
**TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KYIV
EDUCATIONAL AND SCIENTIFIC INSTITUTE OF INTERNATIONAL RELATIONS**

**АКТУАЛЬНІ ПРОБЛЕМИ
МІЖНАРОДНИХ ВІДНОСИН**

ISSUE 162

ACTUAL PROBLEMS OF INTERNATIONAL RELATIONS

ISSN 2308-6912



2 308691 200005 >

KYIV – 2025

Актуальні проблеми міжнародних відносин : Збірник наукових праць.
Випуск 162

К. : Київський національний університет імені Тараса Шевченка.
Навчально-науковий інститут міжнародних відносин, 2025. – 129 с.

Actual Problems of International Relations. Issue 162, #1 (2025), 129 p. Published by Institute of International Relations of Taras Shevchenko National University of Kyiv. All rights reserved. Specifics about Editorial Team and Policy in English can be found at <http://apir.iir.edu.ua/index.php/apmv>

Relevant and most actual problems of international relations, international economic relations, business and finance as well as international law and communications are revealed and comprehensively researched.

Developed and designed for researchers, scientists, Ph.D. students and masters.

У Збірнику розглянуто актуальні питання розвитку сучасних міжнародних відносин, міжнародного права та міжнародних економічних відносин.

Розраховано на викладачів, наукових співробітників, аспірантів та студентів.

РЕДАКЦІЙНА КОЛЕГІЯ ЗБІРНИКА НАУКОВИХ ПРАЦЬ «АКТУАЛЬНІ ПРОБЛЕМИ МІЖНАРОДНИХ ВІДНОСИН»

Головний редактор: *Резнікова Н. В.*, д.е.н., проф., Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка.

Заступник головного редактора: *Дорошко М. С.*, д.і.н., проф., Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка.

Відповідальний редактор: *Приятельчук О. А.*, д.е.н., проф., Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка

Заступники відповідального редактора: *Хлистул Г. Ю.*, к.політ.н., Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка, *Сіренко А. С.*, к.фіз.-мат.н., Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка, *Макеєнко Л. Ф.*, Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка.

Склад редакційної колегії

Грем Томас., д.політ.н., радник президента США з питань зовнішньої політики та безпеки, провідний науковий співробітник Інституту Джексона з глобальних питань Йельського університету (м. Нью-Хейвен, США),

Гейгер Мартін., доктор філософії (політологія), Університет Карлтон (м. Оттава, Канада),

Еспіноза Гастон., д.і.н., проф., коледж Клермонт Мак-Кенна (м. Клермонт, США),

Картасова Єкатерина., д.е.н., Мідлсекс університет (м. Лондон, Велика Британія),

Кремона Маріз., д.ю.н., проф., Європейський академічний інститут (м. Флоренція, Італія),

Сіскос Євангелос., д.е.н., проф., Державний технологічний навчальний інститут, (м. Касторія, Греція),

Хонг Ліу., д.політ.н., проф., Технологічний університет (м. Наньянґ, Сінгапур),

Шаркі Нолан., д.ю.н., Університет Західної Австралії (м. Перт, Австралія),

Кьоллер Юрген., д.е.н., Інститут економіки, Університет Ерлангена-Нюрнберга (м. Ерланген, Німеччина),

Смолл Уоррен, д.ю.н., Міддлберійський Інститут дослідження міжнародних відносин (м. Монтерей, США),

Балюк Валенти, д.політ.н. (габітовантй), проф., Університет Марії Кюрі-Склодовської (м. Люблін, Польща),

Чан Ман Хунг Томас, д.е.н., Чу-Хайський коледж вищої освіти, (м. Гонконг. Китай)

Склад консультаційної ради при редакційній колегії

Білоцький С. Д., д.ю.н., проф., Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка,

Затонацька Т.Г., д.е.н., проф., Економічний факультет Київського національного університету імені Тараса Шевченка,

Копійка В.В., д.політ.н., проф., Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка,

Купалова Г. І., д.е.н., проф., Економічний факультет Київського національного університету імені Тараса Шевченка,

Медведєва М.О., д.ю.н., проф., Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка,

Неліна Д.В., д.політ.н., доц., Філософський факультет Київського національного університету імені Тараса Шевченка,

Піпченко Н. О., д.політ.н., доц., Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка,

Смірнова К.В., д.ю.н., проф., Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка.

Адреса редакційної колегії:

04119, Київ, вул. Юрія Ілленка, 36/1, Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка.

тел. +380444814468.

Збірник наукових праць «Актуальні проблеми міжнародних відносин» заснований у 1996 році. Засновник: Інститут міжнародних відносин Київського національного університету імені Тараса Шевченка.

Збірник наукових праць включено до переліку наукових фахових видань України (категорія Б) у галузі політичних, юридичних і економічних наук (спеціальності – 051, 052, 072, 073, 081, 291, 292, 293).

Рішення Атестаційної колегії Міністерства освіти і науки від 06.03.2020 р.

Електронну версію видання розміщено на сайті «Актуальні проблеми міжнародних відносин» за адресою <http://apir.iir.edu.ua/index.php/apmv> і передано до Національної бібліотеки України імені В. І. Вернадського на депозитарне зберігання та представлення на порталі наукової періодики: <http://www.nbuv.gov.ua>.

Автори опублікованих матеріалів несуть повну відповідальність за підбір, точність наведених фактів, цитат, економіко-статистичних даних, імен власних, коректність перекладу на іноземну мову та інших відомостей.

Всі права застережені. При цитуванні обов'язкове посилання на Збірник наукових праць «Актуальні проблеми міжнародних відносин».

© **Навчально-науковий інститут міжнародних відносин. 2025.**

ПОЛІТИЧНІ ПРОБЛЕМИ МІЖНАРОДНИХ ВІДНОСИН

УДК 327:355.01(477)

CURRENT FOREIGN POLICY OF UKRAINE: A TOUGH WAY TO FORGE PEACE

СУЧАСНА ЗОВНІШНЯ ПОЛІТИКА УКРАЇНИ: ВАЖКИЙ ШЛЯХ ДО МИРУ

Kseniia Pashaieva

PhD (Political Science), Senior Lecturer of the Department of International Relations and Law, Institute of Humanities, Odesa Polytechnic National University, Odesa, Ukraine,
e-mail: kseniya.p.2014@gmail.com
ORCID ID: <https://orcid.org/0000-0002-2576-6403>

Ксенія Пашаєва

доктор філософії, старший викладач кафедри міжнародних відносин та права Інституту гуманітарних наук Національного університету «Одеська політехніка», Одеса, Україна,
e-mail: kseniya.p.2014@gmail.com
ORCID ID: <https://orcid.org/0000-0002-2576-6403>

***Abstract.** This paper examines the fundamentals of Ukrainian foreign policy. It reveals its priority directions, discusses the Ukrainian Peace Formula and President V. Zelensky's Victory Plan. The research highlights the dynamic nature of the country's foreign policy and response to the complex security environment with its outcoming challenges. It identifies the challenges posed by Russia's aggressive actions and analyzes the strategies employed by Ukraine to safeguard its sovereignty and restore territorial integrity.*

The paper studies the priority directions of Ukraine's foreign policy, emphasizing its efforts to promote regional stability. In addition, the research delves into the Ukrainian Peace Formula and the Victory Plan exploring the diplomatic initiatives to resolve the conflict with Russia. It analyzes the impact of these peace efforts on Ukraine's foreign policy orientation and its pursuit of a resolution to the ongoing conflict. Furthermore, the current study researches Ukraine's aspirations for Euro-Atlantic integration, examining its strategic alignment with NATO and the European Union amid the Russian aggression.

Thus, the presented paper provides a comprehensive overview of Ukraine's current foreign policy. By analyzing Ukraine's challenges, priorities, and aspirations in the face of Russian aggression, it sheds light on the dynamic nature of Ukraine's foreign relations and its strategic response to regional security concerns.

Keywords: *Ukrainian foreign policy, the Ukrainian Peace Formula, Euro-Atlantic integration, the Kyiv security compact, Global South, the Victory Plan.*

Анотація. У статті розглядаються засади зовнішньої політики України. Розкриваються її пріоритетні напрями, обговорюється українська формула миру та «План перемоги» президента В. Зеленського. Дослідження висвітляє динамічний характер зовнішньої політики країни, та заходи з реагування на складне безпекове середовище з його його викликами. Визначаються виклики, пов'язані з агресивними діями Росії, та проаналізовано стратегії, які застосовує Україна для захисту свого суверенітету та відновлення територіальної цілісності.

У статті досліджуються пріоритетні напрямки зовнішньої політики України, з акцентом на її зусиллях зі сприяння регіональній стабільності. Крім того, дослідження заглиблюється в українську формулу миру та «План перемоги», досліджуючи дипломатичні

ініціативи, спрямовані на врегулювання конфлікту з Росією. Аналізується вплив цих мирних зусиль на зовнішньополітичну орієнтацію України та її прагнення до врегулювання конфлікту. Крім того, в роботі досліджуються прагнення України до євроатлантичної інтеграції, стратегічна орієнтація країни на НАТО та Європейський Союз в умовах російської агресії.

Таким чином, представлене дослідження являє собою всебічний огляд поточної зовнішньої політики України. Аналізуючи виклики, пріоритети та прагнення України в умовах російської агресії, проливає світло на динамічний характер зовнішніх зносин нашої держави та її стратегічну відповідь на регіональні безпекові виклики.

Ключові слова: українська зовнішня політика, українська формула миру, євроатлантична інтеграція, Київський безпековий договір, Глобальний Південь, План перемоги.

Introduction. Russia's full-scale aggression against Ukraine has shaken Europe and the world. This war has far-reaching consequences for the region and the world. Stability in the Euro-Atlantic region depends on the security of Ukraine. Thus, there is a need to review Ukrainian foreign policy since Ukraine is playing a crucial role in the insurance of the stability of the Euro-Atlantic region now.

The principles of Ukrainian foreign policy are reviewed in the following paper. It discusses the Ukrainian peace formula and exposes its top priorities. The study emphasizes the country's dynamic foreign policy and the way it reacts to the challenging security environment. It outlines the difficulties brought on by Russia's aggressive actions and examines the approaches used by Ukraine to protect its territorial integrity and sovereignty.

Additionally, the article looks into the diplomatic efforts made to end the conflict with Russia and looks at the Ukrainian Peace Formula. It overlooks how these peace initiatives have affected Ukraine's approach to foreign policy and its quest for a peaceful end to the ongoing war. Additionally, the current study investigates Ukraine's strategic alignment with NATO and the European Union to better understand its objectives for European and Euro-Atlantic integration.

As a consequence, the paper summarizes the current foreign policy of Ukraine. It sheds light on the dynamic nature of Ukraine's foreign relations and its strategic response to local security concerns by assessing the difficulties, priorities, and goals of that country in the face of Russian aggression.

The purpose of the article is to provide a comprehensive review of Ukraine's foreign policy principles, its key priorities, and its strategies amid full-scale invasion. The tasks of the article are the following:

- to outline the foundational principles of Ukraine's foreign policy;
- to discuss Ukraine's primary foreign policy goals;
- to delve into the diplomatic initiatives to resolve the conflict with Russia, including the strategies and actions Ukraine is pursuing to achieve peace;
- to research Ukraine's primary foreign policy directions.

Literature review. The use of documents defining the foreign policy of Ukraine, such as the Constitution of Ukraine (28 June 1996) (*Constitution of Ukraine, 2020*), the National Security Strategy of Ukraine (14 September 2020) (*Ukaz Prezydenta Ukrainy №392/2020, 2020*), and the Foreign Policy Strategy of Ukraine (26 August 2021) (*Ukaz Prezydenta Ukrainy №448/2021, 2021*) can provide valuable insights and understanding of the country's diplomatic objectives and international engagement. These documents serve as crucial sources of information for this paper. Furthermore, the analysis of inputs by the Foreign Policy Council “Ukrainian Prism” (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*), (*Ukrainian Prism: Foreign Policy 2023. Analytical study, 2024*) and other analytical reports were involved in the course of the study.

Main results of the research. *Fundamentals of the Ukrainian foreign policy.* The Constitution of Ukraine sets forward the strategic course of Ukraine. Article 18 stipulates the following: “The foreign political activity of Ukraine is aimed at ensuring its national interests and security by maintaining peaceful and mutually beneficial co-operation with members of the

international community, according to generally acknowledged principles and norms of international law” (*Constitution of Ukraine, 2020*). The strategic course of the state toward Ukraine's full membership in the European Union (EU) and the North Atlantic Treaty Organisation (NATO) is also enshrined in the Constitution of Ukraine (*Constitution of Ukraine, 2020*). Thus, Ukraine sets forward its desire to pursue the policy of peaceful co-existence and cooperation with other members of the international community and to become a member of the so-called “European family”.

At the same time, the aim of the foreign political activity of Ukraine is clearly stated in the Strategy of Foreign Policy of Ukraine saying that the state seeks “to establish Ukraine as a strong and reputable European state capable of providing favorable external conditions for sustainable development and realization of its potential, economy and Ukrainian society” (*Ukaz Prezydenta Ukrainy №448/2021, 2021*).

Priority directions of the Ukrainian foreign policy are also stated in the Strategy and are the following ones: “to ensure the independence and state sovereignty of Ukraine, restoration of its territorial integrity; full membership in the EU and NATO; protection of the rights and interests of Ukrainian citizens abroad; to counter the aggression of the Russian Federation and to make the Russian Federation carry its international legal responsibility; the Ukrainian export promotion and increase in foreign investment in Ukraine; promotion of a positive image of Ukraine in the world” (*Ukaz Prezydenta Ukrainy №448/2021, 2021*). To achieve its main goal – the security and prosperity of Ukraine – the following objectives of Ukraine's foreign policy are defined as well “restoration of peace and territorial integrity of Ukraine within its internationally recognized state border; bringing the Russian Federation to international legal responsibility; protecting the rights and interests of Ukrainian citizens abroad; counteracting disinformation attacks from external sources that are detriment of Ukraine's national interests and its image abroad; creating a secure environment through diplomatic means; gaining full membership in NATO; gaining full membership in the EU; facilitating foreign trade and investment; technological and environmental transformation of Ukraine; freedom of movement of Ukrainian citizens in the world; support for Ukrainians abroad, their involvement in state-building, social and economic projects; creating and promoting a positive image of Ukraine in the world” (*Ukaz Prezydenta Ukrainy №448/2021, 2021*).

Therefore, the Constitution of Ukraine, along with the Strategy of Foreign Policy, provides a clear framework for Ukraine's strategic course and foreign political activity. Ukraine aims to safeguard its national interests and security through peaceful cooperation with the international community. The country's strategic objective includes full membership in the EU and NATO, emphasizing its aspiration to become a powerful European state. The priorities of Ukrainian foreign policy encompass protecting its independence, territorial integrity, and the rights of its citizens abroad, as well as countering Russian aggression, promoting economic growth, and enhancing its global image. By adhering to the mentioned above objectives and priorities, Ukraine aims to strengthen its position on the international stage and create favorable conditions for its sustainable development and the realization of its full potential as a nation.

Counteraction to Russian aggression. Eight years after the annexation of Crimea, its takeover of Donbas, and the escalation of the conflict in eastern Ukraine, Russia attacked Ukraine once more in February 2022. While committing war crimes and destroying cities, the Russian army attempted to conquer Ukraine's sovereign territory. They made an effort to seize power over the Ukrainian people and bring down democratically elected government.

The response was immediate – on 24th February 2022 Ukraine severed diplomatic relations with Russia (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*). The Ukrainian authorities adopted 6 packages of sanctions against Russia, its individuals, and companies. All the foreign political efforts were concentrated on the repel Russian aggression and forming an anti-Putin coalition. Positive developments in this regard included the active imposition of economic and political sanctions by Ukraine's partners against Russia, the promotion of a proposal to provide Ukraine with reliable security guarantees, in particular through the creation of the U-24 alliance, the institutionalization of military assistance at the bilateral level and through the launch of meetings of

the Ukraine Defense Consultative Group (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*). This resulted in the unification of a large number of states around the issue of assistance to Ukraine, which has become systemic. Ukraine's active engagement in the international environment has led to a significant increase in the level of consolidation of the international community in countering Russia.

In 2023 direct political contacts between the governments of Ukraine and Russia were suspended due to the dramatic incompatibility of the parties' positions. Ukraine's foreign political activities against Russia are aimed at countering aggression, promoting international sanctions against Russia, receiving military and political assistance from allies, and creating an international anti-Putin coalition. The Ukraine-Russia diplomatic confrontation intensified aimed at the reduction of Russia's influence in different international organizations. The President of Ukraine signed 31 decrees imposing sanctions against Russia and its citizens and companies (*Ukrainian Prism: Foreign Policy 2023. Analytical study, 2024*).

Also, Ukraine denounced six bilateral agreements and one treaty with Russia. Ukraine has withdrawn from 26 agreements and other arrangements within the CIS, as well as from the Memorandum of cooperation in protecting the state borders of the Republic of Belarus, the Russian Federation, and Ukraine (*Ukrainian Prism: Foreign Policy 2023. Analytical study, 2024*).

A couple of years before the beginning of a full-scale war, the National Security Strategy of Ukraine (adopted in September 2020) in Articles 17 and 18 identified the following threats that the Russian Federation posed: “the Russian Federation is engaged in a hybrid war, employing various tactics such as political, economic, information, psychological, cyber, and military means. It is strengthening its armed forces and conducting large-scale military exercises near Ukraine's border, indicating a persistent threat of military invasion. The Russian Federation is also escalating the militarization of the temporarily occupied territories of Crimea and Sevastopol. Additionally, it poses a danger to free navigation in the Black and Azov Seas and the Kerch Strait. The occupation administration and armed forces in these territories are violating human and civil rights, posing a security threat not only to Ukraine but also to other countries in the Baltic-Black Sea region” (*Ukaz Prezydenta Ukrainy №392/2020, 2020*). Thus, the Ukrainian government saw the danger and possible consequences of today's warfare on its territory and sought ways to deal with the mentioned threats.

Particularly, the Foreign Policy Strategy of Ukraine stipulates the following efforts to restore the territorial integrity of Ukraine: “ensuring that the issue of the Russian Federation's armed aggression against Ukraine and related security, humanitarian, economic, environmental and other threats remain on the international agenda; ensuring that the international community takes into account the long-term negative and destructive impact of the Russian Federation's aggressive policy on international, in particular European, security; expanding the circle of states that actively support the territorial integrity and state sovereignty of Ukraine in its confrontation with the Russian Federation; strengthening the international consensus on the need to maintain and increase political, diplomatic and economic pressure on the Russian Federation (in particular, through the introduction of restrictive measures (sanctions)); to provide the international community with the widest possible access to truthful information about the crimes committed and the consequences of the Russian Federation's aggression against Ukraine” (*Ukaz Prezydenta Ukrainy №448/2021, 2021*).

Another crucial component of responding to Russian aggression is also set forth by the Strategy of Foreign Policy “bringing the Russian Federation to international legal responsibility for the crime of aggression against Ukraine will be carried out primarily through appeals to international judicial bodies, in particular the International Court of Justice, the European Court of Human Rights, and international arbitration” (*Ukaz Prezydenta Ukrainy №448/2021, 2021*).

The fact is that Russia has demonstrated its disdain for international law, particularly the United Nations Charter, through its aggression against Ukraine. The list of international agreements and treaties that Russia has broken is remarkable but the most striking of these violations is Article 2 § 4 of the Charter of the United Nations, which underpins the principles of the inviolability of borders, respect for the territorial integrity of States, and the prohibition of the use of force (*Mauro,*

F., 2023). The international legal order, which has already been significantly shifted since the early 2000s, is being hit by this breach by a member state of the United Nations Security Council, the designated custodian of international order, with China, another permanent member of the Security Council, giving its tacit approval (Mauro, F., 2023). Therefore, in the opinion of Frédéric Mauro, an Associate Research Fellow at IRIS, before the legal system that resulted from the Second World War collapses, the case of aggression of the Russian Federation against Ukraine requires the world community to reconsider the existing legal system especially the function and authority of the UN Security Council. This body is now obviously ineffective. Furthermore, it has global effects and raises a need to rethink the age-old dialectic of force and law between sovereign nations (Mauro, F., 2023).

European and Euro-Atlantic integration of Ukraine. It's highlighted in Article 83 of the Foreign Policy Strategy of Ukraine that "the EU is a strategic partner of Ukraine in increasing stability in Europe and consolidating international political and economic pressure on the Russian Federation to stop its aggression against Ukraine and restore Ukraine's territorial integrity within its internationally recognized state border" (Ukaz Prezydenta Ukrainy №448/2021, 2021). This emphasizes the priority of Ukraine to develop relations with the EU.

The full implementation and continued adaptation of the Association Agreement; the integration of the Ukrainian national economy into the European economic area; Ukraine's compliance with the Copenhagen criteria for EU membership; and the political support of the EU member states for Ukraine's prospects for full membership as well as maintaining the EU member states' solidarity with Ukraine in response to the Russian Federation's aggression are all components of the European integration course (Ukaz Prezydenta Ukrainy №448/2021, 2021).

A historic decision was made by EU members to grant Ukraine candidate status and to formally codify the demand that Ukraine complete seven stages at the European Council summit in June 2022 (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*). Following that, work began on implementing the requirements and intensifying the implementation of the EU-Ukraine Association Agreement. A joint statement was signed by the heads of state, government, and parliament, which called for quick integration steps (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*). This decision will impact the dynamics and course of integration efforts for years ahead.

However, after receiving the status, Ukraine has shown a lack of internal effort to meet the seven criteria outlined by the European Commission. As a result, there was no EU-Ukraine summit as of the end of 2022, which prevented the partners from announcing the next steps in integration (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*).

Simultaneously, Ukraine has made immense progress in its sectoral integration with EU institutions and other EU countries. For instance, in 2022, Ukraine was able to obtain "visa-free travel" with the EU in the areas of energy, commerce, transportation, and customs (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*). In March 2022 Ukraine joined the European power grid ENTSO-E, the European network of electricity transmission system operators, a year ahead of schedule. Following that, NPC Ukrenergo was granted ENTSO-E observer member status in April 2022 (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*). Ukraine was able to greatly expand the export of its electricity after it joined the grid. Despite hopeful plans to enhance exports to the EU, these plans had to be postponed in October because of Russian strikes on critical infrastructure in Ukraine.

Since June, for one year, the EU has eliminated all trade restrictions on exports from Ukraine. Additionally, a one-year road freight agreement between the EU and Ukraine was reached in June 2022, eliminating the requirement for Ukrainian drivers to hold a license for transit via the EU. Despite a disastrous loss in the nation's economy during the full-scale war, these actions have significantly improved Ukraine's trade and economic links with the EU. For Ukraine, the terms of the Convention on a Common Transit Procedure went into effect in October, 2022. This made it possible to move products internationally with 35 other member states using a single transit document, considerably simplifying and expediting the customs clearance process. Therefore,

exports to the EU increased slightly compared to 2021 and totaled almost €28 billion, making the EU Ukraine's main trading partner (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*).

Support for Ukraine's economy and the public sector, in particular, should be mentioned separately. The EU provided and guaranteed support totaled €11.6 billion, of which Ukraine received €10.4 billion (€7.2 billion in macro-financial assistance, €1.8 billion in loans, and €1 billion in grants). In December, the European Council approved a large-scale package of €18 billion of assistance to Ukraine in the form of concessional loans for 2023 (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*).

The European Peace Facility, a new extrabudgetary tool, allowed to finance €3.1 billion in military assistance from EU member states to Ukraine (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*). Additionally, the EU Military Support Mission for Ukraine was founded in November 2022 and had already trained more than a thousand Ukrainian soldiers.

Since May 2022, the EU, Ukraine, and Moldova have launched the so-called "Solidarity Roads" initiative for the delivery of vital supplies to Ukraine as well as the transportation of grain and other agricultural products from Ukrainian territory. Due to this, Ukrainian farmers were able to export roughly 23 million tonnes of grain and earn about €20 billion in 2022 (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*).

In addition, Ukraine has received more than 82,000 tonnes of humanitarian aid from the EU and its partner nations, totaling over €527 million under the EU Civil Protection Mechanism since the beginning of the full-scale invasion (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*).

The other key direction of Ukrainian foreign policy is aimed at integration with NATO. Ukraine seeks a clear perspective for its membership in NATO (*Dmytro Kuleba: Try stovpy novoi Yevropy, 2023*). Today the process of Euro-Atlantic integration is impacted by current geopolitical circumstances. Ukraine is virtually demonstrating its ability to become a contributor to the Euro-Atlantic collective security system. Based on the experience of Sweden and Finland, Ukraine applied for accelerated accession to NATO in September 2022.

Primary areas for the development of relations between Ukraine and the Alliance are the following: to intensify joint efforts to address long-term security challenges, primarily Russia's armed aggression against Ukraine by using the assistance provided by the Alliance; to forge a distinctive partnership with NATO in anticipation of Ukraine's full membership in the Alliance as a guarantee of national security. To fully join NATO, Ukraine must: ensure interoperability of the armed forces and other security and defense sector elements with Alliance structures; intensify the reformation process to satisfy NATO membership criteria.

According to the opinion of Benjamin Tallis, who is a senior research fellow at the Alfred von Oppenheim Center for the Future of Europe, Ukrainian membership in the Alliance is by far the opportunity that will most successfully discourage the Putin regime or one of its successors from attacking Ukraine once more. Allies would also have a lot more input in Kyiv's plans, capabilities development, and posture if Ukraine joined NATO. While the battle-tested Ukrainian army would be a significant military asset to NATO, it would also be wise to match it as closely as possible with the medium- and long-term democratic aims, strategies, and vision of NATO members (*Tallis, B., 2023*).

It was articulated by the Minister of Foreign Affairs of Ukraine Dmytro Kuleba that "Ukraine's victory in the war, its accession to NATO and the EU, and the verdict of the Special Tribunal will create a new European reality" (*Dmytro Kuleba: Try stovpy novoi Yevropy, 2023*). These, in the opinion of the Minister, can act as the cornerstones of an emerging new European order that would transform Europe into a continent of justice, peace, diverse economic relationships with Asia and Africa, powered entirely by renewable energy, based on strong defense and deterrence (*Dmytro Kuleba: Try stovpy novoi Yevropy, 2023*).

In general, cooperation with NATO can be separated into three components: securing the possibility of membership in the Alliance, acquiring security guarantees and assistance from member states, and implementing internal reforms aligning with NATO standards to improve

interoperability (*Ukrainian Prism: Foreign Policy 2023. Analytical study, 2024*). However, the outcomes of the NATO-Ukraine partnership in 2023 did not entirely meet Ukraine's expectations and the desired level of political interaction. NATO member-states provided comprehensive assistance to Ukraine with the corresponding level of political and security dialogue, but the issue of future membership remains unresolved (*Ukrainian Prism: Foreign Policy 2023. Analytical study, 2024*). At the Vilnius Summit in 2023, NATO agreed an expanded package of practical and political support for Ukraine and established a new cooperative format called the NATO-Ukraine Council (*Ukrainian Prism: Foreign Policy 2023. Analytical study, 2024*).

Another significant part of collaboration between Ukraine, the EU, and NATO is establishing of a coordination framework between Ukrainian producers and EU and NATO enterprises to maximize arms production for Ukrainian needs (*Ukrainian Prism: Foreign Policy 2023. Analytical study, 2024*).

Going Global South. Ukraine seeks to establish favorable economic ties with the leading countries of Central and South Asia, the Middle East, Africa, and South America. Trade and economic cooperation are the cornerstones of relations with the regional countries. The medium-term goal of Ukraine's foreign policy is to gain broader support from the mentioned regions in countering Russian aggression.

The markets of Asia, the Middle East and Africa offer numerous opportunities for Ukrainian export. Additionally, there is potential for the growth of military-technical cooperation, military training as well as funding. To diversify its international trade, Ukraine as well aims to establish commercial connections with nations in the Caribbean and Latin America.

The strategy of Foreign Policy of Ukraine states the following: “it is important to ensure further development and deepening of political, trade, economic and humanitarian cooperation with the states of Africa and the Middle East, in particular through the tools of establishing pragmatic cooperation with the African Continental Free Trade Area, using the potential of the African Union, the Economic Community of West African States, the Organisation of Islamic Cooperation, the League of Arab States, the Gulf Cooperation Council, etc.” (*Ukaz Prezydenta Ukrainy №448/2021, 2021*).

In addition, Article 157 of the Strategy highlights that “efforts will be made to ensure support from African and Middle Eastern states for Ukraine's initiatives within international organizations, in particular in countering the aggression of the Russian Federation” (*Ukaz Prezydenta Ukrainy №448/2021, 2021*).

Before the full-scale invasion, Ukraine's relations with Africa were paid less attention to and maintained at a minimal level, selling agricultural products and participating in UN peacekeeping missions. Africa is likely to become the world's largest continent in terms of population, with a very high potential for investment and cooperation at all levels. However, now there are significant changes. Many of the countries of the region have a serious potential for economic development, and the potential of individual countries is growing significantly every year. This means that new powerful players are emerging on the international stage. Development of relations with these countries poses an opportunity For Ukraine to make its position stronger in the world arena (*Nabi, E., & Komar, M., 2022*), (*Nabi, E., & Mahuriak, I., 2023*).

Ukraine is considered to be one of the world's largest grain exporters (at least until a full-scale invasion). Therefore, Ukraine can guarantee food security for African states and help them to avoid the issue of famine. One of the initiatives presented by Ukraine was the Black Sea Grain Initiative. It was aimed at the supply of Ukrainian agricultural products and the prevention of the development of a food crisis provoked by Russian aggression. The corresponding agreement was signed by the Minister of Infrastructure of Ukraine O. Kubrakov, the Minister of Defence of Turkey H. Akar, and the UN Secretary-General A. Guterres, and Defence Minister of the Russian Federation S. Shoigu in July 2022 (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*). As of 15 May 2023, Ukraine sent 129 ships with 3.4 million tonnes of agricultural products to Libya, Algeria, Egypt, Kenya, Sudan, Tunisia, Ethiopia, Somalia, and Morocco. Shortly, the program will see ships

carrying agricultural products being sent to other countries in need (*Nabi, E., & Komar, M., 2022*), (*Nabi, E., & Mahuriak, I., 2023*).

However, in addition to food, Ukraine can offer African countries cooperation in science, technology, education, trade and business, digitalization, diplomatic experience, and even military expertise. In other words, there are a lot of opportunities for cooperation beneficial for both sides. Cooperation with Africa is an important component necessary for Ukraine to become one of the leaders of the post-war world.

The issue of gaining support from the regional countries is a significant one. Since many African countries are now adhering to a conditional neutral position. Efforts have been made to strengthen ties with African countries, especially in the political sphere, to isolate Russia and gain support in the UN General Assembly. Ukraine recognizes that its experience and support can be valuable to African countries facing issues of neo-colonialism. On the other hand, Russia has invested heavily in propaganda and maintaining ties in Africa, leveraging its Soviet-era reputation (*Nabi, E., & Komar, M., 2022*), (*Nabi, E., & Mahuriak, I., 2023*).

As a success one can consider the fact that for the first time, no African state voted against the UN General Assembly resolution “Territorial integrity of Ukraine: defending the principles of the Charter of the United Nations” (October 2022). In addition, Ukraine received support from several other countries in the region when voting for the General Assembly resolution on Russian aggression (March 2022) (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*). As well as some positive signals were achieved in the context of expanding opportunities for the supply of Soviet-style weapons from African countries to Ukraine (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*).

In 2023 Foreign Minister Dmytro Kuleba had two African tours to Morocco, Ethiopia, Rwanda, Mozambique, and Nigeria as well as to Equatorial Guinea and Liberia. M. Subh, Ukraine's Special Representative for the Middle East and Africa, also paid working visits to Mauritania, Egypt, and Ethiopia, and met with the Deputy Chairperson of the African Union Commission to discuss the Peace, Food Security, and Grain Corridor Formula and ways to deepen cooperation between the MFA of Ukraine and the African Union Commission (*Ukrainian Prism: Foreign Policy 2023. Analytical study, 2024*).

Thus, Ukraine is still actively working to expand its diplomatic foothold on the continent. However, the continued absence of attention to the region has posed extra impediments to progress, including Russian propaganda and the requirement to build trust with African partners in the long term.

One of the positive results of 2023 was that 29 African countries supported the UN General Assembly Resolution “Principles of the Charter of the United Nations underlying a comprehensive, just and lasting peace in Ukraine” (adopted in February 2023). Benin, Botswana, Cape Verde, Comoros, Côte d'Ivoire, Djibouti, Egypt, Ghana, Gambia, Kenya, Liberia, Libya, Madagascar, Malawi, Mauritania, Mauritius, Malawi, Morocco, Niger, Nigeria, South Sudan, Rwanda, Sao Tome and Principe, Seychelles, Zambia voted in favor of the resolution (*Ukrainian Prism: Foreign Policy 2023. Analytical study, 2024*).

Concerning the Latin American countries “the efforts will be aimed at the growth of exports of Ukrainian goods and services, in particular agricultural and engineering products, developing cooperation in the metallurgical, aerospace, military and other sectors, as well as expanding the participation of Ukrainian legal entities in the implementation of large-scale industrial and infrastructure projects in the region” (*Ukaz Prezydenta Ukrainy №448/2021, 2021*).

The stimulus for the intensification of the Latin American track of foreign policy in 2022 as well as in the case of the Middle Eastern and African countries was the full-scale Russian aggression. Ukraine made significant progress in cooperation with North American and European partners, which means a high degree of support for Ukraine in countering Russian aggression. Attempts to fight for broad support among South American power elites have so far had limited effect. Despite the still-existing reluctance to directly join anti-Russian sanctions or provide military assistance to Ukraine, almost all the Community of Latin American and Caribbean States countries

have expressed their support for Ukraine's territorial integrity and sovereignty and condemned Russian aggression (*Ukrainian Prism: Foreign Policy 2022. Analytical study, 2023*).

The calls to the region mainly concerned support for the Ukrainian Peace Formula and invitations to the participation in the Global Peace Summit, as well as support for food security and demining. The region was called upon to condemn the deportation of children from the temporarily occupied territories, to join anti-Russian sanctions and UN reform, and to abandon the position of “neutrality” and join the creation of a special tribunal for the crime of Russian aggression against Ukraine (*Ukrainian Prism: Foreign Policy 2023. Analytical study, 2024*).

Thus, at the level of political discussion and international collaboration, one may observe favorable trends in relations with Latin American, Middle Eastern, and African states. However, Ukraine is unable to make rapid progress in the Global South due to a lack of long-term, methodical work.

Multilateral cooperation. The UN is the largest, most well-known, most widely represented, and most powerful intergovernmental organization in the world. Active and proactive participation in international organizations, treaties, and multilateral international initiatives is a crucial component of protecting and promoting the national interests of Ukraine. Ukraine's foreign policy priority in this area is the adoption and implementation of decisions aimed at countering Russian aggression (*Ukaz Prezydenta Ukrainy №448/2021, 2021*). However, it has demonstrated its limited effectiveness in the event of a war in Ukraine. This increases the urgency of the call for the UN reformation process.

Ukraine participates actively in several UN platforms to raise awareness of the ongoing conflict and put further legal pressure on Russia. During the UN General Assembly voting, Ukraine received historic support for its resolutions. A vote to condemn Russian aggression, the annexation of Ukrainian territories, the need for reparations and the expulsion of Russia from the Human Rights Council, and other issues was supported by more than 140 governments (*Shelest, H. & Maksak, H., 2023*).

Also, Ukraine utilizes the Council of Europe and the Organization for Security and Co-operation in Europe, which are key regional organizations for informing the international community about Russia's atrocities against Ukraine.

The Ukrainian initiatives to restore peace. There are several initiatives instituting the basis for the restoration of peace on Ukrainian territories. Namely, at the beginning these were the Peace Formula, which President V. Zelensky introduced at a G20 summit meeting in November, 2022, and the Kyiv Security Compact – a plan put forward by former NATO Secretary General Anders Fogh Rasmussen and the head of Ukraine's Presidential Office A. Yermak.

The Office of the President of Ukraine claims that the suggested Peace Formula is the only comprehensive and fair plan for dealing with both Russian aggression and all of its effects. More than 25 international documents, including statements and declarations by the G7, the European Union, and the Council of Europe have endorsed the Ukrainian Peace Formula (*Volodymyr Zelenskyy: The Ukrainian Formula provides for fair peace, therefore it has universal benefit for the world, 2023*).

The presented formula consists of the following points or so-called challenges: radiation and nuclear safety, food security, energy security, the release of all prisoners and deportees, implementation of the UN Charter and restoration of Ukraine's territorial integrity and the world order, withdrawal of Russian troops and cessation of hostilities, justice, ecocide, the prevention of escalation, and confirmation of the end of the war.

Starting from the first challenge – radiation and nuclear safety one should understand that Ukraine the Zaporizhzhia Nuclear Power Plant was turned virtually into a radioactive bomb by the Russian militants. Ukraine demands the withdrawal of Russian militants from its territory and transfer of control to the International Atomic Energy Agency, as well as restoration of power grid connectivity (*Speech by the President of Ukraine at the G20 Summit, 2022*). As it was mentioned previously Ukraine plays a vital role in the insurance of food security and the launch of the “Grain from Ukraine” initiative to export agricultural products is a crucial one within this context (*Speech*

by the President of Ukraine at the G20 Summit, 2022). Russian strikes have severely damaged Ukraine's energy infrastructure, 40% of which was destroyed by the strikes of Russian missiles and Iranian drones, leading to an ongoing energy crisis. Ukraine accuses Russia of intentionally targeting power plants and electricity supply lines to cause a massive energy crisis (*Speech by the President of Ukraine at the G20 Summit, 2022*). Also, Ukraine demands the release of its citizens who are held captive by Russia, including both military personnel and civilians who are subject to brutal torture. The Ukrainian government emphasizes the importance of adhering to the norms of international law and restoring the territorial integrity of the state, urging Russia to recognize Ukraine's sovereignty in line with UN resolutions and international agreements. Another crucial issue is the complete withdrawal of Russian troops and restoration of control over the Ukrainian-Russian border to achieve a lasting cessation of hostilities (*Speech by the President of Ukraine at the G20 Summit, 2022*). The majority of the foreign political efforts of Ukraine are aimed at the establishment of a Special Tribunal to address Russia's aggression and an international mechanism for compensating the damages caused by the war. They have already introduced a resolution in the UN General Assembly and urged its implementation. The Ukrainian state highlights the environmental devastation caused by the conflict, including forest fires, land contamination, flooded coal mines, and the destruction of the Kakhovka Dam. That's the reason for an urge for immediate environmental protection measures (*Speech by the President of Ukraine at the G20 Summit, 2022*).

In addition, Ukraine calls for effective security guarantees and proposes the Kyiv Security Compact, a draft agreement aimed at establishing a post-war security architecture in the Euro-Atlantic region and providing those guarantees for Ukraine. It is stated that “these guarantees should enable Ukraine's self-defense both to deter an armed attack or act of aggression (deterrence by denial), and – in case an attack occurs – to protect the sovereignty, territorial integrity, and security of Ukraine (deterrence by punishment)” (*The Kyiv Security Compact, 2022*). Thus, it is aimed at mobilizing the necessary political, financial, military, and diplomatic resources for Ukraine's self-defense. It is envisaged that the Kyiv Security Compact is a joint strategic partnership treaty, which should contain the security guarantees signed by a core group of partners who will support Ukraine's right to self-defense. Among these partners, one can find the US, UK, Canada, Poland, Italy, Germany, France, Australia, Turkey, and the Nordic, Baltic, and Central European nations. Ukraine and a few guarantor governments may also sign bilateral agreements covering specific issues related to security guarantees between Ukraine and the guarantor states (*The Kyiv Security Compact, 2022*). For meeting the objective of self-defense Ukraine will need large defense forces, robust capabilities, and strong, reformed defense industry. This needs to be supported by sustained investments in its defense industrial base, extensive weapons transfers and intelligence support from allies, and well-trained and exercised forces (*The Kyiv Security Compact, 2022*).

The final step is a confirmation of the end of the war. Once all anti-war measures are implemented, Ukraine proposes signing a document confirming the end of the war. Ukraine considers the restoration of territorial integrity and accountability of Russian criminals as victory, while Western support includes Ukraine's accession to the EU and NATO for long-term stability, peace, and justice in Europe (*The Kyiv Security Compact, 2022*).

Another crucial announcement was made in October, 2024 when President Volodymyr Zelenskyy presented the Victory Plan. The Victory Plan consists of five points – geopolitical, two military, economic, and security-related along with three secret annexes. **The first point** is an invitation for Ukraine to join NATO as a fundamental for peace and a signal to the Russian political leader that his geopolitical calculations have failed. **The second point** deals with the matter of defense. The implementation of this point envisages further operations by the Defense Forces in designated areas of Russia, strengthening Ukrainian positions, and destroying Russia's offensive potential in the occupied territories. **The third point** is deterrence. Ukraine suggests to deploy a comprehensive non-nuclear strategic deterrence package on its territory, sufficient to protect the country from any military threat posed by Russia. **The fourth point** is strategic economic potential. Ukraine offers its strategic partners a special agreement for the joint protection of the country's

critical resources, as well as joint investment and use of this economic potential. **The fifth point** is envisaged for the post-war period and involves the replacement of certain U.S. military contingents stationed in Europe with Ukrainian units that have gained real experience in modern warfare, the use of Western weapons, and cooperation with NATO troops (*Victory Plan Consists of Five Points and Three Secret Annexes*, 2024).

According to the expert, the first and most disputed point of the Victory Plan is the call to grant Ukraine membership in the North Atlantic Treaty Organisation. This is unlikely to happen while Ukraine is still fighting Russia since it would draw NATO into a conflict with a nuclear-armed state. The United States and Germany, the two crucial member-states of NATO, have been reluctant to follow the example of the majority of NATO members, particularly in Eastern Europe, which has reassured their strong support for Ukrainian membership, perceiving it as too irritative (*Boot, M., 2024*).

In conclusion, the Ukrainian Victory Plan consists of several important suggestions for strengthening Ukrainian defense capacity. Its implementation can positively influence the war period by shortening it and potentially forcing the Russian Federation into a negotiation process. The main issue with the implementation of the Victory Plan, according to Max Boot, Jeane J. Kirkpatrick Senior Fellow for National Security Studies, is that the Ukrainian Western partners are unlikely to make the increased aid commitments that they have been asked for (*Boot M., 2024*).

Conclusions. The goal of Ukrainian foreign policy is to develop Ukraine as a powerful European nation that creates favorable conditions for long-term growth and realizes its potential for the country's economy and society.

The Ukrainian Constitution outlines the country's strategic course toward full membership in both NATO and the European Union. Today, Ukraine is virtually proving its capacity to contribute to the Euro-Atlantic collective security framework. However, the state requires security assurances right away. The most effective security guarantees for Ukraine, given its unique geopolitical situation, come from its ability to defend itself. Ukraine's self-defense must be supported by legally binding commitments from foreign partners to mobilize the required military and non-military resources to be sufficiently strong and credible.

All foreign political efforts are centered on restoring the territorial integrity of Ukraine within its internationally recognized borders as a result of the Russian Federation's armed aggression. The Ukrainian Peace Formula and the Victory Plan, which will renew the security architecture and restore global stability, are a crucial tool to end it.

