of detention in these facilities do not meet international humanitarian standards, the persons held there have no rights or protection, and escape is made impossible by the deliberate location of the camps in regions as far away from Ukraine's borders as possible.

Children and adolescents deported in this way are under constant psychological pressure, forced to lose their own Ukrainian identity and cultural code, and forced to learn a foreign language and culture. A certain number of young people, who naturally have not yet had time to form their own identity, go through such adaptation procedures and lose contact with their homeland. As a result, children have no desire to return and, accordingly, weaken the future economic potential of their country. Even more irreparable losses occur as a result of civilian deaths in the temporarily occupied territories, in the frontline zone and in the interior of the country during air strikes. The United Nations (2022) state that in the first three months of the full-scale invasion alone, more than 4,000 civilians were killed, including 261 children, and as of October 2023, the death toll reached almost 10,000 Ukrainian civilians. At the same time, the Office of the Commissioner warns in advance that the estimates are minimal, and the actual scale of losses among the population is much higher, but cannot be calculated due to the active hostilities.

Indirect economic losses also include the loss of income by commercial enterprises and institutions of Ukraine and, accordingly, the loss of wages by employees. In addition,

the inability of the country's intellectual elite to use their creative and scientific potential because of the hostilities can be considered a loss. There are also potential educational losses when, due to the failure to provide educational services in full, young people lose their most valuable resource – time – due to the destruction of educational institutions or danger while in them. All of this can be described as a decline in investment in human capital, which will inevitably affect the country's development in the future.

In general, since the education component is a crucial investment in Ukraine's economic potential and its further innovative transformations, it is worth focusing on the challenges facing this sector. With the increasing digitalization of society and national economies, skilled and educated personnel are becoming a real driver of development. This, in turn, requires strong and systematic investment in a modern and technologically advanced education sector focused on future business achievements. It is all the more worrying that the war is constantly destroying educational institutions and educational infrastructure. According to the Kyiv School of Economics (2024), as of the beginning of 2024, the war has already caused direct damage to Ukraine's infrastructure worth almost USD 155 billion, with at least 3,800 educational institutions destroyed, damaged or seized since the start of the full-scale invasion.

A separate challenge for the education sector is the educational process in the temporarily occupied territories. As a rule, a seized school or university faces three possible options for further development: a complete cessation of any educational activity, a transition to the occupier's educational standards, or continuing to work according to the Ukrainian curriculum, but in a remote mode. It is worth noting that the third scenario, the best but most dangerous for educators and children who remain in the temporarily occupied territories, is the least common. The transition to a remote education format, especially at the beginning of the great war, was also seen in the territories controlled by Ukraine: in the first months after February 2022, when the frontline was extremely unstable, schools and universities in Kyiv, Mykolaiv, Kharkiv, and Chernihiv worked remotely for several weeks. Most institutions were even forced to shorten the school year, which undoubtedly affected the quality of knowledge gained.

As of the spring of 2024, full-time education has resumed in most institutions in the government-controlled area, but the educational process is often interrupted by air raids, sometimes even several times a day, and students are forced to move to civilian protection shelters. As a rule, this means that pupils and students are forced to work on some material taught in an extracurricular format. In addition, the additional stress of air attacks negatively affects the perception of information and, ultimately, the quality of education. In general, in times of war, it is impossible to fully utilize the intellectual and creative potential of human capital, and the full picture of indirect economic losses will only be assessed in the post-war period (Ponomarenko & Pysarchuk, 2024). In addition to the already mentioned

lost profits due to the destruction of enterprises and undercapitalization of education due to the forced displacement of children, the negative consequences will also include a decline in economic activity in a number of trade groups that have lost their attractiveness and demand in the war. Firstly, this applies to luxury goods, the entertainment industry, etc. The tourism, aviation, and hotel industries have also largely lost their capitalization as a result of changing public values, government restrictions and an obvious increase in risks.

Even in those regions of Ukraine that are deep in the rear, citizens are having difficulty finding decent jobs, as, on the one hand, the labour market has received an additional influx of workers from the temporarily occupied territories, and, on the other hand, businesses have experienced a decline in business activity. The latter factor is due to the need for entrepreneurs to spend time and financial resources on relocating production to "quiet" regions and setting up all the necessary industrial and legal processes. In the context of general instability and declining solvency of the population, few owners of large enterprises are ready to make such a major investment.

