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## Impact of the Russia-Ukraine War on Education and International Students

By Fakir Al Gharaibeh,<sup>1</sup> Ifzal Ahmad,<sup>2</sup> and Rima Malkawi<sup>3</sup>

### Abstract

This study examines the effect of the Ukraine crisis on the national and international economy, which is intrinsically tied to education, research, and science. As a result of the Russian invasion of Ukraine in February 2022, the country's economy plummeted sharply. This displaced many local and international students, teachers, and educators at Ukrainian universities, schools, and institutes, including girls and women. In this paper, we have highlighted the global effort to sustain higher education and accommodate displaced students. We have adopted an exploratory, descriptive analysis of media coverage of the Russia-Ukraine War and other statistical studies and articles generally addressing the impact of the Ukraine crisis on the economy, particularly education, research, and science. Results suggest that immediate and continuous support for Ukrainians and international students is viewed as a necessity tightly linked to the national economy and the global economy.

*Keywords:* Russia-Ukraine War, Russia, Ukraine, Education, International students

### Introduction

Conflicts and wars around the world always bring misery to mankind. Wars and military conflicts result in profound economic loss, loss of security, and loss of life that increase with the intensity and length of the war (Djankov & Blinov, 2022; Harrison, 2022, Al Gharaibeh, 2011). The victims of war experience loss of work, as well as insecurities regarding access to healthcare, education, and shelter services (Al Gharaibeh & O'Sullivan, 2021).

Recently, the world has witnessed the Russian invasion of Ukraine, which started in February 2022 and triggered the most serious military conflict in Europe since 1945. According to the UN Refugee Agency's report (2022), over 6.5 million people have sought refuge in different countries, while over 8 million have left conflict areas. The annexation of Crimea and this conflict led to the polarization of pro-Russian and pro-Western supporters (Kurapov et al., 2022).

Ukraine has abundant natural resources, a large consumer market, and a highly educated and skilled labor force that is also price-competitive. In the 2021 report on the Investment Climate Statement by the Bureau of Economic and Business Affairs (U.S. Department of State), Ukraine is considered to have abundant European potential. It is the preferred choice for the European Investment Bank (EIB), which invested €554 million (\$620.1

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million) in crucial infrastructure across the nation in 2021. More than 60% of the EIB's lending in the Eastern Neighbourhood is directed at Ukraine, making it the biggest investor in the area.

Nevertheless, the Russia-Ukraine War has resulted in a sharp decline in the economy, suffering for the Ukrainian people, the loss of historical culture, and the destruction of infrastructure, schools, and educational institutions. Ukraine has around 80,000 international students from around the world. University education in Ukraine has long been regarded as one of the best and most affordable in Europe, both at the undergraduate and postgraduate levels (Bureau of Economic and Business Affairs, 2021).

The discontinuation of education at most Ukrainian universities caused by the current war has taken its toll on international students, causing psychological trauma and educational stress. Sheather (2022) argued:

Those directly caught up in the conflict will be at immediate risk of post-traumatic stress disorder, but depression, anxiety, and other stress-related conditions, including alcohol and drug misuse will also increase, and once again these may have life long and even inter-generational impacts. (p. 1)

The negative consequences of war on education include, but are not limited to, the displacement of children and teachers; the destruction of educational institutions; psychological trauma, fear, and anxiety (and low motivation to attend classes as a result); the violation of social justice; brain drain; limited access to educational resources; and the reduction of academic hours (Lavrysh et al., 2022). In this paper, we mainly investigated the impact of the Ukrainian War on the education, students, and research in the country by consulting literature reviews, news reports, and policy documents from national and international development organizations. More precisely, we aim to address the learning losses and displacement of students and educators, analyze key challenges for students and teachers, and offer solutions to these challenges. Further, the paper explores how students from the Middle East (MENA region) who were studying in Ukraine have been impacted by this war. We also highlight the need for global efforts to sustain educational institutions and support displaced students. To do so, we have conducted an exploratory analysis based on what has been published on the Russia-Ukraine War using media, academic, and statistical studies. In this paper, we aim to answer the following questions:

1. What are the effects of the Russia-Ukraine War on the educational process for students in Ukrainian universities and institutes?
2. To what degree does the current war contribute to the displacement of international students and educators?
3. How did the war impact the progress in research and science in Ukrainian universities?
4. How did global efforts support international students in the current crisis?