Ukraine also aims to diversify its foreign policy by expanding and deepening its political, economic, and humanitarian ties with countries in the Global South.

References

1. Constitution of Ukraine. (2020). Verkhovna Rada of Ukraine. <https://zakon.rada.gov.ua/laws/show/254к/96-вр?lang=en#Text>
2. Ukaz Prezydenta Ukrainy №448/2021. (2021). President of Ukraine Official Website. <https://www.president.gov.ua/documents/4482021-40017>
3. Ukrainian Prism: Foreign Policy 2022. Analytical study. (2023). Foreign Policy Council "Ukrainian Prism". Representation of the Friedrich-Ebert-Stiftung in Ukraine. <https://library.fes.de/pdf-files/bueros/ukraine/20404.pdf>
4. Ukrainian Prism: Foreign Policy 2023. Analytical study. (2024). Foreign Policy Council «Ukrainian Prism». Representation of the Friedrich-Ebert-Stiftung in Ukraine. <https://library.fes.de/pdf-files/bueros/ukraine/21178.pdf>
5. Ukaz Prezydenta Ukrainy №392/2020. (2020). President of Ukraine Official Website. <https://www.president.gov.ua/documents/3922020-35037>
6. Mauro, F. (2023). The War in Ukraine and Europe`s Geopolitical Awakening. Institut de relations internationales et stratégiques. https://www.iris-france.org/wp-content/uploads/2023/06/17_ProgEurope_FMauro_EN.pdf
7. Dmytro Kuleba: Try stovpy novoi Yevropy. (2023). Ministry of Foreign affairs of Ukraine. <https://mfa.gov.ua/news/dmitro-kuleba-tri-stovpi-novoyi->

yevropi?fbclid=PAAaaSXSJWMHPEb9wIp7z8POTXcqCMiOMz42fWG800zxpRSAMrLDNs5z6FpVs_aem_Ae_28lBQHqmLXwcjySnU6pE6BxgUoL4nO3qKkamGSXFDvm6MMGDW7Do63WeZS3wX8PA

8. Tallis, B. (2023). Security Guarantees for Ukraine. German Council on Foreign Relations. DGAP. <https://dgap.org/en/research/publications/security-guarantees-ukraine-0>
9. Nabi, E., & Komar, M. (2022). Dlia choho Ukraini Afryka ta chomu turne Kuleby maie shans uviity v istoriiu. Kanal 24. https://24tv.ua/kuleba-afritsi-yaka-meta-ukrayini-dotsilna-poyizdka-pid-chas_n2180721
10. Nabi, E., & Mahuriak, I. (2023). Novi horyzonty ta udar po Rosii: yak druhe velyke turne Kuleby zminiue pozytsiiu krain Afryky. Kanal 24. https://24tv.ua/kuleba-v-afritsi-analitika-pro-drugeturne_n2320601#3.
11. Shelest, H., & Maksak, H. (2023). Pershyi rik voiennoi dyplomatii: analiz sylnykh ta slabkykh storin zovnishnoi polityky Ukrainy. European Pravda. <https://www.eurointegration.com.ua/articles/2023/05/29/7162586/>
12. Volodymyr Zelenskyy: The Ukrainian Formula provides for fair peace, therefore it has universal benefit for the world. (2023). President of Ukraine Official Website. <https://www.president.gov.ua/en/news/ukrayinska-formula-peredbachaye-chesnij-mir-tomu-maye-univer-83893>
13. Speech by the President of Ukraine at the G20 Summit. (2022). President of Ukraine Official Website. https://www.president.gov.ua/en/news/ukrayina-zavzhdi-bula-liderom-mirotvorchih-zusil-yakshorosi-79141?fbclid=IwAR0r3ITXwo4wl38e8G1KS4rlv_7luNKoRIM-qPpk5GYBkz37VW8ZSmzhG0s.
14. The Kyiv Security Compact. (2022). President of Ukraine Official Website. https://www.president.gov.ua/storage/j-files-storage/01/15/89/41fd0ec2d72259a561313370cee1be6e_1663050954.pdf
15. Victory Plan Consists of Five Points and Three Secret Annexes. (2024). President of Ukraine Official Website. <https://www.president.gov.ua/en/news/plan-peremogi-skladayetsya-z-pyati-punktiv-i-troh-tayemnih-d-93857>
16. Boot, M. (2024). Zelenskyy's 'Victory Plan' for Ukraine Makes Sense. It Has Little Chance of Being Implemented. Council on Foreign Relations. <https://www.cfr.org/expert-brief/zelenskyys-victory-plan-ukraine-makes-sense-it-has-little-chance-being-implemented>

УДК 327.8

MEDIA LITERACY AND PSYCHOLOGICAL RESILIENCE: THE SWEDISH APPROACH TO COUNTERING DISINFORMATION

МЕДІАГРАМОТНІСТЬ І ПСИХОЛОГІЧНА СТІЙКІСТЬ: ШВЕДСЬКИЙ ПІДХІД ДО ПРОТИДІЇ ДЕЗІНФОРМАЦІЇ

Nataliia Pipchenko

Doctor of Political Sciences, Professor, Professor of International Information Chair, Educational and Scientific Institute of International Relations, Taras Shevchenko National University of Kyiv,
e-mail: nataliyapo@gmail.com
ORCID ID: <https://orcid.org/0000-0003-3759-7085>

Alina Yuriy

PhD Student, Educational and Scientific Institute of International Relations, Taras Shevchenko National University of Kyiv,
e-mail: alinayuriy15@gmail.com
ORCID ID: <https://orcid.org/0000-0003-2363-2409>

Піпченко Наталія

Доктор політичних наук, професор, професор кафедри міжнародної інформації Навчально-наукового інституту міжнародних відносин Київського національного університету імені Тараса Шевченка,
e-mail: nataliyapo@gmail.com
ORCID ID: <https://orcid.org/0000-0003-3759-7085>

Юрій Аліна

аспірантка Навчально-наукового інституту міжнародних відносин Київського національного університету імені Тараса Шевченка,
e-mail: alinayuriy15@gmail.com
ORCID ID: <https://orcid.org/0000-0003-2363-2409>

Abstract. *This article aims to examine the role of media literacy in building psychological resilience among the population, using Sweden as a case study, focusing on its significance in ensuring national resilience to contemporary information threats. Special attention is given to the analysis of threats posed by Russia, Iran, and China, which actively employ disinformation campaigns to undermine Sweden's information security. The article explores key mechanisms for developing media literacy, including government support, educational initiatives, and cross-sectoral collaboration, which effectively counter these threats. Classification methods, comparative analysis, and content analysis are employed to investigate Sweden's experience in implementing media education. Particular emphasis is placed on the activities of the Swedish Psychological Defence Agency, which plays a central role in implementing national information security strategies. The article analyzes educational programs aimed at developing citizens' critical thinking and information verification skills, as well as the contributions of libraries, media, and other institutions in enhancing media literacy. Sweden's international cooperation in countering disinformation is also considered, including participation in joint initiatives with international partners to address information threats. The study highlights the correlation between the population's media literacy level and its ability to resist external information influences. It concludes that Sweden's experience can serve as an effective model for other countries seeking to strengthen their informational defences, protect democratic values, and ensure national security in the face of modern hybrid threats.*

Keywords: *media literacy, psychological defence, resilience, disinformation, EU, NATO, Sweden, Russia, Iran, China.*

Анотація. *Метою статті є дослідження ролі медіаграмотності у формуванні психологічного захисту населення на прикладі Швеції, з акцентом на її значення для*

забезпечення національної стійкості до сучасних інформаційних загроз. Особливу увагу приділено аналізу загроз з боку Росії, Ірану та Китаю, які активно використовують дезінформаційні кампанії для підризу інформаційної безпеки Швеції. У статті досліджуються ключові механізми розвитку медіаграмотності, включаючи державну підтримку, освітні ініціативи та міжсекторальну співпрацю, що дозволяють ефективно протистояти цим загрозам. Методи класифікації, порівняльного аналізу та контент-аналізу використовуються для вивчення шведського досвіду впровадження медіаосвіти. Особливу увагу приділено діяльності Шведського агентства психологічної оборони, яке відіграє центральну роль у реалізації національних стратегій інформаційної безпеки. Проаналізовано освітні програми, спрямовані на розвиток критичного мислення, навичок перевірки інформації серед громадян, а також внесок бібліотек, медіа й інших інституцій у підвищення медіаграмотності. Розглянуто міжнародну співпрацю Швеції у протидії дезінформації, зокрема участь у спільних ініціативах з міжнародними партнерами для протидії інформаційним загрозам. Особливий акцент зроблено на кореляції між рівнем медіаграмотності населення та його здатністю протистояти зовнішнім інформаційним впливам. Зроблено висновок, що шведський досвід може слугувати ефективною моделлю для інших країн, які прагнуть зміцнити свої інформаційні бар'єри, захистити демократичні цінності та забезпечити національну безпеку в умовах сучасних гібридних загроз.

Ключові слова: медіаграмотність, психологічний захист, стійкість, дезінформація, ЄС, НАТО, Швеція, Росія, Іран, Китай.

Introduction. In the contemporary global landscape, information threats and disinformation represent significant challenges to national security, democratic development, and social cohesion. Disinformation is increasingly utilized as a strategic tool for manipulating public opinion, undermining trust in governmental institutions, destabilizing societies, and disrupting the international order. Particularly concerning are foreign disinformation campaigns that aim to interfere in the internal affairs of states, weaken their informational security, and create conditions conducive to political or social destabilization. This underscores the critical necessity of developing and implementing comprehensive counter-disinformation strategies to enhance psychological resilience within society and promote media literacy. The relevance of this issue mandates the formulation of systematic, multi-tiered approaches that prioritize the cultivation of a robust informational culture, the advancement of critical thinking skills, and the capacity to identify and mitigate manipulative information influences.

Sweden, as a nation with high democratic standards and robust information security institutions, exemplifies a successful approach to addressing this challenge. Its strategy is grounded in integrating media literacy as a strategic tool for fostering psychological resilience among the population. Through a well-developed media education system encompassing diverse age and social groups, Sweden equips its citizens with critical thinking skills, the ability to analyze information sources, and the capacity to counter manipulative influences. These tools enhance societal resilience to external informational threats and uphold democratic values, even amidst heightened geopolitical tensions.

Ukraine, which faces intense information attacks and disinformation campaigns, requires the adaptation of similar approaches. Despite individual initiatives in media literacy, their lack of systematic implementation and insufficient coordination between government institutions, civil society, and media organizations limit their effectiveness in combating disinformation. Therefore, studying Sweden's experience in developing media literacy, adapting it to Ukrainian realities, and integrating it into educational programs and state information policies could become decisive factors in strengthening Ukraine's national information security.

The purpose of the study is to determine the role of media literacy in fostering psychological resilience within the population, exemplified by the Swedish experience.

Literature review. Countering information threats and fostering psychological resilience within the population have garnered significant attention from scholars at both international and

national levels. Research in this area examines various aspects of disinformation's societal impact, media literacy's role in enhancing information security, and the adaptation of successful international practices.

Among Ukrainian researchers who have focused on countering disinformation, information warfare, and the analysis of the impact of international information threats on national security, as well as exploring the psychological aspects of information influence on public consciousness and behaviour, notable contributions include the works of O. Andreeva, N. Karpchuk, V. Kopsiika, Y. Makar, I. Makarenko, M. Ryzhkov, A. Shulyak, B. Yuskiv, and O. Zaporozhets. Among contemporary foreign researchers, the works of E. Bell, K. Heath, P. Jakobsson, U. Karlsson, N. Rossbach, J. Ruohonen, F. Stiernstedt, J. Stanley, T. Reid, and C. Wardle deserve particular attention. Moreover, it is important to highlight the contribution of international organizations and educational institutions to studying media literacy and information security. Notably, the European Commission, the NATO Strategic Communications Centre of Excellence, the Uppsala University, the University of Gothenburg, and the Fojo Media Institute significantly advance this field.

Main results of research. The spread of disinformation has emerged as a significant challenge to the democratic systems of nations, undermining their stability, public trust, and social cohesion. Sweden, with its historical commitment to democratic values, transparency, and social unity, stands out as a leader in implementing innovative approaches to counter these threats, offering effective models for preserving democratic resilience.

In Sweden, media literacy plays a pivotal role in the framework of psychological defence, particularly in countering disinformation and enhancing societal resilience. The concept of psychological defence in Sweden was established during World War II, when the country, facing a vulnerable position, recognized the necessity of protecting its population from the psychological warfare tactics employed by adversarial states. It became evident that conflicts are waged not only on battlefields but also through manipulating information and public opinion. To safeguard national security, the government developed a strategy that combined military preparedness with measures to counter propaganda and disinformation. A significant milestone in this effort was the establishment of the Psychological Defence Council in 1954, which was tasked with disseminating accurate information during wartime and studying public opinion and propaganda (*Andén, 2020*). The contemporary climate of disinformation, characterized by rapid technological advancements and the proliferation of social media, has further underscored the importance of these historical lessons.

The term «psychological defence» was introduced to avoid the negative connotations associated with «propaganda», which was largely linked to the tactics employed by Nazi Germany during World War II. The concept of psychological defence emphasized the importance of societal awareness of potential threats and the development of collective will to protect democratic values. This approach aimed to counter hostile narratives and enhance citizens' resilience against external manipulations (*Rossbach, 2017*).

The global context in which Sweden operates raises significant concerns. According to the Global State of Democracy 2024 report, published by the International Institute for Democracy and Electoral Assistance, democratic governments worldwide are experiencing a marked decline. The report indicates that in 2023, 47 % of the evaluated countries saw a deterioration in at least one key indicator of democratic performance (*IDEA, 2024*). This marked the eighth consecutive year in which the number of countries with an overall decline in democracy outpaced those showing improvement. Such a trend underscores the urgent need for proactive measures to safeguard democratic values. Sweden's commitment to promoting media literacy becomes particularly significant in this context, as it is a powerful tool for reinforcing democratic principles and effectively countering disinformation.

As Sweden approached NATO membership, it faced significant challenges stemming from the malicious influence of Russia, China, and Iran. These states actively employed tactics aimed at destabilizing Swedish society, undermining trust in state institutions, and fostering social divisions. The Swedish Security Service identified these countries as primary threats, highlighting their

coordinated efforts to manipulate public opinion and influence on national security (*Säkerhetspolisen, 2023*).

Russia represents the most significant threat to Sweden's security. Disinformation campaigns orchestrated by Russian operators aim to fuel societal tensions and undermine government trust. By leveraging social media, Russia disseminates false narratives that exacerbate social conflicts. Notably, the incident involving the burning of the Quran outside the Turkish Embassy in Stockholm in January 2023, reportedly financed by Russian sources, served as a tool to incite anti-Swedish sentiments, strain diplomatic relations with Turkey, and complicate Sweden's NATO accession process (Wee, 2024). Beyond disinformation, Russia engages in cyber operations targeting critical infrastructure and influencing political processes. The Swedish Security Service warns that Russian operatives are actively involved in espionage and orchestrating cyberattacks on governmental and private institutions, posing a direct threat to national security.

China continues to expand its influence over Sweden's information space through various pressure mechanisms. A key instrument is economic leverage, aimed at suppressing critical voices and reducing resistance to Beijing's policies. Of particular concern are China's strategic investments in Swedish technology companies, which could potentially be utilized for espionage or the transfer of sensitive information. In response, Sweden has implemented stringent measures to strengthen oversight of foreign investments, particularly those originating from China, in an effort to safeguard its national interests and ensure the security of critical information infrastructures (*Säkerhetspolisen, 2023*).

Iran, in turn, actively employs cyber operations and disinformation tactics aimed at destabilizing the situation in Sweden. Notably, an incident was recorded in which Iranian hackers targeted Sweden's SMS service, sending messages calling for «revenge» over the Quran burning incident (*Åklagarmyndigheten, 2024*). The objective of this campaign was not only to incite intergroup conflict but also to shape a negative image of Sweden as an «Islamophobic state».

In the face of such challenges, measures to enhance societal information resilience gain critical importance. One of the key tools in this regard is media literacy, which fosters the ability to assess information and resist manipulative influences critically. To this end, Sweden established the Swedish Psychological Defence Agency (Myndigheten för psykologiskt försvar, MPF), which plays a central role in developing strategies to counter disinformation and preparing the population for information threats, particularly in the context of the country's integration into NATO (*Psychological Defence Agency: 2024a*). The agency's activities also focus on building a resilient society capable of effectively countering disinformation attacks while upholding democratic values and fundamental human rights. One of MPF's key priorities is preparing for various scenarios, including potential armed conflict. This preparation involves not only identifying and neutralizing information influence operations but also ensuring the capability of Sweden's population and civil society to withstand malicious external interference (*New Eastern Europe, 2024*). MPF emphasizes raising awareness and training diverse social groups, including government bodies, municipalities, non-governmental organizations, media representatives, and the general public.

The Swedish Psychological Defence Agency (MPF) plays a pivotal role in countering disinformation and strengthening media literacy as a critical component of societal psychological resilience. One of the strategic priorities of MPF is supporting media organizations targeted by information attacks and establishing a platform for collaboration with media industry representatives. In partnership with the Fojo Media Institute at Linnaeus University, the agency conducts training programs designed to prepare journalists for effectively identifying and countering information manipulation (*New Eastern Europe, 2024*). These initiatives contribute to the development of professional competencies among journalists working in complex informational environments, ensuring adherence to ethical standards and the preservation of high professional principles.

At the same time, initiatives targeting the general public play an equally vital role in building national information resilience. As such, a key component of MPF's strategy involves educational campaigns, such as «Don't Be Fooled» (*Psychological Defence Agency: 2024b*). These initiatives aim

to raise citizens' awareness of disinformation tactics and foster critical thinking when consuming information. Specifically, the «Don't Be Fooled» campaign emphasizes the importance of thoroughly verifying sources before sharing any content, thereby promoting a culture of scepticism toward unverified claims. The practical recommendations provided through these efforts help citizens distinguish credible information from manipulative narratives, which is particularly critical in the context of the rapid spread of disinformation on social media. Through such initiatives, MPF contributes to developing a critically thinking society capable of effectively resisting external informational influence and manipulating public opinion. This underscores the strategic importance of media literacy as a tool for ensuring national information security and safeguarding democratic values in the contemporary world.

In this context, Sweden demonstrates significant achievements in implementing media literacy as a key tool for strengthening democratic values and protecting citizens from disinformation. Although a comprehensive national policy in this area has yet to be established, a range of strategic initiatives reflects a clear commitment to raising public awareness and developing critical thinking. A central element of these efforts is the activity of the Media Council under the Swedish Ministry of Culture, which was officially tasked in 2018 with coordinating media literacy measures (*Wagner, 2023*). This decision marked a pivotal moment in the national strategy, signifying an increased focus on media education at the governmental level and laying the foundation for developing an effective legislative framework. Specifically, Sweden's legal foundation for media literacy development is based on key regulatory acts, including the Constitution on Freedom of Expression, the Freedom of the Press Act, the Library Act, and the Education Act (*Wadbring, Ohlsson, 2024*). Additionally, the government implements digitalization and democracy-strengthening strategies that emphasize the importance of media literacy as a critical tool for fostering the informational resilience of the population.

This approach establishes media literacy as an integral component of Sweden's educational policy, embedded in curricula at various levels, ensuring the systematic development of critical thinking among citizens. The Ministry of Education and Research oversees the incorporation of media literacy courses into school curricula, the funding of libraries, and adult education programs, focusing on equipping students with the skills necessary to navigate an increasingly complex media landscape (*Government Offices of Sweden, 2024*). The National Agency for Education plays a pivotal role in supporting this process by providing educators with methodological guidelines, teaching materials, and professional development programs (*Skolverkets organisation, 2024*). These resources enable teachers to utilize modern tools for teaching media literacy effectively. Thus, at the national level, media literacy is established as a mandatory element of the educational curriculum in Sweden, while educators retain the flexibility to design lessons tailored to local needs and contexts. This comprehensive approach effectively integrates media literacy into the general education process and fosters the development of an information culture among youth.

In the Swedish educational system, media literacy begins as early as preschool, when children are introduced to the concept of source criticism. They learn to distinguish between fiction and reality through engaging classroom and library activities. This foundational knowledge is crucial for their further education. In grades 7–9, lessons expand to include critical online reasoning, during which they analyze digital content more deeply and develop skills for assessing the reliability of various information sources (*Sundin, 2015*). Collaboration with school librarians becomes increasingly important at the upper secondary school level. These partnerships help children refine their critical analysis skills for evaluating information from diverse sources, fostering a deeper understanding of how media influence public perception and societal discourse.

Moreover, Sweden has achieved significant progress in developing non-formal education to enhance media literacy and promote safe internet use. The Swedish Safer Internet Centre (SIC SE) plays a key role in fostering responsible behaviour in the digital environment among children and youth. This initiative aligns with the European Union's broader efforts to create a safer digital space through awareness campaigns and resources based on the UNESCO media literacy framework. A distinctive feature of SIC SE's activities is the active involvement of young people in developing

programs and strategies. Youth panels, comprising representatives from various organizations, enable the incorporation of the experiences and needs of the younger audience. This approach facilitates the creation of effective educational programs that address the challenges of the digital age, fostering critical thinking skills and safe internet practices (*Swedish Agency for the Media, 2024*).

Sweden integrates media literacy into key strategic documents at the national level, such as the Ministry of Economy's Digitalization Strategy and the Ministry of Culture's Democracy Strengthening Strategy (*OECD, 2018*). These documents emphasize the importance of information management skills in the digital era, recognizing media literacy as a fundamental prerequisite for active citizen participation in democratic processes. For instance, the «Library Development Strategy 2022–2025» designates libraries as central institutions for fostering media literacy among the population, including individuals of all ages and social groups (*Regeringskansliet, 2022*).

A unique feature of Sweden's approach is the involvement of the Ministry of Infrastructure, which implements digitalization policies that encompass the development of media literacy skills. The Ministry of Justice also integrates media literacy into civil defence strategies to enhance citizens' psychological resilience to informational threats. This focus is particularly significant for maintaining civic unity during crises that may threaten national security (*European Commission, 2019*).

Moreover, Sweden is actively involved in international initiatives to promote media literacy, which is crucial in countering disinformation. One notable example is its participation in the ProMS project (Promoting Media Literacy and Youth Citizen Journalism through Mobile Stories), which brings together organizations from various countries to develop tools that train young people to create and critically evaluate reliable news content (*Media and Learning Association, 2024*). This project illustrates how international collaboration contributes to developing a unified approach to countering informational threats while supporting local initiatives.

Funding media literacy initiatives in Sweden are a critical component of the national strategy to counter disinformation. The majority of funding is provided by the state budget, reflecting the priority placed on integrating media literacy into the national education system. The Ministry of Culture is central in supporting these initiatives, coordinating funding through administrative appropriations and targeted government projects. The Swedish Psychological Defence Agency, responsible for enhancing the psychological resilience of the population, finances its educational programs from the defence budget. Specifically, it allocates resources to training citizens in identifying disinformation and countering external informational threats. For non-governmental organizations and independent initiatives, funding typically comes from self-generated resources or external grants (*Giannetto, 2024*).

Conclusions. Sweden demonstrates a comprehensive and systemic approach to ensuring psychological resilience and strengthening societal resistance to disinformation through advancing media literacy. Amid malicious influences from Russia, China, and Iran, which deploy disinformation campaigns to undermine trust in state institutions and sow social divisions, the country equips its citizens with critical thinking skills, the ability to recognize manipulative narratives, and tools to counter external informational threats. The Swedish Psychological Defence Agency plays a pivotal role in implementing this strategy, which focuses its efforts on combating disinformation and fostering societal resilience. The agency conducts awareness campaigns, supports media organizations, develops educational programs, and collaborates with the Fojo Media Institute. These initiatives enhance public awareness of informational threats and reinforce democratic values.

The integration of media literacy at all levels of education and within strategic frameworks such as the Digitalization Strategy and the Democracy Strengthening Strategy establishes a foundation for developing informational resilience. Libraries, educational institutions, and the Safer Internet Centre play pivotal roles in these processes, aligning national approaches with European standards. Funding for media literacy initiatives is supported by both the national budget and international projects. Active collaboration with non-governmental organizations and international partners enhances the effectiveness of these programs and ensures their sustainable implementation.

Sweden's experience demonstrates that effective counteraction to disinformation and the provision of psychological resilience require a comprehensive approach. This approach combines the advancement of media literacy and the efforts of specialized institutions such as the Swedish Psychological Defence Agency, state support, and international cooperation. Such a strategy is critical for safeguarding national security, preserving democratic values, and strengthening public trust in state institutions.

References

1. Åklagarmyndigheten (2024) Grovt dataintrång utfört av Iran, available at: <https://www.aklagare.se/nyheter-press/pressmeddelanden/2024/september/grovt-dataintrang-utfort-av-iran/>
2. Andé K. (2020) Studying Psychological Defence: Lessons Learned from the Cold War. NordMedia Network, available at: <https://nordmedianetwork.org/latest/news/studying-psychological-defence-lessons-learned-from-the-cold-war/>
3. European Commission (2019) Digital Government Factsheet 2019: Sweden, available at: https://interoperable-europe.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Sweden_2019.pdf
4. Giannetto M. (2024) An analysis on the media literacy efforts of Finland, Sweden, and Norway. Forsvarets høgskole, available at: https://fhs.brage.unit.no/fhs-xmlui/bitstream/handle/11250/3113109/Melissa%20Ines%20Giannetto_Final%20masteroppgaven%20MIG_1.pdf?sequence=1&isAllowed=y
5. Government Offices of Sweden (2024) Ministry of Education and Research, available at: <https://www.government.se/government-of-sweden/ministry-of-education-and-research>
6. IDEA (2024) The Global State of Democracy 2024: Strengthening the Legitimacy of Elections in a Time of Radical Uncertainty, available at: <https://www.idea.int/publications/catalogue/global-state-democracy-2024-strengthening-legitimacy-elections>
7. Media and Learning Association (2024) Promoting MIL and Youth Citizen Journalism through Mobile Stories, available at: <https://media-and-learning.eu/event/promoting-mil-and-youth-citizen-jouanalism-through-mobile-stories/>
8. New Eastern Europe (2024) Combatting disinformation by state agencies: the case of the Swedish Psychological Defence Agency, available at: <https://neweasterneurope.eu/2024/05/07/combating-disinformation-by-state-agencies-the-case-of-the-swedish-psychological-defence-agency/>
9. OECD (2018) Reviews of Digital Transformation: Going Digital in Sweden, available at: https://www.oecd.org/en/publications/oecd-reviews-of-digital-transformation-going-digital-in-sweden_9789264302259-en.html
10. Psychological Defence Agency (2024a) About Agency, available at: <https://mpf.se/psychological-defence-agency/about-us/our-mission>
11. Psychological Defence Agency (2024b) Get the tools, available at: https://bliintelurad.se/download/18.1e9be04b1926afdd87e5db/1728386305302/Handbok-Dont-be-fooled-2023-EN-TA_240417.pdf
12. Regeringskansliet (2022) Strategi för ett starkt biblioteksväsende 2022–2025, available at: <https://www.kb.se/download/18.2dd50321183eebadf40832/1666677483654/strategi-for-ett-starkt-biblioteksvasende-20222025.pdf>
13. Rossbach N. H. (2017) Psychological Defence: Vital for Sweden's Defence Capability. Swedish Defence Research Agency, available at: <https://www.foi.se/rest-api/report/FOI%20Memo%206207>
14. Säkerhetspolisen (2023) Swedish Security Service 2023–2024, available at: https://www.sakerhetspolisen.se/download/18.6dad4d9a18e62da82643a5/1713275525308/SP_Yearbook%20Eng_Accessible%20TGA.pdf
15. Skolverkets organisation (2024) Om organisation, available at: <https://www.skolverket.se/om-oss/organisation>

16.Sundin O. (2015) Invisible Search: Information Literacy in the Swedish Curriculum for Compulsory Schools. *Nordic Journal of Digital Literacy* 10(4): 193–209, DOI:10.18261/ISSN1891-943X-2015-04-01

17.Swedish Agency for the Media (2024) Safer Internet Centre, available at: <https://mediemyndigheten.se/safer-internet-centre/>

18.Wadbring I., Ohlsson J. (2024) Media legislation. *Media Landscapes*, available at: <https://medialandscapes.org/country/sweden/policies/media-legislation>

19.Wagner M. (2023) Mapping measures to promote media and information literacy in Sweden. *Media and Learning Association*, available at: <https://media-and-learning.eu/type/featured-articles/mapping-measures-to-promote-media-and-information-literacy-in-sweden/>

20.Wee O. (2024) Lessons from Russia's Hybrid War Against Sweden and Finland NATO Membership. *VOA*, available at: <https://www.voanews.com/a/7525897.html>

УДК 327.5

THREAT TO THE US' NUCLEAR ORDER: CHINA AND RUSSIA DETERRENCE CRISIS 2024

ЗАГРОЗА ЯДЕРНОМУ ПОРЯДКУ США: КРИЗА СТРИМУВАННЯ КИТАЮ ТА РОСІЇ У 2024

Maksym Skrypnyk

PhD (Political Science), Department of International Relations, Faculty of International Relations, Political Science and Sociology at Odessa I. I. Mechnikov National University, e-mail: skrypnyk.corp@gmail.com
ORCID ID: <https://orcid.org/0000-0001-9212-9132>

Скрипник Максим Вікторович

PhD (Політологія), кафедрі міжнародних відносин, факультет міжнародних відносин, політології і соціології Одеського Національного Університету імені І. І. Мечникова, e-mail: dr.maksym.skrypnyk@gmail.com
ORCID ID: <https://orcid.org/0000-0001-9212-9132>

Abstract. *In this article, the author provides a detailed argumentation of the level of nuclear threat from Russia in the context of conventional aggression against Ukraine, analyzing acts of military cooperation and related military exercises with China where both countries of the authoritarian bloc use nuclear carriers. The author also partially compares the level of nuclear capabilities of both superpowers of the totalitarian bloc as part of the argumentation of the thesis about the need to focus NATO's attention on a higher priority threat from Russia than on challenges and threats from China. The author considers the chronological framework of 2023-2024. To effectively identify and prioritize the level of threats, the author uses the case study method, as well as the content analysis method when working with documents and official statements of representatives of the countries that are the object of this study. The author also analyzes the technical capabilities of certain nuclear carriers that Russia and China actively use in exercises and in the war in Ukraine. The theoretical basis of this work is structural realism, the theory of "ideological allies" by Mark Haas and the concept of the Heartland by Halford Mackinder, which argue for the trends of increasing geopolitical appetites of Russia, as well as the systematic involvement of allies in the bloc of authoritarian states. According to the results of this study, the author proves the thesis that Russia is the undisputed number one nuclear and conventional threat to NATO countries, as well as their allies. Therefore, the trend of reorienting and prioritizing the foreign policy of nuclear deterrence of the United States towards China may be a wrong step in view of the future potential escalation of military actions by Russia and its totalitarian bloc against democratic countries of the West, primarily in Europe.*

Keywords: *US nuclear policy, Russian nuclear deterrence, Chinese nuclear deterrence, NATO, strategic stability in Europe, international security.*

Анотація. *У даній статті автор наводить докладну аргументацію рівня ядерної загрози з боку росії у контексті конвенційної агресії проти України, аналізуючи акти мілітарного співробітництва та суміжних воєнних навчань із Китаєм де обидві країни авторитарного блоку використовують ядерні носії. Також автор частково порівнює рівень ядерної спроможності обох наддержав тоталітарного блоку в рамках аргументації тези про необхідність зосереджені уваги НАТО на більш пріоритетній загрозі з боку росії, ніж на викликах та загрозах з боку Китаю. Автор бере до аналізу хронологічні рамки 2023-2024 роки. Задля ефективною ідентифікації та пріоритетизації рівня загроз автор використовує метод кейс стаді, а також метод контент аналізу при роботі із документами та офіційними заявами представників країн, які є об'єктом даного дослідження. Також автор аналізує технічні спроможності певних ядерних носіїв, які росія та Китай активно використовують у навчаннях, та у війні в Україні. Теоретичним підґрунтям даної роботи є*

структурний реалізм, теорія «ідеологічних союзників» Марка Хааса та концепція Хартленду Хелфорда Маккіндера, які аргументують тенденції підвищення геополітичних апетитів росії, а також системність залучення союзників до блоку авторитарних держав. Згідно результатів даного дослідження автор доводить тезу, що росія є беззаперечною ядерною та конвенційною загрозою номер один по відношенню до країн НАТО, а також їх союзників. Тому тенденція реорієнтації і пріоритизації зовнішньої політики ядерного стримування США на Китай може бути хибним кроком з огляду на майбутню потенційну ескалацію воєнних дій росії та їх тоталітарного блоку проти демократичних країн Заходу в першу чергу у Європі.

***Ключові слова:** ядерна політика США, ядерне стримування росії, ядерне стримування Китаю, НАТО, стратегічна стабільність в Європі, міжнародна безпека.*

Introduction. The year 2024 marked a pivotal moment for the world's leaders, as it became clear that the time to choose their alliance is approaching - the US defence coalition consists of NATO, AUKUS and bilateral agreements with regional allies as Israel, South Korea or Japan. The main purpose of these cohesive formations is military cooperation in response to any threat against the sovereignty of these states (Narang & Vaddi, 2024). And the main threatening complex object to their national security and geopolitical interest is the bloc of authoritarian countries coalescing around Russia's and China's nuclear arms potential and global influence. The fact of Russian nuclear collaboration with Iran and North Korea in exchange of missiles or soldiers to use against Ukraine, as well as relocation of Russian tactical nuclear arms and carriers to Belarus are significant and urgent destabilising factors for the existing international non-proliferation regime (Skrypnyk & Skrypnyk, 2024). Military aggression against Ukraine and tendency of uniting authoritarian actors of the international arena with the aim to change the existing geopolitical order to satisfy Russian political and strategic ambitions. These vector of development of international affairs poses one of the most significant threats to the strategic security and stability of all democratically oriented parts of the world since the Second World War, because Nuclear Weapons have never been so frequently leveraged as tools of coercion, in the context of conventional military conflicts, to achieve their authoritarian leaders' geopolitical objectives, taking into consideration the Caribbean Crisis of the 1962 (Waltz, 1981). This is a great practical example of how Kenneth Waltz's structural realism works in the empirical layer. However, this trend may end if the United States of America restores international security and stability to the global multipolar geopolitical arena by improving its Nuclear Deterrence Policy and enhancing approach to deter Russia from further escalations against Europe (Payne & Trachtenberg, 2022).

The purpose of the study is to strengthen the EU defence position by analysing and emphasising on the most actual nuclear threats from Russia and China in 2024 against the democratic states of the West.

Recent literature review. This article covers the analysis of a wide range of security issues of the EU and NATO, therefore, in the context of this study, it is necessary to note not only the work on nuclear security, non-proliferation and deterrence, but also research on international stability and the security of the EU and NATO countries as a whole. Some of the most relevant works on NATO security and military threats and challenges from Russia belong to the following researchers: Alexandra Gheciu (2022), who concentrates her research on topics such as multilateralism and international institutions: NATO, European Union, Organization for Security And Cooperation in Europe, United Nations Global Governance International Security. Benjamin Schreer (2022) who is a head of European Security and Defense Program And expertise on defense policy and Indo-Pacific strategic affairs, NATO and German defense policy. On the theory of nuclear deterrence and non-proliferation, the works of foreign scientists are considered: Amy Wolf (2023), who is a researcher at the U.S. Congress on the U.S., Russia and China Nuclear Arsenal Programs, Strategic Arms Control and U.S.-Russian Arms Control Policy; Scott Sagan (1983), whose work focuses on U.S. foreign policy and nuclear deterrence; Heather Williams (2014) researches international security and nuclear nonproliferation issues in Eastern Europe; Jonathan Eyall (1987) during recent

years, he has been researching the possible consequences of Iran's Nuclear program for Europe, as well as Russia's nuclear threats in the context of its invasion of Ukraine; Eric Heginbotham (2004) examines China's nuclear deterrence, as well as US-China relations in the geopolitical direction; Bruce Bennett (1979) is an expert on nuclear non-proliferation and deterrence in the Northeast Asian direction, namely North Korea, China, Japan, and South Korea. Ukrainian researchers who consider the nuclear policy of the United States, including through the problem of non-proliferation, it is worth mentioning Sergei Galaka (2011), Polina Sinovets (2017) and Tetyana Melnyk (2021) among others.

US trigger "The president recently issued updated nuclear-weapons employment guidance to account for multiple nuclear-armed adversaries," stated Vipin Narang, an MIT nuclear strategist who formerly served in the Pentagon, before returning to academia earlier this month (Narang & Vaddi, 2024). "And in particular," he further specified, the weapons guidance accounted for "the significant increase in the size and diversity" of China's nuclear arsenal (Narang, 2024). In June 2024, the National Security Council's senior director for arms control and nonproliferation, Pranay Vaddi, referenced the document as the first to thoroughly examine whether the United States is prepared to respond to nuclear crises that may occur either simultaneously or sequentially, using a combination of nuclear and non-nuclear weapons (Narang & Vaddi, 2024). Mr. Vaddi stated that the new strategy emphasises "the need to deter Russia, the PRC and North Korea simultaneously," with "PRC" referring to the People's Republic of China (Narang & Vaddi, 2024). President Biden's administration has already taken core steps and implemented some crucial updates to the U.S. Nuclear Strategy as of March 2024, which were announced in a New York Times report on the 20th of August 2024; however, these documents have not yet been reflected in the U.S. Nuclear Posture Review documents (Narang & Vaddi, 2024). Moreover, the Russian threat is escalating due to the increasing number of their conventional and military exercises which continue to get closer and closer in proximity to the NATO member state's borders. Are these manoeuvres merely acts of strategic intimidation without genuine intention to attack NATO - or do they represent ongoing preparations for a total war of Totalitarian Bloc countries against the Western Democratic Bloc states affiliated with NATO ?

Totalitarian Bloc Response

Following this NYT report, China, now seriously alarmed by the news indicating the United States approved a nuclear strategic plan to focus on China's rapid expansion of its nuclear arsenal, issued an official reaction by the Chinese foreign ministry spokesperson: "The U.S. is peddling the China nuclear threat narrative, finding excuses to seek strategic advantage" (Chu, Orr, Perry & Wong, 2024). North Korea also issued an official statement through its Minister of Foreign Affairs: "The DPRK will as ever bolster up its strategic strength in every way to control and eliminate all sorts of security challenges that may result from the U.S. dangerous nuclear posture readjustment, and resolutely counter any type of nuclear threat," the foreign ministry said, using North Korea's official name (Reuters, 2024). The Ministry also added to the major statement: "Other sovereign states' efforts for bolstering up their defence capabilities to cope with the ever-increasing nuclear threat from the U.S. can never be a pretext for its nuclear arms buildup for aggression and provocative coordination of nuclear posture". In contrast to China, the North Korean Ministry issued a response that was notably more detailed and emotionally charged: "No matter how desperately the U.S. may exaggerate the 'nuclear threat' from other countries, the DPRK will push forward the building of nuclear force sufficient and reliable enough to firmly defend the sovereignty and security interests of the country on its fixed timetable" (Reuters, 2024).

Despite the renewed focus of the U.S. nuclear strategy being redirected from Russia to China, Russia, the second most capable nuclear state after the U.S., stated: "On the first of September 2024 Russia announced that it was decided to make changes to its doctrine on the use of nuclear weapons in response to what it regards as Western escalation in the war in Ukraine, state media quoted Deputy Foreign Minister Sergei Ryabkov" (Reuters, 2024). Taking into account Putin's background of nuclear threats and intimidation towards the Western bloc, it is reasonable to presume that he is inclined to upgrade Russia's nuclear arms capabilities. It is increasingly likely that President Biden's

nuclear posture update has already triggered the inception of a new nuclear arms race between the U.S., China and Russia. Additionally, it is essential to consider Russia's active collaboration with Iran and North Korea in military cooperation and technology exchange necessary for the production and implementation of a nuclear arsenal (Skrypnyk & Skrypnyk, 2024).

Nuclear Precedents of China and Russia in 2024

In the context of the renewal of the U.S. Nuclear Strategy it is of significance to emphasise the most recent acts of potential nuclear intimidation from the primary threatening powers within U.S. national interests and strategic stability. These threats correlate with the actual Nuclear Deterrence Strategy, which provides a strong argument of the aforementioned theses and official statements, however they require enhanced concept of response. (Nuclear Posture Review, 2010).

Approximately one month before the New York Times announcement of President Biden's "Nuclear Employment Guidance" on the 24th of July, the North American Aerospace Defense Command (NORAD) successfully intercepted a formation of nuclear-capable bombers consisting of two Chinese Xian H-6K bombers and two Russian Tu-95MS Bear bombers operating in close proximity to Alaskan airspace. The interception was conducted through a coordinated effort involving American F-16 and F-35 fighter aircrafts, alongside Canadian CF-18 fighter jets. To gauge the potential threat of at least one of these bombers, it is important to consider its nuclear arms capabilities: "Fitted with new electronics and upgraded targeting systems, the more modern Tu-95MS can carry 16 200-kiloton nuclear AS-15 Kent cruise missiles. To put this into perspective, each atomic cruise missile is ten times more powerful than the 10,000-pound 'Fat Man' nuclear bomb the Americans dropped on Nagasaki in 1945" (Bingen, MacKenzie & Williams, 2024).

Another fact of Russian nuclear threat activity was published in May 2024, highlighting the importance of analysing how Russia's nuclear arsenal is integrated into its broader military regime, as reflected in its recent tactical drills (Trevelyan, 2024). Russia's recent tactical nuclear drills, which represent a significant escalation in its military posture, particularly in the context of the ongoing conflict in Ukraine. The drills involve nuclear-capable Kinzhal and Iskander's missiles, which are designed for battlefield use and are classified as non-strategic, or tactical, nuclear weapons. These weapons are distinct from strategic nuclear weapons, which are intended for long-range strikes and have the capacity to destroy entire cities. The inclusion of Kinzhal and Iskander missiles in the drills is notable. The Kinzhal is a hypersonic air-launched ballistic missile with a range of up to 2,000 kilometres, capable of carrying nuclear warheads up to 500 kilotons each (Hambling, 2024). The Iskander, a short-range ballistic missile system, also can be equipped with nuclear warheads and is known for its precision and ability to evade missile defences.

The use of these systems in the drills suggests that Russia is preparing for scenarios in which it could employ tactical nuclear weapons to attain specific military objectives on the battlefield. By focusing on tactical nuclear weapons, Russia is signalling a potential shift in its nuclear doctrine. Traditionally, tactical nuclear weapons have been viewed as tools for deterrence, meant to prevent an adversary from escalating a conflict to a full-scale war. However, the public announcement of these drills, along with the specific mention of "preparation and use" of such weapons, implies that Russia is considering their operational use in the context of the war in Ukraine. This development is concerning because it lowers the threshold for nuclear use, increasing the risk of nuclear weapons being employed in a conventional conflict. Tactical nuclear weapons are often seen as more "usable" due to their lower yield and shorter range compared to strategic nuclear weapons. However, any use of nuclear weapons, regardless of yield or range, would have profound and potentially catastrophic consequences, both militarily and politically (Freedman, 1981).