An additional challenge for the majority of Ukrainians is psychological distress and permanent stress (Spytska, 2024). A special study of mental health and mental health problems conducted by the reputable British company Alligator Digital (2023) among residents of eleven countries shows that half of Ukrainians feel emotionally worse than before the full-scale invasion. At the same time, young people aged 13-15 feel the greatest impact and vulnerability due to the war, and in general, among Ukrainians, respondents named the war (88.5%), job loss (16.5%), watching the news (27.2%), and political decisions at the national (27.4%) and international (14.3%) levels as the most significant factors affecting mental health. These factors of influence and their scale obviously have a negative impact on the professional and creative abilities of citizens, which, again, causes undesirable economic effects, both immediate and delayed.

Such extremely difficult social challenges can be turned into additional opportunities. Since the beginning of the full-scale invasion, numerous Ukrainians have re-examined their national and linguistic identity and become more categorical in their Ukrainian self-identification. According to a study by the Razumkov Centre (2023), 81% of respondents from across the country identify themselves as belonging to the Ukrainian cultural tradition, compared to only 56% in 2006. Also, the number of respondents who identify themselves as belonging to the European cultural tradition has increased from 7% to 10%, and those who want to identify themselves as a carrier of the culture of the occupying country have become 0.5% instead of 11% in 2006. As for the state symbols of Ukraine, there have been radical changes here as well – while in 2011, 26%, 25% and 22.5% of Ukrainians were proud of the Flag, Coat of Arms and the National Anthem, respectively, in 2023 the share of respondents who were proud of their country's symbols

increased to 75%, 74% and 69%, respectively. It is worth noting that the number of people who are proud of the Ukrainian language has more than doubled over the 10 years of war, from 32% to 74%.

Returning to the issue of forced Ukrainian migrants in Europe, it is worth mentioning another delayed, and therefore not so obvious, negative consequence. It lies in the fact that children forced to flee the war, who found themselves abroad in a new social, cultural, and linguistic environment in 2022, quickly adapted to the new realities and often no longer feel connected to Ukraine, and have no desire to return home even after the victory. This challenge can be countered by a competent information policy of Ukraine, which will encourage parents to make plans for their future in the context of the recovery of post-war Ukraine. This message, if properly communicated, will be transmitted within the families of IDPs, so that children will not lose touch with their native language and history, even despite their new foreign experience. Moreover, this approach creates another opportunity for social development: the high standards of living, education, and medicine that young people have become accustomed to during forced emigration will become new social benchmarks for rebuilding Ukraine.

### Discussion

The war against Ukraine, its economic and social consequences are in the focus of attention of the global scientific community, especially as the world has been in global turbulence for several years now and the great war on the European continent is one of its most influential factors.

For example, R. Balcaen *et al.* (2022), studying the use of economic instruments within the concept of “hybrid warfare” even before the start of a full-scale invasion, drew attention to the rapid growth of Ukraine’s defence potential since 2015. As noted in this paper, despite the tensions, the country has shown a clear trend of economic growth. The authors stated that Ukraine had managed to adapt all critical sectors to the new realities and correct defence mistakes made during the invasion of Crimea and Donbas. K.N. Röhl *et al.* (2023) devoted their work to the change in the defence doctrine of European countries against the backdrop of the war in Ukraine. The authors noted the growth of arms exports to Ukraine, and used the example of Germany to explore how the Bundeswehr gradually understood the inevitability of escalation and the need to increase production of modern weapons.

In continuation of the topic of assistance from NATO countries raised in this study, it is also worth mentioning the work of J. George & T. Sandler (2022), who tracked the trends of declining defence budgets of the Alliance countries until 2022. According to the authors, such irresponsible behaviour of the defence ministries of leading European countries against the background of the aggressor country’s strengthening to some extent provoked the expansion of its aggressive actions, as it seemed that NATO was divided and incapacitated. The changes in FDI volumes that were noted and analysed in this paper have been the subject of

attention of a number of European scholars specializing in financial market research. A. Antezza *et al.* (2022) used a special “support tracker” to track the volume of financial assistance to Ukraine and proved a significant increase after the full-scale invasion, which is confirmed by the statistical data of this paper. The increasing influence of foreign investment, in particular Polish, on Ukraine’s economic development was also discussed in the work of R. Matera (2022). The author proved that the proposed financial instruments are fully consistent with the goals set and are effective, despite the obvious risks during hostilities.