In addition to these questions, there is a belief that instant and effective support for research and education is the key to reducing the current crisis for both the economy and international students. The next part of the paper provides a brief overview of Russia and Ukraine and how their economies performed in the pre-war era. This section is followed by the detailed methodology of the study, a discussion provided on the impacts of war in Ukraine on the educational sector, policy implications, and conclusions.

**Figure 1: Physical Features of Ukraine**

Source: Encyclopaedia Britannica, Inc.

## Background of Russia and Ukraine

### Russia

According to National Geographic, Russia is the largest country in the world, as it takes up a tenth of the planet's surface. It spans two continents (Europe and Asia), three seas (the Arctic, Atlantic, and Pacific), and eleven different time zones. The geography of Russia is diverse, ranging from desert to icy shoreline, high mountains to enormous wetlands. Steppes, or undulating, treeless grasslands, comprise a substantial portion of Russia. Taigas, which are vast pine woods, make up the majority of Siberia, which comprises three-quarters of Russia. About 100,000 rivers flow through Russia, including some of the world's longest and most potent. The country also boasts numerous lakes, including Ladoga and Onega, the two biggest in Europe. More water is present in Lake Baikal in Siberia than in any other lake on the planet.

The Russian economy is the sixth largest in terms of nominal GDP and the ninth largest in terms of global GDP (PPP). Russia has a plentiful supply of natural resources, such as oil, coal, iron, ore, gold, and aluminum, which serve as the economy's foundation. Its energy and mineral resources are the largest in the world, and its oil and natural gas production rates are among the highest in the world as well. Moreover, Balmann et al. (2014) stated that Russia is a significant player in the global wheat market. It emerged as a leading player in the world grain market; the country was among the top five wheat-exporting countries between 2006 and 2011 according to FAO in 2014 (p. 132). Finally, Russia has the fifth-highest military spending and the most extensive inventory of nuclear weapons in the world.

### Ukraine

Located in Eastern Europe, Ukraine covers approximately 600,000 square kilometers (230,000 sq. miles) and has a pre-war population of around 41 million. It is rich in natural resources and has abundant reserves of minerals. It ranks first in Europe in access to uranium ore and second for titanium and mercury ore. Globally, it is second in manganese and iron ore reserves. Ukraine is also among the top European countries in shale gas and coal reserves (BBC, 2022).

As for the agriculture ranking, Ukraine occupies the first place in Europe regarding arable land; the third largest area of black soil is in Ukraine. In addition, it has first place in the world in terms of sunflower oil and sunflower seed exports. Ukraine is ranked among the top countries in the world for wheat, barley, corn, rye, and honey production. In the industrial field, it has the second-largest installed nuclear power plant in Europe and the seventh biggest in the world. It has the world's fourth-largest natural gas pipeline system, providing the EU with a

throughput capacity of 142.5 billion cubic meters of gas. It is noteworthy to mention that Ukraine is considered one of the world's leading manufacturers of rocket launchers as well (BBC, 2022).

According to Amonovich (2022), Ukraine's main foreign policy priority has been to join the European Union (E.U.) and NATO, as reflected in recent amendments to its constitution. However, Russia opposes this and has demanded that NATO halt its expansion eastward and withdraw weapons from Eastern Europe. In February 2021, Ukrainian President V. Zelensky suggested that Ukraine might leave the Budapest Memorandum, which obligates Ukraine to give up its nuclear arsenal in exchange for security guarantees from Russia, the U.S., and the U.K. Russia sees this as a move towards Ukraine acquiring nuclear weapons. In February 2022, Russia acknowledged the independence of the Donetsk People's Republic (DPR) and the Luhansk People's Republic (LPR) and cited Article 51 of the U.N. Charter as the basis for its action on Ukrainian lands.

### **The Conflict and its Relevance for the E.U.**

The conflict between Ukraine and Russia has a complex history, with tensions rising after the Orange Revolution in 2004 and the 2008 war between Russia and Georgia (Allison, 2008; Dickinson, 2021). The annexation of Crimea by Russia in 2014, which followed the Maidan Revolution in Ukraine, led to a conflict in eastern Ukraine where pro-Russian separatists declared independence and received support from Russia. The conflict has resulted in thousands of deaths, displacement of over 1.5 million people, and strained relations between Russia, Ukraine, and the West.

Russia's annexation of Crimea was met with widespread international condemnation, and several countries imposed sanctions on Russia in response. The conflict in eastern Ukraine remains ongoing, with sporadic outbreaks of violence, and both sides accusing each other of aggression and violations of international law. The ongoing conflict has also led to an increase in tensions between NATO and Russia, with NATO expanding its military presence in Eastern Europe. Similarly, Ukraine's desire to join NATO has been met with opposition from Russia, further adding to the tensions between the two countries (Myshlovska, 2022). The situation in Ukraine has raised concerns about regional stability and has the potential to escalate into a larger conflict with global implications (Carpenter, 2022).