In the context of Russian tactical nuclear arms capabilities and intentions, it is worth mentioning the relocation of some tactical nuclear stockpiles to Belarus in 2023 (Federation of American Scientists, 2023). The relocation of these stockpiles brings the threat significantly closer to the NATO borders, posing a considerable nuclear threat to the European Union and the Baltic states. The Belarusian military has completed what appears to be a new housing facility for the allegedly nuclear-capable Iskander missile launchers it received from Russia. According to a statement from The Federation of American Scientists, this is the "first time since the Cold War that

russians equipping another country to launch its nuclear weapons and undercut russian criticism of U.S. nuclear sharing arrangements with NATO allies” (Kristensen, 2023).

What about russia's long-range nuclear capabilities? The situation remains the same - active development and huge budgeting - resulting in terrifying and impressive outcomes from a nuclear weapon analysis perspective. “Two U.S. researchers say they have identified the probable deployment site in russia of the 9M730 Burevestnik, a new nuclear-powered, nuclear-armed cruise missile touted by President Vladimir Putin as ‘invincible’” (Reuters, 2024).



Source: the image obtained by Reuters on August 27, 2024. Planet Labs PBC/Handout via REUTERS.

Using images taken on July 26th by Planet Labs, a commercial satellite firm, the two researchers identified a construction project abutting a nuclear warhead storage facility known by two names - Vologda-20 and Chebsara - as the new missile's potential deployment site. The facility is 295 miles (475 km) north of Moscow (Reuters, 2024). Decker Eveleth, an analyst at the CNA research and analysis organisation, discovered satellite imagery revealing what he believes to be nine horizontal launch pads under construction. “The reference to loitering has raised concerns that russia might launch Burevestnik missiles in a crisis, which could then cruise near U.S. and NATO targets while waiting for instructions. This would allow Moscow to strike quickly once orders are given, significantly shortening the amount of time NATO would have to react to russian aggression.” - Decker Eveleth stated in his article for a Foreign Policy. According to his assessment, these pads are organised into three groups, each enclosed by high berms for protection—either to shield them from potential attacks or to prevent an accidental explosion in one from triggering detonations in the others (Foreign Policy, 2024). The berms are connected by roads to what Eveleth identified as likely buildings for servicing the missiles and their components. Additionally, these roads connect to an existing complex of five nuclear warhead storage bunkers. Eveleth stated, “The site is intended for a large, fixed missile system, and the only large, fixed missile system russia is currently developing is the Skyfall” (Reuters, 2024).

The Burevestnik missile (also known as Skyfall) is a russian nuclear-powered cruise missile designed for intercontinental range capabilities (Foreign Policy, 2024). A 2020 report by the U.S. Air Force's National Air and Space Intelligence Center suggested that, if successfully deployed, the missile could offer russia a unique strategic capability. However, many experts have raised concerns about its practicality, given its troubled development history.

Given that 2024 is very rich in the development of the nuclear and military sectors, as well as the doctrines which include them, let us focus on the latter. For any concept, especially of a military nuclear nature, to pose a genuine threat, it must be implemented in practice and deployed on a massive scale. In July 2024, China and russia, as military allies conducted live-fire naval exercises in the South China Sea, underscoring the growing military cooperation between the two nations,

whose collaboration has significant implications for nuclear deterrence and strategic stability in the region. These exercises, which included live-fire drills and joint air defence and anti-submarine operations, demonstrate the increasing military integration between Russia's Pacific Fleet and China's People's Liberation Army Navy (PLA Navy). This cooperation is particularly noteworthy in the context of their "no limits" partnership, declared in 2022, which has deepened following U.S. and Western sanctions against Russia (Blanchard & Tung, 2024).



Source: Japan Self-defence Forces, Taiwan Ministry of Defence, Japanese media Jackie Gu, Reuters.

Certain manoeuvres, conducted during the aforementioned joint naval drills of the Chinese air forces, caused significant concern on the part of Taiwan. "The military has a detailed grasp of the activities in the seas and waters around the Taiwan Strait, including of the Chinese Communists' aircraft and ships," stated ministry spokesperson Sun Li-fang in an official statement (Blanchard & Tung, 2024). Taiwan's Ministry of Defense released two images: a grainy black-and-white photograph of a Chinese J-16 fighter jet and a colour photograph of a nuclear-capable H-6 bomber. The ministry confirmed that these images were taken recently, though it did not disclose the precise location or time of capture (Blanchard & Tung, 2024). "The Chinese Communists threat to regional stability continues to rise, and it's grey zone intrusions into the Taiwan Strait and surrounding areas are also increasing day by day, which are a common challenge to global democracy," President of Taiwan Lai Ching-te said in response to the heightened presence of Chinese military forces surrounding Taiwan in July 2024 (Blanchard & Tung, 2024).

From a nuclear military perspective, the joint exercises signal a potential shift in the strategic landscape, particularly regarding the projection of naval power and nuclear deterrence in the Indo-Pacific region. Both Russia and China possess significant nuclear arsenals, with Russia's Pacific Fleet being a critical component of its strategic nuclear forces. The presence of Russian naval assets, which are capable of deploying nuclear-armed cruise missiles, in conjunction with China's growing naval capabilities, may be interpreted as a message to the United States and its allies regarding the increasing military collaboration between these two nuclear powers. The anti-submarine drills are particularly significant in this context, as these submarines equipped with nuclear-tipped ballistic missiles (SSBNs) are a vital component of the nuclear deterrence strategies of both Russia and China. Through joint anti-submarine exercises, Russia and China are likely honing their ability to protect their own SSBNs while simultaneously developing potential strategies to counter those of their adversaries. This capability is essential for ensuring the survivability of their nuclear forces, the cornerstone of credible nuclear deterrence.

Moreover, the strategic timing and location of these exercises, particularly in the contested waters of the South China Sea, a region of immense geopolitical significance, further elevate their importance. The South China Sea is not only a critical maritime trade route but also serves as a strategic area where the U.S. and its allies, such as the Philippines, hold significant military and geopolitical interests. By conducting these drills in this region, Russia and China are not only asserting their presence but potentially demonstrating their ability to cooperate in the event of a regional conflict, including those that might involve nuclear elements.

It is also important to emphasise on the recent Russian naval exercises, from September the 10th to 16th, 2024. The "Ocean-2024" exercise, conducted by the Russian Navy represents the largest naval exercise undertaken by Russia in over three decades. Taking place across the Pacific and Arctic waters, the Mediterranean Sea, the Caspian Sea, and the Baltic Sea, the drills involve a reported 400 (different sources reporting around 300) combat ships, submarines, and support vessels, as well as 125 aircraft and helicopters. The exercise aims to evaluate the readiness of the Russian Navy and the Air and Space Forces, while also enhancing coordination with naval forces from partner countries, including China. The Russian Ministry of Defense has stated that the exercise involves over 90,000 soldiers, 7,000 combat and specialised vehicles, and encompasses a broad range of operational tasks, including the use of precision weapons and complex force control. Notably, China is participating with a contingent of four naval units, including a Type 055 destroyer and a Type 052D destroyer, as well as 15 aircraft, indicating a strengthening strategic partnership between the two nations (Defense News by Ed., 2024).

Despite the official figures provided, there is scepticism regarding the Russian Navy's ability to deploy the full extent of the stated assets. The current size of the Russian fleet is estimated at approximately 300 vessels of all classes, although the actual number of operational units is likely to be smaller. Therefore, although the scale of the exercise is substantial, it does not match the grandeur of Cold War-era manoeuvres it aims to emulate. The most significant aspect of Russia's naval power, as it was during the Cold War, remains its submarine fleet. Russian submarines continue to represent a substantial threat due to their ability to operate covertly and deliver strategic payloads, including ballistic missiles. The exercises likely emphasise these capabilities, maintaining a focus on underwater warfare and anti-submarine operations. President Vladimir Putin's remarks during the exercise reflect Russia's perception of a strategic contest with the United States, particularly in response to the U.S. military presence near Russia's western borders, the Arctic, and the Asia-Pacific region (Defense News by Ed., 2024). By conducting these drills, Russia aims to demonstrate its determination in achieving its geopolitical targets and military dominance in what it perceives as U.S. efforts to save global military-political affairs leadership. However, some argue that Putin is merely employing intimidation and bluffing tactics, prompting the question - what are his current "red lines" that could trigger him to act as an explicit military aggressor beyond the Ukrainian battlefields?

Leaked Russian Military Files

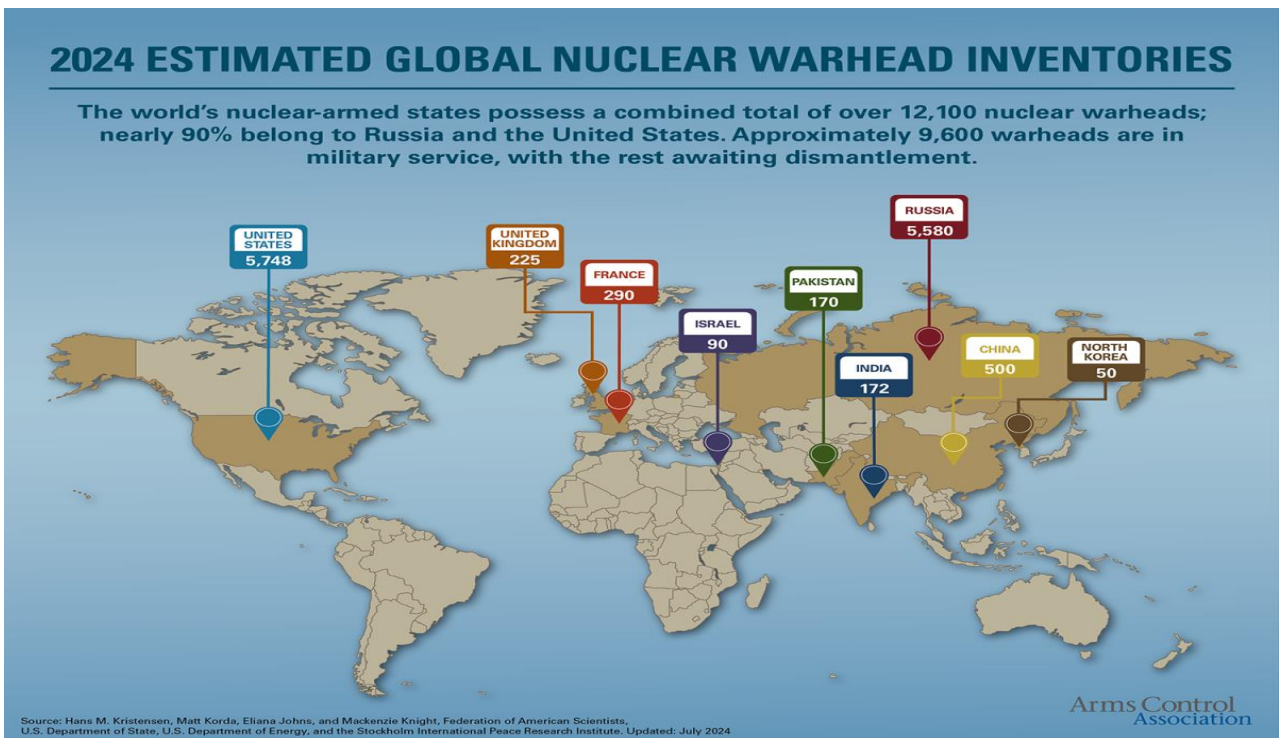
A February 2024 report by the Financial Times reveals alarmingly low thresholds for Russia's nuclear response, underscoring a high level of strategic vulnerability. The disclosure of classified Russian military documents, detailing scenarios from 2008 to 2014, suggests that the destruction of merely 20% of Russia's strategic ballistic missile submarines or 30% of its nuclear-powered attack submarines could trigger a nuclear response. This is particularly concerning given the limited size of Russia's current submarine fleet, which consists of 11 ballistic missile submarines and 17 nuclear-powered attack submarines (Cook & Seddon, 2024). The thresholds are significantly lower than the anticipated losses in a Taiwan conflict scenario, suggesting a potentially precarious stance in Russia's nuclear strategy, especially in light of its growing concerns regarding China. This low threshold for nuclear response not only highlights Russia's strategic concerns but also raises broader questions about the stability of global nuclear deterrence and the risks of escalation in a multi-polar nuclear world.

The analysis, based on Russian strategic documents from 2014, provides a concrete understanding of Russia's defensive posture with respect to China. These documents reveal that over

a decade ago, russia was acutely aware of the potential threat posed by China and had developed strategies to deter a surprise attack from its southeastern neighbour. The documents indicate that by 2015, russia had positioned two Dolgorukiy-class nuclear ballistic missile submarines and approximately six nuclear-powered attack and cruise missile submarines in the Pacific region. (Cook & Seddon, 2024) These assets were part of russia's broader strategy to counterbalance China's growing medium-range missile arsenal, which could pose a significant threat to russia's naval bases. However, the analysis suggests that while this deterrence seemed robust at the time, it may no longer be as effective today. China's nuclear forces have expanded significantly, undermining the deterrent value of russia's Pacific-based nuclear capabilities. The growing disparity in military power is amplified by China's increasing economic and cultural influence in russia's eastern territories, such as Vladivostok, where Chinese historical claims and current ties have become more pronounced.

The concern is that China's enhanced nuclear capacity, combined with its strategic patience and influence in the region, could allow it to effectively annex parts of russia's lightly defended eastern territories without direct military confrontation. The reference to russia's Crimean playbook implies that China might adopt similar hybrid tactics, leveraging local grievances, historical claims, and economic leverage, to achieve its territorial ambitions. This scenario raises significant doubts about the ongoing effectiveness of russia's nuclear deterrence as outlined in the 2014 documents, suggesting that the strategic calculus that once guided russia's defence planning may require urgent revision. However, China's potential nuclear and conventional military threats are primarily focused on Taiwan and Japan, while russia, as the world's second most powerful nuclear state, is engaged in a war against Western Democracies Bloc, including the United States. This thesis was explicitly stated by the russian president on the 12th of September, during the largest ongoing naval drills: "This will mean that NATO countries – the United States and European countries – are at war with russia. And if this is the case, then, bearing in mind the change in the essence of the conflict, we will make appropriate decisions in response to the threats that will be posed to us" (Conte & Schmitz, 2024). Putin's threat was in response to the Western Democracies alliance's intention to grant Ukraine pivotal permission to use long-range missiles deeper within russian territory. This move aims to neutralise russia's capabilities to demolish Ukrainian cities and energy infrastructure as the winter of 2024-2025 approaches. Therefore, in addition to the previously outlined borders and russia's very low threshold for using nuclear arms, we can add one more "red line" - comprehensive application of the long-range missile systems by Ukraine.

Conclusion. The main issue remains and requires additional concepts of response, because russian threat is currently the main factor of nuclear intimidation and strategic non-stability for the EU. Even when considering the total number of potential triggers for 2024 and excluding all of Putin's threats since the attack on Ukraine in 2022, russia has become much more explicitly provocative in terms of nuclear threats and intimidation since the beginning of 2024. Direct threats to use nuclear weapons as part of a blackmail strategy to deter NATO support for Ukraine. Most importantly, russia currently has almost 11 times more nuclear warheads than China.



Source: Arms Control Association

As illustrated in the image from the Arms Control Association, North Korea only has 50 warheads. While exact data regarding Iran's arsenal is not available, it is certain that Iran has fewer than North Korea. In contrast, China possesses approximately 500 warheads. These figures clearly indicate that Russia, with more than 5,000 nuclear warheads, is the leading power among totalitarian countries in terms of nuclear arms power (Arms Control Association, 2024). This includes direct, indirect, and potential nuclear threats to U.S. allies, who rely on security guarantees and the nuclear umbrella defence provided by the great Western ally of Europe. Regarding the development of military technologies, Russia was the primary supplier of nuclear weapons and carriers to China. This cooperation made China's nuclear capabilities technologically compatible with Russia's, enhancing their ability to confront common enemies or even to challenge the entire alliance. To strengthen the thesis stated below, we can provide an exemplifying argument with the nuclear carrier bombers, one of the modifications mentioned earlier in this article. In the mid-1950s, Russia provided China with nuclear-capable bomber technology, specifically through the transfer of technology and assistance for the Tupolev Tu-16. These bombers were critical in enabling China to develop its own long-range strategic bomber fleet. China used the technology and design framework from the Soviet Tu-16 to develop its own variant, which they named the Xian H-6. (Evans, 2024)

The significant developments in Russia's tactical and strategic nuclear arsenal, coupled with the ongoing practical testing of different types of potential nuclear carriers amid the massive war in Ukraine, cast doubts about the expediency of President Biden's decision. Prompting the European democratic states to seriously reconsider their own defence capabilities. There is growing concern regarding the viability of maintaining an independent nuclear deterrent against Russia without U.S. support, as well as the effectiveness of continuing to provide conventional aid to Ukraine. Ukraine, serving as Europe's primary line of defence against a potential Russian military invasion. Given Russia's capability to execute a further invasion of Europe, coupled with their policy of disregarding casualties in the war with Ukraine and the ability to recruit additional personnel due to the large amount of human resources potentially available, this situation warrants serious attention.

References

1. Blanchard, B., & Tung, R. (2024). Taiwan reports surge in Chinese air force activity after carrier passes by. Reuters. Retrieved from <https://www.reuters.com/world/asia-pacific/taiwan-reports-surge-chinese-air-force-activity-after-carrier-passes-by-2024-07-11/>
2. Bingen, K., MacKenzie, L., & Williams, H. (2024). Why did China and Russia stage joint bomber exercise near Alaska? Center for Strategic and International Studies. Retrieved from <https://www.csis.org/analysis/why-did-china-and-russia-stage-joint-bomber-exercise-near-alaska>
3. Cash, J. (2024). China and Russia kick off live-fire naval exercises in the South China Sea. Reuters. Retrieved from <https://www.reuters.com/world/china-russia-kick-off-live-fire-naval-exercises-south-china-sea-2024-07-17/>
4. Chase, M. S. (2013). China's transition to a more credible nuclear deterrent: Implications and challenges for the United States. *Asia Policy*, National Bureau of Asian Research 16, 69–102. Retrieved from <https://www.jstor.org/stable/24905232>
5. Chu, M., Orr, B., Perry, M., & Wong, J. (2024). China says it is seriously concerned about U.S. nuclear strategic report. Reuters. Retrieved from <https://www.reuters.com/world/china-says-it-is-seriously-concerned-about-us-nuclear-strategic-report-2024-08-21/>
6. Conte M., & Schmitz A. (2024) Putin warns NATO over missile threat. CNN. Retrieved from <https://edition.cnn.com/2024/09/12/europe/putin-warns-nato-missiles-hnk-latam-intl/index.html>
7. Cook, C., & Seddon, M. (2024). The leaked Russian military files. *Financial Times*. Retrieved from <https://www.ft.com/content/f18e6e1f-5c3d-4554-ae5-50a730b306b7>
8. Evans, G. (2014). Nuclear deterrence in Asia and the Pacific. *Asia & the Pacific Policy Studies*, 1(1), 91–111. <https://doi.org/10.1002/app5.5>
9. Freedman, L. (1981). The evolution of nuclear strategy. In Chapter 15, *The Strategy of Stable Conflict* (pp. 415–428). Palgrave Macmillan.
10. Hambling, D. (2024). Hypersonic missiles arms race. *Popular Mechanics*, 1(2). Retrieved from <https://www.popularmechanics.com/military/a42386379/hypersonic-missiles-arms-race/>
11. Kristensen, H. (2023). Belarus' nuclear-capable Iskanders get a new garage. Federation of American Scientists. Retrieved from <https://fas.org/publication/belarus-nuclear-capable-iskanders-get-a-new-garage/>
12. Landay, J. (2024). U.S. researchers find probable launch site for Russia's new nuclear-powered missile. Reuters. Retrieved from <https://www.reuters.com/world/europe/us-researchers-find-probable-launch-site-russias-new-nuclear-powered-missile-2024-09-02/>
13. Narang, V. (2024). Nuclear threats and the role of allies: Remarks by Acting Assistant Secretary of Defense for Space Policy Dr. Vipin Narang at CSIS. U.S. Department of Defense. Retrieved from <https://www.defense.gov/News/Speeches/Speech/Article/3858311/>
14. Narang, V., & Vaddi, P. (2024). Biden's nuclear weapons policy adjustments. *The New York Times*. Retrieved from <https://www.nytimes.com/2024/08/20/us/politics/biden-nuclear-china-russia.html>
15. Nuclear Posture Review. (2022). U.S. Department of Defense. Retrieved from <https://dod.defense.gov/News/Special-Reports/NPR/>
16. Payne, K. B., & Trachtenberg, D. J. (2022). Deterrence in the emerging threat environment: What is different and why it matters. *National Institute for Public Policy*, 2(8), 17–20, 35–60. Retrieved from https://nipp.org/papers/deterrence-in-the-emerging-threat-environment-what-is-different-and-why-it-matters/?utm_source=chatgpt.com
17. Skrypnyk, V. V., & Skrypnyk, M. V. (2024). NATO antagonist nuclear alliance in 2024. *Actual Problems of International Relations*, 156, 21–35. Retrieved from <http://apir.iir.edu.ua/index.php/apmv/issue/view/241>
18. The Arms Control Association. (2024). Nuclear weapons: Who has what at a glance. Retrieved from <https://www.armscontrol.org/factsheets/nuclear-weapons-who-has-what-glance>

19. The Associated Press. (2024). Russia launches massive naval drills with China. Defense News. Retrieved from <https://www.defensenews.com/global/europe/2024/09/10/russia-launches-massive-naval-drills-with-china/>
20. Trevelyan, M. (2024). Russia says it starts nuclear military drills. Reuters. Retrieved from <https://www.reuters.com/world/europe/russia-says-it-starts-nuclear-military-drills-2024-05-21/>
21. Waltz, K. N. (1981). The spread of nuclear weapons: More may be better. *Adelphi Papers*, 171, 8–15.
22. North Korea says it strongly condemns U.S. nuclear strategic plan. (2024). Reuters. Retrieved from <https://www.reuters.com/world/north-korea-says-it-strongly-condemns-us-nuclear-strategic-plan-2024-08-23/>

THE INDIVIDUAL IN INTERNATIONAL RELATIONS: THE TRANSFORMATION OF THE PARADIGM

ФАКТОР ЛЮДИНИ У МІЖНАРОДНИХ ВІДНОСИНАХ: ТРАНСФОРМАЦІЯ ПАРАДИГМИ

Denysenko K.Yu.

PhD in Political Sciences, Associate Professor at the International relations and foreign policy chair of the Institute of International Relations of Taras Shevchenko National University of Kyiv. E-mail: mvi.dkyu@clouds.iir.edu.ua
ORCIDID: <https://orcid.org/0000-0003-1032-1281>

Денисенко К.Ю.

Кандидат політичних наук, доцент кафедри міжнародних відносин та зовнішньої політики Інституту міжнародних відносин Київського національного університету імені Тараса Шевченка E-mail: mvi.dkyu@clouds.iir.edu.ua
ORCIDID: <https://orcid.org/0000-0003-1032-1281>

Abstract. *The article raises a whole complex of issues about the growing role of the individual in international relations. An individual in international relations is studied from the position of leaders and the political elites surrounding them, a mass person, a person as a stochastic factor in international relations, human qualities, self-identification, belonging to a particular socio-anthropological group, psychological and physical condition and much more. Due to the specificity of this new actor, it is proposed to develop a new discipline which is called anthropology of international relations. Some aspects of the institutionalization of this discipline are also analyzed by the author.*

Keywords: *individual, human factor, international relations, anthropology, anthropologization.*

Анотація. *Стаття розкриває цілий комплекс питань, які стосуються зростаючої ролі людини у міжнародних відносинах. Людина у міжнародних відносинах досліджується з позиції лідерів і політичних еліт, людина як стійкий фактор в міжнародних відносинах, людські якості, самоідентифікація, приналежність до певної соціо – антропологічної групи, самоідентифікація, психологічні особливості та інші фактори. Посилення ролі людини у міжнародних відносинах сприяє розробці нової дисципліни – антропології міжнародних відносин. Деякі аспекти цієї дисципліни аналізуються автором.*

Ключові слова: *людина, фактор людини, міжнародні відносини, антропологія, антропологізація.*

Introduction. Recently, there has been a growing interest to the individual in scientific research and practical activities in the field of international relations. This trend is followed, for example, in the academic call for the recognition of the importance of individuals in international politics. Similar changes have already occurred in other branches of knowledge, have been defined as the growing anthropologization of modern science.

Not all branches of knowledge immediately recognized such correlations. The science of international relations is very indicative in this context. In accordance with the primary tendencies, it was initially oriented toward the study of the role of statesmen as the main creators of foreign policy. In democratic conditions, the influence of public opinion on the formation and implementation of foreign policy was also taken into consideration (Bailey, 1948).

Despite the very early interest of some well-known specialists in the possibilities of anthropology and the study of the role of the individual, their undertakings did not receive recognition in the discipline. In the early 1980s, anthropologists themselves attempted to enter international relations, but this attempt was not particularly successful. Thus, competent European authors had to state in 1993: “It is quite legitimate to say that there is no anthropology of international relations between nation-states” (Eriksen, Neumann 1993). But, as they say, the message was received, and soon other authors recorded an important change in mood: “Specialists formed in the post-Cold War era seem to have intuitively grasped the idea that the study of international relations should be devoted primarily to people, and that the ways in which people are drawn into these relations are difficult to simplify” (Hudson, Vore, 1995). The emerging trend can also be linked to the discussion of the role of individuals in international politics that unfolded in the 1990s (Morgan 1994; Rosenau 1990).

Already at the beginning of the new century the anthropology of international relations in theoretical and practical terms as the discipline started to focus on the humanization of these relations themselves and the spheres of human life.

Definitions, methods, and research structure. The subject matter of the study is the status of the individual in world politics. The hypothesis of this paper is the following: individuals can influence the behavior of the international system. The purpose of the article is to examine a wide range of issues devoted to the role of the individual in international relations. The emergence of the new discipline – the anthropology of international relations in its theoretical and practical terms is also the subject matter of the study.

The methodological basis of the research is the systematic approach which helped the authors to study the growing role of the individual in international relations. The content analysis method was used for the analysis of a great number of textual and visual information from different electronic and non-electronic resources. The descriptive method helped to present the results of the study in the logical sequence. But, as we consider, the comparative method allowed us to obtain reliable conclusions that the problems connected with individuals have for a long time been given by the science of international relations to other disciplines and were poorly connected with the subject field of the analysis of international life.

Literature review. In 1990, in the changing political climate at the end of the Cold War, James Rosenau published a book entitled “Turbulence in World Politics, a Theory of Change and Continuity” (Rosenau, 1990). This book looks at international affairs from a new perspective. The main focus of Rosenau’s analysis could be summarized as a change of actors. Rosenau studies the changes that are taking place in the post-Cold War era, influenced by the information technology revolution. In this constellation, one conspicuous factor in Rosenau’s view is the growing importance of the role of individuals in the conduct of international affairs.

Michel Gerard in his book “Les individus dans la politique internationale” clarified the role of individuals in international affairs. Girard argues that all kinds of theories from Grotius’s concept of international law to nineteenth century thinking ranging from Kant, Cobden, Proudhon, and even Marx have “contributed to keep open the question of the place and role of the individual in world politics” (Gerard, 1994).

The paper introduces constructivism as asserted by Alexander Wendt, observing that it gives individuals a greater place in international relations in his book “Social Theory of International Politics” (Wendt, 1999).

Michael Nicholson’s article “Individuals and Their Influence on the International System” in *Individualism and World Politics* (1999) also discusses the role of individuals in the changing situation after the end of the Cold War, clarifying the circumstances in which relevant individuals change history (Nicholson, 1999).

A number of works dedicated to the formation of political anthropology and the anthropology of international relations have already been published in Ukraine by: Kravets A (Kravets, 2012), Krysenko O. (Krysenko, 2009), Melnyk V. (Melnyk, 2012), but unfortunately the subject of the research still lacks study.

Main results of the research.

Despite the emergence of several works related to the discussion of the individual in international relations, it cannot be claimed that the anthropology of international relations has already fully developed. It would also be a mistake to claim that the human factor in international relations is already widely recognized in the professional field. Most publications of this kind so far demonstrate the beginning of the development of a new branch of knowledge with all the ensuing consequences. Therefore, the task of discussing some general issues and prospects for the integration of anthropology as a complex science of the individual and international relations studies remains relevant. Considering the scale of the task, in this article it is necessary to concentrate on the review of a few theoretical and methodological aspects.

It is obvious that the need to update the existing research toolkit is explained by the revealed inconsistency of previously used instruments and approaches. In the light of already presented studies, it is quite reasonable to underline that the problems associated with individuals, their communities and have for a long time been, in fact, given by the science of international relations to other disciplines such as socio-cultural anthropology, very weakly connected with the subject field of the analysis of international life.

Some scholars consider that the end of the Cold war gave rise to the transformation of the human factor in international relations. But it is not only the noted historical period that determined the relevance of the problem of the human factor in this area of knowledge. After all, it cannot be claimed that interest is exclusively an achievement of the present day. Already during the previous 19th-20th centuries, all possible studies of the individual were actualized in socio-political thought and practice. After the rejection of various kinds of teleological explanations, everything began with a general philosophical and liberal-idealistic orientation toward universal values and common human interests. Then Marxism developed its class approach, and conservatism placed on the first place the “heroic personality” - the statesman. Heroism in this case meant the endowment of subjects of power with moral qualities, including the specific sense of ethic and responsibility. Here it would be appropriate to recall the well-known formula of the classic realist G. Morgenthau: “Nations behave like people” (Morgenthau, 2005). It is noteworthy that the modern theorist of constructivism in international relations A. Wendt was also sure: “States are people too” (Wendt, 1999). The role of the individual was perceived as the central one, determining the development of the social system.

It is no less obvious that the emerging scientific inconsistency is often caused by the emergence of new realities that confront the scientific and political communities with previously unknown prospects, tasks and threats. Since the tendency to reassess the role and significance of the individual in international relations manifested itself in the 1960s-1980s, the general context of its emergence seems to be obvious. Here we have the beginning of globalization, the collapse of the bipolar world system, the human rights revolution, a new stage of democratic transition and several other moments. But the new actualization of the problem was largely conditioned, along with other circumstances, by the postmodernist challenge, which in the late 1960s-1970s of the last century posed its own “inconvenient” questions to the universalist and objectivist intentions of social and humanitarian knowledge. In the postmodern era, it is no longer possible to be satisfied with a simple statement of the fact that society, the state, the institutions, ideas and practices associated with them are created and maintained by people who have a certain unified “nature”. Now it is necessary to consider and understand the inevitable introduction of their limited “subjective” ideas into the same economy, politics and international relations (Devetak, 2005).

Therefore, the notorious “human factor” as the direct participation of a person in various institutions and practices should nevertheless be separated for research purposes from the most complex socio-political reality of states, nations, etc. Failure to meet this methodological requirement inevitably affects an adequate analysis of this kind of reality. It is significant that the desire to “bring the problem of the individual in international relations to a properly scientific basis” was initially expressed in the active involvement of psychological approaches and concepts (De Rivera 1968, Tetlock, Goldgeier 2000).

Various authors also began to actively use the concepts of the unconscious, perception, and other psychological categories (Jervis 1986, Voss, Dorsey, 1992). The first initiatives in this field were already loudly praised as a “revolution in the study of the human element in international relations” (Mandel, 1986). One of the shortcomings of trying to solve all problems based on a psychological approach was noted by the famous Norwegian specialist I. Neumann: “The study of international politics by the criteria of perception, belief systems, operational codes, (images of enemies), and so on, has reached a dead end, since it has tended to begin and end with socially unconditioned “I” ...” [Neumann, 1993]. There is already an explanation of why this happens: “At its core, this problem is twofold: psychologists usually underestimate the complexity of the task of adapting psychological concepts to world politics, while specialists in international relations overestimate their ability to create convincing explanations that are based on psychology” (Tetlock, Goldgeier 2000). No wonder then that the “human revolution” in international relations has gotten stuck within the framework of political psychology.

Another revision of previous approaches to the problem of the individual, has become widespread, when scholars were too passionate in developing different types or models of man (manager, player, economic etc.). Political science, including international relations, did not remain aside from these new trends. As a result, a new definition appeared “political man” (Lane, 1972). An illustrative example of an attempt to conceptualize it was the detailed work of the famous American political scientist R. Lane. The author's attention was focused on the systems of basic human beliefs, in the formation of which an important role was assigned to political socialization. In accordance with such attitudes, the author believed that “political personality can be defined as an organized, dynamic response to political stimuli” (Lane, 2003).

It is noteworthy that the role of the individual in international relations was presented in a similar way by different authors. For some, modern man is truly a world historical individual along with the local social environment and traditions, factors of the global order, the dialogue of cultures and civilizations, and global spiritual production in the form of science, art, and mass communications in which he actively participates. Others consider personification of international relations is the flip side of the processes of “internationalization” and “globalization” of the world economy, reflecting the growing role of the individual in international relations and his transformation into a subject of international relations. The international individual is a person who associates the satisfaction of his needs not only with his state, but also with the world community in general. At the same time, the fact that the international individual is not only a person of the world, but to a significant extent is a person of the future is indicative. Thus, considering the number of factors, the international individual was given a significant role in the new discipline: as an independent social type. He was considered as the basis for the cultivation of an independent branch of humanitarian knowledge - the anthropology of international relations.

In general, the analysis of the main approaches to the problem of the individual in socio-political life and the concepts that have developed on their basis allows, despite some scientific inconsistency in relation to this object of research, to state the presence of a certain logic in their development and interaction. At the beginning, mainly general, purely abstract questions concerning the essence of the man and his existence were studied. Then the role and significance of political classes, social groups, etc. Gradually, the focus of research shifted to the development of various models of the individual for certain areas of activity or everyday life. Simultaneously, simple borrowing of psychological concepts into other branches of social and humanitarian knowledge, including international studies, was practiced. But over time, it became increasingly clear that universal models and excursions into psychology left no room for real individuals, including the science of international relations. As the French researcher M. Gerard, who studied this problem specifically, showed, over a long period: “...the question of individuals was reduced, mainly, to approaches based on psychological curiosity or ethical concern...” (Gerard, 1994). It is quite natural that today it is precisely real individuals that are receiving increasing attention in various branches of knowledge.

In the sphere of international relations, modern approaches to the individual began to be introduced somewhere in the last quarter of the twentieth century. Thus, in the early 1980s, the British theorist E. Linklater was only noting the contradiction between the ethical universalism of man and his civil-social particularism. (Linklater, 1984). “We are all representatives of the human race and feel that we have obligations to each other as people, but we are also citizens of separate states”. The presented situation can partly explain the emergence of debates about the problems that arose when trying to combine human rights with the rights of a citizen (Benhabib, 2004).

It is significant that soon the American specialist J. Rosenau raised the question of the need to study the role of ordinary individuals in international politics. This author explained his position precisely by the violation of previous norms regulating this area (Rosenau, 1990). Other researchers expressed concern that “interest in the role of individuals in international politics almost inevitably leads to a rejection of the interstate approach...” (Gerard, 1994).

Moreover, it is obvious that the recognition of ordinary individuals as subjects of international politics inevitably “grounded” its former creators — statesmen, including security professionals. Michel Gerard, already known to us showed: “The irony of fate is that the high politics of national interest and discussions of sovereignty, despite their solemn appearance and deliberate monumentality, are in many ways connected by the strongest threads with the most ordinary behavior of the most ordinary individuals” (Gerard, 1994). So, despite all the fears, the idea of the significance of individuals in international relations should have received wide recognition. Now, for many experts, it has become self-evident that “...although they may accidentally forget this fact, or try to persuade us to forget it, political figures are still human beings, and they all have too much of the human in them” (Tetlock, Goldgeier 2000). It is no coincidence that, when presenting one of the first projects on the role of individuals in international relations, its initiator emphasized: “The individuals in question here are, according to the authors’ intention, primarily ordinary individuals, with trivial perceptions and behavior, no different from other members of their society and their environment” (Gerard, 1994).

However, the wider implementation of the postmodern strategy of deconstruction has forced us to pay attention to the fact that the “elementary individual/person” is not as unambiguous as it might seem at first, if only because of its different gender affiliations. Therefore, the emergence of various kinds of feminist projects, including in the field of international relations, was a natural consequence of the criticism of previous universalist ideas. In fact, according to the followers of this trend, such constructions reflected purely “masculine positions and views” (Sylvester, 1994). It would also be appropriate to recall the studies of the influence on the formation of the individual of various factors that turned out to be outside the traditionally understood socio-political field. At first it was race, and more recently - belonging to various minorities, including diasporas. Thus, the most conscientious authors now considered it their duty to warn: “The individual whom the reader will encounter in this work appears either as an empirical subject... or as a generally accepted analytical construct, which, depending on the cases and authors, appears either as an ideal-typical individual... or as a modal individual, called upon to accurately reproduce the most frequently encountered characteristics of a given group of individuals” (Gerard, 1994).

Thus, the recognition of the importance of the individual has become not just a tribute to some fashion but has become a necessary requirement of the modern stage of research into socio-political life and its international sphere. However, the desire to understand the role of this subject in a rapidly changing world has encountered an obstacle, expressed in the focus of science on individual stages of its development on different aspects of man. As a result, very often there has been an unjustified exaggeration of these individual aspects to the detriment of a holistic perception of the problem itself and the real difficulties in its development.

It is no coincidence that in the desire for “anthropologization”, the introduction of man into the study of various phenomena and entities, we fall, as already noted, into the sin of “anthropomorphization”. It consists in likening the proposed creations (artifacts, models) to a real person/individual, including in the study of the person himself, while endowing them with only those human properties that are considered the most significant “here and now” (Hale, 2008). The

further development of such a methodology was accompanied by the reduction of individuals to their psychologization, professionalization, naturalization, etc. At the same time, the remaining uncertainty with the distinction between specific individuals and "ideal-typical" constructions of a person, on the contrary, made it possible to hypertrophy the individual, replacing him with various communities and associations. Unfortunately, given the desire of the majority of authors of modern theoretical developments in the field of international relations (in fairness, it should still be added, as in all social and humanitarian knowledge) to solve all anthropological problems with the help of the concept of identity, it must be noted that the presented negative practice is still widely used (Guillaume, 2014).

Consequently, it can be stated quite definitely that the recognition of the significance of the man not only as some abstract model, but also as a real individual in international relations and the science that deals with them, is even a somewhat belated step. However, even in the light of a very schematized presentation of the current state of the problem of recognizing a man, it can be concluded that its very formulation, as some authors have warned, cannot but affect the state of this branch of science. On the one hand, the inclusion of individuals in the sphere of international relations definitely puts forward the requirement for the formation of new competencies in order to develop this area of research. It is no coincidence, for example, that at one time the same R. Lane made a call: "to protect political science from itself." He still assigned the role of savior to psychology, which was supposed to protect the branch in question from errors, for example, associated with the judgment that such an important category as interests are purely rational and materialistic (Lane, 2003).

On the other hand, the newly emerging dimension of the international relations sphere has clearly highlighted the remaining gaps in the existing foundations of their study. One of them was noted by M. Gerard as a kind of duel between the supporters of the specificity of international political analysis and their opponents, who consider it as part of political science or social sciences (Gerard, 1994).

Nevertheless, today it is no longer possible to avoid recognizing the fact that international relations and world politics are ultimately implemented by people. Consequently, we must understand who and why makes specific decisions or prepares certain events here. However, the whole point is that people also analyze these areas of politics. Therefore, it would be quite fair to say that we should also know who and why offers us specific assessments and conclusions about the activities of politicians. And, if the "creators" of international politics, one way or another, become the object of research, then their "evaluators" still much less often fall under this kind of control. But it is also necessary to engage in such research, and this should be done by the anthropology of international relations.

A broader view of the problem of the individual in the international sphere has also forced us to pay attention to the significant differences between the modern or postmodern individual participating in them and the representative of the so-called traditional and generally "other" societies (Gerard, 1994). In part, differences of this kind began to be recorded through the use of the concept of civilization, which again became popular thanks to S. Huntington. But the limited list of civilizations clearly could not accommodate the entire diversity of existing variants of communities. The concept of identity is also actively used for the same purpose. As is known, for a long period of time, "traditional societies" remained the object of research primarily in socio-cultural anthropology. In the late 1960s, they also began to be studied by a new discipline - political anthropology (Balandier, 2013). The inclusion of these communities in modern international relations because of globalization, due to their persistent characteristics, is another argument in favor of creating a discipline — the anthropology of international relations.

At the same time, having recognized the significance of man as an individual in international relations, it was impossible not to notice their different capabilities in this area. After all, the powers of the heads of the main branches of government, the heads of foreign policy departments, and the leaders of non-governmental organizations are still not comparable with the capabilities of an individual ordinary citizen. Consequently, the discussion of the problem of the role of individuals in

the formation of international politics and the relations associated with it can only be correctly carried out considering the nature of the socio-political system in which they operate.

Therefore, one should not confuse the international man as a theoretical category with specific individuals who occupy different positions in relation to the institutions, channels and networks for implementing international relations.

Conclusions and discussions. Thus, the recognition of the individual in the field has clearly demonstrated serious shortcomings in the existing theories of international relations. First of all, it touches upon the concerns that the non-strict definition of the terms man and individual are applied. This allowed actively practice anthropomorphization of various actors in international relations, which led to a distorted perception of the essence of the problem of the role of the individual in the international sphere. The way out of the dead end lies in a strict methodological distinction between the level of real individuals and their various associations, including social strata, political nations and humanity, as well as foreign policy institutions, international organizations, etc. Therefore, considering this requirement, we must consider not only and not so much the role of abstract individuals in international relations as such. Now it should be understood that we are obliged to analyze the same institutions, associations and communities, both from the position of the people who make them up with the real qualities and properties of the latter, and from the point of view of the organization, rules, norms and functions of institutions of various kinds. Of course, all of this was also created by people who continue to ensure the existence of institutions and communities in accordance with the laws, rules and requirements of the time.

The fundamental point in this situation is the methodological distinction between the characteristics of real, living individuals and the heritage of previous generations, representing transformed characteristics of previously living people and their environment, which we have already received in a removed form and most often characterized by the same poorly defined term culture. Therefore, the emerging interest in the analysis of the role of culture in international relations seems very indicative (Reeves, 2004).

It is also clear that, despite their anthropological nature, in the first and second cases we have a different kind of reality, which must be studied in accordance with its features. Consequently, along with the same familiar psychology, there is its second, transformed version (“external psychology” according to the definition of the famous American anthropologist C. Geertz) (Geertz, 2000). Now we must understand that, accepting the importance of the individual for modern international relations, we undertake to consider him in our research as a certain conceptual continuum. At one side is an individual, at another – all the humanity. And between them there is a certain number of different groups, communities and associations of individuals included in various institutions, connections and interactions. Only in this case, despite the emerging multidimensionality of the sphere of international relations, we will be able to avoid previous mistakes in determining the place of the individual in it. Taking into account all the above-mentioned circumstances, it can be stated that the position put forward by a number of authors about the international individual as the main object of a new discipline - the anthropology of international relations, is unjustifiably limited. Rather, here we should talk about the study of the human dimension of international relations or the influence of the individual on international relations and world politics. The presented dimension includes the individuals directly related to the formation of international policy and those who analyze it. At another level, the subject of study is the psychological, mental and other properties and qualities inherent by the individuals. Another level of the discipline is associated with the analysis of the participation of individuals in the activities of various international institutions, organizations and associations.