M. Fink (2022) has written about the challenges in shipping, which are the focus of this paper. The blockade of traditional trade routes in the Black Sea by the aggressor country led to a grain crisis in developing countries and violated several international maritime laws. The authors argue that the references in this case to the laws and customs of naval warfare are not legally justified and are nothing more than an attempt at illegal armed maritime control, which equates the aggressor’s army with pirate groups. In turn, A. Rogozińska (2023), who also raised the issue of the occupier’s actions in the maritime dimension, emphasized the global nature of hostilities in the internationally recognized Ukrainian territorial waters of the Black and Azov Seas and predicted a possible expansion of aggression to other countries in the region. However, as noted above, Ukraine managed to prevent provocations and losses by opening up new opportunities and reorienting part of the logistics chain. Thus, diversification of traditional logistics, which is no longer safe, is quite important, and the examples of reorientation of grain exports to road and rail transport presented in this paper confirm this. J.S. Srari *et al.* (2023), in their study of the disconnection of supply chains from conflict zones, also confirm the need for a structured approach to diversifying logistics routes in the current geopolitical context.

The challenges in the energy sector provoked by the full-scale war and the transformation of these challenges into new opportunities by Ukrainians, which have been discussed in this paper, have a more global dimension. A. Goldthau & S. Tagliapietra (2022) noted that the continental energy crisis of the winter of 2022/2023 was overcome only due to unprecedented austerity measures and, to some extent, favourable weather conditions. In order to avoid similar crises in the future, it is necessary not to repeat the mistakes and to prevent European economies from becoming energy-dependent on a single supplier. J. Osička & F. Černoch (2022) also wrote about the need to diversify the supply of fossil fuels. The authors argue that the speed of natural gas phase-out will play an important role in Europe’s future energy transition. C. Kuzemko *et al.* (2022) also noted that decarbonization of the energy sector will certainly lead to a reduction in the energy vulnerability of EU economies and bring the achievement of sustainable development goals closer.

The new opportunities that await the Ukrainian economy during the post-war reconstruction, as discussed in

this paper, are also being considered by foreign experts in order to join the reconstruction projects on time. D. Atstāja *et al.* (2022), for example, developed protocols for the management of construction waste in the reconstruction of war-damaged facilities in advance. To increase the resource efficiency of restoration processes, it is proposed to create additional mobile waste processing complexes based on fractional waste processing. The increase in the competence of Ukrainian doctors in tactical medicine, noted in this study as one of the advantages created by the war, was also reflected by J.T. Shumaker *et al.* (2024). Authors proved the usefulness of simulation training for military medics and recognized the significant progress in the professional skills of Ukrainian tactical medics.

Russian aggression adversely affected the economy of Ukraine and emphasized the need to adapt the best practices of EU countries to determine steps to restore the country's competitiveness (Kichurchak, 2023). The study V. Strilets *et al.* (2024) constructed neural networks to assess the relationships between the factors of innovative development and the competitiveness of the EU countries and Ukraine. This comparative analysis concluded that EU countries consider intellectual property, green economy, and state innovation policy as key components of their competitiveness. In the context of the importance of the role of the state, we draw attention to the publication M.V. Dykha (2016), which describes the system of components of the economic mechanism, means of state regulation of socio-economic processes.

As noted above, the unique practical combat experience of the Ukrainian military will also be an important advantage in the post-war restoration of regional and global balances. A study by V. Savero *et al.* (2024) demonstrated that the transition of the war to a full-scale phase paradoxically strengthened cooperation between Ukraine and NATO, allowed the Alliance representatives to verify the competence and skills of Ukrainian soldiers and significantly accelerated the country's accession to the organization. The ability of the Armed Forces of Ukraine to withstand superior enemy forces in the face of a lack of resources was also noted by D. Kunertova (2023). Furthermore, the author made a good observation, which was not reflected in this work, about strengthening the practical skills of Ukrainian soldiers in working with innovative military technologies, in particular, with a wide range of combat and reconnaissance drones.

The issue of adaptation of Ukrainian refugees abroad is also of critical importance – as noted in this study, there is a certain substantive dualism. On the one hand, Ukraine, as a state, is interested in ensuring that its citizens who were forced to move work and receive education in a new place in maximum comfort. On the other hand, living conditions that are too good compared to their homeland will inevitably lead them to believe that it is not worth returning even after the victory. A. Batuchina & M. Ratkevičienė (2023), who studied the experience of refugee children in Lithuanian schools, noted that the acceptance of newcomers

was easy both on the part of classmates and the teaching staff, which helped little Ukrainians to become part of the team almost immediately. R. Walawender *et al.* (2023), in turn, were interested in the problems of adult refugees and their employment. It turned out that the assessment of personal capabilities and the level of confidence have a significant positive impact on the expectation of a good job, and among workers with children, the percentage of self-confidence is even higher. Similar peculiarities of integration of Ukrainian refugee families into society were found in Slovakia by H. Rahman (2023). Using a sample of 12 refugee families who found refuge in the small town of Ruzomberku, the study proved the positive acceptance of new residents by the local community and the provision of appropriate housing, opportunities to maintain cultural ties and religious freedom.