The conflict has had a significant impact on the relationship between Russia and the West, with the crisis in Ukraine leading to a deterioration of relations and increased tensions. One of the key areas of concern for Europe is energy security. The conflict has led to disruptions in gas supplies to Europe as Ukraine serves as a transit country for Russian gas exports. Furthermore, the ongoing conflict has resulted in significant humanitarian issues, with many people displaced and in need of assistance. As such, it is important for all parties involved to work towards a peaceful resolution that respects the sovereignty and territorial integrity of Ukraine while also ensuring the security and stability of the wider region. However, the conflict is ongoing and shows no sign of being resolved anytime soon.

### **Methodology**

After defining our research questions, relevant literature using various databases such as Google Scholar, JSTOR, and PubMed were searched using keywords and statements like "impact of Ukraine war on education," "impact of war on education," "Russia-Ukraine conflict and its repercussions for education," and "the education sector of Ukraine in the backdrop of the Russia-Ukraine war."

We also found scholarly articles, newspaper articles, and reports from various international organizations, such as the U.N., UNESCO, Reliefweb, FAO, U.S. State

Department's reports, the E.U. Council, and WHO. Similarly, we mainly relied on research papers and reports published in the context of the Russian invasion of Ukraine after February 2022. However, to contextualize the issue and provide a brief history of the conflict, relevant papers related to this dimension were also incorporated into the final analysis. News clips, reports, and research papers were critically reviewed for relevance and authenticity of sources in relation to the Russia-Ukraine War.

In addition to the literature search methodology described, we also employed a systematic approach to ensure that we captured a wide range of perspectives on the impact of the Ukraine War on education. This included searching for literature from both Ukrainian and Russian sources, as well as from international organizations and experts in the field of education and conflict. We also made sure to include literature from various disciplines, such as Education, Sociology, Political Science, and International Relations, to gain a comprehensive understanding of the issue. This methodology of data collection is consistent with the previous studies conducted (Ahmad et al., 2016; Ahmad, 2017).

Accordingly, we shortlisted and analyzed a total of 49 research papers, news articles from authentic news outlets, and policy reports published by well-known international development organizations. Overall, our literature review and research methodology aimed to provide a thorough and unbiased analysis of the impact of the Russia-Ukraine War on education, and to contribute to a better understanding of the issues in relation to education and research for policy-makers, educators, and the general public.

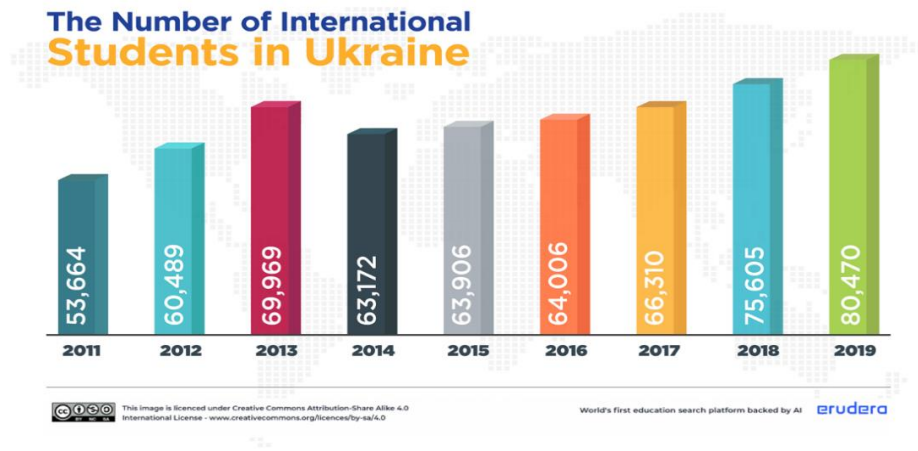
## **Findings and Discussion**

### *Ukraine: Top European Educational Destination*

Ukrainian universities are best known for the affordability and high quality education they provide at both undergraduate and graduate levels. According to the Lisbon Convention on Qualification Recognition in the higher education sector in the E.U. region (Lisbon Convention, 1972), as well as 22 bilateral agreements with other countries, Ukrainian educational diplomas and academic degrees are highly recognized by many countries such as the U.S., Canada, U.K., E.U. countries, Australia, the People's Republic of China, and even Russia (Shevchenko, 2019). Access to worldwide standards of education while studying in Ukraine is made possible by the fact that most top universities are government-run and accredited by organizations like the European Council, WHO, and UNESCO.