The necessary work should be first of all performed by the general anthropology which aim is to study the associations of individuals and all of humanity in their general and specific diversity ways of life. On the other hand, if the selection of the anthropological data necessary for a qualified solution to problems in a particular socio-political sphere is the task of the anthropology of international relations. For the presented subdiscipline, an important condition for

its effectiveness is the requirement not to lose the real scale and capabilities of the individual in its special tasks.

References

1. Bailey A. (1948). *The Man in the Street: The Impact of American Public Opinion on Foreign Policy*. New York: Macmillan Publishers.
2. Eriksen T., Neumann I. (1993). *International Relations as a Cultural System. An Agenda for Research. Cooperation and Conflict*, Vol. 28 (3), 238–255.
3. Hudson V.M., Vore Ch.S. (1995). *Foreign Policy Analysis Yesterday, Today, and Tomorrow*. *Foreign Studies Review*, Vol. 39((2)), 209–238.
4. Morgan P.M. (1994). *Theories and Approaches to International Politics. What Are We to Think?* New Brunswick: Transaction Pub.
5. Rosenau J. (1990). *Turbulence in World Politics. A Theory of Change and Continuity*. New Jersey: Princeton University Press.
6. Gerard M. (1993). *Les individus dans la politique internationale*. Paris: Economica.
7. Wendt A. (1999). *Social Theory of International Politics*. Cambridge: Cambridge University Press.
8. Nicholson M. (1999) *Individuals and their influence on the international system*. In Michel Girard (ed.) *Individualism and World Politics*. London: Macmillan.
9. Kravets A. (2012). *Politychna antropolohiia*. Dnipro: Aktsent.
10. Krysenko O. (2009). *Politychna antropolohiia: kontseptualne pole ta instytutsionalizatsiia doslidzhen*. *Visnyk Kharkivskoho natsionalnoho universytetu imeni V. Karazina. Pytannia politolohii*, Vol. 839, 6–12.
11. Melnyk V. (2012). *Psykhologichni aspekty sotsiokulturnoi antropolohii*. *Visnyk Vinnytskoho natsionalnoho medychnoho universytetu*, Vol. 16 ((2)), 518–529
12. Morgenthau H. J. (2005). *Politics Among Nations: The Struggle for Power and Peace*. New York: McGraw-Hill Professional.
13. Devetak R. (2005) *Postmodernism*. Burchill S., Linklater A., Devetak R., Donnelly J., Paterson M., Reus-Smit Ch. and True J. *Theories of International Relations*. London: Palgrave, 2005, 161-187.
14. De Rivera J. H. (1968). *The psychological dimension of foreign policy*. C. E. Columbus, Ohio : Merrill Pub. Co.
15. Tetlock F. G. G., Goldgeier G. (2000). *Human Nature and World Politics: Cognition, Identity, and Influence*. *International Journal of Psychology*, Vol. 35((2)), 87–96.
16. Sylvester C. (1999) *Feminist Theory and International Relations in Postmodern Era*. Cambridge: Cambridge University Press.
17. Jervis R. (1986). *Perception and Misperception in International Politics*. *Oxford Handbook on Political Psychology*. Oxford: Ed. by D.O. Sears.
18. Voss J., Dorsey E. (1992). *Perception and International Relations: An Overview*. *Political Psychology and Foreign Policy*. Boulder: Ed. by E. Singer and V. M. Hudson.
19. Mandel R. (1984). *Psychological Approaches to International Relations*. *Political Psychology: Contemporary Problems and Issues*. San-Francisco: Ed. by M. Hermann.
20. Eriksen T., Neumann I. (1993). *International Relations as a Cultural System. An Agenda for Research. Cooperation and Conflict*, Vol. 28, ((3)), 61–187.
21. Lane R. E. (1972). *Political Man*. Los Angeles: The Free Press.
22. Lane R. (2003). *Psychology's Role in Rescuing Political Science from Itself*. *Oxford Handbook of Political Psychology*. Ed. By D.O. Sears, L. Huddy, and R. Jervice. Oxford: Oxford University Press.
23. Linklater A. (1982). *Men and Citizens in the Theory of International Relations*. New York: St. Martin's Press.
24. Hale H. E. (2008). *The Foundations of Ethnic Politics: Separatism of States and Nations in Eurasia and the World*. Cambridge: Cambridge University Press.

25. Guillaume X. (2014) *International Relations and Identity (New International Relations)* 1st Edition. London: Routledge.
26. Balandier G. (2013) *Anthropologie politique* (6e édition). Paris: Puf.
27. Benhabib S. (1999). *The Rights of Others. Aliens, Residents and Citizens*. Cambridge: Cambridge University Press.
28. Reeves J. (2004). *Culture and International Relations Narratives, Natives and Tourists*. London: Routledge.
29. Geertz C. (2000). *Local Knowledge Further Essays In Interpretive Anthropology*. New York: Basic Books.

УДК 327(4ЄС-04-194-11):355.4(470+571-651.1:477)"20"

THE EASTERN EXTERNAL BORDER OF THE EU: TRANSFORMATION OF FUNCTIONS IN THE CONTEXT OF THE RUSSIAN-UKRAINIAN WAR

СХІДНИЙ ЗОВНІШНІЙ КОРДОН ЄС: ТРАНСФОРМАЦІЯ ФУНКЦІЙ У КОНТЕКСТІ РОСІЙСЬКО-УКРАЇНСЬКОЇ ВІЙНИ

Oleksandra Fedun

PhD in Geographical Science, Associate Professor of the Department of European and Regional Studies, Faculty of International Relations, Ivan Franko National University of Lviv,

e-mail: oleksandra.fedun@lnu.edu.ua

ORCID ID: <https://orcid.org/0000-0003-3182-0725>

Nataliia Papish

PhD in Political Science, Associate Professor of the Department of European and Regional Studies, Faculty of International Relations, Ivan Franko National University of Lviv,

e-mail: nataliya.papish@lnu.edu.ua

ORCID ID: <https://orcid.org/0000-0003-4738-6580>

Mariia Olkhovych-Novosadyuk

Lecturer of the Department of Foreign Languages, Faculty of International Relations, Ivan Franko National University of Lviv,

e-mail: mariya.olkhovych-novosadyuk@lnu.edu.ua

ORCID ID: <https://orcid.org/my-orcid?orcid=0000-0002-2659-1633>

Олександра Федунь

Кандидат географічних наук, доцент кафедри європейських та регіональних студій факультету міжнародних відносин Львівського національного університету імені Івана Франка,

e-mail: oleksandra.fedun@lnu.edu.ua

ORCID ID: <https://orcid.org/0000-0003-3182-0725>

Наталія Папіш

Кандидат політичних наук, доцент кафедри європейських та регіональних студій факультету міжнародних відносин Львівського національного університету імені Івана Франка,

e-mail: nataliya.papish@lnu.edu.ua

ORCID ID: <https://orcid.org/0000-0003-4738-6580>

Марія Ольхович-Новосадиук

Асистент кафедри іноземних мов факультету міжнародних відносин Львівського національного університету імені Івана Франка,

e-mail: mariya.olkhovych-novosadyuk@lnu.edu.ua

ORCID ID: <https://orcid.org/my-orcid?orcid=0000-0002-2659-1633>

***Abstract.** The article investigates the distinctive features of the eastern external border of the European Union (EU) as an object of international political interaction. In the east, eight EU member states share borders with their four neighbours, including Russia and Belarus, which account for two-thirds of the EU's entire eastern border. It is obvious that at the current stage such a neighbourhood has become a great challenge for the European security and requires a change in approaches to the EU common policy of integrated border management.*

The paper analyses the dynamics of the EU's eastern external border functions in the period before and after February 24, 2022. From the early 1990s to 2004, the functions of the borders evolved from rigid barriers to integration boundaries. After the largest EU enlargement in 2004, the configuration and the length of the eastern border line changed, and its filtering and regulating functions became decisive. The authors have evaluated the impact of the latest threats that arose as a result of Russia's full-scale invasion of Ukraine on the changes in the ratio of the EU's eastern external border functions. The barrier function has become dominant on the border sections with

Russia and Belarus, and the integration function – on the border sections with Ukraine and Moldova.

It should be noted that the external boundaries of the EU serve as both state and common borders. The activities of border states aimed at coordinating efforts to monitor the EU's eastern border and counter growing hybrid threats to international security are examined.

Keywords: *external borders, eastern border, border functions, security, threats, barriers, European Union, Russian-Ukrainian war.*

Анотація. У статті розглянуто характерні особливості східного зовнішнього кордону Європейського Союзу (ЄС) як об'єкту міжнародно-політичної взаємодії. На східному напрямку вісім держав-членів ЄС межують з чотирма сусідами, зокрема з росією та Білоруссю, на які припадає дві третини усього східного кордону ЄС. Доведено, що на сучасному етапі таке сусідство стає викликом для європейської безпеки та вимагає зміни підходів у спільній політиці інтегрованого управління кордонами ЄС.

Проаналізовано динаміку функцій східного зовнішнього кордону ЄС у період до та після 24 лютого 2022 року. Від початку 1990-х до 2004 р. функції кордонів зазнали еволюції від жорстких бар'єрів до інтеграційних ліній. Зазначено, що після найбільшого розширення ЄС (2004) відбулися зміни конфігурації та довжини лінії східного кордону, в той час визначальними стали його фільтрувальна та регулююча функції. Розкрито вплив новітніх загроз, які виникли внаслідок повномасштабного вторгнення росії в Україну, на зміни у співвідношенні функцій східного зовнішнього кордону ЄС. На ділянках кордону з росією та Білоруссю домінуючою стала бар'єрна функція, а з Україною та Молдовою – інтеграційна.

Зазначено, що зовнішні межі ЄС виконують роль як державних, так і спільних кордонів. Досліджено діяльність прикордонних держав з метою координації зусиль для моніторингу східного кордону ЄС та протидії зростаючим гібридним загрозам міжнародній безпеці.

Ключові слова: *зовнішні кордони, східний кордон, функції кордонів, безпека, загрози, бар'єри, Європейський Союз, російсько-українська війна.*

Introduction. In the modern world, the number of armed conflicts and wars associated with the violation of state borders is increasing, which threatens international stability and leads to an aggravation of the confrontation between major powers. Russia's full-scale invasion of Ukraine has created a new chain of dangers in Europe caused by the violation of the fundamental principles of international law, migration flows, energy crisis, hybrid attacks, etc. Therefore, the security, protection and strengthening of the EU's external borders and the change in their functions are becoming increasingly relevant and require thorough and comprehensive research.

Literature Review. The issues of the external borders of the European Union, their dynamics, functioning, challenges and threats that affected international security and the development of border regions have been studied and covered by many foreign scholars. Historical aspects of the formation of Europe without borders and changes in understanding of their meaning were studied by I. Stanley-Becker (*Stanley-Becker, 2025*). The openness of the European borders at the beginning of the 21st century was analyzed by L. O'Dowd (*O'Dowd, 2002*). The problem of security of the European Union external borders in connection with the deepening of integration processes and the openness of internal borders was studied by J. Oltmer (*Oltmer, 2022*). V. Cucerescu examined the characteristic features of certain sections of the EU's eastern border in the context of regular and illegal migration (*Cucerescu, 2019*). The problems that arise on the internal and external borders of the EU from the perspective of current events and crises, including the full-scale Russian-Ukrainian war, were analysed by A. Bakardjieva Engelbrekt, P. Ekman, A. Michalski, L. Oxelheim (*Bakardjieva Engelbrekt, Ekman, Michalski, Oxelheim, 2024*). The conceptual interrelations between security, borders and national identity in the context of Russia's war against Ukraine were investigated by A. Makarychev and C. Dufy (*Makarychev, Dufy, 2024*). The issue of strengthening the EU's external borders by building walls and other physical barriers was investigated by

I. Goldner Lang (*Goldner Lang, 2024*), C. Dumbrava (*Dumbrava, 2022*), J. Karčiasuskas (*Karčiasuskas, 2024*) and others.

Ukrainian scientists study mainly the problems of protecting the state border of Ukraine, assess the main threats and risks for border security, some authors take into account the experience of the EU countries, among them are O. Androschuk, M. Dement, O. Kyrychenko, D. Kuprienko, M. Lysyi, A. Makhniuk, V. Polovnikov, A. Pomaza-Ponomarenko, O. Tseveliov, O. Shynkaruk and others. The empirical analysis of the current state of the Ukraine's common border with the EU, the problems of integrated border management are covered by the researchers of the NGO "Europe without Barriers", in particular P. Kravchuk, K. Kulchytska, I. Sushko and others.

Emphasizing the previously unresolved parts of the general problem to which the scientific article is devoted. An analysis of recent research and publications proves that in the foreign academic environment compared with Ukrainian academic circles much more attention is being paid to the study and analysis of security problems and the functioning of the EU's external borders, especially in the conditions of growing new challenges and threats. However, the research of the changing functions of the EU's external borders in the context of actual transition from the popular project "Europe without Borders" to a peculiar format of Europe with fortified and sometimes partially closed borders, which is due to a number of hybrid threats from Russia and Belarus, remains beyond the attention of foreign and Ukrainian scholars.

In Ukraine, as a state with the status of a candidate for EU membership, the study of a wide range of topical issues of the EU's eastern border functioning based on the analysis of the impact of the armed aggression of the Russian Federation remains beyond the attention of scholars.

The purpose of the scientific article is to identify the peculiarities of the transformation of the European Union's eastern external border functions under the influence of real and potential challenges and threats caused by Russia's armed aggression against Ukraine.

Presentation of the material. In the new historical and geopolitical realities that emerged in the early 1990s after the end of the Cold War and the fall of the Iron Curtain, conceptual approaches to interpreting the role and functions of state borders in Europe gradually changed. At that time, the European states were rethinking their civilizational and international political significance for regional stability, the formation of a common market and a free and secure space on the continent, which was in line with the main provisions of the founding treaties of the European Union. As a result of signing of the Schengen Agreement on 14 June, 1985 and its entry into force on 26 March, 1995, the member- states abolished border control. This gave a significant impetus to the process of European integration and the formation of a "Europe without Borders", which aimed to create an area of freedom, security and justice without visas and controlled internal borders (*Buzmaniuk, 2021*).

Since then, the regime of state borders in Europe was changing dynamically. Within the Schengen area, borders became open, their contact function strengthened, and their regulatory and filtering functions degraded due to the abolition of internal border control and customs checks. The closure of existing border crossing points at land borders, airports and seaports took place. This led to the introduction of a common visa policy towards third countries and ensured the free movement of people, capital, goods and services. At the same time, a number of restrictions were introduced for the citizens of neighboring countries which were not integrated into the Schengen area, and the filtering function of the border became dominant.

In the 1990s, the external borders from fortified lines of demarcation with enhanced border control, which served as barriers, gradually turned into semi-permeable lines of interstate interaction based on the principles of mutually beneficial economic cooperation of the EU with the Eastern Partnership countries and with Russia. Thus, as a result of a number of factors, the ratio of the EU's external border functions changed, and they began to perform more stringent filtering and regulatory functions.

The configuration and length of the external border of the European Union underwent radical changes and shifted towards the south and east. As a result of successive processes of its spatial expansion, new closest neighbours were identified, most of which were covered by the European

Neighbourhood Policy (ENP). This partnership strategy was aimed to prevent the creation of new dividing lines in Europe by building a qualitatively new system of relations with neighbouring states by establishing long-term mutually beneficial cooperation to ensure stability and prosperity not only within the European Community, but also beyond. Such a common policy required a significant change in approaches to the management of new external borders and influenced their arrangement, crossing regime, as well as strengthening their contact function (*Communication from the Commission...*, 2003).

The European Union shares land borders with twenty-one countries. We consider external borders to be an object of international political interaction with a complex structure and dynamic relationships. External borders are at the center of attention of the EU, which implements a common policy in the field of integrated border management (IBM). External borders are viewed and handled as both state and common. That is why the protection of external borders is extremely important and, at the same time, complex and difficult. For some bordering member states such responsibility often becomes a great challenge, because they have to bear full responsibility for border management, protection and security. There are a number of examples when unfriendly neighbours, pursuing their own geopolitical and foreign policy interests, artificially provoked and carried out hybrid operations to destabilize the situation on the common border.

By and large, the EU external borders are divided into four sections along the horizon: eastern, south-eastern, western and south-western. The reconfiguration of these borders has been changed several times due to the EU enlargement process, first to the south and then to the east (Fig. 1). Recently, after Brexit (2020), the EU territory decreased and the borders changed, respectively, the EU lost 12,429 km of coastline. Today, the European Union has approximately 67,571 km of coastline and 14,647 km of land borders (*Buzmaniuk, 2021*).



Figure 1. The EU Eastern Border Line

Source: Eastern Borders Annual Overview. 2012. Frontex.

In the eastern direction, eight EU countries share borders with four neighbours; the length of the borders with them is over 5700 km (Table 1). From north to south, the EU borders with the following neighbours: Russia, which Finland, Estonia, Latvia, Lithuania and Poland share a

common border with; Belarus, which borders Latvia, Lithuania, Poland; Ukraine, which neighbours Poland, Slovakia, Hungary and Romania; Moldova, which borders Romania (*Cucerescu, 2019*).

The longest border is that with Russia, its length is 2432 km, the shortest is with Moldova – 682 km. In total, two thirds of the entire eastern border of the EU is the neighbourhood with Russia and Belarus, which is a source of constant challenges and threats. Therefore, it requires increased attention and strengthening.

Table 1. The length of the EU eastern border line (km)

Land boundaries	Russia	Belarus	Ukraine	Moldova	Total
Finland	1309				1309
Estonia	324				324
Latvia	292	171			463
Lithuania	275	678			953
Poland	232	418	535		1185
Slovakia			97		97
Hungary			137		137
Romania			613	682	1295
Total	2432	1267	1382	682	5763

Sources: Cucerescu, 2019; Straż Graniczna, 2024.

Ukraine, Moldova, Belarus and Russia became proximate neighbours of the European Union after the fifth largest wave of its expansion to the east in 2004. This neighbourhood led to the introduction of a visa regime and increased checks of vehicles and cargo at border checkpoints in accordance with the EU requirements.

At that time, tensions between the Russian Federation and the EU increased. Their bilateral relations became more complicated, despite the persistent efforts of the European side to involve this eastern neighbour in the European integration process. This confrontation was caused by a combination of factors, in particular: the Russian Federation refused the status of a semi-peripheral country within the framework of the ENP, which was offered to it; the Baltic and Central European states became members of NATO and joined the EU; Ukraine and Moldova chose pro-European foreign policy strategies that took them out of the orbit of Russian geopolitical and geoeconomic influence. All this prevented Russia from fully asserting its influence over its post-Soviet neighbours.

It should be noted that the Russian Federation tried in various ways to maintain its political influence and control in the Eastern European region and minimize the negative consequences of the EU enlargement for itself. In 2005 it applied economic restrictions and sanctions against the countries of the post-Soviet space and individual member states of the Community. During this period, the Kremlin regime accelerated the development of new weapons systems and increased weapons production, implementing a policy of selective dialogue on energy supplies with the following European countries: Germany, France, Hungary, Greece, Bulgaria and Italy. Over time, this list expanded. At the same time, agreements were reached with the EU on reducing trade tariffs, increasing quotas for the import of Russian steel, etc (*Tolstov, 2015*).

In general, such short-sighted policy of some EU member states caused extreme dependence on Russian energy resources. This later grew into a major threat to their national security and European security altogether. After the full-scale invasion in 2022, only some countries, in particular, Lithuania, Poland and others began to refuse to import Russian fossil fuels (*Maj, 2023*).

As a result, both the new rules for crossing the external border under the requirements of the ENP, as well as geopolitical changes and geoeconomic interests of individual states after the start of the Russian Federation's hybrid war against Ukraine in 2014, determined trends towards changing the functions of the EU's eastern border – from the predominance of the contact function to the strengthening of filtering and barrier functions.

Russia, as the largest neighbour, in its bilateral relations with the European Union chose the tactics of political manipulation using hybrid threats (sabotage, blackmail, cyberattacks, diversions, disinformation campaigns, etc.) in order to intervene and destabilize the situation in the neighbouring countries and to weaken the EU as a whole. At the same time, since June 2007, citizens of Russia (a state that had no intention of integrating into the EU) enjoyed the benefits of a visa-free regime and for a long time remained among the leaders in obtaining Schengen visas and with the lowest percentage of refusals (*Eastern Borders..., 2012*). Only after the full-scale invasion at the request of Ukraine and other states did the Council of the European Union approve the decision to completely suspend the visa facilitation agreement with Russia on September 12, 2022 (*Council Decision on the suspension..., 2022*).

At the height of the migration crisis of 2015-2016, due to the influx of refugees from Syria, Afghanistan and other countries, when more than 1 million migrants arrived in Europe, the vulnerability of the EU's external borders and its insufficient protection in various areas became obvious. This prompted decisive actions by individual countries (through whose territory the "Balkan route" passed) to introduce regular checks and strengthen control on the internal and external borders of the European Union to counter illegal migration. In response to increasing migration pressure, the growth of organized cross-border crime and other border protection and security challenges, the mandate of the Frontex Agency (European Border and Coast Guard Agency) was expanded in 2016. The Agency is responsible for securing the EU's external borders and works with member states to quickly identify and address any problems.

The greatest challenge to the security of the European Union's eastern border became the massive attempts of illegal border crossing from Belarus in July 2021. This created new risks and threats to the national security of the Baltic states and Poland. The deterioration of relations between the EU and Belarus was due to the sanctions against the Lukashenko's regime, which the European Union imposed after the 2020 presidential elections. The Belarusian authorities used illegal migrants from the Middle East (mostly the citizens of Iraq) in order to destabilize the European Union for the sake of their own political interests (*Situation on the eastern borders..., 2022*).

The sudden and unprecedented mass influx of migrants from Belarus led to the crisis on the EU's eastern border, putting enormous pressure on the national asylum systems of Poland, Lithuania and Latvia. They had never before encountered such a large number of third-country nationals trying to enter their territory. As a result, these three countries declared a state of emergency and took a number of countermeasures to strengthen their borders with Belarus and to build physical barriers. In response to the hybrid attack, the EU supported the affected member states in implementing temporary measures to effectively address the emergency migration situation at the EU's external borders (*Proposal for a Council Decision..., 2021*). That was a new practice, since Europe had been moving towards open borders for quite a long time.

Lithuania was the first country to start building a wall along its border with Belarus. From October 2021 to August 2022, a 4-meter-high fence with a barbed wire barrier was erected, stretching 678 kilometers (*Karčiasukas, 2024*). From January to June 2022, Poland built a 5.5-meter-high steel fence on a 187-kilometer section of the border with Belarus, consisting of 38,800 metal posts and barbed wire and equipped with special monitoring systems for 24-hour surveillance of the border (*Granice RP..., 2024*).

After the beginning of Russia's full-scale invasion of Ukraine on February 24, 2022, there was a trend towards the introduction of various restrictions and the construction of physical barriers on the eastern border of the EU. In particular, as noted above, in September 2022, the visa-free regime between the EU and the Russian Federation was abolished. A number of European countries closed their airspace to flights (including transit) by Russian airlines. And some states decided to close border crossing points on the border with Russia, which the European Parliament recognized as a state sponsor of terrorism in November 2022 (*European Parliament declares Russia..., 2022*). For example, due to a sharp increase in the flow of migrants, Finland closed the border crossings on the Finnish-Russian land border on December 15, 2023. In April 2024, the Finnish authorities

stopped the movement of pleasure boats through the Saimaa Canal through Nuijamaa, and the sea crossings of Haapasaari and Santio were closed for an indefinite period (*Finnish Government..., 2025*). Following Finland's experience, Estonia also plans to close its border with Russia in 2025 as the number of potential threats and hybrid attacks from its eastern neighbour is increasing.

In addition to closing checkpoints, countries are implementing projects to build walls and other physical barriers to strengthen their borders with Russia. In particular, in March 2023, Finland began building a 3.5 m high barrier fence on separate sections with a total length of 200 km in the South-Eastern part of the country, in North Karelia and Kainuu. The barrier fence is planned to be completed in 2026 (*The eastern border barrier fence, 2022*).

Since 2022, border states have significantly strengthened the interaction and coordination of their efforts to protect the eastern borders, implementing joint defense projects using innovative technologies and surveillance systems, including those based on artificial intelligence.

Drone Wall. The widespread use of drones in the Russian-Ukrainian war has prompted NATO's eastern flank states (most of which, except Norway, are EU members) to consider and assess the possibilities of using unmanned aerial vehicles (UAVs) to counter the growing real and potential threats to international security posed by Russia and Belarus. In May 2024, six countries – Norway, Finland, Estonia, Latvia, Lithuania and Poland – agreed on the main principles of the “Drone wall” initiative, which aims to use UAVs for comprehensive border protection and monitoring (*Karčiauskas, 2024*). This ambitious project has marked significant progress in the development of the defense strategies of the above-mentioned countries.

It is planned to build a “Drone wall” within three years through joint efforts of the states with possible financial support from the European Union, stretching for more than 3,000 km from north to south along the eastern border of the EU, starting from Norway and ending in Poland. The goals of this project are as follows:

1) preventing provocations by developing a border monitoring system which, if necessary, can protect against potential invasions by enemy states, uncontrolled migration, etc.;

2) combating smuggling using drones that will help identify violators in real time and detain them;

3) strengthening regional security and defense capabilities of the NATO member states using various types of UAVs, surveillance systems and other technologies to protect their borders (*A New Era of Border Security..., 2024*).

Baltic Defense Line. Russia's full-scale invasion of Ukraine in February 2022 raised concerns that the Baltic states could become the next target of Russian armed aggression and hybrid attacks. Therefore, the states of the region began to develop plans to counter real and potential threats to national security. Lithuania was one of the first to modernize and strengthen its defense strategy. In July 2022, most political parties signed an inter-party defense agreement, which stipulates that Lithuania should deploy surveillance systems behind physical barriers and develop effective measures to counter mobility along its borders with the Russian exclave of Kaliningrad Region and Belarus (*Karčiauskas, 2024*).

On January 19, 2024, in Riga the defense ministers of Estonia, Latvia, and Lithuania signed a Protocol of Intent to Strengthen Cooperation by developing effective measures to counter mobility along the border with the hostile states and agreed to establish the Baltic Defense Line. This line will consist of a complex of fortifications, anti-tank obstacles and other defense infrastructure along the borders with the Russian Federation and Belarus. Construction could take up to 10 years and requires significant investments and efforts (*Ryan, 2024*).

East Shield. The National Deterrence and Defence Program “East Shield” (*Tarcza Wschód..., 2024*) has become an important element of strengthening the eastern borders of Poland, and therefore of the European Union and NATO. The program is planned for 2024–2028 and has been the largest border reinforcement operation in Europe since 1945. It aims to strengthen the military readiness and security of Poland's borders through a comprehensive combination of modern surveillance systems, physical barriers and state-of-the-art airspace monitoring systems. East Shield involves not only the construction of fortifications and ammunition bunkers along the border, but

also the creation of natural obstacles in strategic border sections. It also plans to develop threat recognition systems, build advanced military bases, logistics centers, warehouses and implement electronic warfare and anti-drone effectors. The tasks of the program include: strengthening the capabilities to prevent unexpected attacks, limiting the mobility of the enemy (impeding the advancement of enemy troops), ensuring the mobility of its own troops and firepower, increasing the security of its own armed forces and protecting civilians (*Poland's new East Shield...*, 2024).

The length of the project border line is about 800 km, including the lands of the Pomeranian, Warmian-Masurian, Lublin, Podlaskie and Subcarpathian provinces. Thus, its implementation will contribute to the strengthening Poland's resilience, its readiness for defense and the capabilities to immediately deploy troops in the event of armed aggression. The East Shield program should be a complement to the Baltic Defense Line project. In the future, it is planned to unite them at two points: one along the Russian exclave of Kaliningrad Region, the other – along the border with Belarus. Thus, a continuous "EU Defense Line" will be created (*Tarcza Wschód...*, 2024).

Despite the ongoing war with Russia, on some sections of the EU's eastern border with Ukraine and Moldova a visa-free regime for citizens of these countries remains valid. The European Union Border Assistance Mission to Moldova and Ukraine (EUBAM) continues its work. Existing and new border crossing points have been modernized and opened. For example, on May 23, 2023 a new border crossing point Leova-Bumbata was opened on the Romanian-Moldovan border, which allowed to speed up the border crossing by individuals and vehicles, facilitate cross-border movement and reduce waiting time at other border crossing points, which were significantly overcrowded. A joint border control was also introduced at the Albitas-Leuseni checkpoint (April 2023) and Giurgiulești-Galați (November 2024) – a key automobile checkpoint on the way from Ukraine to Romanian ports (*Crossing of state border...*, 2023). The introduction of joint controls has made it possible to speed up the border crossing procedures, including the transportation of Ukrainian grain. One of the "EU-Ukraine Solidarity Routes" runs through Galați and Giurgiulești, which was launched by the European Commission in May, 2022 as a sign of support for Ukraine. This was a response to the blockade of Ukrainian seaports by Russia after the beginning of the full-scale invasion. As a result, new transport routes were laid to ensure imports and exports to and from Ukraine by rail, road and waterways (*EU-Ukraine Solidarity Lanes*, 2022).

In order to increase the throughput capacity of the Ukrainian-Polish border, a new international automobile checkpoint "Nyzhankovychi-Malkhovychi" was opened on December 21, 2024, which operates under the procedure of joint border and customs control. With the support of the USAID Project "Economic Support to Ukraine", a number of checkpoints were comprehensively modernized, in particular, the automobile checkpoint "Yahodyn" on the Ukrainian-Polish border, "Porubne" on the Ukrainian-Romanian border, "Chop (Tysa)" on the Ukrainian-Hungarian border and "Uzhhorod" on the Ukrainian-Slovak border (*Modernization of the Border...*, 2025).

Thus, on the EU eastern border with Ukraine and Moldova, the opposite trend is observed – the degradation of the filtering function and strengthening of the contact function of the borders. In particular, despite the full-scale war, the eastern borders of the EU with Ukraine and Moldova remain open, as opposed to the closure of the borders with Russia and Belarus.

Conclusions. All in all, we argue that the evolution of the European integration process has determined the line of the modern eastern border of the European Union and influenced the dynamics of its functional development. In the 1990s, the filtering and contact functions of the state borders in Europe became more and more distinctive, as they ceased to be a source of conflicts between countries, and turned into drivers of integration and cooperation. The external borders of the EU underwent a linear evolution from the boundaries of alienation to the lines of interstate interaction.

As a result of the largest enlargement of the European Union in 2004, the external borders moved eastward, and its new neighbours became Ukraine, Moldova, Belarus and Russia, which a visa regime was introduced with. Since then, significant changes have occurred in the functioning

of the external border with a decrease in its throughput capacity and an increase in its filtering and regulatory functions.

The latest security threats of the 21st century such as migration crises and hybrid attacks have significantly affected the functioning of the EU's eastern border. Russia's large-scale invasion of Ukraine has necessitated significant transformations of the functional component of the European borders. This primarily concerns states that share borders with Belarus and Russia, since these countries pose a threat to the Eastern European region. Given this, European countries began to distance themselves from dangerous neighbours in various ways. On the border with Belarus and Russia, neighbour states built physical barriers. Finland closed all border crossings with Russia, and Estonia is planning the same actions. States are strengthening their defense strategies. In particular, the Baltic countries are constructing a new fortification system along the borders with Russia and Belarus – the Baltic Defense Line, and Poland has developed the National Deterrence and Defense Program “East Shield”. The combination of these two projects will create a joint “EU Defense Line” in the future.

The EU and NATO eastern flank countries are strengthening collective resilience, they have agreed on the “Drone wall” initiative, aimed at using UAVs for the effective and comprehensive border protection and monitoring. It is clearly evident that on the sections of the EU's eastern border with Russia and Belarus, the transformation from filtering to rigid barrier border function has taken place.

At the same time, on the sections of the eastern border of the European Union with Ukraine and Moldova, which have the official status of candidates for the EU accession, there is a decrease in the filtering function and an increase in the contact function of the borders. The visa-free regime for the citizens of Ukraine and Moldova continues to operate, new border crossing points are being opened and existing ones are being modernized. Moreover, the EU has supported Ukraine as a sign of solidarity and opened the new routes for the transportation of Ukrainian products, in particular grain.

To conclude, the history of the EU's external borders development, taking into account the current dynamic processes of interstate relations, indicates the changing nature of their functions. The transformation of the state borders functions is clearly on the go and there are no clear timelines that would indicate the completion of this process. Further research will be aimed at studying the key approaches of the European Union to assessing the importance of external borders for strengthening European security and at the same time deepening integration with Ukraine and Moldova.

References.

1. Stanley-Becker, I. (2025). *Europe without Borders: A History*. Princeton University Press. 416 p.
2. O'Dowd, L. (2002). The Changing Significance of European Borders. *Regional & Federal Studies* 12(4):13–36. DOI:10.1080/714004774
3. Oltmer, J. (2022). The Borders of the EU European Integration, “Schengen” and the Control of Migration. URL: <https://doi.org/10.1007/978-3-658-39200-0>
4. Cucerescu, V. (2019). The Eastern Borders of the European Union in the Field of Migration. *The Review of European Affairs* Volume 3:1(5). The Polish European Community Studies Association PECSA. P. 5-21.
5. Bakardjieva Engelbrekt, A., Ekman, P., Michalski, A., Oxelheim, L. (2024). The Borders of the European Union in a Conflictual World. URL: <https://doi.org/10.1007/978-3-031-54200-8>
6. Makarychev, A., Dufy, C. (2024). The spatial repercussions of Russia's war in Ukraine: Region(alism)s, borders, insecurities. *New Perspectives* 32(3). DOI:10.1177/2336825X241256847

7. Goldner Lang, I. (2024). Walls and Fences at the EU's External Borders and their Monitoring. The Law of Schengen: Limits, Contents and Perspectives after 40 Years, Edward Elgar. URL: <https://ssrn.com/abstract=4788881>
8. Dumbrava, C. (2022). Walls and fences at EU borders. European Parliamentary Research Service. URL: [https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733692/EPRS_BRI\(2022\)733692_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/733692/EPRS_BRI(2022)733692_EN.pdf)
9. Karčiauskas, J. (2024). Lithuania external relations briefing: Barriers, Fences and Defence Lines on the Eastern. China-CEE Institute. Vol. 74. No. 4. URL: https://china-cee.eu/wp-content/uploads/2024/08/2024er06_Lithuania.pdf.4
10. Buzmaniuk, S. (2021). The Union's external borders: a European debate revisited. Robert Schuman Foundation. The Research and Studies Centre on Europe. URL: <https://www.robertschuman.eu/en/european-issues/585-the-union-s-external-borders-a-european-debate-revisited>
11. Communication from the Commission to the Council and the European Parliament - Wider Europe - Neighbourhood: A New Framework for Relations with our Eastern and Southern Neighbours. (2003). Document 52003DC0104. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52003DC0104>
12. Eastern Borders Annual Overview (2012). Frontex. Warsaw. URL: https://www.frontex.europa.eu/assets/Publications/Risk_Analysis/EB_AO.pdf
13. Granice RP. (2024). Straż Graniczna. URL: <https://www.strazgraniczna.pl/pl/granica/granice-rp/1910,Granice-RP.html>
14. Tolstov, S. (2015). The EU policy towards Russia: general problems and trends. Historical and political studies. № 2. C. 97–111.
15. Maj, M. (2023). Energy Without Russia: The Case of Poland. The Consequences of the Ukraine War and the EU Sanctions on the Energy Sector in Europe. URL: <https://library.fes.de/pdf-files/bueros/budapest/20475.pdf>
16. Council Decision on the suspension in whole of the application of the Agreement between the European Community and the Russian Federation on the facilitation of the issuance of visas to the citizens of the European Union and the Russian Federation. (2022). Document ST_12039_2022_INIT. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CONSIL%3AST_12039_2022_INIT&qid=1662719660688
17. Situation on the eastern borders. Instrumentalisation of migration: Situation at the border with Belarus. (2022). EUAA. Asylum Report. URL: <https://euaa.europa.eu/asylum-report-2022/411-situation-eastern-borders>
18. Proposal for a Council Decision on provisional emergency measures for the benefit of Latvia, Lithuania and Poland. (2021). Document 52021PC0752. URL: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021PC0752/>
19. European Parliament declares Russia to be a state sponsor of terrorism. (2022). European Parliament. Press release. URL: <https://www.europarl.europa.eu/news/en/press-room/20221118IPR55707/european-parliament-declares-russia-to-be-a-state-sponsor-of-terrorism>
20. Finnish Government prepares to extend validity of Border Security Act. (2025). Ministry of the Interior. URL: <https://valtioneuvosto.fi/en/-/1410869/finnish-government-prepares-to-extend-validity-of-border-security-act>
21. The eastern border barrier fence. (2022). Finnish Border Guard. URL: <https://raja.fi/en/the-eastern-border-barrier-fence>
22. A New Era of Border Security: The Rise of the Drone Wall. (2024). Drone Pilot Detection. URL: <https://www.airsight.com/blog/a-new-era-of-border-security-the-rise-of-the-drone-wall/>
23. **Ryan K.** The New “Baltic Way”: Assessing the Baltic Defensive Line Concept. (2024). Foreign Policy Research Institute. URL: <https://www.fpri.org/article/2024/12/the-new-baltic-way-assessing-the-baltic-defensive-line-concept/>

24. “Tarcza Wschód” wzmocni bezpieczeństwo Polski i wschodniej flanki NATO. (2024). Ministerstwo Obrony Narodowej. URL: <https://www.gov.pl/web/obrona-narodowa/tarcza-wschod-wzmocni-bezpieczenstwo-polski-i-wschodniej-flanki-nato>

25. Poland’s new East Shield plan mixes modern ISR with old-school physical barriers. (2024). URL: <https://breakingdefense.com/2024/05/polands-new-east-shield-plan-mixes-modern-isr-with-old-school-physical-barriers/>

26. Crossing of state border at Leuseni-Albita Moldovan-Romanian checkpoint is to take place according to one stop principle. (2023). Government Republic of Moldova. URL: <https://gov.md/en/content/crossing-state-border-leuseni-albita-moldovan-romanian-checkpoint-take-place-according-one>

27. EU-Ukraine Solidarity Lanes. (2022). European Commission. URL: https://transport.ec.europa.eu/ukraine/eu-ukraine-solidarity-lanes_en

28. Modernization of the Border Crossing Points. (2025). USAID. URL: <https://era-ukraine.org.ua/en/bcp-renovation-and-reconstruction/>

УДК 327

A GLOBAL SHORTFALL OF CYBER WORKFORCE: EVALUATING THE U.S. STRATEGY APPROACH AND UKRAINE'S EMERGING CHALLENGES

ГЛОБАЛЬНА КРИЗА З НЕСТАЧЕЮ КІБЕРФАХІВЦІВ: ОЦІНКА СТРАТЕГІЧНОГО ПІДХОДУ США ТА ВИКЛИКИ ДЛЯ УКРАЇНИ

Dmytro Dubov

Doctor of Political Sciences, Senior Research Fellow, Head of the Information Security and Cybersecurity Department of the Security Studies Center of the National Institute for Strategic Studies

e-mail: dubov@niss.gov.ua

ORCID ID: <https://orcid.org/0000-0001-9728-369X>

Svitlana Dubova

PhD in Historical Sciences, Head of the Board of the NGO “Center for Analysis and Development of Effective Policies”

e-mail: ngo.cadep@gmail.com

ORCID ID: <https://orcid.org/0000-0002-0374-2099>

Дмитро Дубов

Доктор політичних наук, старший науковий співробітник, завідувач відділу інформаційної безпеки та кібербезпеки центру безпекових досліджень Національного інституту стратегічних досліджень

e-mail: dubov@niss.gov.ua

ORCID ID: <https://orcid.org/0000-0001-9728-369X>

Світлана Дубова

Кандидат історичних наук, Голова правління Громадської організації «Центр аналізу та розробки ефективних політик»

e-mail: ngo.cadep@gmail.com

ORCID ID: <https://orcid.org/0000-0002-0374-2099>

Abstract. *The article addresses the global shortage of cyber workforce, a challenge that directly impacts national security and international competition. The role of cybersecurity in large-scale military conflicts involving conventional weapons is examined, highlighting that while cyberspace has a limited direct impact on warfare, cybersecurity remains crucial for defense against cyberespionage and cyber sabotage. The study emphasizes that cybersecurity comprises three key components—technology, processes, and personnel—with the latter being the most critical. Effective technology use and process implementation depend on skilled professionals, their technological proficiency, and their awareness of cybersecurity’s significance in organizational operations. The article provides a detailed analysis of U.S. efforts to mitigate the cyber workforce shortage, including the National Cyber Workforce and Education Strategy, the first-year implementation report, and various legislative and local initiatives aimed at broadening workforce participation. Additionally, the strategies of specific agencies, such as the U.S. Department of Defense, for recruiting cybersecurity specialists are assessed.*

The study also explores Ukraine’s strategic approach to addressing the cybersecurity workforce deficit, noting the lack of attention to this issue in the country’s Cybersecurity Strategy and other national strategic documents. The current state of Ukraine’s cyber workforce is characterized by factors such as armed conflict, migration, and mobilization, the latter having helped address some staffing challenges in the security and defense sectors. A key barrier to effective policymaking in this area is identified as the absence of comprehensive statistical data. The article underscores the need to expand the cybersecurity talent pool by engaging traditionally underrepresented groups, including veterans, their spouses, women, and other social demographics.

Keywords: *cyber workforce; cybersecurity; state policy; strategy; gaps; USA; Ukraine;*

Анотація. Стаття присвячена глобальній проблемі нестачі кібер робочої сили, що позначається на стані національної безпеки країн а відтак і міжнародному суперництві. Показна роль кібербезпекового фактору у масштабних військових конфліктах з використанням конвенційних озброєнь. Зокрема зазначено, що навіть незважаючи на обмежений вплив кіберпростору під час самого конфлікту, кібербезпека залишається важливим фактором адже сприяє захисту від кібершпиунства та кібердиверсій. Відмічено, що хоча кібербезпека складається з трьох компонентів: технології, процеси, люди, однак саме остання компонента є ключовою адже і ефективно використання технологій, і налагодження процесів критично залежить від навченого персоналу, його готовності до використання сучасних технологій, розуміння ролі кібербезпеки в функціонуванні організації. Докладно розглянуто ті заходи, яких вживало США для вирішення даної проблеми, в тому числі National Cyber Workforce and Education Strategy, звіт про її реалізацію за перший рік, а також ті локальні та законодавчі ініціативи яких вживали США аби розширити базу залучення кіберфахівців. Додатково розглянуто окремі відомчі стратегії залучення кіберфахівців (наприклад, Міністерства оборони США) та надано оцінку їх успішності. Проаналізовано стратегічні підходи до вирішення проблеми нестачі кіберфахівців в Україні. Зокрема вказано на брак уваги до цієї проблеми в Стратегії кібербезпеки України та інших стратегічних документах. Охарактеризовано поточний стан забезпечення України кіберробочою силою та фактори, які на це впливають: бойові дії, міграція та мобілізація (остання дозволила вирішити частину кадрових проблем організаціям сектору безпеки і оборони). Підкреслено, що базовою проблемою формування ефективної державної політики щодо проблеми є збір належних статистичних даних, які характеризують відповідну сферу. Зроблено акцент на необхідності розширення бази фахівців за рахунок ширшого залучення ветеранів, їх дружин, жінок та інших соціальних груп, які традиційно не охоплені цим процесом.