Nevertheless, the language barriers mentioned by all the above-mentioned researchers of the social adaptation of Ukrainians in foreign countries give hope that in the short term, IDP families will still prefer to return to their homeland.

## Conclusions

The results obtained in this study form a twofold perception of the current prospects for Ukraine's socio-economic development: as of the first half of 2024, the country is at a bifurcation point and whether it will be able to realize the opportunities mentioned above depends on the further outcome at the front. However, there is every reason to believe that the financial, military and sanctions assistance of Ukraine's partners will not allow the aggressor to turn the tide of the war.

In this case, as we have found out over the course of our work, a wide range of opportunities awaits Ukraine. In particular, due to the blockage of traditional logistics, the Ukrainian transport system has experienced an additional impetus to develop alternative logistics routes and diversify supply chains. Also, as noted above, the extensive destruction experienced by Ukrainian cities and towns, some of which were completely destroyed, will provide an opportunity to rebuild innovative neighbourhoods that meet modern urban standards on the site of outdated buildings and infrastructure. A separate opportunity in this area was identified as the involvement of foreign investment in reconstruction and the world's leading urban planning experts.

Among other potential opportunities created by the invasion and war, the study noted the increased value of human capital among the military and medical professionals. Their practical skills and experience now make it possible to export this knowledge through the formation of educational hubs in military affairs and tactical medicine in Ukraine. The country's great potential has also been unlocked in the energy sector and the achievement of sustainable development goals – the forced abandonment of conventional fossil fuels should further stimulate the increase in clean energy production and the post-war construction of new solar and wind generation facilities. However, the

collection and processing of certain statistical data was limited by the classification of information due to its secrecy under martial law.

In addition, when analysing statistics on internally displaced Ukrainians abroad, the growth of the level of education and qualifications of Ukrainians in the European environment was noted. Ukraine's task is to ensure the return of these people to their homeland after the victory and integrate them into the post-war reconstruction of

the country. The development of a special communication strategy aimed at encouraging the return of forced refugees could be the subject of a future study.

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## Conflict of Interest

None.

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## Трансформація соціально-економічного розвитку України в умовах глобальної турбулентності та війни: виклики та можливості

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**Анотація.** Глобальні зміни в сучасній Україні руйнують звичний уклад, проте й відкривають нові можливості. Дати оцінку такому потенціалу та заздалегідь прорахувати шляхи його реалізації – є надзвичайно актуальною задачею. Метою даної роботи було дослідження соціального та економічного розвитку України. В процесі дослідження були проаналізовані такі показники як обсяг іноземних інвестицій, склад загального фонду державного бюджету та фінансування оборонної сфери до та після повномасштабного вторгнення. Також в процесі синтезу окремих інформаційних повідомлень, було сформовано узагальнену картину щодо поточної ситуації на фронті. В результаті роботи були виявлені такі виклики, як вимушене зниження морського експорту на 55 % у 2022 році (у 2024 році Україна збільшила товарообіг через морські порти до 75 % від довоєнного рівня); дефіцит енергоносіїв, що сягав в моменті 38 %; падіння обсягів врожаю на 40 %; вимушена міграція з країни 6,5 млн українців тощо. Втім, по кожному з викликів були сформовані шляхи їх подолання та методи перетворення їх на додаткові можливості. Зокрема, це диверсифікація логістичних шляхів, збільшення вартості людського капіталу, розвиток альтернативних джерел живлення та наближення до цілей сталого розвитку. Окремо було запропоновано створення в Україні світового освітнього хабу, в якому українські військові та медики, що мають практичний досвід ведення бойових дій та тактичної медицини, зможуть навчати іноземних колег. Крім того, з метою підвищення мотивації внутрішньо переміщених осіб (ВПО) до повернення на батьківщину пропонується розробити відповідну комунікаційну стратегію. Практична значимість дослідження полягає в розробці конкретних пропозицій щодо повоєнної відбудови України, які мають зацікавити керівництво департаментів Міністерства розвитку громад, територій та інфраструктури України

**Ключові слова:** потенціал повоєнного відновлення; людський капітал; альтернативна енергетика; іноземні інвестиції; трансформація; соціально-економічний розвиток; сталий розвиток