Education in Ukraine offers the benefits of European living standards at an affordable cost. Besides, English is the primary language of instruction in the majority of Ukrainian institutions and universities. The latter provide a variety of student conferences with visiting faculty from the United Kingdom, Canada, the United States of America, and other notable nations to enrich the student experience. Additionally, students from Ukraine who complete their studies could be given the option of permanent residency in Europe ("Advantages of studying in Ukraine," n.d.).

According to Hladchenko (2021), the main factors that push international students to study in Ukraine are the low cost of study compared to home countries, strong education, and recognition of Ukrainian degrees for further studies in their countries. The data come from semi-structured interviews with 50 international students from top Ukrainian institutions which represent technical, classical, medical, aviation, and life sciences discipline profiles.

**Figure 2: The Number of International Students in Ukraine**

Source: Erudera

In reference to Ukraine's higher education statistics by Erudera, Ukraine welcomed around 80,470 international students who mostly majored in medicine, medical practice, dentistry, management, and pharmacy ("Ukraine International Student Statistics," 2022). The studies also indicate that in less than a decade, from 2011 to 2019, the number of international students enrolled increased by approximately 50%.

**Figure 3: The Number of International Students at Ukrainian Universities**

Source: Aljazeera, 2022

In 2019, 18,429 students from India made up most of the international students enrolled in higher education institutions, followed by Moroccan students with a total of 8,233. At the same time, just 21.5% of international students in Ukraine were from post-Soviet nations, with Azerbaijan coming in first (5,470 students). Kharkiv, with 20,196 students, is the Ukrainian region with the most international students. Kharkiv National Medical University has around 4,355 enrolled international students in the medical field.

According to Al Jazeera (2022), the number of international students at Ukraine universities has increased tremendously since 2011, from 53,664 enrollments to 80,470 enrollments in 2019. India has the highest percentage of international students, accounting for 22.90% of all enrollments. To pursue degrees in medicine, dentistry, and nursing, more and more Indians are migrating to Ukraine as courses are inexpensive and of good quality. According to Arab News (2022), there are also more than 10,000 Arab students from different

Middle Eastern countries studying in Ukraine due to the country's safety and their comparably low cost of living. With almost 8,233 students registered in universities, Morocco has the highest percentage among Arab countries at 10.23%. This is followed by Egypt with around 3,000 students and a few hundred students from Lebanon.

Al Jazeera (2022) stated that international students may enroll at more than 240 universities in Ukraine to obtain bachelor's, master's or Ph.D. degrees. Educators and professors at Ukrainian institutes and universities have advanced levels of experience in teaching and advanced professional training, thus making the educational process interesting and creating all conditions for the scientific and creative development of education. Consequently, Ukrainian universities and institutes attract many international students to study at their premises, contributing significantly to the Ukrainian economy.

International students are an essential part of Ukraine's economy. Al Jazeera (2022) pointed out that the gross domestic product (GDP) of Ukraine was more heavily influenced by the spending of international students than the U.S. Enrolled foreign students bring \$542 million in revenue to the country with a GDP of \$155 billion, or more than \$3.00 of every \$1,000. By comparison, international students contributed \$28.4 billion to the U.S. economy of \$21 trillion in 2020-2021, or less than \$1.50 of every \$1,000.

### **Impact of the Ukraine Crisis on Education and International Students**

The war in Ukraine took its toll on humanity in February 2022, imposing life-threatening conditions, a sharp drop in economies, destruction of cultural and historical places, and hurdles to educational and learning processes. Tsagkaris et al. (2022) divided the effects of the Russia-Ukraine War into four groups: 1) Environmental damage brought on by using toxic substances and/or nuclear radiation during the conflict, 2) physical harm, 3) mental health effects on Ukrainians (including soldiers and civilians), and 4) destruction of healthcare facilities and infrastructure.

Apart from tens of thousands of deaths, the United Nations High Commissioner for Refugees (UNHCR) reported 7.8 million Ukrainian refugees in Europe as of November 1, 2022. In different European countries, 4.5 million people have registered for Temporary Protection or other state protection programs. 14.8 million border crossings into Ukraine and 7.4 million border crossings out of Ukraine were counted as cross-border movements. These statistics represent cross-border movements rather than specific people (p. 1). It is estimated that Ukraine's real GDP will shrink by 36.5% in 2022, which also includes a 39% drop in private consumption caused by the shocks of war, disrupting supply chains, depleting resources for spending among consumers and the migration of over 6 million refugees to neighboring countries (Djankov & Blinov, 2022).