Ключові слова: кіберфахівці; кібербезпека; державна політика; стратегія; прогаліни; США; Україна;

Introduction. Despite the increasing role of conventional military means in international relations in recent years, cybersecurity remains a critical element of modern conflicts. The ongoing Russian-Ukrainian war has reinforced the importance of maintaining strong armed forces while also revealing both the capabilities and limitations of cyberspace in military confrontations. Prior to the war, many cyber conflict theorists anticipated that cyber operations would play a role equal to, if not greater than, conventional warfare, with the potential for cyberattacks to dominate under favorable conditions. However, the reality of large-scale military-political conflicts suggests that the role of cyberspace is more limited, primarily encompassing cyber espionage and cyber sabotage, rather than directly shaping battlefield outcomes.

Cyber operations such as the attack on ViaSat in 2022, the attempted breach of Ukrtelecom, the 2023 cyberattack on Kyivstar, and the large-scale compromise of state registries in 2024, while significant in their media impact, did not have a decisive influence on the military conflict itself. Nevertheless, these incidents disrupted operations, diverted resources, and imposed reputational costs, forcing Ukraine to allocate additional funds for recovery efforts. Each attack aimed not only to cause operational disruptions but also to undermine public confidence in the state's ability to protect its citizens from cyber threats.

Given this landscape, cybersecurity remains a key pillar of national security. Neglecting it can lead to localized threats with potentially global repercussions. Effective cybersecurity relies on the synergy of three essential components: technology, processes, and people. While all three elements are crucial, the human factor is the cornerstone of this model. Trained professionals are essential for leveraging technology effectively, implementing secure processes, and understanding the strategic role of cybersecurity within an organization. This becomes even more apparent in offensive cyber

operations, which require meticulous planning, network infiltration, and execution—areas where skilled personnel are indispensable.

The global shortage of cybersecurity professionals presents a significant challenge. By 2023, the shortfall had reached 3.4 million specialists (*Cybersecurity Workforce Demand, 2023*), rising to four million by April 2024 (*WEF Strategic Cybersecurity Talent Framework, 2024*). Experts from the World Economic Forum predict that this figure could escalate to 85 million by 2030 as digital dependency grows, exacerbated by emerging threats linked to artificial intelligence.

Some nations, such as the United States under President Biden, have recognized this workforce crisis and are implementing strategic policies to address the gap. Others, including Ukraine, are still in the early stages of developing solutions, facing unique challenges that further complicate efforts to build a robust cybersecurity workforce.

Literature review. While the challenges of cyber workforce training are widely covered in scientific literature, most studies focus on specific aspects or targeted measures aimed at improving particular segments of the issue. For instance, research by Manimay Dev and Debashis Saha (*Dev & Saha, 2023*), Amila Withanaarachchi and Nisansala Vithana (*Withanaarachchi & Vithana, 2022*), and Jing Zheng, Yuxin Pei, and Ya Gao (*Zheng, Pei, Gao, 2020*) examines the participation of women in cybersecurity and the obstacles they encounter. Other studies explore the learning process itself and strategies for optimizing it (*Lehto, 2016; Catota, Morgan, Sicker, 2019; Ashley, Kwon, Gourisetti, Katsis, Bonebrake, Boyd, 2022*) or focus on the necessary technical and cognitive skills for future cybersecurity professionals (*Dawson & Thomson, 2018*). However, the issue of developing a cohesive state policy on cybersecurity workforce remains insufficiently studied. This gap applies both to the analysis of individual national policies and to broader regional or international generalizations. Some studies attempt to address these broader issues, such as the work of Jared DeCrosta, who assesses the global state of the cybersecurity workforce, including models for measuring workforce shortages, and examines the impact of educational systems and public policies on the availability of skilled professionals (*DeCrosta, 2021*). Another key study in this area is by Chooi Shi Teoh and Ahmad Kamil Mahmood (*Teoh & Mahmood, 2017*), who analyzed nine National Cybersecurity Strategies from developed countries to determine whether they address cybersecurity workforce development. Their main conclusion is that while most countries acknowledge the importance of cyber workforce growth in their strategies, these references are often too general and lack concrete policy measures. A significant study directly related to the formulation of state policy is the analytical essay by William Crumpler and James A. Lewis (*Crumpler & Lewis, 2019*), which examines the overall U.S. approach to cybersecurity workforce development. The authors emphasize the need for stronger government support for retraining programs, professional competitions, soft skills development, and the expansion of the National Network of Academic Centers of Excellence as a foundation for public policy in this field.

The purpose of the article to conduct a comprehensive analysis of U.S. state policy on addressing cybersecurity workforce challenges and to outline initial perspectives on the issues facing Ukrainian state policy in this area.

Main results of the research. US policy on overcoming the cyber workforce gap. As of June 2024, official data indicates that there were 500,000 unfilled cybersecurity positions in the United States. This workforce shortage poses a significant strategic threat to U.S. national security, a concern highlighted by FBI Director Christopher Wray in 2023: “Even if all FBI cyber agents and intelligence analysts focused solely on threats from China, Chinese hackers would still outnumber them at least 50 to one” (*Media Advisory, 2023*).

A study conducted by CyberSeek in collaboration with the U.S. National Institute of Standards and Technology (NIST), a key organization responsible for setting cybersecurity standards and educational requirements, estimates that the total number of cybersecurity professionals in the U.S. is approximately 1.2 million (*CyberSeek, 2024*). However, this remains critically insufficient given the rapid evolution of digital technologies and the country’s growing dependence on digital solutions. One contributing factor to this shortage is the perception of

cybersecurity as a male-dominated field, with women comprising only about 24% of the cyber workforce (*Cybersecurity Workforce Report, 2024*).

The issue of cybersecurity workforce shortages was formally recognized in the National Cybersecurity Strategy released in March 2023 (*The National Cybersecurity Strategy, 2023*). The document acknowledges that both government agencies and the private sector struggle to recruit and retain cybersecurity professionals, posing a direct risk to national security. Given the complexity of the problem, a dedicated strategy was deemed necessary, leading to the development of the National Cyber Workforce and Education Strategy (*National Cyber Workforce and Education Strategy, 2023*), which was assigned to the Office of the National Cyber Director (ONCD).

In July 2023, the Office of the National Cyber Director (ONCD) released the National Cyber Workforce and Education Strategy. The strategy is built around four key pillars that guide all related initiatives:

- Ensuring that all Americans possess fundamental cybersecurity skills
- Transforming cybersecurity education
- Expanding and strengthening the overall U.S. cyber workforce
- Enhancing the capabilities of existing federal cybersecurity professionals

The strategy emphasizes that the scale of the issue requires a deliberate state policy aimed at maximizing the pool of future cybersecurity professionals. It stresses the need to include individuals from all backgrounds, regardless of age or demographic group, specifically mentioning women, veterans, military spouses, people of color, first-generation professionals, individuals with disabilities, members of LGBTQ+ communities, Indigenous groups, and residents of areas with limited access to educational opportunities.

The four main goals outlined in the strategy led to the definition of 15 strategic objectives that guide its implementation. These objectives include:

- Developing national initiatives to raise public awareness of cybersecurity skills
- Establishing a presidential award for achievements in basic cybersecurity skills
- Promoting the development of international standards related to cybersecurity skills
- Supporting and strengthening regional cybersecurity education systems
- Engaging the private sector and local communities in the development and support of training programs
- Integrating practical cybersecurity content into interdisciplinary educational programs
- Expanding access to cybersecurity education curricula
- Improving data accessibility on the cybersecurity workforce
- Increasing access to free or low-cost workforce development tools for small businesses and nonprofit organizations
- Leveraging professional learning communities to enhance workforce diversity and better align with labor market needs
- Encouraging skills-based hiring practices in both the public and private sectors
- Expanding experiential learning opportunities, such as internships and work-readiness programs
- Promoting flexible employment models, including part-time work
- Increasing the participation of veterans and their families in the cybersecurity workforce
- Streamlining hiring processes within federal agencies
- Expanding employment opportunities for graduates and young professionals in federal agencies
- Providing access to retraining and professional development programs for cybersecurity professionals

The head of ONCD is personally involved in promoting the goals of the strategy. In June 2024, the first report on its implementation was published (*Initial Stages of Implementation, 2024*). The document does not assess how much the situation in this area has changed but instead lists measures taken by federal and non-governmental entities to achieve the strategy's objectives.

One of the key initiatives is the transition to qualification-based hiring, which places less emphasis on formal educational requirements and more on actual cybersecurity qualifications, such as certifications or practical assessments. The government has also launched Tech to Gov job fairs to attract cyber professionals, with the second fair held in April 2024, attracting 1,700 participants.

A program has been introduced to designate educational institutions as National Centers of Academic Excellence in Cybersecurity (NCAE-C). This status reflects a high level of professional training recognized by the government, provides access to additional federal funding, and ensures that training programs align with the NICE Framework developed by NIST, which defines the relationship between skills and specific cybersecurity roles.

National Coordinator for Critical Infrastructure Security and Resilience or CISA (*CISA's Vulnerability Management, 2024*) has joined the Neurodiverse Federal Workforce program to recruit individuals with autism spectrum disorders for cybersecurity positions. Other initiatives mentioned in the report include the Cyber Clinics model, which engages university students in solving cybersecurity challenges for small businesses and local communities, a national roadshow by ONCD to major educational institutions to highlight the importance of cybersecurity professionals in federal agencies, and increased attention to the US President's Cybersecurity Cup, where teams from more than 100 agencies compete in cyber threat scenarios, with the winner recognized at a White House event.

In addition to the national strategy, some federal agencies have developed their own departmental strategies to attract cybersecurity professionals. In March 2023, the US Department of Defense adopted its own strategy (*DOD Cyber Workforce Strategy 2023-2027, 2023*). While the document does not provide estimates of the overall workforce gap, sources indicate that at the time of its adoption, approximately 25% of cybersecurity positions within the Department of Defense were unfilled. By November 2024, a year after its implementation, this figure had dropped to 16%, though 28,000 vacancies remained (*Pomerleau, 2024*). One significant factor contributing to this improvement may be the transition to qualification-based hiring rather than relying on minimum education requirements (*Eric Hysen, 2024*), which has expanded opportunities for individuals who previously would not have been eligible for such positions.

American lawmakers are also seeking solutions to this workforce shortage. In November 2023, Senator Margaret Wood Hassan introduced the Federal Cybersecurity Workforce Expansion Act (*Federal Cybersecurity Workforce Expansion Act, 2023*). If passed, the bill would establish two five-year programs. The first would create an apprenticeship program for 25 participants annually, funded through grants from the Department of Homeland Security (DHS), requiring participants to commit to working in federal cybersecurity roles for a specified period. The second program would provide cybersecurity training for veterans and military spouses, particularly those without higher education, focusing on practical skills and offering graduates opportunities to work in federal agencies.

In May 2024, Congresswoman Shontel M. Brown introduced the Diverse Cybersecurity Workforce Act of 2024 (*Diverse Cybersecurity Workforce Act, 2024*). This bill proposes a nationwide information campaign led by CISA to encourage individuals from underrepresented communities, including those with prior incarceration, to enter the cybersecurity field.

It remains unclear how the change in the US government in 2025 will impact these trends. While the new Trump administration has expressed opposition to DEI initiatives, which were considered in the previously mentioned policies, their cancellation will not resolve the cybersecurity workforce shortage. Additionally, tighter immigration restrictions could further exacerbate the issue, as the United States has previously implemented specific immigration programs for cybersecurity professionals, such as the H-1B visa. Even if the Trump administration limits these pathways for recruiting cyber talent, the growing cybersecurity challenges and workforce demands will persist, requiring alternative solutions.

Ukraine faces new and old challenges of cyber workforce gap. Like in the United States, the shortage of cybersecurity specialists is a pressing issue in Ukraine. Both the public and private sectors are expanding rapidly, creating an increasing demand for skilled professionals. According to

the Aspen Institute (*Overview of the cybersecurity market in Ukraine, 2025*), the Ukrainian cybersecurity market was valued at 138 million USD in 2024. While this figure is modest compared to other countries—800 million USD in Poland and 8 billion USD in Germany—it represents a fourfold increase since 2016.

The main challenges in recruiting cybersecurity professionals in Ukraine's public and private sectors have traditionally included a shortage of qualified specialists, low salaries in the public sector, a lack of understanding among leadership regarding the value of cybersecurity professionals, and the high demand for experienced Ukrainian cyber experts from foreign companies.

The full-scale war has partially altered this landscape. Security and defense authorities responsible for cybersecurity, as outlined in the Law on the Basic Principles of Cybersecurity in Ukraine (*On the basic principles of cybersecurity in Ukraine Law, 2017*), have addressed staffing shortages through mobilization. However, some cyber specialists have left the country for various reasons, while others have been assigned to non-cyber units within the Armed Forces of Ukraine, limiting their ability to contribute their expertise. Meanwhile, cyber threats to critical infrastructure, including both government and private sector organizations, remain a significant concern.

Even if the broader military-political situation does not change, Ukraine could face a long-term cybersecurity workforce crisis in the near future. The current National Cybersecurity Strategy of Ukraine (*National Cybersecurity Strategy of Ukraine, 2021*) does not adequately address this issue. While some provisions emphasize professional development for security and defense personnel (paragraphs 25, 26, 62), financial incentives (paragraph 61), and private sector involvement in countering cyber threats (paragraphs 34 and 35), only paragraph 58 explicitly mentions improving cybersecurity training. However, the Strategy (and even Implementation Plan) does not yet provide clear directions for its implementation.

Although cybersecurity workforce challenges may seem secondary in the context of conventional warfare, they could become a crucial tool for social adaptation in the long term, particularly if the military-political situation changes significantly.

One of Ukraine's primary issues in this area is the lack of a systematic assessment of its cybersecurity workforce. The state does not have precise data on the number of vacant cybersecurity positions in either the public or private sectors, has limited insight into the challenges of specialist training, and lacks detailed information on workforce demographics, such as gender, ethnicity, and age distribution. While there is a slightly better understanding of the potential talent pool, the commonly stated shortage of cybersecurity specialists is more of a general consensus among professionals than a statistically verified fact.

At the same time, given ongoing migration trends and the current social structure, Ukraine should already be exploring ways to attract new target groups to the cybersecurity sector through expanded training programs. These groups include veterans, their spouses, women, and other vulnerable populations. This is particularly relevant for veterans, who represent a large social group in need of long-term reintegration, often requiring training in new professions. While some international projects, in collaboration with government agencies, offer ad hoc retraining programs, their effectiveness and long-term impact remain difficult to assess.

A similar challenge exists in increasing women's participation in cybersecurity. Although initiatives like the National Security and Defense Council's National Initiative to Strengthen the Role of Women in Cybersecurity play an important role, a more comprehensive policy is needed to define clear objectives and implementation steps.

Conclusions. A global shortage of 3.4 million cybersecurity professionals poses a serious risk to the security of even the most developed countries. Various hostile actors, both financially motivated and state-sponsored, are actively exploiting this workforce gap to their advantage. As a result, governments are increasingly focusing not only on improving cybersecurity training but also on attracting new professionals to the field.

In the United States, the cybersecurity workforce shortage stands at approximately 500,000 across both public and private sectors. To address this issue, the Biden administration adopted the National Cyber Workforce and Education Strategy in 2023, assigning its implementation to the

National Cyber Director, one of the highest-ranking officials in U.S. cybersecurity. These national efforts were further reinforced by local initiatives, agency-level strategies, and legislative proposals aimed at expanding the cybersecurity workforce. Although the first annual report on the strategy's implementation highlighted significant efforts to address the problem, it did not provide a quantitative assessment of progress. The change in U.S. leadership in 2025 may introduce additional challenges, particularly due to shifts in migration and domestic policies, which could force alternative solutions or leave federal information systems and critical infrastructure more vulnerable to cyber threats from Russia and China.

For Ukraine, the cybersecurity workforce shortage is further compounded by several additional factors, including the absence of a dedicated national strategy, limited resources, ongoing military conflict, workforce displacement, and demographic shifts. Addressing this issue requires at least a foundational policy to attract cybersecurity professionals and expand recruitment efforts among underrepresented social groups, such as women, veterans, and military spouses. Beyond addressing workforce needs, such initiatives would also contribute to the professional development and social reintegration of these groups.

References.

1. Cybersecurity Workforce Demand (2023), NIST, https://www.nist.gov/system/files/documents/2023/06/05/NICE%20FactSheet_Workforce%20Demand_Final_20211202.pdf
2. WEF Strategic Cybersecurity Talent Framework (2024), World Economic Forum, https://www3.weforum.org/docs/WEF_Strategic_Cybersecurity_Talent_Framework_2024.pdf
3. Dev, M. and Saha, D. (2024), "Does e-government development moderate the impact of female labor participation on national cybersecurity maturity? An empirical investigation", *Information and Computer Security*, Vol. 32 No. 1, pp. 74-92. <https://doi.org/10.1108/ICS-03-2023-0042>
4. Withanaarachchi, A. and Vithana, N. (2022), "Female underrepresentation in the cybersecurity workforce – a study on cybersecurity professionals in Sri Lanka", *Information and Computer Security*, Vol. 30 No. 3, pp. 402-421. <https://doi.org/10.1108/ICS-08-2021-0129>
5. Zheng, J., Pei, Y., Gao Y. (2020) Social Media as a Disguise and an Aid: Disabled Women in the Cyber Workforce in China, Vol 8, No 2 (2020): Left Behind? Women's Status in Contemporary China, <https://doi.org/10.17645/si.v8i2.2646>
6. Lehto, Martti. 2016. Cyber Security Education and Research in the Finland's Universities and Universities of Applied Sciences. *Int. J. Cyber Warf. Terror.* 6, 2 (April 2016), 15–31. <https://doi.org/10.4018/IJCWT.2016040102>
7. Frankie E Catota, M Granger Morgan, Douglas C Sicker, Cybersecurity education in a developing nation: the Ecuadorian environment, *Journal of Cybersecurity*, Volume 5, Issue 1, 2019, tyz001, <https://doi.org/10.1093/cybsec/tyz001>
8. T. D. Ashley, R. Kwon, S. N. G. Gourisetti, C. Katsis, C. A. Bonebrake and P. A. Boyd, (2022) "Gamification of Cybersecurity for Workforce Development in Critical Infrastructure," in *IEEE Access*, vol. 10, pp. 112487-112501, , doi: 10.1109/ACCESS.2022.3216711
9. Dawson J and Thomson R (2018) The Future Cybersecurity Workforce: Going Beyond Technical Skills for Successful Cyber Performance. *Front. Psychol.* 9:744. doi: 10.3389/fpsyg.2018.00744
10. DeCrosta, Jared (2021). Bridging the Gap: An Exploration of the Quantitative and Qualitative Factors Influencing the Cybersecurity Workforce Shortage // *Utica College ProQuest Dissertations & Theses*, 2021, <https://www.proquest.com/openview/b08d412275c53f095c3f145e30717ab6/1?pq-origsite=gscholar&cbl=18750&diss=y>
11. Teoh, C. S., & Mahmood, A. K. (2017). Cybersecurity Workforce Development for Digital Economy. *The Educational Reviewing*, USA,2(1), 136-146.

<http://dx.doi.org/10.26855/er.2018.01.003> , https://www.researchgate.net/profile/Efthymia-Gourgiotou/publication/323834705_Trainee_Teachers'_Collaborative_and_Reflective_Practicum_in_Kindergarten_Classrooms_in_Greece_A_Case_Study_Approach/links/5aae2611aca2721710fb0e7f/Trainee-Teachers-Collaborative-and-Reflective-Practicum-in-Kindergarten-Classrooms-in-Greece-A-Case-Study-Approach.pdf#page=23

12. Media Advisory (2023) Chairman Green Announces Hearing on America's Cyber Workforce Shortage Amid Rising Threats, Homeland Security Committee, <https://homeland.house.gov/2024/06/21/media-advisory-chairman-green-announces-hearing-on-americas-cyber-workforce-shortage-amid-rising-threats/>

13. CyberSeek (2024) 225,000 More Cybersecurity Workers Needed in US, <https://www.securityweek.com/225000-more-cybersecurity-workers-needed-in-us-cyberseek/>

14. Cybersecurity Workforce Report (2024) Bridging the Workforce Shortage and Skills Gap, Global Cybersecurity Forum, <https://web-assets.bcg.com/61/d3/705fbd684d70b0e5f98cdcf7cf47/2024-cybersecurity-workforce-report.pdf>

15. The National Cybersecurity Strategy (2023), White House, <https://bidenwhitehouse.archives.gov/oncd/national-cybersecurity-strategy/>

16. National Cyber Workforce and Education Strategy (2023), Scribd.com, <https://www.scribd.com/document/680371021/NATIONAL-CYBER-WORKFORCE-AND-EDUCATION-STRATEGY>

17. Initial Stages of Implementation (2024) National Cyber Workforce and Education Strategy, Biden White House.Archives, <https://bidenwhitehouse.archives.gov/wp-content/uploads/2024/06/NCWES-Initial-Report-2024.06.25.pdf>

18. CISA's Vulnerability Management (2024), CISA, <https://www.cisa.gov/news-events/news/cisas-vulnerability-management-goes-big-interns-and-results-are-staggering>

19. DOD Cyber Workforce Strategy 2023-2027 (2023), Department of Defense, <https://dodcio.defense.gov/Portals/0/Documents/Library/CWF-Strategy.pdf>

20. Pomerleau, Mark (2024) DOD sees decrease in civilian cyber workforce shortage amid efforts to beef up talent pipeline, DefenseScoop, <https://defensescoop.com/2024/11/07/dod-sees-decrease-civilian-cyber-workforce-shortage-talent-pipeline/>

21. Eric Hysen (2024) Testimony of Eric Hysen Chief Information Officer and Chief Artificial Intelligence Officer

22. U.S. Department of Homeland Security before Committee on Homeland Security United States House of Representatives on "Finding 500,000: Addressing America's Cyber Workforce Gap", Committee on Homeland Security, <https://homeland.house.gov/wp-content/uploads/2024/06/2024-06-26-HRG-Testimony.pdf>

23. Federal Cybersecurity Workforce Expansion Act (2023), US Congress, <https://www.congress.gov/bill/118th-congress/senate-bill/2256>

24. Diverse Cybersecurity Workforce Act (2024), US Congress, <https://www.congress.gov/bill/118th-congress/house-bill/8469/all-actions?q=%7B%22search%22%3A%22Diverse+Cybersecurity+Workforce+Act+of+2024%22%7D&s=1&r=1&overview=closed#tabs>

25. Overview of the cybersecurity market in Ukraine (2025), Aspen Institute, <https://itukraine.org.ua/files/Ukraine-Cybersec-Market-Review.pdf>

26. On the basic principles of cybersecurity in Ukraine Law (2017), Verhovna Rada of Ukraine, <https://zakon.rada.gov.ua/laws/show/2163-19#Text>

27. National Cybersecurity Strategy of Ukraine (2021), President of Ukraine site, <https://www.president.gov.ua/documents/4472021-40013>

СУЧАСНА СИСТЕМА МІЖНАРОДНОГО ПРАВА

УДК 342.7+504

EXTRATERRITORIAL JURISDICTION IN INTERNATIONAL RIGHTS-BASED CLIMATE LITIGATION

ЕКСТЕРИТОРІАЛЬНА ЮРИСДИКЦІЯ В МІЖНАРОДНИХ СУДОВИХ ПРОЦЕСАХ З ПРАВ ЛЮДИНИ ТА КЛІМАТУ

Medvedieva M.O.

Doctor of Law, Professor at the International Law Chair of the Educational and Scientific Institute of International Relations of Taras Shevchenko National University of Kyiv.

E-mail: medvedieva.maryna@gmail.com

ORCID ID: <https://orcid.org/0000-0003-4010-4659>

Bilotskiy S.D.

Doctor of Law, Professor at the International Law Chair of the Educational and Scientific Institute of International Relations of Taras Shevchenko National University of Kyiv.

E-mail: serbel325@gmail.com

ORCID ID: <https://orcid.org/0000-0001-5904-9069>

Медведєва М.О.

Доктор юридичних наук, професор, професор кафедри міжнародного права Навчально-наукового інституту міжнародних відносин Київського національного університету імені Тараса Шевченка.

E-mail: medvedieva.maryna@gmail.com

ORCID ID: <https://orcid.org/0000-0003-4010-4659>

Білоцький С.Д.

Доктор юридичних наук, професор, професор кафедри міжнародного права Навчально-наукового інституту міжнародних відносин Київського національного університету імені Тараса Шевченка.

E-mail: serbel325@gmail.com

ORCID ID: <https://orcid.org/0000-0001-5904-9069>

***Abstract.** The article is dedicated to the phenomenon of international rights-based climate litigation which concerns responsibility of states for the breaches of human rights in cases relating to scientific data on climate change, climate policy, national climate legislation and (or) international climate law. The purpose of the article is to analyze the legal arguments of parties as well as of international human rights courts and quasi-judicial bodies concerning the possibility to apply extraterritorial jurisdiction of states in climate cases. The author considered several cases brought before the Court of Justice of the European Union (People's Climate case and Biomass case), the European Court of Human Rights (Verein KlimaSeniorinnen Schweiz case and Duarte Agostinho case), the Inter-American Commission on Human Rights (the Inuit and Athabaskan cases), the United Nations Human Rights Committee (Daniel Billy case) and the United Nations Committee on the Rights of the Child (Sacchi case). The author tried to answer one of the main questions: is it possible to recognize a state's jurisdiction over persons, with the aim of invoking its responsibility for failure to take mitigation and adaptation measures to combat the effects of climate change, if those persons are neither its nationals nor residents, in other words, are within the territorial jurisdiction of another state? The article refers to the novel concept of 'effects-based' / 'control-over-the-source' / 'impacts' jurisdiction. The author concludes that there are opposite comments on the extraterritorial jurisdiction in rights-based climate litigation: some scholars argue that restrictive approach to extraterritorial jurisdiction possess serious risks for future climate litigation at international courts and human rights bodies; others are of the view that departure*

from the traditional 'control over the victim' concept of extraterritorial jurisdiction may pose dangers to the current international legal order.

Keywords: human rights, climate change, extraterritorial jurisdiction, Court of Justice of the European Union, European Court of Human Rights, Inter-American Commission on Human Rights, United Nations Human Rights Committee, United Nations Committee on the Rights of the Child.

Анотація. Стаття присвячена феномену міжнародних судових процесів з прав людини та клімату, які стосуються відповідальності держав за порушення прав людини у справах відносно наукових даних про зміну клімату, кліматичної політики, національного кліматичного законодавства та (або) міжнародного кліматичного права. Метою статті є аналіз правових аргументів сторін та міжнародних судів і квазісудових органів з прав людини щодо можливості застосування екстериторіальної юрисдикції держав у кліматичних справах. Автор розглянула кілька справ, поданих до Суду Європейського Союзу (справи *People's Climate i Biomass*), Європейського суду з прав людини (справи *Verein KlimaSeniorinnen Schweiz i Duarte Agostinho*), Міжамериканської комісії з прав людини (справи інуїтів і атабасків), Комітету ООН з прав людини (справа *Daniel Billy*) і Комітету ООН з прав дитини (справа *Sacchi*). Автор спробувала відповісти на одне з головних питань: чи можна визнавати юрисдикцію держави над особами з метою прикликання її до відповідальності за невіджиття заходів з пом'якшення та адаптації до наслідків зміни клімату, якщо ці особи не є ні її громадянами чи резидентами, іншими словами, перебувають у межах територіальної юрисдикції іншої держави? У статті йдеться про нову концепцію юрисдикції, заснованій на «наслідках» / «контролі над джерелом» / «впливі». Автор робить висновок, що існують протилежні коментарі щодо екстериторіальної юрисдикції в кліматичних судових процесах, заснованих на правах людини: деякі вчені стверджують, що обмежувальний підхід до екстериторіальної юрисдикції має серйозні ризики для майбутніх кліматичних судових процесів у міжнародних судах і органах з прав людини; інші вважають, що відхід від традиційної концепції екстериторіальної юрисдикції, заснованій на «контролі над жертвою», може становити небезпеку для сучасного міжнародного правопорядку.

Ключові слова: права людини, зміна клімату, екстериторіальна юрисдикція, Суд Європейського Союзу, Європейський суд з прав людини, Міжамериканська комісія з прав людини, Комітет ООН з прав людини, Комітет ООН з прав дитини.

Relevance of the topic. It is a well-established and universally recognized principle of international law that the jurisdiction of states is primarily territorial. This means that each state is entitled to exercise full powers within its own borders. Foreign states may be allowed to exercise their powers in the territory of other states only 'by virtue of a permissive rule derived from international custom or from a convention' (*Permanent Court, 1927, p. 18-19*), as was proclaimed by the Permanent Court of International Justice in its judgment in the famous *S.S. 'Lotus'* case. Thus, though the principle of territoriality is the basic principle of states' jurisdiction in criminal, administrative or civil matters, sometimes international law provides for some exceptions which became the basis for the so-called extraterritorial jurisdiction. The legitimate grounds for the extraterritorial jurisdiction which have been formed over a long period of time may be derived from the international legal rules regarding immunity from jurisdiction of the host state for high-ranking officials or diplomatic and consular agents of the sending state; immunity from jurisdiction of aircrafts and maritime vessels, military forces or military bases abroad; jurisdictional immunities of states and their property; passage through international rivers, international channels and straits, etc.

Some grounds for the extraterritorial jurisdiction may pave the way to political, diplomatic, economic and legal conflicts between different states, for example, the principles of active and passive nationality, protection and universality in international criminal law; the 'effects' doctrine, 'single economic entity' or 'implementation' doctrines in antitrust (competition) law; the concept of 'processes and production methods' in international trade law. Sometimes states exercise jurisdiction outside their sovereign territories due to armed conflict or occupation of the territories

of other states. International law, while not recognizing the legality of aggression and occupation, nevertheless accepts the extraterritorial jurisdiction of the occupying state or state exercising 'effective control' over foreign territory for the purposes of protecting human rights.

Climate litigation – an absolutely new phenomenon in international environmental and human rights law – concerns recognition of the jurisdiction of national and international courts and quasi-judicial bodies and responsibility of states for the breaches of human rights in cases relating to scientific data on climate change, climate policy, national climate legislation and (or) international climate law. While contributing to implementation of international climate agreements and setting more ambitious national climate targets, climate litigation leads to many divergencies and conflicts concerning a new basis for the extraterritorial jurisdiction of states in climate-related matters. The jurisdiction of international courts and quasi-judicial bodies depends on the jurisdiction of states, as well as interrelates with such important issues as admissibility, victim status, exhaustion of domestic remedies, etc. Careful consideration of all these problems may bring scholars and practitioners to a deeper understanding of the nature of extraterritorial jurisdiction and build solid arguments 'pro' or 'contra' its expansion in climate- and human rights-related issues.

Recent literature review. To make thorough research of the stated problem, we used the papers of such foreign authors as Setzer J., Narulla H., and Bradeen E. (concerning climate litigation in Europe), Skelton A. (concerning *Sacchi* case), Liston G., Ibrahim L., and Blattner Ch. E. (concerning *Duarte Agostinho* case), Raible L. and Schayani K. (concerning climate change cases of the European Court of Human Rights), Szpak A. (concerning the Athabaskan petition) and Torre-Schaub M. (concerning the advisory opinion of the International Court of Justice). There are a lot of scientific works dedicated to climate litigation and extraterritorial jurisdiction in human rights cases as separate issues. Extraterritorial jurisdiction in international rights-based climate litigation is usually analyzed just as one of the many other topics within the same articles and monographs. We tried to create a comprehensive understanding of this complex phenomenon in our own research provided below.

The purpose of the paper. The purpose of this article is to analyze the legal arguments of parties as well as of international human rights courts and quasi-judicial bodies concerning the possibility to apply extraterritorial jurisdiction in climate cases.

Main research results. Before we start the analysis, it should be mentioned that relations between the jurisdiction of a court and admissibility of claims is a disputed topic in public international law which is a subject-matter for another research. Usually, decisions of a court on its own jurisdiction and on the admissibility of claims are separate procedural stages in international litigation. After a court having accepted its jurisdiction in the case, it still must decide if an applicant's claims are admissible. Admissibility may be determined at the preliminary jurisdictional phase and (or) later, at the merits phase. In the jurisprudence of international human right bodies, the consideration of admissibility often comprises the issues of the jurisdiction of a state, victim status, exhaustion of domestic remedies as well as compliance with other procedural requirements by the applicants. Recognition of a jurisdiction of a state is the prerequisite for further consideration of its responsibility for human rights violations.

To date, thousands of cases dealing with alleged violations of human rights by non-compliance of states with their climate-related obligations have been considered or pending before various national courts, about 60 cases – before the Court of Justice of the European Union (hereinafter – the CJEU), about 10 cases – before the European Court of Human Rights (hereinafter – the ECtHR) (*Setzer, Narulla, & Bradeen, 2022*). Besides, each of the following international institutions – the Inter-American Commission on Human Rights (hereinafter – the IACoHR), the United Nations Human Rights Committee (hereinafter – the UNHRC) and the United Nations Committee on the Rights of the Child (hereinafter – the UNCRC) – received communications or delivered decisions in at least 1 or 2 cases. Applicants – mainly individuals and non-governmental organizations – asserted that states (in cases dealt with by the ECtHR) and the EU institutions (in cases dealt with by the CJEU) breached their human rights, e.g., the right to life, health, respect for private and family life, access to legal remedies, access to information, etc. and relied on different

international documents such as the European Convention on Human Rights (1950), Paris Agreement (2015), the EU Lisbon treaties (2007), etc. Unfortunately, most of these cases passed only jurisdictional (admissibility) phase and have never been considered on merits. Nevertheless, the argumentation applied by parties and international bodies sheds the light on the complex jurisdictional issues including the possibility of recognizing the extraterritorial jurisdiction and extraterritorial human rights obligations of states in the era of climate change. One of the main questions which must be decided by human rights institutions is: is it possible to recognize a state's jurisdiction over persons, with the aim of invoking its responsibility for failure to take mitigation and adaptation measures to combat the effects of climate change, if those persons are neither its nationals nor residents, in other words, are within the territorial jurisdiction of another state?

We'll start our analysis with the case-law of the universal human rights bodies, namely, the UNHRC and the UNCRC. In *Daniel Billy et al. v. Australia* decided by the UNHRC in 2022 the authors and six of their children, who belonged to the indigenous people of the Torres Strait Islands, complained that Australia violated their human rights under the International Covenant on Civil and Political Rights (1966) because it failed to take mitigation and adaptation measures to combat the effects of climate change in that region (*Daniel Billy, 2022*). The government insisted that 'climate change is a global phenomenon attributable to the actions of many states', its effects are beyond the jurisdiction and control of just one state and that the applicants didn't show any causation between the alleged violations of their rights and the state party's activities (*Daniel Billy, 2022, para. 4.2*). The UNHRC was not persuaded by those arguments, found no obstacles to the admissibility of claims and stated that Australia was in violation of the Covenant. There was no room for extraterritorial jurisdiction in this case. Only if some of the applicants had been the nationals of states other than Australia or the applicants had insisted that the UNHRC should take into account the GHG emissions generated abroad and attribute them to Australia, the Committee would have been forced to assess such a possibility.

The *Sacchi case* is a famous case brought by sixteen children who were nationals of Argentina, Brazil, France, Germany, India, Marshall Islands, Nigeria, Palau, South Africa, Sweden, Tunisia, and the United States of America before the UNCRC against Argentina, Brazil, France, Germany and Turkey. They submitted five separate communications against each of these states. The applicants claimed that the respondent states violated their rights under the United Nations Convention on the Rights of the Child (1989) by failing to prevent and mitigate the consequences of climate change (*Sacchi, et al. v. Argentina, 2021*). All applicants argued that the Committee had jurisdiction to examine the case in relation to their own states (Argentina, Brazil, France, Germany) as well as Turkey. The children claimed that all five states had jurisdiction over each of the authors of the communication, including in relation to the authors who were neither their nationals nor residents, in other words, had extraterritorial obligations towards them; and that all five states were responsible for human rights violations. The reason behind the applicants' argumentation was as follows: extraterritorial obligations may arise when a state controls activities, namely GHG emissions, in its territory that cause transboundary harm, namely, climate change impacts like sea-level rise or extreme weather conditions which hinder the enjoyment of children's rights to life, health or culture (*Sacchi, et al. v. Argentina, 2021, para. 5.2*).

Argentina submitted that the communication was inadmissible *ratione loci* in relation to the authors who were not its nationals and didn't reside in its territory because the Committee didn't have jurisdiction to analyse events that allegedly had occurred outside its territory, over which it didn't exercise any type of jurisdiction or control, and because there was no causal link between its actions and the violations of children's rights (*Sacchi, et al. v. Argentina, 2021, para. 4.3*). France argued that extraterritorial jurisdiction required the state to exercise effective control over the territory on which the applicants reside, Germany argued that the collective and global nature of climate change rendered the establishment of jurisdiction which was impossible to prove (*International Human Rights Law, 2022, p. 1983*), and Brazil argued that the authors had not demonstrated the extent to which the alleged violations could be attributable to Brazil which was not amongst the main CO₂ emitters, presently or historically (*Sacchi, et al. v. Brazil, 2021, para.*

4.3). Turkey was of the view that acceptance of the extraterritorial jurisdiction over the authors would mean acceptance of the respondent states' effective control on a global scale, over every state, that would lead to the risk of the erosion of jurisdiction and undermining the fundamental principle of state sovereignty (*Sacchi, et al. v. Turkey, 2021, para. 7.6*).

The Committee's decision was delivered in 2021. The UNCRC referred to the relevant articles of the Convention and its Optional Protocol concerning its own competence as well as the jurisdiction of states and observed 'that present communication raises novel jurisdictional issues of transboundary harm related to climate change' (*Sacchi, et al. v. Germany, 2021, para. 9.4*). The Committee relied on the reasoning of the Inter-American Court of Human Rights (hereinafter – IACtHR) provided in its Advisory Opinion on the Environment and Human Rights (2017) and accepted the applicants' arguments. It concluded that the collective responsibility for climate change does not absolve a state of its individual responsibility that may derive from the harmful effects of emissions originating in its territory on children, whatever their location (*Sacchi, et al. v. Germany, 2021, para. 9.10*). Though the Committee acknowledged the victim status of the applicants and the extraterritorial jurisdiction of all five states over all 16 applicants, it found the communication inadmissible for failure to exhaust domestic remedies.

The scholars characterize the case as unique, as it is the first one where a complaint was brought before an international human rights body against multiple state parties by people from different regions of the world (*Skelton, 2023*). The Committee's decision on jurisdiction and victim status was labelled as 'ground-breaking' and 'historic', the one which pushed the boundaries of international law on extraterritorial jurisdiction (*Skelton, 2023*). Some commentators observe that the *Sacchi* case represented 'the explosion of human rights law's predominant control-based test of extraterritorial jurisdiction' (*International Human Rights Law, 2022, p. 1984*), because the Committee went away from the traditional 'authority and control' test and recognized jurisdiction over harms caused by cross-border emissions (*International Human Rights Law, 2022, p. 1984*).

In 2024, the Grand Chamber of the ECtHR ruled in three climate cases that were initiated for the first time in this regional human rights court: *Verein KlimaSeniorinnen Schweiz and Others v. Switzerland, Carême v. France* and *Duarte Agostinho and Others v. Portugal and 32 Other States*. The Court acknowledged that climate cases raise unprecedented issues which have not so far been addressed in its previous case-law on environmental matters (*Verein KlimaSeniorinnen Schweiz, 2024, para. 414*). As in the UNHRC's case of *Daniel Billy, Carême* didn't raise any extraterritoriality questions because the applicant was the national of France.

Verein KlimaSeniorinnen Schweiz case was brought by a Swiss association and its members, a group of elderly women, who were concerned about the consequences of global warming for their live, health, private and family life, and complained about the actions of the Swiss authorities in the field of climate-change mitigation. This case touches upon one aspect of the extraterritorial jurisdiction of a state. At the admissibility stage, the parties argued on whether the ECtHR should take into account the GHG emissions generated abroad, mainly through the import of different goods, and whether they must be attributed to Switzerland (so-called embedded emissions) (*Verein KlimaSeniorinnen Schweiz, 2024, paras. 275-276*). The government insisted that such emissions produced beyond the state's territory could not be linked to any omissions on the part of Switzerland, because they were out of its direct control (*Verein KlimaSeniorinnen Schweiz, 2024, paras. 285-288*). The Court took into account these emissions because they formed a significant part of the overall Swiss GHG footprint and dismissed the respondent state's objection concerning the lack of jurisdiction (*Verein KlimaSeniorinnen Schweiz, 2024, paras. 279, 283*). The ECtHR drew to the conclusion that 'the applicants' complaint concerning 'embedded emissions', although containing an extraterritorial aspect, does not raise an issue of Switzerland's jurisdiction ... but rather one of Switzerland's responsibility' for their alleged effects on the applicants' rights (*Verein KlimaSeniorinnen Schweiz, 2024, para. 287*). Unfortunately, the Court didn't address this aspect in a proper way at the merits stage. Meanwhile, it made a very important observation that since Article 1 of the European Convention on Human Rights on jurisdiction is 'principally territorial, each State

has its own responsibilities within its own territorial jurisdiction in respect of climate change' (*Verein KlimaSeniorinnen Schweiz, 2024, para. 443*).

Duarte Agostinho case was brought by six Portuguese nationals under age of 10-23 years against Portugal and other 32 states. The applicants complained that the respondents violated their rights by not taking ambitious climate measures and, as a result, they experienced serious impacts on their lives, well-being, mental health and the amenities of their homes, like heatwaves, wildfires and smoke therefrom (*Duarte Agostinho, 2024, para. 3*). They argued that concerning states other than Portugal, extraterritorial jurisdiction must be established on the exceptional grounds because their acts, namely, failure to limit GHG emissions, produced effects outside their boundaries bringing the applicants within their jurisdiction (*Duarte Agostinho, 2024, para. 121*). They argued that lodging application against one territorial state, Portugal, would be an insufficient measure (*Duarte Agostinho, 2024, para. 125*). They deemed the extraterritorial jurisdiction as grounded on the specific features of climate change, as well as the need to avoid a vacuum within the Convention legal space (*Duarte Agostinho, 2024, para. 125*). It is remarkable that the applicants insisted on the extraterritorial jurisdiction on the basis of the fact that there was a great variation in vulnerability to climate impacts and in the adaptive capacity of various countries across Europe, and that if they had brought the case only against Portugal, that would have left them within a vacuum of protection (*Liston, 2024, p. 1-2*). To substantiate their arguments, they relied on the judgment of Germany's Federal Constitutional Court in *Neubauer et al. v. Germany* where the Court envisaged that reducing the GHG emissions produced in Germany, this state could protect people outside its territorial jurisdiction against the impacts of climate change (*Duarte Agostinho, 2024, para. 178*).