According to a report published by the World Bank referring to the Ministry of Education and Science of Ukraine (MoES) stats suggesting that 126 schools and universities have been destroyed, and 1,635 schools (which is 5% of the country's schools) have suffered damage due to the war (The World Bank, 2022). Among the estimated total of over 6 million refugees, the World Bank report published in May 2022 estimated that about 665,000 are students. This is about 16% of the total enrolled students in the country. According to a study by Save the Children (n.d.), 2.5 times more school-aged girls than boys have been displaced from their places of education, due to the effects of the Ukraine war. Similarly, more than 25,000 educators, most of whom are female educators, have also been displaced and taken refuge, representing 6% of all educators in the country. Similarly, the same report estimated that over 8 million Ukrainians have been internally displaced, including women and children.

Among these 8 million people, 74% of families have children (The World Bank, 2022). According to a report by BBC in July 2022, 65% of women displaced due to War were looking



for safe places to take shelter which increases the risk of trafficking and sexual abuse (BBC News, 2022). As a result of the sharp increase in the defense and security budget, the government is unable to allocate enough funds to education due to the continuity of war. The government of Ukraine has adopted the 2023 budget which includes 43% of the total expenditure, that is more than \$30 billion, devoted to security and defense (Wilk & Zochowski, 2022). Additionally, the longer the war lasts, the longer the delay in reopening of schools and colleges, and therefore the more days missed by students and youth. This situation will further reduce the ability of Ukraine to have a skilled workforce for the jobs available during the recovery phase and students will fall behind in their learning (Djankov & Blinov, 2022).

It has been proven that wars and other calamities negatively impact the cognitive abilities of children. Past studies reported that during the civil war of Tajik between 1992-98, girls were mostly impacted and could not complete their education compared to girls in relatively stable areas (Shemyakina, 2011). Similarly, the 2005 earthquake in Pakistan affected the growth of children between the ages of 3 and 11 who later scored significantly lower than those children who were not affected (Andrabi et al., 2021).

Additionally, in Ukraine, COVID-19, which resulted in school closure for 31 weeks, and the invasion of Russia resulted in an estimated 20 learning points of loss based on the Organisation for Economic Co-operation and Development (OECD) learning parameters for each year (Angrist et al., 2022). Moreover, Angrist et al. (2022) estimated that the prolonged war in Ukraine could further negatively affect the harmonized Learning Outcomes to 451 from 481, i.e., the lowest among the EU countries. Furthermore, students' future earning losses could be greater than 10% per year per student (Angrist et al., 2022).

Besides the destruction of and damage to educational institutions, the displacement of students and educators has substantially impacted the provision of educational services. Although there are numerous online education projects to retain access to education during the war for Ukrainian students and refugees outside Ukraine, there are still large coverage gaps. The quality of education delivered remotely or online is of a lesser one due to less learning material being covered during the war which eventually leads to lower learning outcomes; it is classified now below the lowest-performing countries in Europe according to a report by the World Bank (2022).

According to International Consultants for Education and Fairs (ICEF) (2022), thousands of international students were trying to flee Ukraine. The Ukrainian government and non-profit organizations evacuated students outside the war zone to cross the border into neighboring countries and then to their home countries. Since most of the international students reside in Kharkiv, which is the second-largest city in Ukraine, evacuation attempts were largely focused there. Al Jazeera (2022) reports indicate that many of Ukraine's top universities—including VN Karazin Kharkiv National University and the Kharkiv National Medical University—host a sizable portion of all international students in the country, most of whom are situated in eastern Ukraine, where the most intense fighting is currently taking place.

ICEF (2022) also states that some African students have encountered racial harassment at border posts as they attempted to leave the country. In addition to their attempts at evacuation, the loss of international students will have a substantial impact on the Ukrainian economy. Similarly, Srichawla et al. (2022) revealed that the majority of domestic and international medical students are currently refugees attempting to reach Western Europe or their home countries. How many of these students will be able to finish their studies and manage the trauma of political upheaval is still an open question. This remains relevant even though many have managed to flee the ongoing fighting. Hnedko et al. (2022) indicate that policy-makers, educators, and scientists in Ukraine are focusing on ways to make education

safe for students during a time of war. Administrators of institutes must ensure that safe places are available for students to study, such as bomb shelters.

Ukraine has one of the top European medical schools with a high number of international students, which makes the impact of the war on international medical students even more significant. Srichawla et al. (2022) noted that many students were waiting for admission on the borders of neighboring countries; while some have obtained refugee status, their primary concern was for their classmates and families in addition to their schooling and employment. Due to the continuous violence, these international students will probably pursue their medical degrees in other countries like Italy, Spain, and Germany. Unfortunately, new reports suggest that some of these future healthcare experts have lost their lives too soon because of the continued bombing of Ukrainian cities. Srichawla et al. (2022) believed that if the crisis persists, students' academic performance will suffer and whatever healthcare education takes place might be limited to online courses. It was crucial and challenging to prioritize, in these conditions, the creation of an atmosphere where medical students could have a steady internet connection and the tools they need to attend their courses.

Kurapov et al. (2022) conducted an online survey of students and staff at four universities using a snowball, non-probability sampling technique. Information was gathered on burnout, loneliness, resilience, and fear of conflict using four trustworthy tools. Additional data on drug use and dietary habits were collected. The results revealed that “the majority of respondents (97.8%) indicated a decline in their psycho-emotional health, with students reporting higher rates of despair (84.3%), weariness (86.7%), loneliness (51.8%), anxiousness (84.4%), and anger (76.9%)” (Kurapov et al., 2022, p. 1). Kurapov, et al. (2022) remarked how drug use (alcohol, tobacco, painkillers, and sedatives) has risen, along with feelings of dread-induced loneliness, exhaustion, and weakened resilience. Despite these circumstances, 12.7% of respondents claimed that the conflict had not impacted them.

*The Arab Times* (2022) reported that the crisis had impacted international students' physical and mental health, as these students were compelled to flee the country to protect their lives rather than concentrate on their studies or jobs. The future and education of those who had already enrolled were in jeopardy.

Finally, a report published by Asomi College of Sciences on their official website reported that the Ukrainian war has also impacted Ukrainian and Russian students who are studying abroad. As a result of the war, these countries experienced an economic crisis which negatively impacted their banks. Due to this situation, many students studying abroad have been unable to pay their tuition or living expenses since they do not have access to the necessary funds. A 14-year-old female student named Amina argued that “the COVID-19 lockdown in 2020 was hard, but I realize that it was nothing compared to what we are going through now. Our lives have been changed forever” (Newswire, 2023). There are many communities around the world raising money or offering scholarships to ensure that these students have access to funds.

### **The Russian-Ukrainian War: Impact on Research and Science**

The war in Ukraine has had a significant negative impact on research and science in the country. It has sparked political and economic divisions that have hampered research in Physics, space science, climate science, food security, and energy. Many researchers have also left the country to seek more stable and secure research environments. Abbott et al. (2022) commented that researchers and scientists, mainly in Ukraine, have had to deal with turmoil and threats to their lives and work while their institutions were bombed. As a result of politics, boycotts and sanctions affected scientists in Russia as well.

Furthermore, the ongoing conflict has led to a reduction in funding for scientific institutions and a decrease in the number of international collaborations. Indeed, the Ukrainian government has had to divert funds away from research and other scientific activities in order to support the war effort and address the humanitarian crises caused by the conflict (OECD, 2022). This has resulted in a reduction in funding for universities and other scientific institutions and made it more difficult for researchers to conduct their work. Furthermore, the war has had a negative impact on international collaborations. Many researchers have been unable to attend international conferences and workshops, and there has been a decrease in the number of international research projects involving Ukrainian scientists. This has limited the exchange of ideas and knowledge and has made it more difficult for Ukrainian researchers to keep up with the latest developments in their field.

In addition to the financial and logistic challenges, the ongoing conflict has affected 95,000 Ukraine researchers and caused many of them to leave the country in search of more stable and secure research environments. This brain drain has led to a loss of talent and expertise in Ukraine and has further hindered the country's ability to conduct cutting-edge research. George Gamota, a Ukrainian-born physicist who currently resides in the United States and who assisted Ukraine in developing its scientific system after its independence from the Soviet Union in 1991, has estimated that around 22,000 Ukrainian researchers have left the country (Abbott et al., 2022, p. 1). Another study conducted under the project Ukrainian Science Reload shows that 14.7% of the researchers have migrated abroad. A majority of this number are women scientists. Similarly, another survey conducted by the UNESCO Institute of Statistics illustrates that, pre-war, Ukraine had 44.7% female researchers. Abbott et al. (2022) pointed out that a research system that was gradually modernizing and starting to integrate with European partners was destroyed during the war. For example, the Kharkiv Institute of Physics and Technology's neutron source was bombed in March and June 2022. Numerous universities and science centers have also sustained significant damage. Steve Binkley, chief deputy director of the US Department of Energy's Office of Science, warned in an April letter urging grant-holders to host scientists impacted by the conflict that it would probably take years to rebuild the scientific infrastructure (Gaid et al., 2022; Polishchuk et al., 2022).