The respondent governments disagreed that the applicants were within the jurisdiction of states other than Portugal because they were neither their nationals nor residents (*Duarte Agostinho, 2024, para. 77*). They insisted that they did not exercise any form of control over the territory in which the applicants resided and did not exercise any authority over the person of the applicants or over their property (*Duarte Agostinho, 2024, para. 79*). The ECtHR accepted the respondents' position highlighting that two traditional exceptions for the recognition of the extraterritorial jurisdiction ('effective control over an area' and 'state agent authority and control') could not be applied in the case (*Duarte Agostinho, 2024, paras. 181-182*). In the case the Court refused to expand **extraterritoriality test in the context of climate change** (*Ibrahim, 2024*). Furthermore, though the Court mentioned some specific features of climate change, e.g. its transboundary nature, it refused to elaborate a novel approach to jurisdiction (*Raible, 2024, p. 2*). It also reiterated that jurisdiction cannot be established merely on the basis of the argument that a state is capable of taking a decision or action impacting the applicant's situation abroad (*Duarte Agostinho, 2024, para. 199*). In other words, extraterritorial jurisdiction can't be established on the grounds of the impact of governmental acts on the interests of the applicants. Since it is rather impossible to accept cause-and-effect relations between the GHG emissions and breaches of persons' rights, because everybody in the world could be potentially impacted by the phenomenon, the extension of the Convention's scope turning it into 'a global climate-change treaty' (*Duarte Agostinho, 2024, para. 208*) finds no support in the Court's case-law. The Court found the complaints inadmissible in relation to Portugal due to the lack of the exhaustion of domestic remedies and in relation to other states – due to the absence of the extraterritorial jurisdiction.

The experts observe that the ECtHR approach to the extraterritoriality in climate cases will predetermine future climate litigation: complaints will be brought for the benefit of European residents and exclude the representation of interests of the most affected people and areas in other regions of the world (*Schayani, 2024*). Some authors conclude that since the Court adopted the approach which recognizes jurisdiction of a state over the victim but not over the source, it excluded individuals residing in the Global South, outside the territories of state parties to the European Convention, who suffer major negative climate consequences due to the historic injustice, from access to climate litigation (*Schayani, 2024*). Others have an opposite view: they caution against excessive expanding the extraterritorial jurisdiction of states in international judicial practice, because such novel 'effects-based' / 'control-over-the-source' / 'impacts' jurisdiction

approach overlooks the fact that jurisdiction must be established between a state which bears human rights obligations and the rights-holder (*Blattner, 2024*).

The CJEU could have had an opportunity to deal with a respondent state's extraterritorial jurisdiction in several cases, including *Armando Ferrão Carvalho and Others v. the European Parliament and the Council* (known as *People's Climate* case) and *Peter Sabo and Others v. European Parliament and Council of the European Union* (known as *Biomass* case), but they were dismissed on the procedural grounds in 2021. The first case was brought by 36 individuals from the EU member states, namely Germany, France, Italy, Portugal and Romania, as well as Swedish association representing indigenous Sami peoples and from Kenya and Fiji (*Armando Ferrão Carvalho, 2021*). They demanded the repeal of three pieces of the EU legislation that, in their opinion, did not comply with the Paris Agreement, and argued that the EU should adopt a more ambitious climate target. The second case was brought by individuals from various EU member states (Estonia, Ireland, France and Slovakia), several environmental associations registered in the EU as well as from the United States (*Peter Sabo, 2021*). The appellants sought the annulment in part of the directive on renewable energy sources, which, in their opinion, contradicted the environmental goals of the Lisbon Treaty and violated the Charter of Fundamental Rights of the European Union.

The General Court and the European Court of Justice held that the appellants did not satisfy any of the *locus standi* criteria laid down in the fourth paragraph of Article 263 of the Treaty on the Functioning of the European Union (2007) (*Armando Ferrão Carvalho, 2021; Peter Sabo, 2021*). The CJEU was not able to proclaim its position on the possibility to accept extraterritorial jurisdiction of the EU member states for the omissions having effect on the rights of nationals of Kenya and Fiji (the first case) or the USA (the second case).

The same situation is observed with the IACoMHR. In 2005, the Inuit, indigenous peoples of the Arctic regions of the USA and Canada, lodged a petition to the Commission stating that the inaction of the USA as the biggest GHG emitter to deal with climate change violated their fundamental rights to life, property, culture and livelihood envisaged in the American Declaration of the Rights and Duties of Man (*Petition, 2005*). The Inuit petition was the first request from a human rights body to rule on the issue of the extraterritorial jurisdiction over states' obligations on climate change (*Torre-Schaub, 2023*). In 2006, the IACoMHR informed that it was not possible to process the petition. In 2013, a similar petition was filed by the Athabaskan peoples of the Arctic regions of Canada and the United States against Canada claiming that black carbon pollution from this state harmed the Arctic environment and ecosystems upon which indigenous peoples depend (*Petition, 2013*). The case is still pending before the Commission.

In these two cases, the petitioners, indigenous peoples living in both states (the USA and Canada) complained about the acts and omissions of just one state. Hence, the problem of extraterritorial jurisdiction emerged as well (*Szpak, 2020, p. 1576*): that of the USA in the first case and Canada, in the second. Here, the question arises: is it possible to rely on the jurisdiction and invoke the responsibility of a state for failure to take mitigation and adaptation measures to combat the effects of climate change, if the GHG emissions have been produced in its own territory but impact the human rights of persons which are within the territorial jurisdiction of another state (Canada in the first case and the USA, in the second)?

Though the IACtHR stated one of the most expansive positions towards extraterritorial jurisdiction in environmental cases in its Advisory Opinion on the Environment and Human Rights mentioned above, the IACoMHR didn't have an opportunity to rely on this position in the Inuit and Athabaskan cases. Meanwhile, we may expect the interpretation of some extraterritorial aspects in relation to states' jurisdiction and human rights obligations concerning climate change in the upcoming Advisory Opinion on the Climate Emergency and Human Rights, the IACtHR has to deliver soon in accordance with the request made by Colombia and Chile in 2023. One of the questions the Court will have to answer is 'What should a State take into consideration when implementing its obligations ... to mitigate any activities under its jurisdiction that exacerbate or could exacerbate the climate emergency?' (*Request, 2023*). The same year, the UN General

Assembly requested the International Court of Justice (hereinafter – the ICJ) to render its own Advisory Opinion on the Obligations of States in Respect of Climate Change. Obviously, the Court will be seized with the issues of extraterritorial jurisdiction and climate-human rights obligations of states.

In 2024, another court – the International Tribunal on the Law of the Sea – has already rendered its Advisory Opinion submitted by the Commission of Small Island States on Climate Change and International Law. Although the Tribunal noted that climate change raises human rights concerns (*International Tribunal, 2024, para. 66*), the issue of interlinkages between states' obligations to preserve marine environment, on the one hand, and protection of human rights in the era of climate change, on the other, was not interpreted in the document. Meanwhile, the Tribunal analyzed the principle of international environmental law according to which states have responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction in the context of the marine environment. It concluded that the UN Convention on the Law of the Sea (1982) requires states 'to take all necessary measures to ensure that GHG emissions under their jurisdiction or control do not cause damage to other states and their environment, and that pollution arising from such emissions under their jurisdiction or control does not spread beyond the areas where they exercise sovereign rights' (*International Tribunal, p. 148*).

We can assume that time has come for national courts to ask advisory opinion of ECtHR on the scope of the state jurisdiction, including the extraterritorial one, in human rights and climate change issues. Although, unlike their judgments, advisory opinions of international courts do not have a binding force, they contribute to the interpretation and development of international law, as well as its effective implementation. In addition, they will help to prevent the submission of many identical individual applications against states and to unload human rights courts in such a way.

Conclusions. Violations of human rights due to climate change impacts is a novel sphere of jurisprudence for international human rights bodies which has never been addressed before in their case-law. All environmental cases which have ever been decided by these bodies concerned concrete damage caused to the applicants due to the failure of a state to take certain measures, besides, there was always a possibility to prove the existence of 'cause-effect' relationship between human rights' violations and environmental damage. Today those institutions are faced with a new challenge – human rights-based climate litigation, which tries to affirm a state's jurisdiction over persons, with the aim of invoking responsibility of a state for the failure to take mitigation and adaptation measures to combat the effects of climate change, even if those persons are neither its nationals nor residents, in other words, are within the territorial jurisdiction of another state. The expansion of a state's jurisdiction in human rights cases became possible due to the transboundary and global nature of climate change. Though most of these cases passed only admissibility phase and have never been considered on merits, except *Daniel Billy* and *Verein KlimaSeniorinnen Schweiz*, they are very precious source of international jurisprudence on the jurisdiction of states, including the extraterritorial one.

Daniel Billy didn't concern the issue of extraterritorial jurisdiction of a state but it reflected the main arguments of the respondent governments, namely that they can't exercise their jurisdiction over the applicants and be blamed for the violations of human rights since climate change is a global phenomenon attributable to the actions of many states, its effects are beyond the jurisdiction and control of just one state and there is no causation between the alleged violations of the applicants' rights and the state party's activities. In all other cases (*Sacchi, Duarte Agostinho, People's Climate* and *Biomass* cases as well as the *Inuit* and *Athabaskan* cases) the parties disagreed whether respondent states had jurisdiction over each of the authors of the communication, including in relation to the authors who were neither their nationals nor residents. Unlike all other cases, the CJEU cases involved the petitioners who were from states not belonging to the legal regime within which an international human rights body had been established (Kenya and Fiji as well as the United States). *Verein KlimaSeniorinnen Schweiz* concerned another aspect of the extraterritoriality, namely, whether the GHG emissions generated abroad must be attributed to the territorial state. The

international human rights institutions reacted to the challenge of the extraterritorial jurisdiction in climate issues in different ways: some of them accepted it (e.g., the UNCRC in *Sacchi*), while others not (e.g., the ECtHR in *Duarte Agostinho*). The novel concept of ‘effects-based’ / ‘control-over-the-source’ / ‘impacts’ jurisdiction was expressly ruled out by the ECtHR while supported by the UNCRC which creates a certain mismatch between the case-law of these two human rights bodies. The CJEU and the IACoMHR were not able to proclaim their positions on the possibility to accept extraterritorial jurisdiction. Meanwhile, we expect that the IACtHR and the ICJ will have an opportunity to interpret the extraterritorial human rights obligations of states in respect of climate change in their advisory opinions.

Comments on the above-mentioned cases are split. Some authors think that a restrictive approach to extraterritorial jurisdiction possesses serious risks for future climate litigation at international courts and human rights bodies. Others are of the view that departure from the traditional ‘authority and control’ concept of extraterritorial jurisdiction may pose dangers to the current international legal order. Though the extraterritorial jurisdiction is widely used by states and recognized by international courts in such branches of international law as diplomatic and consular law, international criminal and trade law, law of armed conflict and antitrust law, as well as in some spheres of human rights and environmental law, there are still different interpretations of this jurisdiction in face of new challenges climate change poses to human rights.

The author of this article would like to refer to the introduction where it was observed that climate litigation is about cases relating to scientific data on climate change, climate policy, national climate legislation and (or) international climate law. To our mind, the main problem in climate law or policy in general and in climate cases in particular is the lack of reliable scientific data on climate change. Today, the anthropogenic origin of climate change is considered to be the prevailing scientific theory, although we should mention another point of view, namely that the current global warming is the result of solar activity. Since solar contribution to climate change could appear to be significant (*Scafetta, 2023*), it might become unfair to blame either territorial or non-territorial states for climate impacts on human rights. Further research in climate science is needed to clarify the issue of territorial and extraterritorial jurisdiction of states in this sphere.

References:

1. Armando Ferrão Carvalho and Others v. the European Parliament and the Council. (2021). <https://climatecasechart.com/non-us-case/armando-ferrao-carvalho-and-others-v-the-european-parliament-and-the-council/>
2. Blattner, Ch. E. (2024). Post Agostinho learning moments for extraterritorial jurisdiction in Human Rights Law, using a Public International Law perspective. <https://opiniojuris.org/2024/04/30/beyond-territoriality-symposium-on-jurisdictional-hooks-for-extraterritorial-human-rights-obligations-post-agostinho-learning-moments-for-extraterritorial-jurisdiction-in-human/#respond>
3. Daniel Billy and others v. Australia (2022). <https://climatecasechart.com/non-us-case/petition-of-torres-strait-islanders-to-the-united-nations-human-rights-committee-alleging-violations-stemming-from-australias-inaction-on-climate-change/>
4. Duarte Agostinho and Others v. Portugal and 32 Other States. (2024). <https://climatecasechart.com/non-us-case/youth-for-climate-justice-v-austria-et-al/>
5. Ibrahim, L. (2024). Extraterritorial Human Rights and Climate Change at the ECtHR: The End of the Road? <https://ohrh.law.ox.ac.uk/extraterritorial-human-rights-and-climate-change-at-the-ecthr-the-end-of-the-road/>
6. International Human Rights Law – Extraterritorial Jurisdiction – Committee on the Rights of the Child Extends Jurisdiction over Transboundary Harms; Enshrines New Test. – *Sacchi v. Argentina*, No. CRC/C/88/D/104/2019 (Oct. 8, 2021). (2022). *Harvard Law Review*, 135(7), 1981-1988.
7. International Tribunal on the Law of the Sea. (2024). Advisory Opinion: Request for an Advisory Opinion Submitted by the Commission of Small Island States on Climate Change and International Law. https://www.itlos.org/fileadmin/itlos/documents/cases/31/Advisory_Opinion/C31_Adv_Op_21.05.2024_orig.pdf

8. Liston, G. Reflections on the Strasbourg climate rulings in light of two aims behind the Duarte Agostinho case. (2024). <https://www.ejiltalk.org/reflections-on-the-strasbourg-climate-rulings-in-light-of-two-aims-behind-the-duarte-agostinho-case/>
9. Permanent Court of International Justice. (1927). S.S. ‘Lotus’ case (France v. Turkey). https://www.icj-cij.org/public/files/permanent-court-of-international-justice/serie_A/A_10/30_Lotus_Arret.pdf
10. Peter Sabo and Others v. European Parliament and Council of the European Union. (2021). <https://climatecasechart.com/non-us-case/eu-biomass-plaintiffs-v-european-union/>
11. Petition to the Inter-American Commission on Human Rights Seeking Relief from Violations Resulting from Global Warming Caused by Acts and Omissions of the United States. (2005). <https://climatecasechart.com/non-us-case/petition-to-the-inter-american-commission-on-human-rights-seeking-relief-from-violations-resulting-from-global-warming-caused-by-acts-and-omissions-of-the-united-states/>
12. Petition to the Inter-American Commission on Human Rights Seeking Relief from Violations of the Rights of Arctic Athabaskan Peoples Resulting from Rapid Arctic Warming and Melting Caused by Emissions of Black Carbon by Canada. (2013). <https://climatecasechart.com/non-us-case/petition-inter-american-commission-human-rights-seeking-relief-violations-rights-arctic-athabaskan-peoples-resulting-rapid-arctic-warming-melting-caused-emissions/>
13. Raible, L. (2024). Priorities for Climate Litigation at the European Court of Human Rights. <https://www.ejiltalk.org/priorities-for-climate-litigation-at-the-european-court-of-human-rights/>
14. Request for an advisory opinion on the Climate Emergency and Human Rights submitted to the Inter-American Court of Human Rights by the Republic of Colombia and the Republic of Chile. (2023). https://www.corteidh.or.cr/docs/opiniones/soc_1_2023_en.pdf
15. Sacchi, et al. v. Argentina. (2021). <https://climatecasechart.com/non-us-case/sacchi-et-al-v-argentina-et-al/>
16. Sacchi, et al. v. Brazil. (2021). <https://climatecasechart.com/non-us-case/sacchi-et-al-v-argentina-et-al/>
17. Sacchi, et al. v. Germany. (2021). <https://climatecasechart.com/non-us-case/sacchi-et-al-v-argentina-et-al/>
18. Sacchi, et al. v. Turkey. (2021). <https://climatecasechart.com/non-us-case/sacchi-et-al-v-argentina-et-al/>
19. Scafetta, N. (2023). Empirical assessment of the role of the Sun in climate change using balanced multi-proxy solar records. *Geoscience Frontiers*, 14(6), 101650. <https://www.sciencedirect.com/science/article/pii/S1674987123001172>
20. Schayani, K. (2024). No Global Climate Justice from this Court: A Critical Analysis on How the ECtHR’s Rulings in the Climate Change Cases Exclude the Most Affected People and Areas from Access to Climate Change Litigation. <https://voelkerrechtsblog.org/no-global-climate-justice-from-this-court/>
21. Setzer, J., Narulla, H., & Bradeen, E. (2022). Climate Litigation in Europe: A summary report for the European Union Forum of Judges for the Environment. https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2022/12/Climate-litigation-in-Europe_A-summary-report-for-the-EU-Forum-of-Judges-for-the-Environment.pdf
22. Skelton, A. (2023). Child rights jurisprudence without borders: Developments in extraterritorial jurisdiction. *De Jure Law Journal*, 56, 606-624.
23. Szpak, A. (2020). Arctic Athabaskan Council’s petition to the Inter-American Commission on human rights and climate change – business as usual or a breakthrough? *Climatic Change*, 162, 1575-1593.
24. Torre-Schaub, M. (2023). International justice and the environment: Analysis of the request for an advisory opinion to the International Court of Justice. <https://www.iddri.org/en/publications-and-events/blog-post/international-justice-and-environment-analysis-request-advisory>
25. Verein KlimaSeniorinnen Schweiz and Others v. Switzerland. (2024). <https://climatecasechart.com/non-us-case/union-of-swiss-senior-women-for-climate-protection-v-swiss-federal-council-and-others/>

ОСОБЛИВОСТІ РОЗВИТКУ СВІТОВОГО ГОСПОДАРСТВА ТА МЕВ

УДК 330.342

STRUCTURE AND DYNAMICS OF THE GLOBAL ARMS AND MILITARY EQUIPMENT MARKET

СТРУКТУРА ТА ДИНАМІКА РОЗВИТКУ СВІТОВОГО РИНКУ ОЗБРОЄНЬ ТА ВІЙСЬКОВОЇ ТЕХНІКИ

Olena Pryiatelchuk

Doctor of Economics, Professor of the Department of International Business, Educational and Scientific Institute of International Relations, Taras Shevchenko National University of Kyiv,
e-mail: pryiatelchuk@gmail.com
ORCID ID: <https://orcid.org/0000-0002-5222-452X>

Vasyl Namoniuk

PhD in Economics, Head of the Department of International Finance at the Educational and Scientific Institute of International Relations, Taras Shevchenko National University of Kyiv,
e-mail: vasyi.namoniuk@knu.ua
ORCID ID: <https://orcid.org/0000-0002-9454-6658>

Приятельчук О.А.

Доктор економічних наук, професор кафедри міжнародного бізнесу Навчально-наукового інституту міжнародних відносин Київського національного університету імені Тараса Шевченка,
e-mail: pryiatelchuk@gmail.com
ORCID ID: <https://orcid.org/0000-0002-5222-452X>

Намонюк В.Є.

Кандидат економічних наук, завідувач кафедри міжнародних фінансів Навчально-наукового інституту міжнародних відносин Київського національного університету імені Тараса Шевченка,
e-mail: vasyi.namoniuk@knu.ua
ORCID ID: <https://orcid.org/0000-0002-9454-6658>

***Abstract.** In the article, the authors studied the global arms and military equipment market, as well as the level of competition in it, and formulated the trends, challenges and prospects currently observed in the global arms and military equipment market. In modern economic conditions, the global arms and military equipment market remains extremely competitive and dynamic and is characterized by high rates of growth in military spending. At the same time, the sharp increase in military spending against the backdrop of geopolitical conflicts and the growth of investments in military technologies contribute to the positioning of this sector of the economy in the international dimension as an important factor in global security, stability and the world economy. The global arms and military equipment market is determined by the complex interaction of competition and cooperation, where countries strive for both military superiority and strategic partnerships to protect their interests. The future of the global arms trade lies in balancing these forces, using technological advances and promoting diplomatic cooperation to achieve common security goals in a rapidly changing world. Given the current geopolitical situation, economic, technological and political changes, the arms and military equipment market is currently at a stage of significant transformations. Based on an understanding of the history of the development of society, we believe that the determining factors for the further development of this industry will remain the ability of states to adapt their national security strategies to new challenges and ensure the effective integration of innovative technologies into the defense sector.*

***Keywords:** militarization, military expenses, international security, economic development, armed conflict, war, terrorism.*

Анотація. В статті авторами було досліджено світовий ринок озброєнь та військової техніки, а також рівень конкуренції на ньому, та сформульовано тенденції, виклики та перспективи, що наразі спостерігаються на світовому ринку озброєнь та військової техніки. В сучасних умовах господарювання світовий ринок озброєнь та військової техніки залишається надзвичайно конкурентним і динамічним, та характеризується високими темпами зростання військових витрат. Водночас, різке зростання військових витрат на тлі геополітичних конфліктів та зростання інвестицій у військові технології сприяють позиціонуванню даної галузі економіки у міжнародному вимірі важливим фактором глобальної безпеки, стабільності та світової економіки. Світовий ринок озброєнь та військової техніки визначається складною взаємодією конкуренції і співпраці, де країни прагнуть як військової переваги, так і стратегічного партнерства для захисту своїх інтересів. Майбутнє глобальної торгівлі зброєю полягає в збалансуванні цих сил, використанні технологічних досягнень і сприянні дипломатичному співробітництву для досягнення спільних цілей безпеки у світі, що швидко змінюється. Зважаючи на сучасні умови геополітичної ситуації, економічні, технологічні та політичні зміни, ринок озброєнь і військової техніки сьогодні знаходиться на етапі значних трансформацій. Виходячи з розуміння історії розвитку суспільства, вважаємо, що визначальними факторами для подальшого розвитку цієї галузі залишатимуться здатність держав адаптувати свої стратегії національної безпеки до нових викликів та забезпечувати ефективну інтеграцію інноваційних технологій в оборонний сектор.

Ключові слова: *мілітаризація, військові витрати, міжнародна безпека, економічний розвиток, збройний конфлікт, війна, тероризм.*

Introduction. The changes in the global security environment that have emerged in the 21st century largely determine the relevance of studying the global arms and military equipment market. Indeed, at the current stage of world politics, the problem of ensuring the national security of individual states, regional stability, and maintaining the functioning of the established international security system as a whole is in the spotlight of the international community, given the growth of terrorist threats, the development of new forms of military conflicts, and the rapid development of innovations in the field of weapons and military equipment development. At the same time, a special place in the analysis of global security policy trends is occupied by the study of the structure and dynamics of the development of the global arms and military equipment market.

The modern world arms and military market can be called one of the most complex sectors of the world economy, the features of which differ significantly from others. In view of this, there are many interpretations of the definition of the “world arms and military equipment market”, which once again confirms its complexity.

Literature review. The concept of the “world arms and military equipment market” implies a set of commodity-money relations that arise because of the sale on foreign markets of weapons, ammunition, dual-purpose goods, military vehicles, spare parts and components for the above-mentioned groups of goods, as well as explosives and military technologies [6].

According to the definition of Stockholm International Peace Research Institute (www.sipri.org), the world arms and military equipment market can be characterized as a system of global trade relations covering the production, sale and supply of arms and military equipment between countries.

In contrast, there is another point of view when the global arms and military equipment market is believed to be "a complex system of international military-technical relations that allows the exporting country to profit from the sale of weapons and influence the military-political situation in different regions of the world; a manifestation of rivalry between states for profits and potential buyers, military-technical superiority and leadership in the global space" [2].

Based on such interpretations of the concept of "world arms and military equipment market", we can conclude that this sector of the world economy has significant differences from traditional international trade in civilian products and services, since its development trends are significantly

interconnected with numerous aspects of international relations and the domestic political situation of the world's states. At the same time, as follows from the above, the significance of the world arms and military equipment market is determined not only by the volume of exports of relevant goods and services and profit. Instead, the set of commodity-money relations arising from the sale of weapons on foreign markets is often used as a mechanism of influence in the field of international politics, which at the same time determines the political interests and courses of different countries of the world, depending on the positions they occupy in this system.

The concept that most accurately characterizes the full list of such goods and services is “military, dual-purpose and special-purpose products and services”. However, to designate this list in the scientific literature, such concepts as: “products and services of the defense-industrial complex”, “products and services of the military-industrial complex”, “defense products”, “military products and services” are also quite often used.

The main goal of this research is determining the essence and components of the arms and military equipment market, the subject structure of the main exporters and importers, the dynamics of its development over the last decade, as well as modern trends that have formed under the influence of the current geopolitical situation and current military conflicts in the world.

Main results. The development of the world market for arms and military equipment (WMAME) is significantly influenced by political and economic events of various nature taking place in the international arena. Among these events, armed conflicts occupy a special place, which, on the one hand, generate demand for such products from countries that are their direct participants and act as importers, and on the other hand, stimulate the production of weapons, ammunition, military equipment, etc. in the rest of the world, which in turn act as exporters. In addition, it is a well-known fact that the work of national defense-industrial complexes of countries around the world is mostly financed by the efforts of their governments, since the activities of the former, as a rule, are aimed at satisfying the interests of the latter. Accordingly, we have every reason to assert that the size of both national defense industries and the world market for arms and military equipment can be determined by assessing military budgets and world military spending. In fact, this approach is used to reflect the structure and dynamics of this market by such respectable specialized institutions as the Stockholm International Peace Research Institute (SIPRI) and the International Institute for Strategic Studies (IISS).

Thus, the course of 2023 was characterized by active phases of four major armed conflicts (i.e. conflicts that resulted in the deaths of 10,000 or more people), namely: the civil wars in Myanmar and Sudan, the armed conflict between Israel and Hamas, and the Russian-Ukrainian war. In addition to the above, there were at least 20 more armed conflicts that fell into the category of high-intensity conflicts (i.e. conflicts that resulted in the deaths of 1,000 to 9,999 people).

These and other events demonstrate the high tension of the global security situation and reflect significant economic confrontation both between individual warring countries and between entire military-political alliances, which further explains why many countries in the world today need to maintain significant military budgets and foresee significant expenditures aimed at meeting the needs of their troops. Details on the dynamics of the global military equipment market, determined because of the size of military expenditures of countries in different regions, are presented in the following diagram.

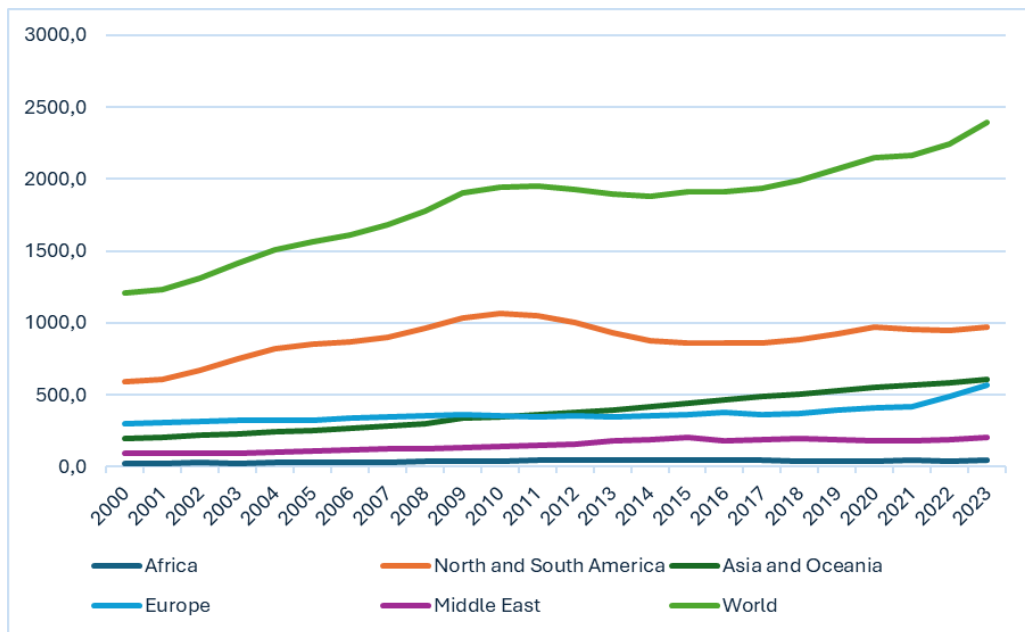


Figure 1. Dynamics of growth in military expenses in 2000-2023 by region, billion US dollars.

Source: compiled by the author based on <https://www.sipri.org/databases/milex>

Based on the SIPRI database and the prepared visualization of changes in military expenses in 2000-2023, we see that the estimated volume of world military expenses maintains a growing trend for the ninth consecutive year since 2015. At the same time, in 2023, the volume of such spending exceeded 2.4 trillion US dollars as a result of the impact of the Russian-Ukrainian war and the general geopolitical tension that exists in the international political arena. In dynamics, we observe that the increase in total military spending by 6.8% in 2023 compared to the previous year was the largest increase since 2009. As a result, the volume of total military spending in 2023 showed the highest level ever recorded by SIPRI. At the same time, the volume of world military spending as a share of world gross domestic product (GDP) increased to 2.3%.

Applying statistical observation methods, we note that this situation means that:

- governments of the world allocated an average of 6.9% of their state budgets for military needs;
- governments of the world allocated an average of 306 USD per capita for military needs;
- for the first time since 2009, the volume of military expenses increased simultaneously in all five regions of the world;
- in 2023, the largest increase in the volume of military expenses in relative terms compared to the previous year was recorded in African countries - by 22%, and the smallest - in the countries of North and South America - by 2.2%.

In addition to the generalized information on the volume of world military expenses, we consider it necessary to note the leading countries in terms of the volume of state defense budgets in monetary terms.

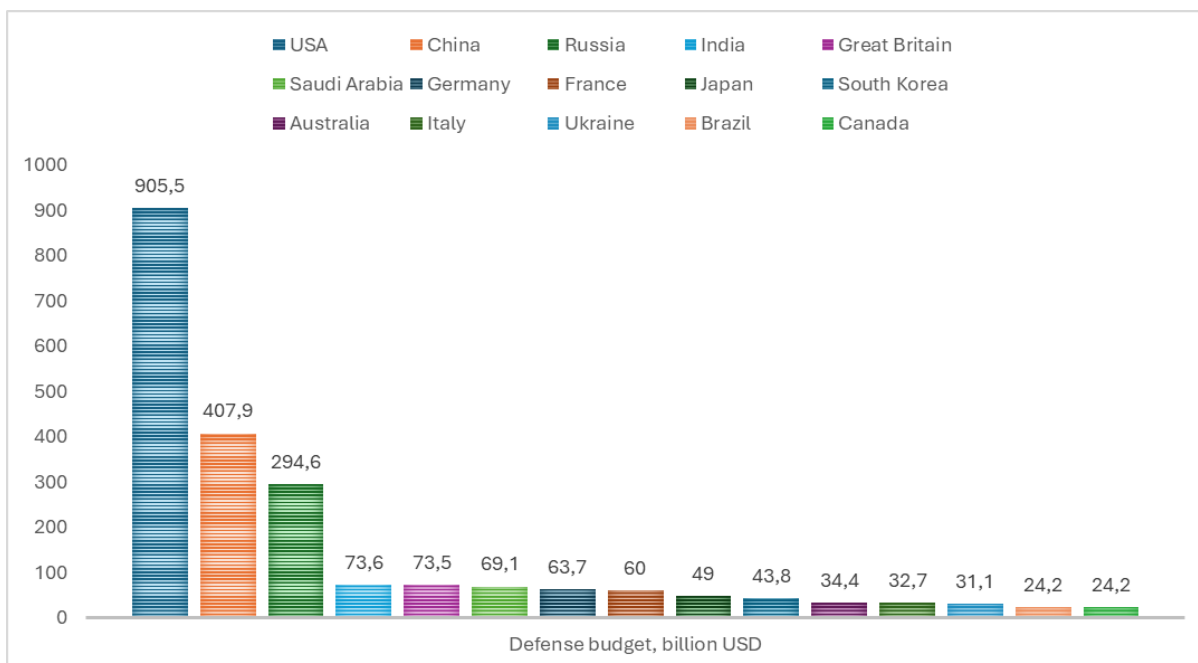


Figure 2. Leading countries by state defense budget in 2023, billion US dollar.

Source: compiled by the author based on <https://www.sipri.org/databases/milex>

The absolute leader is the United States of America with a defense budget of 905.5 billion US dollars, which is more than twice the defense budget of China. At the same time, the total defense budgets of the United States and China, which is 1,313.4 billion US dollars, exceed the total military spending of the remaining thirteen analyzed countries by 439.5 billion US dollars. At the same time, Ukraine is in 13th place in this comparison.

Even though global military expenses are one of the fundamental factors determining the volume of the global arms and military equipment market, information about it does not allow us to fully indicate the real volume of production, export and import of military products.

The database created by SIPRI is the most up-to-date and complete open source of information on the volume of global arms trade and the revenue of defense companies, which contains data from the annual financial reports of the largest companies on the market and publications of various publications, which are regularly updated. According to estimates by the Stockholm International Peace Research Institute, the total value of sales of military goods and services carried out with the participation of the hundred largest manufacturing companies on the market (SIPRI TOP-100) in 2022 amounted to at least 597 billion US dollars, which is 3.5% less than the same figure in 2021. For the purposes of studying the structure of the global arms and military equipment market in detail, we also consider it necessary to present a list of at least 30 of the largest manufacturers of products and services in this industry (excluding companies' resident in the Russia), indicating the level of their income generated based on the results of 2022.

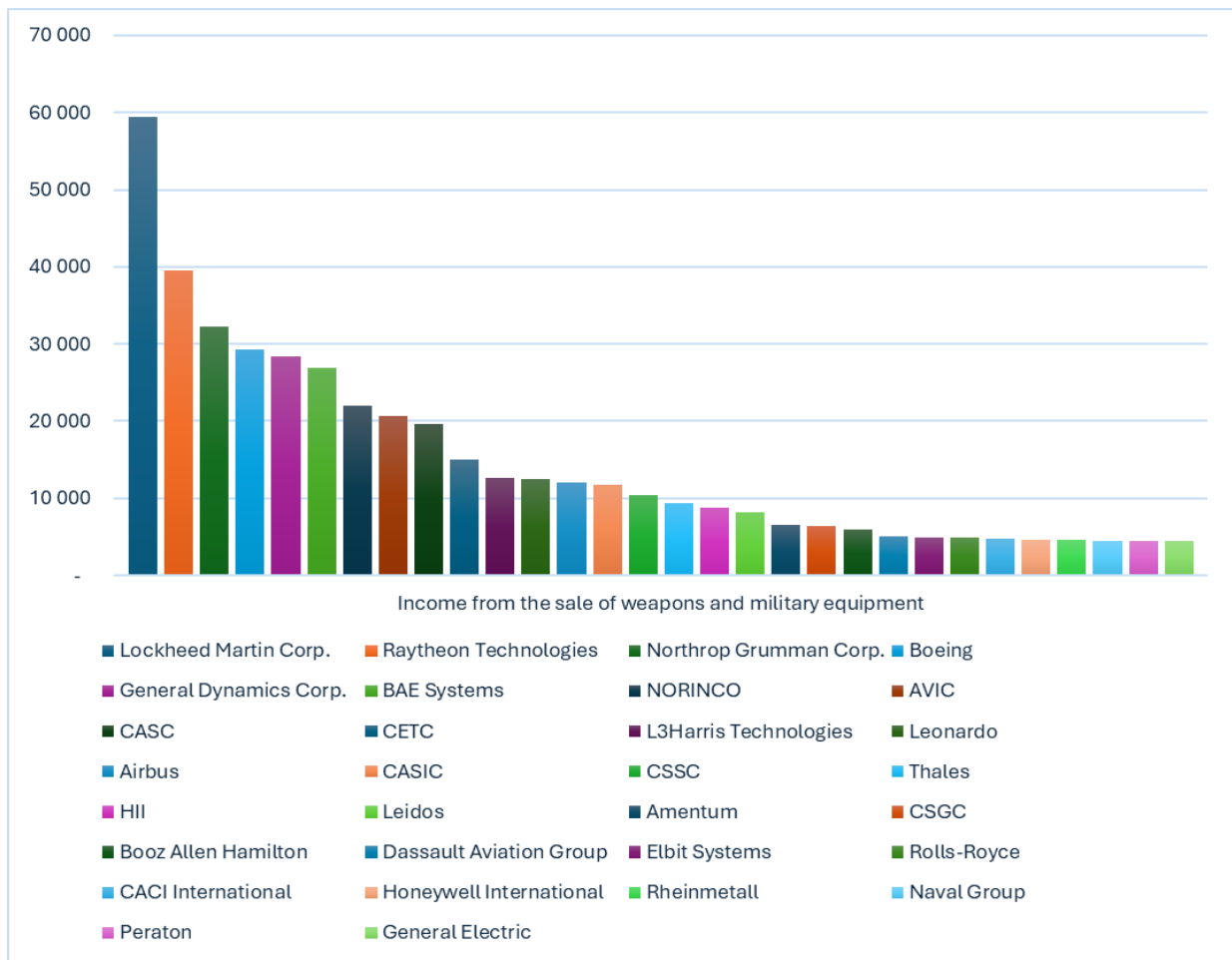


Figure 3. List and revenue level of the 30 largest military equipment manufacturers in the world for 2022, million US dollars

Source: compiled by the author based on <https://www.sipri.org/databases/milex>

In the above-mentioned rating, JSC "Ukrainian Defense Industry", which unites state-owned multi-profile enterprises of various directions of the defense industry of Ukraine and within which the production of weapons and military equipment of Ukrainian origin is concentrated, is in 81st place with a revenue of 1,260 million US dollars for 2022.

In general, the analysis of data showed that transactions for the sale of military goods and services carried out with the participation of the hundred largest manufacturing companies on the market (SIPRI TOP-100) were mostly implemented by companies resident in the USA (51% of the total value of the SIPRI TOP-100), China (18% of the total value of the SIPRI TOP-100), the United Kingdom of Great Britain and Northern Ireland (7% of the total value of the SIPRI TOP-100), France (4% of the total value of the SIPRI TOP-100), while the amount of income generated by companies resident in other countries of the world as a result of the sale of military goods and services is only 20% of the total. Another critically important stage in the study of the structure and dynamics of the global arms and military equipment market is the identification of the main exporting and importing countries of this type of goods and services. Such an analysis will not only identify the main trends in global trade in military equipment but will also contribute to a clear understanding of how geopolitical factors affect the development of this sector of the economy. In addition, studying the structure of foreign economic relations between countries in the field of defense cooperation in the form of the exchange of weapons and military equipment, as well as military services, will help determine possible scenarios for the further development of the defense industry of individual countries of the world, as well as the formation of a holistic understanding of global security and international politics. In general, SIPRI analysts note that only 66 countries in the world took an active part in concluding contracts for the export of this type of defense-industrial

complex products and services over the past five years, i.e. 2019-2023. At the same time, the main share of all export transactions, namely 56%, was carried out by manufacturing companies operating in countries such as the USA, France, China, China, Germany and Russia. Accordingly, the volume of exports of military products carried out by the rest of the world is relatively insignificant both individually and in general. Therefore, we can argue that the above five countries were the leaders in arms exports during the recent period. We hope that, thanks to sanctions and the efforts of the world community to limit the potential of the Russian defense industry, this country will not be included in the rating of the largest manufacturers-exporters of weapons and military equipment in the future. Currently, the structure of countries that are the largest exporters of these products and services looks as follows.

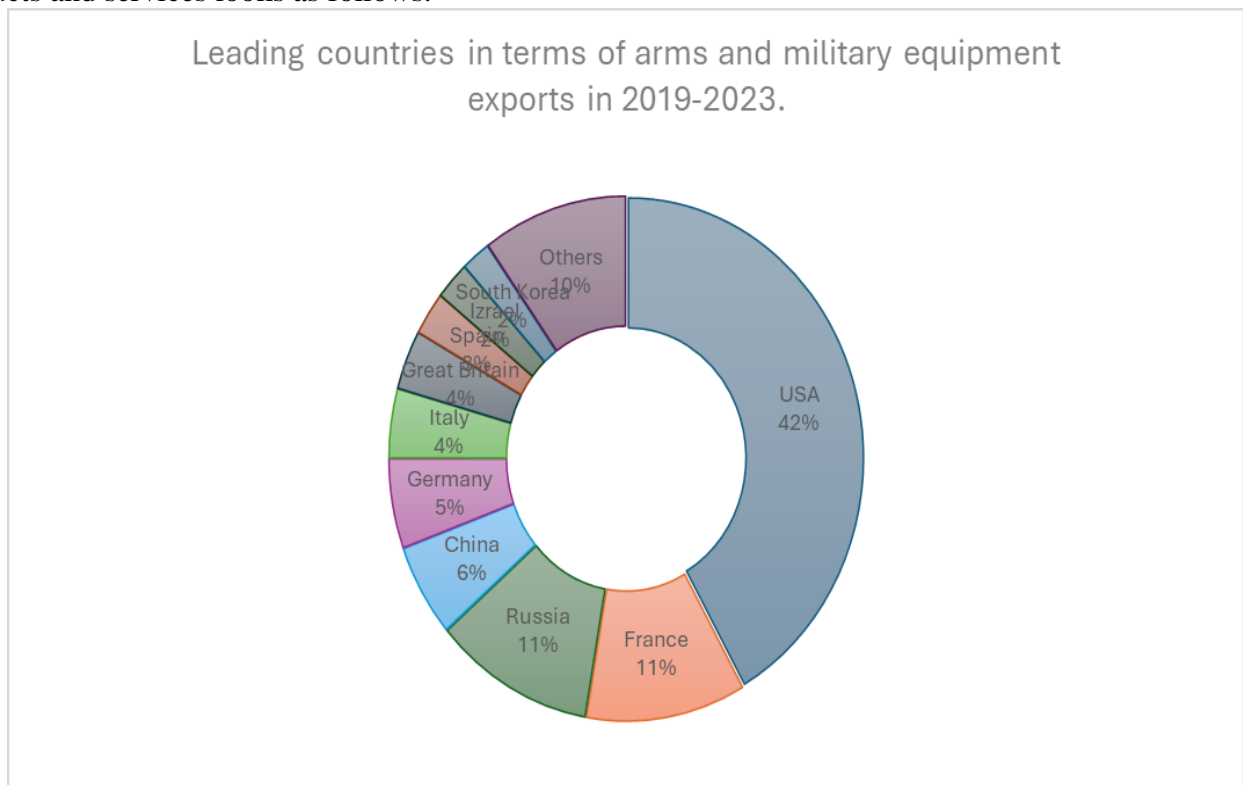


Figure 4. Leading countries in terms of arms and military equipment exports in 2019-2023, %
Source: compiled by the author based on <https://www.sipri.org/databases/milex>

At the same time, when considering the sales of weapons and military equipment in foreign markets by the largest exporting countries, the following trends are observed:

1) USA. The volume of US exports during the period 2019-2023 increased by 17% compared to the same period in 2014-2018, and their share in total global exports of military products increased from 34% to 42%. During 2019-2023, the USA supplied weapons and military equipment to 107 countries around the world. At the same time, about 38% fell to the countries of the Middle East (Saudi Arabia, Qatar, Kuwait, Israel), 31% - to the countries of Asia and Oceania (Japan, Australia, South Korea), 28% - to the countries of Europe, particularly Ukraine. A significant part of exports to the world market was made up of deliveries of aviation equipment, including F-15 fighters.

2) France. The volume of exports of France during the period 2019-2023 increased by 47% compared to the same period in 2014-2018, and its share in total world exports of military products is currently 11%. During 2019-2023, France supplied weapons and military equipment to 64 countries around the world. At the same time, about 29% fell to India, 42% to countries in Asia and Oceania, and 34% to countries in the Middle East.