While there is evidence that most of the scientists remain in Ukraine, the fact is that the labs and other infrastructure are bombed, making it difficult for them to conduct meaningful research (Naujokaitytė, 2022). According to a recent survey reported by Naujokaitytė (2022), 2,000 scientists (38% of the total) were forced to relocate within the country due to the current war, whereas another 15% have fled to other countries. The same report further highlighted that three-fourth of scientists are unable to carry on their research activities due to the war. One scientist was reported as saying, "I don't feel safe which hinders me from working. The specifics of my work imply my presence at the workplace, and I do not have such an opportunity" (Ukrainian Science Reload, 2022). It is noteworthy that approximately 81% of the scientists are receiving their salaries from their institutions, which highlights the resilience of the existing system in Ukrainian universities. Shulga (2022) reported that more than 200,000 students and scientists have fled the war-torn country of Ukraine. The majority of these students and scientists may never return to the country unless there are signs of peace and stability in the future.

### **Impact on Students from the MENA Region**

There has been a significant impact of the ongoing war in Ukraine on international students, including Middle Eastern and North African (MENA) students. The country's economy has been heavily impacted by the conflict, leading to inflation and a shortage of basic

goods (IFRC, 2022). This has made it difficult for students to afford food and other necessities and has further compounded the challenges they face in continuing their studies. The war in Ukraine is also having a negative impact on the mental health of students in the MENA region. Many have reported feelings of anxiety and loneliness due to the unstable security situation and the ongoing fighting. Students have been unable to focus on their studies as a result, which has caused stress and depression. A female student named Viazovska told *Quanta Magazine* in the following words: “I cannot work when I am in conflict with somebody or there is some emotionally difficult thing going on” (Harmatiy, 2022, p. 352). She further said that some of her known fellows have left education and fought in the war or became volunteers who later died during the conflict.

Furthermore, the war in Ukraine has significantly limited these students’ ability to travel and return home. The conflict has resulted in the closure of airports and the suspension of flights, making it difficult for students to leave the country. This has caused a great deal of stress and uncertainty for many students, as they are unable to see their families and loved ones. It is estimated that prior to the Russian invasion, around 8,000 students from Morocco, 4,000 from Turkey, 3,000 from Egypt, and many others from different MENA countries were studying at Ukrainian universities. In the wake of the invasion, the governments of these countries attempted to evacuate their students, but Silber and Wilder (2022) claim that thousands of students remained in Ukraine. The same report also stated that some students, including Moroccans, were killed during this war.

**Figure 4. Number of International Students in Ukraine by Country of Origin**



*Source: Erudera (2019)*

According to ICEF (2022), many organizations worked round-the-clock to assist international students in the evacuation, including US-based NGO Sewa International, Sewa Europe, and the Hindu Swayamsevak Sangh (HSS). They worked together to evacuate students and citizens in eleven Ukrainian cities. Sewa International assisted over 4,000 students enrolled in their helpline by February 2022. The non-profit organization planned the students’ transportation to the closest border-crossing point and provided food and other supplies for them. In addition, Sewa set aside a modest sum for money to help students and started a Facebook fundraising campaign.

Some policy documents have reported that the war in Ukraine has led to a rise in xenophobia against MENA students in Ukraine (Silber & Wilder, 2022). The conflict has fueled anti-immigrant sentiment and some students reported that they had to wait for hours to cross the border. According to a news report by Busari et al. (2022) for CNN, Ukrainian students were evacuated first and prioritized by the Ukrainian authorities over other students including those from the Middle East.

Another critical aspect to consider is the effect of the war in Ukraine on the future prospects of MENA students. The conflict has made it difficult for these students to complete their degrees, resulting in delays in their education. This can have a significant impact on their professional careers and job prospects. Due to disruptions in education, economic difficulties, negative impacts on mental health, travel restrictions, xenophobia, discrimination, and negative effects on future prospects, students from the MENA region have found it difficult to continue their studies. It is thus imperative for the international community to support these students and work towards finding a peaceful resolution to the ongoing conflict.

Similarly, European countries such as Germany allowed affected students to apply for a temporary residence permit, initially for two years, which allowed them to work, study, and receive social benefits. Some Arab countries, like Egypt, put into service repatriation flights from neighboring European countries, such as Romania and Poland, to help evacuate international students (Arab News, 2022).

### **Global Efforts to Sustain Ukrainian Research and Support Displaced Students**

Many countries have generously supported the students and scientific community of Ukraine. For example, many universities and research institutions across the world have offered scholarships and fellowships to refugee scientists. Approximately 15% of all scientists have fled to other countries for refuge. Among them, 27% sought refuge in Germany, whereas 25% fled to Poland. Abbott et al. (2022) confirmed that the U.S. National Academy of Science was one of many organizations assisting Ukrainian scientists who were refugees in carrying out their research. The fastest to respond, however, were neighboring countries like Poland, which took in more than 1.2 million migrants by August 2022. The Polish Academy of Sciences has funded hundreds of Ukrainian academics. In 2019, Poland surpassed Russia as Ukraine's top research partner.

Since the beginning of the war, the United Arab Emirates has supported the Ukrainian people. Many of the students who fled the war in Ukraine were granted scholarships in the U.A.E. to help them continue their educational journey (Gulf Today, 2022). The Gulf Medical University (GMU), for instance, which is a medical school in Ajman, U.A.E., has offered scholarships for displaced students; some were enrolled under the GMU-Ukraine Student Exchange Program, while others even qualified for free seats in medicine.

Similarly, Shulga (2022) reported that the E.U. has committed to assess the damage and to rebuild the physical infrastructure of schools, universities, and scientific facilities in the country. Similarly, Kondrotov et al. (2022) proposed several actions to support and develop Ukrainian science, including support for the scientific community in Chemistry. Further, the Ilfa University of Latvia, in collaboration with ScienceForUkraine, started an initiative designed to assist young scientists in Ukraine. This initiative provides lists and databases of research groups that can place such scientists at risk in appropriate research groups. ScienceForUkraine compiled a list of over 1,000 laboratories and research institutions including several that run and support the World Economic Forum for placements of such scholars (Polishchuk et al., 2022).

A number of governments, including the U.K., Germany, and Poland, have also begun advocating for the mobilization of humanitarian aid, integrating Ukrainian scholars into various research groups and think tanks, and providing funding and lodging facilities for such scholars.

### **Policy Implications and Conclusion**

The devastation wrought by wars are felt across the board, in terms of economics, human lives, infrastructure, and the basic fabric of society. There are many students and children in Ukraine who do not know what their future holds. They are displaced from their homes and are still unsure when they will be able to return. While it is difficult to open schools in the war-torn areas of Ukraine at the moment, neighboring countries, where many of the refugees have fled, can help open schools in the refugee camps on a temporary basis. It is critical to allocate more funds to the education of refugees as soon as possible.

Another policy implication is that schools in less affected areas may be used for double and triple shifts to accommodate as many students as possible. However, this would still remain a challenge given that students will have to travel long distances to take advantage of these facilities. The government may need to mobilize additional resources to facilitate transportation to such schools. Furthermore, the Ukrainian economy has shrunk by half, so if the war were to stop today, the country would need over \$100 billion to rebuild its destroyed infrastructure, including schools, colleges, universities and research centers. Efforts could be made to ensure that these facilities are equipped with the necessary resources and technology to support modern education. For this, the world must provide all-out support for the Ukrainian government. NGOs and international development organizations will have a significant role in rebuilding the country.

Another step that may help improve the educational system of Ukraine, post-war, is to offer support to displaced students. This could include financial assistance to families to help cover the cost of transportation, accommodation, and other expenses related to displacement. Efforts could be made to facilitate students enrolled in schools in nearby locations and equip them with the necessary materials and resources to continue their education.

Another policy implication from this study is that governments around the world must promote the scientific initiatives of Ukrainian researchers. This can be achieved by supporting research scientists in Ukraine at present, ensuring the availability of funds, collaborations, and enhancement of research networks to be among the few steps that can be immediately taken to support their scientific endeavors. Similarly, academics that are at risk may be hired to protect them and offer them a safe and secure place to work. Various projects may be supported so that they can move to safer territories in Ukraine and around the world. The government's engagement in supporting such initiatives is highly important. Therefore, communication channels with the Ukrainian government must be repaired and strengthened for this purpose.

Providing additional funding for education post-war is another policy recommendation for national and international development and non-governmental organizations. This funding could be used to support programs, such as teacher training and curriculum development, as well as to provide additional resources and materials for students. Various programs may be developed to provide support and educate students affected by war. Programs for youth may include skills development and career development, as well as programs that offer social and mental health support.

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