3) Russia. The volume of exports of Russia during the period 2019-2023 decreased by 53% compared to the same period in 2014-2018, and its share in total world exports of military products is now 11%. The main indicator demonstrating the decrease in the export potential of this country is

the number of countries to which Russia sent samples of its own weapons: in 2019 it was 31 countries, and in 2023 – only 12. At the same time, about 34% of all Russian arms exports fell to India, 21% - to China and 7.5 – to Egypt.

4) China. The volume of China's exports during the period 2019-2023 decreased by 5.3% compared to the same period in 2014-2018, and its share in total world exports of military products is now 5.8%. China has supplied arms and military equipment to 40 countries around the world, mostly those in Asia and Oceania, accounting for about 85% of total exports. At the same time, almost 61% of China's total exports to the world market go to just one country - Pakistan.

5) Arms and military equipment exports to the rest of the world collectively account for a small share of the market (about 30%).

Similarly to the structure and dynamics of export operations in the global arms and military equipment market, it necessary to consider the situation that has developed in the context of import operations of defense-industrial complex products during the period 2019-2023. In general, analysts note that 170 countries of the world participated in the conclusion of foreign economic contracts for the import of products of this type over the past five years. At the same time, the main share of all import operations, namely 35%, fell on such countries as the Republic of India, Saudi Arabia, the State of Qatar, Ukraine and Pakistan. Accordingly, the volume of imports of military products and services carried out by the rest of the world is relatively insignificant individually. Therefore, the above-mentioned five countries were leaders in arms imports during the recent period.

In addition, an analysis of the structure of imports of weapons and military equipment for the period 2019-2023 by region of the world made it possible to draw the following conclusions: 37% of all imports of weapons and military equipment fall on the countries of Asia and Oceania; 30% - the countries of the Middle East; 21% - Europe; 5,7% - North America and South America; 4,4% - Africa.

The structure of countries that are the largest importers of this industry in the international dimension is presented in Fig. 5.

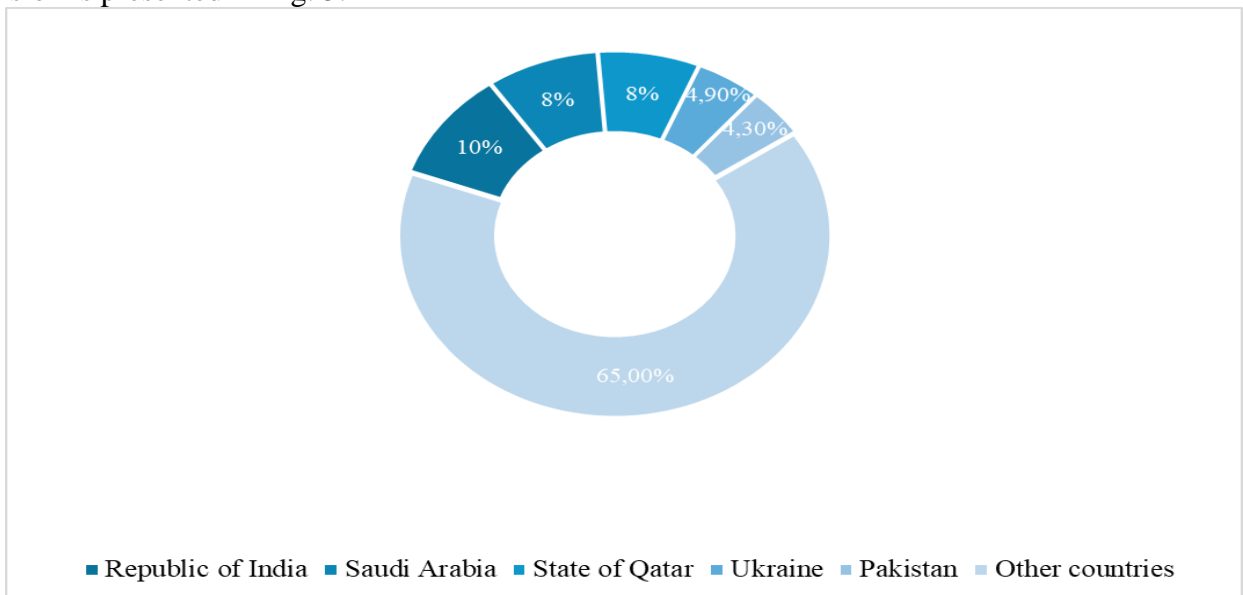


Figure 5. Leading countries in terms of imports of weapons and military equipment (2019-2023)

Source: compiled by the author based on <https://www.sipri.org/databases/milex>

At the same time, when considering the procurement operations of weapons and military equipment on foreign markets by the largest importing countries, the following trends are observed:

→ Tensions in the relations of the Republic of India with Pakistan and China significantly affect the volume of imports of weapons and military equipment carried out by this country. Imports of the specified products and services to the Republic of India during 2019-2023 increased by 4.7% compared to the same period in 2014-2018, and its share in total world imports of military

products is currently 9.8%. Russia remains India's main supplier, but its share in Indian arms imports decreased from 76% in 2009-2013 to 58% in 2014-2018, and then to 36% in 2019-2023. Instead, to meet its needs for military products and services, the Republic of India has turned to Western exporters, primarily France and the United States, and is also taking measures to intensively develop its own defense industry.

→ Saudi Arabia became the second largest importer of weapons in the world during the period 2019-2023, its share in total global imports of military products is currently 8.4%. The volume of imports by the specified state in the period 2019-2023 decreased by 28% compared to the period 2014-2018. The largest share of imports of military products and services belongs to the United States, which provided 75% of the total volume of supplies to Saudi Arabia.

→ The State of Qatar became the third largest importer of weapons in the world with a share of 7.6% in total global imports of military products. Imports of arms and military equipment during 2019-2023 increased by 396% compared to the same period in 2014-2018. At the same time, 45% of all import operations in the industry during the specified period were provided by the USA, 25% - by France and 15% - by Italy.

→ In the same period Ukraine accounted for 23% of imports of arms and military equipment in the European region and 4.9% of global imports. Accordingly, Ukraine is considered the largest importer of arms in Europe and the fourth largest in the world. After the full-scale Russian invasion in February 2022, at least 30 countries of the world began to actively provide Ukraine with the necessary weapons and military equipment, and already in 2023 Ukraine became the largest importer of arms in the world by a certain margin. During 2019-2023 39% of Ukrainian arms imports were provided by the USA, 14% by Germany and 13% by Poland.

→ Pakistan's imports of arms and military equipment increased by 43% in the period 2019-2023 compared to the same period in 2014-2018 and currently account for 4.3% of total global imports of military products. The above-mentioned situation creates the circumstances for considering Pakistan the fifth largest importer of arms and military equipment in terms of operations. In the current environment, Pakistan continues to strengthen its relations in the field of arms procurement with China, since 82% of the country's arms import operations during 2019-2023 were implemented precisely thanks to bilateral cooperation with China.

Conclusions. As a result of a detailed analysis of the structure and dynamics of the development of the global arms and military equipment market, its complexity and dynamism were established. The arms market is presented as a highly competitive and regulated area, where the leading countries of the world, in particular the USA, China, Great Britain, as well as European countries, compete for leadership in the production and supply of military products and services.

Over the past decades, the world economy has seen a constant increase in the amount of spending from state budgets of countries around the world on military needs and the development of new technologies, which mostly stimulates the development of the global arms and military equipment market.

The leading countries in terms of military spending and defense budgets — the United States, China, Russia, France, and the United Kingdom — are the entities that today determine the structure of the global arms market.

Analysis of the global arms market by revenue of the largest manufacturing companies in 2022, as well as by export volume of products and services of this type for the period 2019-2023 also confirms the dominance of the United States, China, and the United Kingdom. At the same time, among the main trends observed during export operations in the market under study is a significant increase in US supplies to the Middle East and Asia, as well as an active reduction in export operations involving the Russian Federation due to the impact of international sanctions that were introduced in response to unprovoked armed aggression and the latter's full-scale invasion of Ukraine.

At the same time, in the context of arms and military equipment import operations, the role of the Republic of India, Saudi Arabia, Qatar and Ukraine has been growing over the past five years. This indicates significant changes in global trade flows, which primarily involve an intensive

increase in defense procurement volumes in response to geopolitical threats by those countries that were not previously particularly distinguished by significant defense budgets and active participation in the world market. Therefore, in view of the above, we believe that in modern conditions the world market for arms and military equipment remains extremely competitive and dynamic and is characterized by high rates of growth in military spending. At the same time, the sharp increase in military spending against the backdrop of geopolitical conflicts and the growth of investments in military technologies contribute to the positioning of this sector of the economy in the international dimension as an important factor in global security, stability and the world economy.

Reference:

1. Andrew, T. (2023) Global arms trade Retrieved from: <https://researchers.mq.edu.au/en/publications/global-arms-trade>.
2. Botvinov, R. (2023) Suchasnyi stan svitovoi torhivli zbroieiu [The current state of the global arms trade] (in Ukrainian) Retrieved from: <https://economyandsociety.in.ua/index.php/journal/article/view/2392/2313>
3. Defence industry (2009) Comprehensive sectoral analysis of emerging competences and economic activities in the European Union Retrieved from: <https://ec.europa.eu/social/BlobServlet?docId=4138&langId=en>.
4. Hmyria V., Nikitchenko, V. (2020) Development of the defence industry of Ukraine to ensure national security Retrieved from: <https://fkd.net.ua/index.php/fkd/article/download/4366/4124/23454>.
5. Global Defence Industry: A Year of Strategic Shifts and Growth Retrieved from: <https://ddqinvest.com/global-defence-industry-a-year-of-strategic-shifts-and-growth/>.
6. Gonak, I. (2017) Doslidzhennia osoblyvostei ekonomichoho supernytstva na svitovykh rynkakh zbroi: svit i Ukraina [Research on the features of economic rivalry in global arms markets: the world and Ukraine] (in Ukrainian)
7. Korchynskyi, I. (2022) Research of the Main Methods for Assessing the Competitiveness of Enterprises / Social and Legal Studios. Retrieved from: https://sls-journal.com.ua/web/uploads/pdf/Social%20and%20Legal%20Studios_Vol.%205.%20No.%202_54-60.pdf.
8. Military expenditure as percentage of gross domestic product (GDP) in highest spending countries 2023 Retrieved from: <https://www.statista.com/statistics/266892/military-expenditure-as-percentage-of-gdp-in-highest-spending-countries/>.
9. Pavliuk, T. (2020) Analysis of competitiveness and competitive advantages in today's market conditions / Management and Entrepreneurship Trends of Development. Retrieved from: https://www.researchgate.net/publication/342948242_Analysis_of_competitiveness_and_competitive_advantages_in_today's_market_conditions.
10. Sammut-Bonnici, T. (2015) Benchmarking / Wiley Encyclopedia of Management. Retrieved from: https://www.researchgate.net/publication/272352934_Benchmarking.
11. The Military Balance 2024 / The International Institute for Strategic Studies. Retrieved from: <https://www.iiss.org/publications/the-military-balance/>.
12. The Top 5 Trends for Defence in 2024 Retrieved from: <https://www.defence-engage.com/knowledge/top-5-trends-defence-2024>.
13. Ukraine's Defense Industry Evolution: A Gateway for Innovative Cooperation? Retrieved from: <https://ukraineworld.org/en/articles/analysis/ukraines-defense-industry>.

УДК 338.439.02

THE ROLE OF STATE ECONOMIC POLICY IN THE IMPLEMENTATION OF NEW TECHNOLOGIES AND INNOVATIONS: THE CASE OF PUBLIC-PRIVATE PARTNERSHIPS IN EU COUNTRIES

РОЛЬ ДЕРЖАВНОЇ ЕКОНОМІЧНОЇ ПОЛІТИКИ У ВПРОВАДЖЕННІ НОВИХ ТЕХНОЛОГІЙ ТА ІННОВАЦІЙ: НА ПРИКЛАДІ ДЕРЖАВНО-ПРИВАТНОГО ПАРТНЕРСТВА В КРАЇНАХ ЄС

German Panikar

PhD in Economics, Associate Professor of the Department of International Business, Educational and Scientific Institute of International Relations, Taras Shevchenko National University of Kyiv,
e-mail: german.panikar@gmail.com,
ORCID ID: <https://orcid.org/0000-0002-3112-305X>

Volodymyr Morozov

PhD in Economics, Associate Professor, Postdoctoral Researcher of the Faculty of International Relations, National Aviation University, Kyiv,
e-mail: vm.mailservice@gmail.com
ORCID ID: <https://orcid.org/0009-0002-0722-3429>

Панікар Герман Юрійович

Кандидат економічних наук, доцент кафедри міжнародного бізнесу, Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка, м. Київ, Україна,
e-mail: german.panikar@gmail.com,
ORCID ID: <https://orcid.org/0000-0002-3112-305X>

Морозов Володимир Сергійович

Кандидат економічних наук, доцент, докторант факультету міжнародних відносин Національного Авіаційного Університету, м. Київ, Україна,
e-mail: vm.mailservice@gmail.com
ORCID ID: <https://orcid.org/0009-0002-0722-3429>

***Abstract.** This article examines the role of state economic policies in promoting new technologies and innovations, with a focus on public-private partnerships (PPPs) in several EU member states. It studies how collaboration between the public and private sectors influenced by state economic policies contributes to the development of new technology. Through a comprehensive analysis of multiple case studies and empirical data, this work assesses how these policies could promote innovation and technological advancement under PPP frameworks. It particularly examines how different state interventions - such as financial incentives, regulatory frameworks, and direct investments - interact with private sector capabilities to foster technological advancements. Additionally, it identifies best practices and potential areas for policy improvement to enhance the impact of PPPs on innovation.*

***Keywords:** state economic policy, new technologies, innovations, public-private partnerships, European Union, Germany, Sweden*

***Анотація.** У статті розглядається роль державної економічної політики у сприянні впровадженню нових технологій та інновацій, з особливим акцентом на державно-приватне партнерство (ДПП) у кількох країнах-членах ЄС. Досліджується, як співпраця між державним і приватним секторами, що перебуває під впливом державної економічної політики, сприяє розвитку нових технологій. Завдяки комплексному аналізу кількох кейсів і*

емпіричних даних, у роботі оцінюється, як ці політики можуть сприяти інноваціям і технологічному прогресу за рахунок дії механізму ДПП. Особлива увага приділяється тому, як різні державні втручання, такі як фінансові стимули, регуляторні рамки та прямі інвестиції, взаємодіють із можливостями приватного сектору для сприяння технологічному прогресу. Крім того, у статті визначаються найкращі практики та можливі напрями вдосконалення політик для підвищення впливу ДПП на інновації.

Ключові слова: державна економічна політика, нові технології, інновації, державно-приватне партнерство, Європейський Союз, Німеччина, Швеція.

Introduction. The rapid advancement of technology is fundamentally altering modern economies, driving productivity growth, and enhancing competitiveness. In this context, the significance of state economic policy in facilitating the adoption and integration of new technologies and innovations into society cannot be overstated. PPPs have emerged as a pivotal mechanism for governments to collaborate with private sector entities, aiming to promote technological development and innovation.

State economic policy encompasses a broad spectrum of interventions aimed at influencing economic activities within a country or region. These interventions include fiscal measures, monetary policies, regulatory frameworks, and investment incentives. In the context of technological innovation, state economic policy plays a critical role in creating an environment conducive to innovation, investment, and collaboration between public and private sectors.

This article critically examines the role of state economic policy in leveraging PPPs to facilitate the implementation of new technologies and innovations in EU countries.

The purpose of this article. Despite the potential benefits of PPPs in promoting the adoption and diffusion of new technologies, the actual impact of state economic policies in facilitating these partnerships within the EU remains underexamined. The variability in policy effectiveness across different member states and sectors presents a complex landscape. This raises questions about the optimal strategies for policy formulation and implementation that truly enhance innovation through PPPs.

The purpose of this article is to critically analyse how state economic policies influence the success of PPPs in driving technological innovation within the EU. It seeks to identify key policy elements that are most effective in enhancing the adoption and scaling of new technologies through these partnerships.

The following research questions are addressed in the study.

How do state economic policies in EU countries facilitate the adoption of new technologies through Public-Private Partnerships?

What are the key factors that influence the effectiveness of these policies in different EU member states?

How do regulatory frameworks impact the operational success of PPPs in the technology sector across the EU?

What role do fiscal incentives and investments play in enhancing the capability of private sector partners within PPPs?

How can EU member states optimize their economic policies to maximize the benefits of PPPs in fostering innovation?

These elements frame the study in a way that allows for an in-depth examination of state policies, offering insights into the dynamics of public and private sector collaboration in the technological field within the EU.

Literature Review.

Government Intervention as a Catalyst for Innovation. Governments play a pivotal role in addressing market failures and fostering innovation, particularly in sectors that the private sector may neglect due to the high risks associated with long-term investments. Recent studies underscore

the necessity of public involvement in foundational research and development (R&D), arguing that without such intervention, essential but unprofitable research initiatives would be overlooked (Freeman, 1987; Acs et al., 2016).

State Support for R&D and Innovation Systems. Recent analyses reveal that government support through funding and tax incentives can stimulate private sector innovation, thereby enhancing economic growth. Public funding for basic and applied research forms the cornerstone for technological advancements by supporting scientific discoveries and breakthroughs. Lundvall's concept of national innovation systems illustrates how government policies can facilitate effective collaboration between various actors in the innovation process, significantly impacting the innovation ecosystem (Lundvall, 1992). For example, recent work by Zhang et al. (2022) examines the role of government incentives in promoting technological innovations within national innovation systems.

Recent Perspectives on State Economic Policy in Innovation. Recent studies highlight the dynamic role of state economic policies in encouraging firms to innovate by mitigating risks associated with market volatility. Aghion et al. (2019) explore how state-driven uncertainties can spur innovation by mitigating risks associated with market volatility. Howell (2017) provides empirical evidence on the effectiveness of R&D grants in boosting firm-level innovation, showcasing the benefits of targeted government support. Additionally, Li and Feng (2021) analyze the impact of fiscal policies on innovation outputs, finding a significant positive correlation between government subsidies and technological advancements.

Modern Insights and Practical Outcomes. Combining historical insights with recent empirical evidence underlines the continued importance of strategic public intervention in fostering an integrated innovation ecosystem, particularly through PPPs in the EU. Acs et al. (2016) advocate for balanced policies that stimulate both the creation and commercialization of innovations, ensuring that innovations not only emerge but also effectively reach the market and society at large. Recent studies by Zhou and Wu (2022) emphasize the importance of government-led innovation policies in fostering sustainable technological advancements.

General Trends and International Perspectives. State economic policies in the EU emphasize the development of digital infrastructure, renewable energy, and healthcare through PPPs. Financial incentives, regulatory adjustments, and direct government funding are common trends. Countries such as Germany and Sweden have significantly increased their allocations to PPPs, focusing on high-tech and sustainable projects. This trend reflects a strategic alignment between state policies and the sectors identified as priority areas for the EU.

Conflicts and Challenges in Policy Implementation. Despite the benefits, regulatory barriers often hinder the effectiveness of PPPs. Complex procurement processes, legal constraints, and differing regulatory frameworks across EU member states are significant challenges. Smith and Jones (2020) discuss the complexities of public procurement processes, highlighting the delays and administrative burdens these can impose on PPP projects. Johnson et al. (2019) emphasize the legal constraints and varying regulatory frameworks that create barriers to cross-border collaboration in PPPs. More recently, Evans and Clark (2021) highlight the regulatory challenges faced by PPPs in the technology sector, suggesting the need for harmonized policies across the EU to streamline operations.

Funding and Investment Challenges. Funding limitations, especially for SMEs and startups, present a significant challenge. Garcia et al. (2018) highlight the difficulties SMEs face in accessing bank financing for innovation projects due to stringent collateral requirements. Brown and Smith (2020) illustrate geographical disparities in venture capital investment in the EU, demonstrating how most funds flow to established innovation hubs, leaving startups outside these areas with limited access to VC funding. Public funding initiatives, including grants, subsidies, and tax incentives, can help bridge the funding gap for innovative SMEs and startups. Simplifying application procedures and providing targeted support are essential steps in ensuring equitable access to funding and investment for innovation projects. Recent analysis by Liu et al. (2023)

underscores the importance of flexible financing mechanisms in supporting the growth of innovation-driven enterprises.

Scientific Gaps and Strengths in Research. There are significant gaps in the current research, particularly in understanding the long-term impacts of state economic policies on innovation through PPPs. Future research could focus on comparative studies across different sectors, track long-term impacts, and make global comparisons to see what works best for fostering innovation.

Research Methodology.

The study on the role of state economic policy in encouraging innovation through PPPs in the EU used the combination of qualitative and quantitative methods. This comprehensive approach aimed to address the research questions and achieve the stated objective. Below is a detailed description of the research methodology:

1. A Dual Approach

The study employed a mixed-methods approach, incorporating qualitative case studies and quantitative data analysis. This combination allowed us to deeply analyze state policies and their impact on PPPs across various technology areas in EU member states.

2. Data Collection

Qualitative Data:

- **Case Studies:** We conducted in-depth examinations of specific PPP projects in the EU, such as the Horizon 2020 program and the European Battery Alliance. Information was sourced from official EU reports, project documents, and policy briefs..

- We interviewed key players involved in PPPs, like policymakers, industry professionals, and academic researchers. These interviews provided insights into the successes and challenges of implementing policies in different settings.

Quantitative Data:

- A structured survey was conducted among a representative sample of firms engaged in PPPs within the EU to measure the influence of different state economic policies on the implementation of innovative technologies.

- **Secondary Data Analysis:** Statistical data on the performance of PPP projects, funding amounts, and innovation outcomes were collected from available EU databases and national statistics offices.

3. Sampling Strategy

The research ensured diversity by selecting case studies from sectors like renewable energy, healthcare, and digital infrastructure. We used purposive sampling to choose participants, ensuring a variety of viewpoints from different EU countries and industries.

4. Data Analysis

- **Qualitative Analysis:** Thematic analysis was applied to interview transcripts and case study documents to identify common themes and patterns related to the effectiveness of state economic policies in PPPs.

- **Quantitative Analysis:** Descriptive statistics and inferential analysis were conducted on survey data to measure the correlation between specific state policies and the successful implementation of technological innovations in PPPs. Regression analysis was used to determine the predictive power of certain policy types on innovation outcomes within PPPs.

5. Research Limitations

The research acknowledged potential limitations such as the availability of comprehensive data across all EU member states and the variability in how different sectors respond to state economic policies.

6. Ethical Considerations

The research complies with ethical norms regarding the confidentiality and consent of all participants engaged in interviews and surveys. All data were anonymized and used solely for academic purposes.

7. Validation

Triangulation was employed to strengthen the findings. Data from documents, interviews, and surveys were cross-verified. The research will adhere to ethical standards concerning confidentiality and consent of all participants involved in interviews and surveys.

Main results of the research. PPPs have become a significant model for cooperative endeavors in technological and innovative fields. According to Yescombe (2007, p. 137), PPPs are formalized contractual engagements that combine resources from public and private entities for the purpose of initiating projects or delivering services, thereby harnessing each sector's strengths. Within the sphere of innovation, such partnerships are instrumental for governments in distributing both risks and resources with private companies, which in turn promotes the creation and application of new technologies.

A notable example of PPPs in innovation is the European Union's Horizon 2020 program. Horizon 2020, the EU's largest research and innovation funding program, encourages collaboration between public and private sector organizations to address societal challenges and drive economic growth (European Commission, 2013). Through funding schemes such as public-private partnerships and innovation clusters, Horizon 2020 aims to accelerate the development and uptake of new technologies across Europe.

State Economic Policy and PPPs in the EU. In the European Union, state economic policies play a crucial role in supporting PPPs and fostering innovation. The European Commission's Innovation Union initiative, launched in 2010, emphasizes the importance of state-led initiatives in promoting innovation and technological development (European Commission, 2010). Through funding programs, policy initiatives, and regulatory frameworks, the EU supports PPPs in key sectors such as renewable energy, healthcare, and digital infrastructure.

Table 1. National Strategies for Supporting PPPs

Country	Strategy Name	Policy Objectives	Funding Mechanisms	Key Sectors Targeted	Expected Outcomes
Germany	High-Tech Strategy 2025	To secure Germany's position as a leader in technological innovations	Direct investment, tax incentives	Information technology, Renewable energy	Boost to technological R&D and industrial growth
United Kingdom	UK's Industrial Strategy	To improve economic productivity through technological innovation	Partnerships, government grants	Healthcare, Digital infrastructure	Enhanced productivity and economic growth

Source: Authors' research.

Moreover, EU member states have implemented various national strategies and policies to support PPPs and innovation. For example, Germany's High-Tech Strategy 2025 aims to strengthen collaboration between industry, academia, and government to drive innovation and technological progress (Federal Ministry of Education and Research, 2014). Similarly, the UK's Industrial Strategy focuses on fostering partnerships between the public and private sectors to address societal challenges and enhance productivity (HM Government, 2017).

Case Studies: The European Battery Alliance: The European Battery Alliance (EBA) is an initiative aimed at developing a sustainable battery value chain in Europe. Through public-private partnerships, the EBA aims to build a competitive battery industry that meets the growing demand for electric vehicles and energy storage solutions (European Commission, 2017).

The strategies like Germany's High-Tech Strategy 2025 and the UK's Industrial Strategy reflect the pivotal role of national policies in shaping innovation landscapes. These strategies prioritize investment in R&D and forge strong alliances between academia, industry, and government, essential for fostering an ecosystem conducive to innovation. Germany's approach to bolstering industry-academia collaboration is particularly noteworthy for its emphasis on cutting-edge technology, while the UK strategy focuses on enhancing productivity through partnerships, addressing broader societal challenges which in turn stimulate economic growth.

The Digital Innovation Hubs Network. The Digital Innovation Hubs (DIHs) Network supports small and medium-sized enterprises (SMEs) in adopting digital technologies across the EU. DIHs facilitate collaboration between businesses, research institutions, and technology providers by providing access to expertise, funding, and test facilities (European Commission, 2018).

State economic policy is pivotal in promoting the implementation of new technologies and innovations through public-private partnerships in EU countries. By providing funding, regulatory support, and incentives, governments can create an enabling environment for collaboration between public and private sectors. Initiatives like Horizon 2020 demonstrate the EU's commitment to fostering innovation and driving economic growth through PPPs. However, challenges persist, including the need for greater coordination among EU member states and the private sector. Addressing these challenges requires continued investment, policy alignment, and collaboration to ensure the successful implementation of new technologies and innovations across Europe.

Table 2. Overview of PPP Innovation Programs

Program Name	Program Scope	Total Funding (€)	Duration	Key Participants	Key Technologies Focused
Horizon 2020	EU's largest research and innovation program aimed at societal challenges and economic growth.	80 billion	2014-2020	EU institutions, multinational corporations, universities	Biotech, Digital Technologies, Clean Energy
European Battery Alliance	Initiative to establish a leading battery industry in Europe to support electric vehicle production.	Not specified	2017-present	Automotive industry leaders, energy companies, EU bodies	Battery technologies, Recycling
Digital Innovation Hubs	Supports SMEs in digital transformation across the EU by providing expertise and technology access.	Not specified	Ongoing	SMEs, tech providers, research institutions	IoT, AI, Robotics

Source: Authors' research

The PPP programs such as Horizon 2020 and the European Battery Alliance demonstrate the significant impact of structured collaboration between public and private sectors on innovation and technology development. These programs not only foster technological advancements but also drive economic growth through strategic funding and partnerships. Horizon 2020, by integrating a wide range of sectors and stakeholders, promotes a comprehensive approach to innovation, highlighting the EU's commitment to addressing societal challenges. The European Battery Alliance shows a targeted approach, focusing on a critical industry with wide-reaching implications for the automotive and energy sectors, emphasizing sustainability and competitiveness.

The case studies, including the European Battery Alliance and Digital Innovation Hubs, provide concrete examples of how PPPs can lead to successful innovation outcomes. These initiatives not only advance technological developments but also facilitate the integration of these technologies into society. The European Battery Alliance's focus on sustainable battery technology is crucial for the EU's energy transition goals, while Digital Innovation Hubs illustrate the importance of digital transformation support for SMEs, showing how tailored assistance can significantly impact small and medium enterprises.

Table 3. In-Depth Case Studies of PPPs in EU

Initiative	Area of Focus	Goals and Objectives	Major Achievements	Key Partners	Insights Gained
European Battery Alliance	Sustainable battery production for EVs	To reduce dependency on imported batteries, promote sustainability in transport	Established pilot production plants, innovative recycling techniques	Major EU automakers, battery manufacturers	Importance of strategic alliances, need for technical innovation
Digital Innovation Hubs	Digital transformation support for SMEs	To accelerate the digitalization of European SMEs through accessible technologies	Increased SME productivity, wider adoption of digital tools	Tech companies, educational institutions	Showcased the benefits of regional support networks

Source: Authors' research

State Economic Policy and Innovation. State economic policy encompasses a comprehensive array of measures aimed at fostering an environment conducive to innovation and technological progress. These policies often include investment in research and development (R&D), tax incentives for innovation-driven activities, regulatory frameworks to safeguard intellectual property rights, and support for entrepreneurship and start-ups. By providing the necessary infrastructure and incentives, governments can effectively stimulate innovation across various sectors of the economy.

State investment in R&D stands as a pivotal component of economic policy aimed at fostering innovation. According to Mowery and Rosenberg (1998, p. 27), government funding for basic and applied research forms the cornerstone for technological advancements by supporting scientific discoveries and breakthroughs. Furthermore, public investment in R&D often leads to spillover effects, where the knowledge generated benefits society as a whole. A notable example is Sweden's Vinnova, the national innovation agency, which funds a wide array of research projects aimed at fostering innovation across various sectors. Vinnova has significantly contributed to advancements in healthcare, green technologies, and digital innovation. For instance, its support for smart mobility projects has positioned Sweden as a leader in sustainable transport solutions, benefiting both the economy and the environment across Europe (Vinnova, 2022).

Tax incentives serve as another vital tool employed by governments to promote innovation and stimulate investment in R&D. Countries like Singapore and Ireland offer generous tax credits and deductions for companies engaged in research and development activities. These incentives reduce the cost of innovation for businesses, thus encouraging them to invest in new technologies and product development. Moreover, targeted tax breaks for specific industries or technologies, such as renewable energy or green technologies can further incentivize innovation in priority areas.

Regulatory frameworks play a crucial role in protecting intellectual property rights and fostering innovation. Strong intellectual property laws ensure that innovators are duly rewarded for

their efforts and have the incentive to invest in R&D. For example, patents grant inventors exclusive rights to their inventions, enabling them to profit from their innovations and recoup their investment. Similarly, copyright laws safeguard creative works, such as software code and artistic creations, from unauthorized use or reproduction. By providing legal protection for intellectual property, governments foster an environment conducive to innovation and entrepreneurship.

Support for entrepreneurship and start-ups is essential for nurturing a culture of innovation within an economy. Government initiatives such as business incubators, accelerators, and venture capital funds offer critical support to early-stage companies and entrepreneurs. These programs provide mentorship, networking opportunities, and access to funding, enabling start-ups to develop and commercialize innovative products and services. For instance, Germany's Central Innovation Program for SMEs (ZIM) provides funding to small businesses for R&D projects with the potential for commercialization. ZIM supports small and medium-sized enterprises by funding innovative R&D projects that foster technological advancements and commercialization. For instance, German biotech firms have successfully leveraged ZIM funding to develop advanced medical diagnostics, which have not only enhanced healthcare outcomes domestically but also found markets across the EU. This strategic approach bridges the gap between innovative research and market-ready solutions.

State economic policy plays a crucial role in fostering innovation and technological progress by providing the necessary infrastructure, incentives, and support mechanisms. Through investment in R&D, tax incentives, regulatory frameworks, and support for entrepreneurship, governments can create an environment where innovation thrives. However, effective policy implementation requires coordination between government agencies, private sector stakeholders, and research institutions to ensure that resources are allocated efficiently and that innovation benefits society as a whole.

The role of state economic policy in the implementation of new technologies and innovations through PPPs in EU countries is crucial for driving productivity growth and enhancing competitiveness. Governments leverage PPPs to collaborate with private sector entities, promoting technological development and innovation. PPPs have significantly contributed to the economic integration of Germany with the European Union by promoting innovation, improving infrastructure, and facilitating cross-border economic activities, thereby strengthening regional cohesion and competitiveness (Morozov et al., 2024). Moreover, these partnerships address market failures and stimulate private sector innovation, ensuring that essential but unprofitable research initiatives are supported by public involvement.

Case Studies: Public-Private Partnerships in EU Countries.

Germany: Fraunhofer-Gesellschaft. Germany's Fraunhofer-Gesellschaft is a renowned network of institutes dedicated to applied research and development. It operates through partnerships between government, industry, and academia, focusing on technological innovation and industrial competitiveness.

Fraunhofer institutes collaborate with companies to develop innovative technologies and solutions tailored to industry needs. For example, the Fraunhofer Institute for Solar Energy Systems (ISE) conducts research on renewable energy technologies, including solar photovoltaics and solar thermal systems. Through partnerships with companies such as Bosch and Siemens, Fraunhofer ISE has contributed to the development of high-efficiency solar cells and innovative solar energy storage solutions (Fraunhofer Institute for Solar Energy Systems, 2022).

Another successful example is the Fraunhofer Institute for Integrated Circuits (IIS), which specializes in the development of microelectronic and information technology systems. Working with companies like Audi and BMW, Fraunhofer IIS has pioneered advancements in automotive electronics, wireless communication technologies, and digital signal processing. These collaborations have led to innovations such as driver assistance systems, digital radio broadcasting (DAB), and wireless sensor networks for industrial applications (Fraunhofer Institute for Integrated Circuits, 2022).

The Fraunhofer-Gesellschaft also plays a key role in promoting technology transfer and commercialization. Through its network of institutes and partnerships, Fraunhofer facilitates the transition of research results into marketable products and services. For instance, the Fraunhofer Institute for Industrial Engineering (IAO) provides consulting services to companies on innovation management, product development, and market entry strategies. By leveraging its expertise and industry connections, Fraunhofer IAO helps businesses transform innovative ideas into successful commercial ventures (Fraunhofer Institute for Industrial Engineering, 2022).

Overall, Fraunhofer-Gesellschaft serves as a model for effective public-private partnerships in fostering technological innovation and economic growth. By bringing together government, industry, and academia, Fraunhofer institutes drive collaborative research and development efforts that lead to tangible benefits for society.

Sweden: Vinnova. Vinnova is Sweden's innovation agency, responsible for funding and supporting research and innovation projects. It promotes collaboration between businesses, academia, and public sector organizations to drive innovation-led growth.

Vinnova provides financial support and resources to projects that demonstrate high potential for innovation and societal impact (Vinnova, 2022). For example, it offers grants to startups and small businesses to develop innovative products and services. Additionally, Vinnova funds research projects conducted in collaboration with universities and research institutes, focusing on areas such as sustainable development, digitalization, and healthcare innovation.

One of Vinnova's flagship programs is the Strategic Innovation Programs (SIPs), which address key societal challenges through innovation. These programs bring together stakeholders from various sectors to tackle complex issues and develop innovative solutions. For instance, the SIP Smart Built Environment aims to promote sustainable urban development by leveraging digital technologies and innovative construction methods. Through this program, Vinnova supports research projects focused on energy-efficient buildings, smart infrastructure, and circular economy principles (Strategic Innovation Programs, 2022).

Moreover, Vinnova actively promotes international collaboration and knowledge exchange to enhance Sweden's innovation ecosystem. It participates in European research and innovation initiatives and collaborates with organizations such as the European Commission and the European Investment Bank. By engaging in international networks and partnerships, Vinnova facilitates the exchange of best practices and fosters innovation on a global scale.

Vinnova plays a vital role in Sweden's innovation landscape by fostering collaboration, providing funding, and driving strategic initiatives to address societal challenges through innovation.

Case Study: Smart Industry Sweden. Smart Industry Sweden is a collaborative initiative involving Vinnova, industry associations, and regional actors. It aims to accelerate the digital transformation of Swedish manufacturing industries through innovation and technology adoption.

Smart Industry Sweden provides support and resources to manufacturing companies to enhance their competitiveness and sustainability in the global market (Smart Industry Sweden, 2022). By leveraging digital technologies such as artificial intelligence, Internet of Things (IoT), and advanced robotics, the initiative helps companies streamline their production processes, improve product quality, and reduce costs.

One of the key objectives of Smart Industry Sweden is to facilitate knowledge transfer and collaboration between industry players, research institutions, and government agencies. Through various programs and initiatives, it fosters partnerships to develop and implement innovative solutions for the manufacturing sector. For example, the initiative organizes workshops, seminars, and networking events where companies can exchange ideas, share best practices, and learn about the latest technological advancements.

Smart Industry Sweden also supports research and development projects focused on addressing industry-specific challenges and opportunities. It provides funding for projects that

demonstrate potential for innovation and scalability, with a particular emphasis on areas such as smart production, digitalization of supply chains, and sustainability.

Moreover, Smart Industry Sweden plays a crucial role in advocating for supportive policies and regulations that facilitate the adoption of new technologies in the manufacturing sector. By engaging with policymakers and industry stakeholders, the initiative advocates for measures to promote innovation, enhance digital skills training, and create a favorable business environment for technology-driven growth.

Smart Industry Sweden serves as a catalyst for innovation and digitalization in the Swedish manufacturing industry, driving collaboration, knowledge sharing, and technology adoption to enhance competitiveness and sustainability.

Challenges and Opportunities.

Regulatory Barriers. Despite the benefits of PPPs, regulatory barriers often hinder their effectiveness. These barriers include complex procurement processes, legal constraints, and differing regulatory frameworks across EU member states.

The complex procurement processes can significantly delay the implementation of PPP projects (Smith & Jones, 2020, pp. 145–162). Public procurement rules in the EU aim to ensure fair competition and transparency, but they can also lead to lengthy procedures, bureaucracy, and administrative burdens. For instance, the requirement for open tenders and competitive bidding processes may prolong the project initiation phase, resulting in delays in the delivery of innovative solutions. According to a study by Smith and Jones, lengthy procurement procedures accounted for an average delay of 12 months in PPP projects in the transportation sector.

Legal constraints also pose challenges to PPP implementation. Legal frameworks governing PPPs vary among EU countries, leading to inconsistencies and uncertainties for project stakeholders (Johnson et al., 2019, pp. 211–230). For example, differences in contract laws and public-private partnership regulations across member states can create barriers to cross-border collaboration. Moreover, the interpretation and enforcement of contractual clauses may differ, leading to disputes and legal challenges. A study by Johnson et al. found that legal disputes were the primary cause of project delays in PPPs in the energy sector, resulting in additional costs and reputational risks for project sponsors.

Furthermore, the lack of harmonization in regulatory frameworks across EU member states complicates PPP initiatives (European Commission, 2021, pp. 45–58). Each country has its own set of rules and regulations governing public-private partnerships, making it challenging to navigate the regulatory landscape for multinational projects. For instance, tax regulations, environmental standards, and labor laws may vary significantly from one country to another, requiring extensive legal and regulatory compliance efforts. According to a report by the European Commission, regulatory heterogeneity accounted for 30% of the total project costs in cross-border PPPs in the infrastructure sector.

Addressing these regulatory barriers requires coordinated efforts at both national and EU levels. Harmonizing procurement rules, standardizing contractual frameworks, and promoting legal certainty are essential steps to enhance the effectiveness of PPPs in fostering innovation and technology adoption across the EU.

Table 4. PPP Implementation Challenges and Solutions

Challenge Category	Specific Issue	Examples	Impact on Projects	Proposed Solutions
Regulatory Barriers	Complex legal and procurement frameworks	Varying contract laws across EU states	Delays and higher project costs	EU-wide standardized laws and faster procurement processes
Funding Limitations	Limited access to capital for high-risk projects	Difficulty in securing venture capital	Hindered innovation in critical sectors	Enhanced EU funding, targeted investment funds

Source: Authors' research

Barriers such as regulatory hurdles and funding difficulties highlight the complex environment in which PPPs operate. The diversity of regulatory frameworks across the EU complicates the execution of PPP projects, necessitating streamlined processes and harmonization at a European level. Funding challenges, particularly for small and medium-sized enterprises (SMEs), underscore the need for more accessible financial mechanisms that do not solely rely on traditional criteria like credit history or collateral but also consider the innovative potential of the projects.

Funding and Investment. Access to funding and investment presents another significant challenge, particularly for SMEs and start-ups. Ensuring adequate financial support for innovation projects is essential for their success.

One of the primary obstacles to funding for SMEs and start-ups is the lack of collateral and credit history, making it difficult for them to secure loans from traditional financial institutions (Garcia et al., 2018, pp. 301–318). Garcia and colleagues, in their study published in the *European Economic Review*, delve into the challenges SMEs face in accessing bank financing for innovation projects due to stringent collateral requirements. Their findings reveal that 60% of SMEs in the EU encounter difficulties in obtaining bank financing.

Furthermore, venture capital (VC) investment, crucial for financing high-risk innovation ventures, tends to be concentrated in a few key regions and sectors (Brown & Smith, 2020, pp. 105–120). Brown and Smith, in their research published in the *Journal of Innovation and Entrepreneurship*, highlight geographical disparities in VC investment in the EU. They demonstrate how most funds flow to established innovation hubs such as London, Berlin, and Stockholm, leaving start-ups outside these areas with limited access to VC funding.

Public funding initiatives, including grants, subsidies, and tax incentives, can help bridge the funding gap for innovative SMEs and startups. For instance, the European Commission's Horizon 2020 program provides substantial financial support for research and innovation projects across various sectors. However, bureaucratic procedures and complex application processes often deter SMEs from accessing these funds (European Investment Bank, 2021, pp. 215–230). The European Investment Bank's working paper highlights how lengthy administrative procedures consume significant time and resources for SMEs during grant applications.

To address these challenges, policymakers must streamline funding mechanisms and make them more accessible to innovative enterprises. Simplifying application procedures, reducing administrative burdens, and providing targeted support to SMEs and startups in less developed regions are crucial steps in ensuring equitable access to funding and investment for innovation projects across the EU.

Table 5. Expanded Analysis of Funding and Investment Challenges

Funding Challenge	Description	Impact on Innovation	Examples of Affected Projects	Recommended Policy Actions
Venture Capital Shortage	Insufficient VC funds in less economically developed regions	Reduced innovation in peripheral regions	Innovative startups outside major urban areas	Creation of regional funds, incentives for VC investments
Collateral Requirements	High collateral demands hinder SMEs from accessing traditional loans	Limits growth potential of innovative SMEs	Small tech startups needing R&D funding	Government-backed loan guarantees, lower collateral options

Source: Authors' research

To enhance the effectiveness of PPPs, policy recommendations such as regulatory streamlining and expanded financial support are crucial. Simplifying procurement processes can make PPP projects more appealing to private investors and reduce time-to-market for innovations. Expanding financial support, particularly through mechanisms like venture capital, grants, and innovative funding models, is vital for enabling a broader range of participants, including startups and SMEs, to contribute to and benefit from innovative projects. These changes could lead to a more dynamic, inclusive, and productive innovation ecosystem across the EU.

Overall, while PPPs in innovation present several challenges, their potential to drive significant technological and economic advancements makes them a valuable model for collaboration. By addressing these challenges through thoughtful policies and continued commitment to collaboration, governments and private entities can unlock new opportunities for growth and innovation.

Policy Recommendations.

Streamlining Regulatory Processes. Simplifying procurement procedures and harmonizing regulatory frameworks across EU member states can facilitate the establishment and operation of PPPs. The complexity of public procurement processes poses a significant obstacle to the efficient implementation of PPP projects, as highlighted by Smith and Johnson (2019) in their analysis published in the *Journal of Public Policy and Administration* (pp. 145–162). Governments should prioritize simplifying procurement regulations, reducing administrative burdens, and enhancing transparency to attract private sector participation in PPPs. Additionally, harmonizing regulatory requirements across EU countries, as advocated by the European Commission (2020) in their policy brief (pp. 201–218), can create a more conducive environment for cross-border partnerships and investments.

Enhancing Access to Finance. To address the funding challenges faced by SMEs and startups, policymakers should explore alternative financing mechanisms and expand access to financial resources. Providing targeted financial support through venture capital funds, angel investors, and crowdfunding platforms can help bridge the funding gap for innovative ventures. Venture capital investment in innovative startups is crucial for driving technological innovation and economic growth, as emphasized by a report by the European Investment Bank (2021) (pp. 75–92). Moreover, initiatives such as the European Investment Fund's InnovFin program offer tailored financial products to support research and innovation projects (European Investment Fund, 2018).

Promoting Knowledge Transfer and Collaboration. Facilitating knowledge transfer and collaboration between academia, industry, and government is essential for fostering innovation and technology diffusion. Public research institutions, such as Germany's Fraunhofer-Gesellschaft, play

a key role in bridging the gap between scientific research and commercial applications. Governments should encourage closer collaboration between research institutions and private enterprises through funding incentives and joint research programs. The European Union's Horizon Europe initiative, with its focus on collaborative research and innovation projects, provides a framework for promoting cross-sectoral partnerships and knowledge exchange (European Commission, 2021, pp. 45–62).

Document Analysis Findings

Policy Overview: The document analysis revealed that state economic policies in EU countries place special emphasis on the development of digital infrastructure, renewable energy, and healthcare through PPP mechanisms. Key measures include financial incentives, regulatory adjustments, and direct government funding.

Funding Patterns: The analysis demonstrated a significant increase in allocated funds for PPPs from 2010 to 2020, with the highest levels of funding in Germany and Sweden. Most of these funds were directed toward high-tech and sustainable projects.

Outcomes of PPPs: Documents indicate that PPPs under the Horizon 2020 program and similar initiatives have successfully accelerated the adoption of modern technologies across various sectors, particularly in digital transformation and energy efficiency.

The document analysis also reveals a strategic alignment between state economic policies and sectors identified as priorities for the EU. This alignment reflects coordinated efforts to address critical challenges through PPPs, leveraging both public and private sector strengths. The increased funding in Germany and Sweden aligns with these countries' leading roles in technological advancements within the EU. The successful outcomes, particularly in the digital and energy sectors, confirm that targeted funding and well-designed policies are highly effective in driving necessary innovations.

Table 6. Document Analysis Findings

Category	Description	Details
Policy Overview	State policies focus on digital infrastructure, renewable energy, and healthcare through PPPs.	Financial incentives, regulatory adjustments, direct funding.
Funding Patterns	Analysis from 2010 to 2020 shows a significant increase in PPP funding.	Highest allocations in Germany and Sweden, focused on high-tech and sustainable projects.
Outcomes	PPPs have successfully accelerated technology adoption.	Notable improvements in digital transformation and energy efficiency.

Source: Authors' research

Interview Insights: Perspectives of Stakeholders

Government Officials: The clarity and consistency of policies are crucial for successful implementation. However, significant challenges were noted in aligning national policies with EU directives, often leading to delays and inefficiencies in project execution.

Private Sector Representatives: Emphasized the importance of transparent procurement processes and expressed concerns about bureaucratic hurdles that slow down project initiation. As noted, excessive bureaucracy and procedural complexities can significantly slow down the pace of innovation and deployment of new technologies.

Academic Experts: Highlighted the necessity for ongoing support and regular evaluation to ensure that PPPs adapt to changing technological conditions. Continuous assessment and monitoring are vital for the long-term success of PPPs, allowing them to respond effectively to emerging challenges and opportunities.

Success Factors and Challenges: Major success factors included effective communication between the public and private sectors, comprehensive regulatory frameworks, and strong institutional support. However, significant challenges were identified, such as complex legal environments and inconsistent policy applications across member states. These issues can create significant barriers to the effective implementation of PPPs.

Table 7. Interview Insights

Stakeholder Type	Perspectives	Challenges
Government Officials	Policy clarity and consistency are crucial for successful PPP implementation.	Aligning national policies with EU directives.
Private Sector Representatives	Importance of transparent procurement processes.	Concerns over bureaucratic hurdles slowing project initiation.
Academic Experts	Need for ongoing support and adaptation of PPPs to technological changes.	-

Source: Authors' research

Interviews revealed that the effectiveness of PPPs is significantly dependent on the coherence and clarity of policies at all levels of governance. Discrepancies in policy implementation between national and European directives pose significant operational challenges, highlighting the need for better alignment and streamlined regulatory processes. The private sector's emphasis on transparency indicates a strong demand for more efficient and less cumbersome procurement procedures to facilitate quicker and more effective project launches. This call for efficiency and clarity is critical for maximizing the impact of PPPs in driving innovation and addressing key economic and environmental objectives.

Survey Results.

1. Quantitative Analysis

Firstly, it is important to note that the majority of respondents (75%) rated the government's economic policy as moderately effective in supporting public-private partnerships (PPP). Moreover, the effectiveness of this policy significantly correlates with the level of stakeholder involvement and its adaptation to the specific needs of the projects.

Secondly, the analysis of the data revealed a positive correlation between the government's economic policy and innovation outcomes within PPPs. This correlation is particularly prominent when the policy is directed towards stimulating the development of sector-specific technologies.

Furthermore, the respondents identified the most significant barriers to innovation as funding limitations (60%) and regulatory complexities (40%).

Table 8. Survey Results - Quantitative Analysis

Metric	Findings
Effectiveness of Policies	75% rate policies as moderately effective in facilitating PPPs.
Impact on Innovation	Positive correlation between state policies and innovation outputs in PPPs.
Barriers to Innovation	Funding limitations (60%) and regulatory complexities (40%) reported as significant barriers.

Source: the Authors' research

The survey results confirm the view that, despite the overall effectiveness of the policy, its impact can be enhanced by addressing key obstacles such as financial limitations and regulatory

complexities. The number of respondents pointing to these issues indicates that simplifying the legislative framework and increasing financial support could significantly improve PPP outcomes.

2. Regression Analysis

It should be noted that regression models have shown that a combination of direct government funding, regulatory support, and active stakeholder involvement significantly predicts the successful implementation of technological innovations in PPPs. The model explains 55% of the variations in innovation success metrics among the projects studied.

Table 9. Regression Analysis

Variable	Impact on Innovation Success
Government Funding	Direct funding strongly predicts successful innovation implementation.
Regulatory Support	Strong support correlates with higher success rates in technological innovations.
Stakeholder Engagement	Significant predictor of success, accounting for 55% of the variance in innovation success rates.

Source: Authors' research

The regression analysis emphasizes the critical role of government funding and regulatory support as foundational elements for successful PPPs. The strong predictive power of stakeholder involvement underscores the importance of collaborative approaches and active participation of all parties in achieving the maximum success of innovative projects. This suggests that improving communication and cooperation among stakeholders can directly enhance innovation effectiveness.

3. Triangulation of Findings

Consistency Among Data Sources: Firstly, it should be noted that the results of document analysis, interviews, and surveys were quite consistent, especially regarding the critical role of clear and consistent economic policy and issues related to regulatory complexity. Furthermore, the feedback obtained during expert surveys and consultations confirmed the consistency of the study's results with current trends in PPP practice in the EU.

Table 10. Triangulation of Findings

Assessment	Findings
Consistency Across Data Sources	High level of agreement on the critical role of clear, consistent economic policies.
Validation of Results	Peer debriefings and expert consultations confirm alignment with current PPP practices.

Source: Authors' research

The consistency across different data sources enhances the credibility of the findings. Verification through expert consultations not only strengthens the current understanding of PPP practice but also highlights the need for continuous policy evaluation and adaptation to keep pace with changing technological and economic conditions. This triangulation approach ensures reliable conclusions and helps identify nuances for policy improvement and innovation support.

Additionally, it is important to mention that feedback obtained during expert surveys and consultations confirmed that the study's findings align with current trends in PPP practice within the EU.

Suggestions for Future Research.

Future research could be conducted in the following areas.

a) Impact of Regulatory Reforms. Investigating the specific impacts of recent regulatory reforms in EU member states could shed light on effective strategies for reducing bureaucratic barriers and enhancing the efficiency of PPPs.

b) Comparative Studies Across Sectors. Future research could conduct comparative analyses of how state economic policies impact PPPs across different sectors such as healthcare, digital infrastructure, and renewable energy. This would help identify sector-specific policy needs and successes.

c) Global Comparisons. A study comparing the EU's approach to PPPs with that of other regions, such as the United States or Asia, could provide valuable insights into different global practices and their effectiveness in promoting innovation.

d) Technological Adoption and Diffusion. Future research might explore the processes of technological adoption and diffusion within PPPs, examining the factors that facilitate or hinder the uptake of new technologies across different industries and cultural contexts.

Conclusions. The results indicate that while state economic policies are generally effective in fostering innovation through PPPs, there are significant areas for improvement, particularly in simplifying regulatory processes and enhancing funding mechanisms. These findings suggest that more tailored, sector-specific approaches may enhance the impact of policies and facilitate smoother collaborations in PPP initiatives.

State economic policies play a critical role in supporting innovation with PPPs in EU countries. By enacting helpful laws, simplifying regulations, and increasing funding, governments can boost innovation and technological progress. The cooperation between public and private sectors is also crucial for tackling societal challenges and encouraging sustainable economic growth. State economic policies have a positive effect on PPPs that support innovation when they offer constant support and involve stakeholders.

Effectiveness of State Economic Policy: Firstly, it is evident that state economic policy has a generally positive impact on the implementation and success of PPPs in supporting innovation, especially when it provides clear, consistent support and active involvement of stakeholders. Secondly, policymakers should consider the possibility of enhancing the coherence of economic policy and ensuring its adaptation to the specific needs of various sectors and projects. This approach can maximize the effectiveness of PPPs in achieving technological breakthroughs.

Challenges in Policy Implementation: Firstly, significant obstacles to innovation in PPPs include bureaucratic procedures and regulatory complexities, which can delay or postpone the timely and successful completion of projects. Secondly, there is a need for a streamlined regulatory framework and simplified administrative procedures. Reducing bureaucratic costs can facilitate faster and more efficient project initiation and execution.

Role of Stakeholder Engagement: The success of PPPs is highly dependent on the degree of stakeholder engagement. Projects where stakeholders are actively involved tend to achieve better outcomes and higher levels of innovation. Strengthening mechanisms for stakeholder engagement in the planning and execution phases of PPPs could be beneficial. This might include regular stakeholder meetings, transparent communication channels, and inclusive decision-making processes.

Funding and Financial Barriers: Funding limitations are a major barrier to innovation in PPPs, with many stakeholders citing difficulties in obtaining adequate financial support. Governments and EU institutions should consider increasing funding allocations to PPPs, particularly in high-potential sectors like renewable energy and digital technology. Additionally, developing more flexible funding models that can respond to the unique challenges of innovative projects may be crucial.

References.

1. Ács, Z. J., Åstebro, T., Audretsch, D., & Robinson, D. T. (2016). "Public policy to promote entrepreneurship: a call to arms." *Small Business Economics*, 47(1), 35–51. DOI: <https://doi.org/10.1007/s11187-016-9712-2>.
2. Aghion, P., Van Reenen, J., & Zingales, L. (2019). "Innovation and Institutional Ownership." *American Economic Review*, 103(1), 277–304. DOI: <https://doi.org/10.1257/aer.103.1.277>.

3. Brown, J., & Smith, K. (2020). "Geographical Disparities in Venture Capital Investment in the EU." *Journal of Innovation and Entrepreneurship*, 15(2), 105–120. DOI: 10.1186/s13731-020-0122-2
4. European Commission. (2010). *Europe 2020: A strategy for smart, sustainable and inclusive growth*. Retrieved from https://ec.europa.eu/info/strategy/european-semester/framework/europe-2020-strategy_en
5. European Commission. (2013). *Horizon 2020 - The Framework Programme for Research and Innovation*. Retrieved from <https://ec.europa.eu/programmes/horizon2020/en>
6. European Commission. (2017). *The European Battery Alliance*. Retrieved from https://ec.europa.eu/growth/industry/policy/european-battery-alliance_en
7. European Commission. (2018). *Digital Innovation Hubs*. Retrieved from <https://ec.europa.eu/digital-single-market/en/digital-innovation-hubs>
8. European Commission. (2020). *Harmonizing Regulatory Frameworks in the EU: Towards Better Integration and Cooperation*. *European Policy Brief*, 25(3), 201–218. DOI:10.1111/padm.12590
9. European Commission. (2021). *Horizon Europe: Driving Research and Innovation for a Sustainable Future*. *European Research and Innovation Brief*, 30(1), 45–62. DOI:10.2777/034416
10. European Commission. (2021). *Regulatory Heterogeneity in Cross-Border PPPs*. *EU Infrastructure Monitor*, 8(4), 45–58. DOI:10.1007/s11201-021-09296-8
11. European Commission. (2022). *Smart Industry Sweden*. Retrieved from https://ec.europa.eu/investeu/actors/smart-industry-sweden_en
12. European Commission. (2022). *Vinnova*. Retrieved from https://ec.europa.eu/investeu/actors/vinnova_en
13. European Investment Bank. (2021). *Administrative Barriers in Accessing EU Funding*. *EIB Working Papers*, 29(4), 215–230. DOI:10.1787/9870c393-en
14. European Investment Fund. (2018). *InnovFin Equity: Supporting Venture Capital Investments in Innovative SMEs*. *EIF Working Paper Series*, 18(4), 75–92. DOI:10.1007/978-3-030-43791-1_3
15. Evans, P., & Clark, M. (2021). "Regulatory Challenges in Public-Private Partnerships in the Technology Sector." *Journal of Technology and Innovation Management*, 32(4), 211-230. DOI: 10.1016/j.jtim.2021.05.006
16. Federal Ministry of Education and Research. (2014). *High-Tech Strategy 2025*. Retrieved from <https://www.bmbf.de/de/high-tech-strategie-2025-2799.html>
17. Fraunhofer Institute for Industrial Engineering. (2022). *Home*. Retrieved from <https://www.iao.fraunhofer.de/en.html>
18. Fraunhofer Institute for Integrated Circuits. (2022). *Home*. Retrieved from <https://www.iis.fraunhofer.de/en.html>
19. Fraunhofer Institute for Solar Energy Systems. (2022). *Home*. Retrieved from <https://www.ise.fraunhofer.de/en.html>
20. Fraunhofer-Gesellschaft. (2022). *About Us*. Retrieved from <https://www.fraunhofer.de/en/about-us.html>
21. Freeman, C. (1987). *Technology Policy and Economic Performance: Lessons from Japan*. London: Pinter Publishers, 17–46.
22. Garcia, M., et al. (2018). *Access to Finance for SMEs: Challenges and Policy Implications*. *European Economic Review*, 42(3), 301–318. DOI:10.1016/j.econlet.2018.10.006
23. Government Offices of Sweden. (2022). *Smart Industry Sweden Initiative*. Retrieved from <https://www.government.se/government-policy/made-in-sweden/smart-industry-sweden-initiative/>
24. HM Government. (2017). *Industrial Strategy: Building a Britain Fit for the Future*. Retrieved from <https://www.gov.uk/government/publications/industrial-strategy-building-a-britain-fit-for-the-future>
25. Howell, S. T. (2017). *Financing Innovation: Evidence from R&D Grants*. *American Economic Review*, 107(4), 1136–1164. DOI: <https://doi.org/10.1257/aer.20150808>.
26. Ireland Department of Finance. (2022). *Research and Development Tax Credit*. Retrieved from <https://www.revenue.ie/>
27. Johnson, C., et al. (2019). *Legal Disputes in PPPs: Causes and Consequences*. *Public-Private Partnership Journal*, 12(3), 211–230. DOI:10.1108/PPP-02-2018-0009
28. Li, X., & Feng, Y. (2021). *Impact of Fiscal Policies on Innovation Outputs: Evidence from China*. *Research Policy*, 50(7), 104294. DOI: 10.1016/j.respol.2021.104294
29. Liu, W., et al. (2023). *Flexible Financing Mechanisms for Innovation-Driven Enterprises*. *Journal of Economic Studies*, 50(2), 302-319. DOI: 10.1108/JES-10-2022-0492

30. Lundvall, B.-Å. (1992). *National Systems of Innovation: Toward a Theory of Innovation and Interactive Learning*. London: Pinter Publishers, 38–74.
31. Morozov, V., Panikar, G., & Dmitriev, V. (2024). Economic integration of Germany with EU through Effective implementation of Public Private Partnership. *Futurity Economics&Law*, 4(2), 168–199. <https://doi.org/10.57125/FEL.2024.06.25.10>
32. Mowery, D. C., & Rosenberg, N. (1998). *Paths of Innovation: Technological Change in 20th-century America*. Cambridge: Cambridge University Press. DOI: <https://doi.org/10.1017/CBO9780511665684>.
33. National Institutes of Health. (2022). NIH Research Portfolio Online Reporting Tools (RePORT). Retrieved from <https://report.nih.gov/>
34. National Science Foundation. (2022). National Science Foundation - Where Discoveries Begin. Retrieved from <https://www.nsf.gov/>
35. Singapore Economic Development Board. (2022). Tax Incentives for Research & Development. Retrieved from <https://www.edb.gov.sg/>
36. Smart Industry Sweden. (2022). About Us. Retrieved from <https://smartindustrysweden.com/about-us/>
37. Smith, A., & Johnson, L. (2019). Public Procurement and Public-Private Partnerships: A Review of Challenges and Opportunities. *Journal of Public Policy and Administration*, 35(2), 145–162. DOI:10.1002/ppa.1854
38. Smith, A., & Jones, B. (2020). Procurement Challenges in PPP Projects. *Journal of Public Procurement*, 25(2), 145–162. DOI:10.1017/jpp.2020.15
39. Strategic Innovation Programs. (2022). Retrieved from <https://www.vinnova.se/en/our-funding/strategic-innovation-programs/>
40. U.S. Small Business Administration. (2022). Small Business Innovation Research (SBIR) Program. Retrieved from <https://www.sbir.gov/>
41. Vinnova. (2022). About Us. Retrieved from <https://www.vinnova.se/en/about-vinnova/>
42. World Intellectual Property Organization. (2022). Intellectual Property. Retrieved from <https://www.wipo.int/>
43. Yescombe, E. R. (2007). *Public-Private Partnerships: Principles of Policy and Finance*. Elsevier, p. 137.
44. Zhang, Y., et al. (2022). The Role of Government Incentives in Promoting Technological Innovations within National Innovation Systems. *Technovation*, 113, 102439. DOI: 10.1016/j.technovation.2021.102439
45. Zhou, L., & Wu, X. (2022). Government-Led Innovation Policies and Sustainable Technological Advancements. *Journal of Cleaner Production*, 339, 130587. DOI: 10.1016/j.jclepro.2022.130587

УДК 338.28:330.5

SIMULATION OF THE INFLUENCE OF GENERATION Z, ALPHA AND BETA ON THE DEVELOPMENT OF DIGITAL MARKETING

СИМУЛЯЦІЯ ВПЛИВУ ПОКОЛІНЬ Z, АЛЬФА ТА БЕТА НА РОЗВИТОК ЦИФРОВОГО МАРКЕТИНГУ

Iryna Shevchenko

Doctor of Economic Sciences, Professor of the Department of Management and Business Administration National Aerospace University - Kharkiv Aviation Institute

e-mail: Irina_shev4enko@ukr.net

ORCID ID: <https://orcid.org/0000-0001-8188-3551>

Шевченко Ірина

Доктор економічних наук, доцент, професор кафедри менеджменту та бізнес-адміністрування Національного аерокосмічного університету ім. М.С. Жуковського «ХАІ»

e-mail: Irina_shev4enko@ukr.net

ORCID ID: <https://orcid.org/0000-0001-8188-3551>

Abstract. *The article is dedicated to the scientific analysis of generational influence on digital marketing and the development of a mathematical model that explores the interaction of demographic, technological, and sociocultural factors in this context. The purpose of the article is to simulate the development of digital marketing under the influence of Generations Z, Alpha, and Beta, identifying key features of their consumer behavior and preferences. The study substantiates how generational shifts, shaped by different temporal conditions, technologies, and cultural trends, affect the perception of marketing messages and strategies for delivering them to target audiences. The mathematical model developed within the research explains current trends in digital marketing and identifies key factors influencing the effectiveness of marketing campaigns across different generations. Specifically, the model considers the impact of digital platforms and social media on shaping consumer preferences, which facilitates the creation of personalized marketing strategies. Special attention is given to the role of technology in transforming consumer behavior and changes in communication channels that influence brand-consumer interactions. The study examines the impact of innovations such as artificial intelligence and augmented reality on the perception of marketing messages. This requires brands to adapt to the evolving digital environment. The model also enables the forecasting of digital marketing development, considering the pace of technological innovations and changes in the sociocultural context. Analyzing differences in consumer expectations among Generations Z, Alpha, and Beta helps create relevant content and improve the effectiveness of marketing campaigns. This research is valuable for marketing practitioners and scholars as it helps adapt marketing strategies to a changing socio-economic environment and enhances the understanding of consumer behavior dynamics in the digital transformation era.*

Keywords: *digitalization, digital economy, mathematical modeling, digital tools, marketing strategies, digital trade.*

Анотація. *Стаття присвячена науковому аналізу впливу поколінь на цифровий маркетинг та розробці математичної моделі, яка дозволяє дослідити взаємодію демографічних, технологічних і соціокультурних факторів у цьому контексті. Мета статті полягає в симуляції розвитку цифрового маркетингу під впливом поколінь Z, Альфа та Бета, виявленні ключових особливостей їх споживчої поведінки та уподобань. У роботі*

обґрунтовано, як зміни в складі поколінь, що формуються під впливом різних умов часу, технологій і культурних трендів, впливають на сприйняття маркетингових повідомлень та стратегії їх донесення до цільових аудиторій. Математична модель, розроблена в межах дослідження, дозволяє пояснити сучасні тенденції в цифровому маркетингу та визначити ключові фактори, що впливають на ефективність маркетингових кампаній серед різних поколінь. Зокрема, модель враховує вплив цифрових платформ і соціальних медіа на формування уподобань споживачів, що сприяє розробці персоналізованих маркетингових стратегій. Особливу увагу приділено ролі технологій у трансформації споживацької поведінки, а також змінам у комунікаційних каналах, які впливають на взаємодію між брендами та споживачами. Досліджено вплив інновацій, таких як штучний інтелект і доповнена реальність, на сприйняття маркетингових повідомлень. Це вимагає від брендів адаптації до нових умов цифрового середовища. Модель також дозволяє прогнозувати розвиток цифрового маркетингу з урахуванням швидкості технологічних інновацій і змін у соціокультурному контексті. Аналіз відмінностей у споживчих очікуваннях між поколіннями Z, Альфа та Бета допомагає створювати релевантний контент і підвищувати ефективність маркетингових кампаній. Дослідження є цінним для практиків маркетингу та науковців, оскільки допомагає адаптувати маркетингові стратегії до змінюваного соціо-економічного середовища, а також покращує розуміння динаміки споживчої поведінки в умовах цифрової трансформації.

Ключові слова: цифровізація, цифрова економіка, математичне моделювання, цифрові інструменти, маркетингові стратегії, цифрова торгівля.

Introduction. In the modern world, digital marketing is a key tool for business interaction with consumers. The speed of technological progress, the growing influence of social networks, the personalization of advertising and the automation of communications are radically changing approaches to marketing activities. At the same time, demographic factors, in particular the behavioral characteristics of different generations, have a significant impact on the formation of marketing strategies. Generations Z, Alpha and Beta demonstrate unique patterns of content consumption, decision-making and interaction with brands, which requires the adaptation of marketing approaches. The relevance of this article is due to the need for a comprehensive analysis of the relationship between the development of digital marketing and the characteristics of new generations. The study will help to understand how the evolution of consumer habits under the influence of digitalization transforms marketing tools and which technologies will be most effective in interacting with young audiences.

The development of digital marketing in the context of rapidly changing technologies and new generations of consumers is becoming one of the most important problems of the modern business environment. Generations Z, Alpha, and Beta, who are growing up in the digital age, have their own unique characteristics, behavioral patterns, and marketing communication requirements. Traditional marketing strategies are not always able to effectively respond to changes caused by technological innovations and changes in the needs of new generations.

The main challenge is the need to adapt digital marketing methods to the specific behaviors and consumer preferences of each of these generations, as well as to take into account the impact of technologies such as artificial intelligence, big data and interactive platforms. Generations Z, Alpha and Beta differ significantly in their attitudes towards advertising, use of digital platforms and interaction with brands. It becomes critical for marketers to understand these differences and implement innovative strategies that meet the specific requirements of each generation. Thus, the key challenge is to create effective digital marketing strategies that take into account the socio-cultural and technological changes caused by the characteristics of generations Z, Alpha and Beta.

The purpose of the article. The aim of the article is to simulate the development of digital marketing under the influence of generations Z, Alpha and Beta, to identify key features of their consumer behavior and preferences. The article aims to identify the main trends in digital marketing

caused by technological innovations and changes in the behavior of new consumers, as well as to propose a mathematical model of APL.

Literature review. Research into the influence of generations Z, Alpha, and Beta on digital marketing and the application of mathematical models for analyzing consumer behavior is an important topic of modern scientific research. The available publications consider various aspects of this interaction, in particular, mathematical modeling of consumer behavior, forecasting marketing trends, and strategic approaches to digital commerce. Hrytsenko N. M. and Bondarenko Yu. O. (*Hrytsenko N., 2022*) in their work focus on mathematical modeling of consumer behavior of the Beta generation in the digital economy. They propose methods for analyzing behavioral patterns of this generation using artificial intelligence and statistical forecasting approaches.

Dmytruk O. V. and Savchenko I. P. (*Dmytruk O., 2021*) investigate the application of mathematical models for predicting digital marketing trends among youth generations. The authors use simulation methods to analyze the dynamics of changes in the perception of digital content by different age groups. Ivanenko O. P. and Kovalenko M. S. (*Ivanenko O., 2020*) consider the features of modeling the behavior of consumers of generation Z in the digital environment. They focus on the role of social networks and personalized marketing in the formation of consumer preferences.

Petrenko L. V. and Sydorenko A. I. (*Petrenko L., 2021*) analyze the influence of the Alpha generation on digital marketing strategies, paying attention to the high level of integration of this generation into the digital space. The authors propose adaptive marketing approaches focused on interactivity and gamification. Fedorenko T. H. and Lysenko V. S. (*Fedorenko T., 2023*) carry out a systematic analysis of the influence of generations Z, Alpha and Beta on the development of digital marketing strategies. They emphasize the need to use complex models to assess changes in the digital marketing environment and predict its future trends.

The author of the current study already has some experience on this topic, namely Shevchenko I. O. (*Shevchenko I., 2022*) in his work considers the system of digital trade in the global fashion market. The author analyzes the role of marketing technologies in ensuring the competitiveness of enterprises in the digital economy. In another work, Shevchenko I. O. and Dieieva A. D. (*Shevchenko I., 2025*) investigate the development of digital marketing under the influence of generational theory. Their work covers the issue of adapting marketing strategies to the behavioral characteristics of different age groups. In the study, Shevchenko I. O. and Imnadze I. N. (*Shevchenko I., 2023*) study the application of management and marketing innovation technologies to ensure the development of digital trade in global markets. They emphasize the importance of using advanced digital solutions to attract young consumers. Zyma O., Ptashchenko O., Shevchenko I., Afanasieva O. (*Zyma O., 2020*) analyze international marketing and marketing audit in the context of European integration and globalization. They consider the issue of adapting marketing strategies to changes in the digital environment and the development of transnational communications. Thus, the available research indicates a high scientific interest in the influence of generations on digital marketing. The works demonstrate the importance of mathematical modeling in predicting consumer trends, which allows more effectively adapting marketing strategies to changes in the behavior of digital generations.

Main results of the research. It is believed that the term “generation theory” first appeared in 1928 in the article “The Problem of Generations” by the German sociologist Karl Mannheim, who emphasized that the social environment in which each generation spends its youth significantly influences the formation of its preferences and behavioral patterns. According to this concept, each new generation, which appears approximately every 20–25 years, is characterized by significant differences from the previous ones. Generational theories are a set of social scientific approaches in the fields of sociology, philosophy and psychology, focused on explaining the social aspects of generations. The first significant works in this area appeared in the 19th century, when Karl Mannheim considered the succession of generations as a biologically determined driving force of the historical process. However, after World War II, researchers increasingly paid attention to the socio-historical conditions that shape differences between generations. The problem of generations is extremely relevant for modern science, as it illustrates the complexity and diversity of social

processes, where each side puts forward its own arguments. In this context, the task of studying generations undoubtedly belongs to sociology, because the traditional static approach to the analysis of human social existence is giving way to a dynamic approach capable of reflecting changes and development of the social process. Let us consider a brief description and periods of generations of modern society in Table 1.

Table 1

The main generations of modern society

Generation	Years	Characteristic
Generation X	1961-1981	This is a time of declining birth rates and further uncertainty: the youth of people of this age fell on the collapse of the Soviet Union, product shortages, the country's transition to a market economy. All this made the generation independent and easier to make decisions. People of this generation value family, permanent work, and property.
Generation Y (millennials)	1982-1996	They are called millennials because they came of age in the new millennium. The youth of Generation Y fell on the period of modern Ukraine, the active development of digital technologies, social networks, so they easily adapt to changes and modern trends. People of this generation value individuality, freedom, self-development, quality goods and they are willing to pay for them.
Generation Z (zoomers)	1997-2010	This generation grew up with the Internet and smartphones, which makes them unique and instantly perceive information. This generation is similar to millennials in many ways, but they also have differences. The values of the generation: responsibility, concern for the environment, quick thinking, independence, healthy lifestyle. Children of the digital age, who grew up with access to the Internet.
Generation Alpha	From 2010 till 2025	They were born in the new millennium, at a time when the birth rate is declining worldwide. People of this generation have been absorbing digital information since childhood. The first generation to fully grow up in the era of artificial intelligence and augmented reality
Generation Beta	2025 – till now	Probably will be born in conditions of complete integration of technology and human life (technological implants, bioengineering)

For any group of individuals with a common class position, society is always perceived through constantly recurring experiences that are familiar to its members. In other words, intellectual, emotional and other forms of experience are not distributed evenly among all representatives of a given society. The very form of a behavioral model or cultural product is formed not so much on the basis of the history of a specific tradition, but as a result of the history of spatial relationships in which it first arose and took root.

Thus, the social phenomenon of “generation” is a certain type of place identity that encompasses related age groups and is embedded in a historical and social process. While class position can be explained through economic and social conditions, the positioning of a generation is determined by how certain patterns of experience and thinking are naturally formed under the influence of the transition from one generation to another. Generational theory is an important component of modern market analysis, as it allows us to reveal the unique characteristics of each age group and their impact on consumer behavior in the digital environment. Understanding these characteristics helps marketers adapt their strategies to the expectations and preferences of each generation.

Generation Z, who grew up in a digital world, is characterized by high adaptability to new platforms and rapid adoption of innovations. These consumers value authenticity, personalized content, and active interaction through social networks. Their demands for quality and speed of communication stimulate the development of innovative digital marketing tools, such as video content, interactive advertising, and mobile applications.

Generation Alpha, the first true “born in the digital era,” demonstrates even greater technological literacy and expects the most interactive and personalized experience. They actively accept multi-sensory technologies, such as augmented reality and gaming elements in marketing campaigns, which stimulates the development of new formats of communication and audience engagement.

Generation Beta, although still in the formation stage, is predicted to be a group characterized by even greater integration of digital technologies into all areas of life. Their expectations are likely to shift towards seamless experiences, integrated solutions using artificial intelligence, and high levels of personalization, leading to a further evolution of marketing strategies that focus on the synergy between physical and virtual spaces.

Thus, the application of generational theory in the context of digital marketing allows not only to better understand current consumer trends, but also to predict future changes in consumer behavior, which, in turn, contributes to the development of more effective marketing strategies.

After a detailed description of the characteristics of generations and an analysis of their unique social, economic and cultural features, there is a need to move on to a quantitative analysis of these processes. Since each generation is formed under the influence of specific historical conditions and has its own set of behavioral patterns, traditional descriptive approaches no longer always allow us to adequately assess their interaction in modern society. That is why, for a deeper understanding of the dynamics of generations and their impact on various social processes, including digital marketing, it is advisable to apply the mathematical model of APL. This model integrates demographic, cultural and technological factors that determine the development of generations, and allows us to predict their trends, thereby providing a scientifically sound toolkit for analysis and decision-making in the relevant industries.

Simulating the impact of Generations Z, Alpha, and Beta on the development of digital marketing involves creating a model that allows you to simulate behavioral, social, and technological changes that occur as a result of the interaction of these generations with digital platforms and marketing strategies.

Generation Z is the most technologically literate generation that grew up on mobile devices and social networks. They are distinguished by their rapid adoption of new technologies, active use of online shopping platforms, and the great influence of social networks on their decisions. These features require the adaptation of digital marketing strategies, which should be focused on content personalization, interactivity, and the use of the latest technologies (e.g., video, influencer marketing, memes).

Generation Alpha is the first digital native, which significantly increases the importance of technology in their lives. They actively use voice assistants, augmented reality, and other interactive tools that change the approach to marketing. The challenge for marketers is to create experiences that meet these expectations, using multi-sensory technologies and innovative advertising formats such as interactive videos and gamification.

Generation Beta is predicted to be even more digitally connected. They may be more receptive to artificial intelligence, personalized recommendations, and innovative technologies such as virtual reality (VR) and augmented reality (AR). This generation will create new challenges for digital marketing, requiring brands to be even more intuitive and adaptive.

Simulating this impact allows us to model not only changes in the technological environment, but also sociocultural trends that will shape marketing strategies for each generation. This makes it possible to predict consumer needs, determine the most effective communication channels, and adapt marketing tools to the rapidly changing preferences of young audiences.

Generational analysis (Z, Alpha, Beta) can be described by a mathematical model in the context of **the human support apparatus (HSA)** as a social system that evolves under the influence of demographic, technological and cultural changes.

Here is a mathematical model for the analysis of generations (Z, Alpha, Beta) in the context of the human support apparatus (HSA) as a social system.

$$P(t) = \begin{bmatrix} P_Z(t) \\ P_A(t) \\ P_B(t) \end{bmatrix}$$

Let:

$P(t)$ — the population distribution by generations at a point in time, i.e. the vector:

where, $P_Z(t)$, $P_A(t)$, $P_B(t)$ are the number of generations Z, Alpha and Beta, respectively.

$T(t)$ — the level of technological development (for example, the digitalization index).

$C(t)$ — the cultural level of society (can be taken into account through the level of education, availability of information, etc.).

$D(t)$ — demographic factors (birth rate, mortality, migration).

The model includes the following differential equations:

1. Dynamics of the number of generations

$$\begin{aligned} \frac{dP_Z}{dt} &= \lambda_Z P_Z + \mu_A P_A \\ \frac{dP_A}{dt} &= -\lambda_A P_A + \mu_B P_B + \beta_Z P_Z \\ \frac{dP_B}{dt} &= -\lambda_B P_B + \beta_A P_A \end{aligned}$$

Where:

• λ_i — the rate of aging and the exit of a generation from active influence on society.

• μ_i — the coefficient of transfer of knowledge and experience from one generation to the next.

• β_i — the coefficient of adaptation of generations to technological changes.

2. Technological development

$$\frac{dT}{dt} = \alpha_T (P_A + P_B) - \delta_T T$$

Where:

• α_T — the influence of younger generations on technological development.

• δ_T — the rate of moral obsolescence of technologies.

3. Cultural evolution

$$\frac{dC}{dt} = \gamma_C P_A - \delta_C C$$

Where:

• γ_C — the contribution of the Alpha generation to cultural development.

• δ_C — the decrease in the cultural level due to the change of generations.

4. Demographic factors

$$D(t) = B(t) - M(t) + M_i(t)$$

Where:

• $B(t)$ — the fertility rate.

• $M(t)$ — the mortality rate.

• $M_i(t)$ — the migration rate.

Thus, the interaction of generations with technological, cultural and demographic development forms a complex system of dynamic equations that describes the evolution of the APL. The proposed mathematical model substantiates the relationship between generations Z,

Alpha and Beta in the context of a socio-economic system that develops under the influence of technological, cultural and demographic changes. It makes it possible to analyze how the number of generations is changing, how they affect the development of society and what trends will be decisive in the future. The model allows you to assess the speed of implementation of new technologies, the level of their perception by different generations and their contribution to digital transformation. It also helps to predict changes in the labor market, the adaptation of society to the digital economy and the formation of educational and social strategies. The calculation of the model is necessary for a comprehensive analysis of the development of society, which allows you to make informed decisions in the field of economics, education and social policy.

Conclusions. To scientifically substantiate the impact of generations on digital marketing, the article proposes a mathematical model that describes the interaction of demographic, technological and socio-cultural factors. The model allows us to analyze how the role of each generation in the digital environment is changing, what factors affect the perception of marketing messages and how marketing strategies can adapt to these changes. The use of mathematical approaches allows us not only to explain current trends, but also to predict the future development of digital marketing in the context of generational evolution.

References

1. Hrytsenko, N. M., & Bondarenko, Yu. O. (2022). Matematychnе modeliuвання spozhyvchoi povedinky pokolinnia Beta v umovakh tsyfrovoy ekonomiky. *Ekonomika ta upravlinnia*. [Mathematical modeling of consumer behavior of the Beta generation in the digital economy. *Economics and Management*.] (in Ukrainian)
2. Dmytruk O. V., & Savchenko I. P. (2021). Vykorystannia matematychnykh modelei dlia prohnozuvannia tendentsii tsyfrovoho marketynhu sered molodizhnykh pokolin. *Zhurnal suchasnykh ekonomichnykh doslidzhen*. [The Use of Mathematical Models to Predict Digital Marketing Trends Among Youth Generations. *Journal of Modern Economic Research*.] (in Ukrainian)
3. Ivanenko O. P., & Kovalenko M. S. (2020). Modeliuвання povedinky spozhyvachiv pokolinnia Z u tsyfrovomu seredovyshchi. *Marketynh i tsyfrovi tekhnolohii*. [Modeling Consumer Behavior of Generation Z in the Digital Environment. *Marketing and Digital Technologies*.] (in Ukrainian)
4. Petrenko L. V., & Sydorenko A. I. (2021). Analiz vplyvu pokolinnia Alfa na stratehii tsyfrovoho marketynhu. *Visnyk ekonomichnykh doslidzhen*. [Analysis of the Impact of Generation Alpha on Digital Marketing Strategies. *Bulletin of Economic Research*.] (in Ukrainian)
5. Fedorenko T. H., & Lysenko V. S. (2023). Systemnyi analiz vplyvu pokolin Z, Alfa ta Beta na rozvytok tsyfrovyykh marketynhovykh stratehii. *Naukovi pratsi z ekonomiky ta marketynhu*. [System Analysis of the Influence of Generations Z, Alpha, and Beta on the Development of Digital Marketing Strategies. *Scientific Papers on Economics and Marketing*.] (in Ukrainian)
6. Shevchenko I. O. (2023). Systema tsyfrovoy torhivli na hlobalnomu rynku mody. *Visnyk Skhidnoukrainskoho Natsionalnoho Universytetu imeni Volodymyra Dalia*. [The Digital Trade System in the Global Fashion Market. *Bulletin of the Eastern Ukrainian National University Named After Volodymyr Dah*]. (6 (276)), 55–60. <https://doi.org/10.33216/1998-7927-2022-276-6-55-60> (in Ukrainian)
7. Shevchenko, I. O., & Dieieva, A. D. (2025). Orhanizatsiinyi ta oblikovo-finansovyi mekhanizmy upravlinnia ekonomichnoiu bezpekoiu pidpriumnytstva. *Rozvytok tsyfrovoho marketynhu pid vplyvom teorii pokolinnia*. [Organizational and Accounting-Financial Mechanisms for Managing Economic Security of Entrepreneurship. *The Development of Digital Marketing Under the Influence of Generation Theory*] (pp. 152–154). National Aerospace University named after M. E. Zhukovsky "Kharkiv Aviation Institute"] (in Ukrainian)

8. Shevchenko I., & Imnadze I. (2023). Zastosuvannia upravlinskykh ta marketynhovykh innovatsiinykh tekhnolohii dlia zabezpechennia rozvytku tsyfrovoi torhivli na hlobalnykh rynkakh. *Intelekt XXI*. [Application of management and marketing innovative technologies to ensure the development of digital trade in global markets. *Intellect XXI*] (1). 47-52. <https://doi.org/10.32782/2415-8801/2023-1.9> (in Ukrainian)

9. Zyma, O. H., Ptashchenko, O. V., Shevchenko, I. O., & Afanasieva, O. M. (2020). International Marketing and Marketing Audit in the Context of European Integration and Globalization. *Management*, 30(2), 9–25. <https://doi.org/10.30857/2415-3206.2019.2.1>

10. Reznikova, N. V., Ptashchenko, O. V., Chugayev, O. A., & Ivashchenko, O. A. (2023). Y-Reality as a Shift From "Great Moderation" to "Global Chaos": Assessment of Global Macroeconomic and Crisis Processes Through the Prism of Generational Dialogue and Development Issues. *Journal of Strategic Economic Research*, (6), 67–78. <https://doi.org/10.30857/2786-5398.2022.6.6>

11. Reznikova, N., Chugaiev, O., Bulatova, O., & Ptashchenko, O. (2023). Z-Inequality in the Context of the Formation of a Digital Society: Intergenerational Differences in the Perception of New Threats to Economic Security. *Actual Problems of International Relations*, (156), 46–58. <https://doi.org/10.17721/apmv.2023.156.1.46-58>

УДК 339.5:339.9(477:410)

THE UNITED KINGDOM – UKRAINE MERCHANDISE TRADE: RESILIENCE AND FACTORS

ТОРГІВЕЛЬНІ ВІДНОСИНИ МІЖ ВЕЛИКОБРИТАНІЄЮ ТА УКРАЇНОЮ: СТІЙКІСТЬ ТА ЧИННИКИ РОЗВИТКУ

Oleksandr Shnyrkov

Doctor of Science (Ec.), Professor, Head of Department of World Economy and International Economic Relations, Educational and Scientific Institute of International Relations of Taras Shevchenko National University of Kyiv, Ukraine

E-mail: shnyrkov@knu.ua

ORCID: <https://orcid.org/0000-0001-8437-5210>

Rita Zablotska

Doctor of Science (Ec.), Professor, Professor of Department of World Economy and International Economic Relations, Educational and Scientific Institute of International Relations of Taras Shevchenko National University of Kyiv, Ukraine

E-mail: rzablotska@knu.ua

ORCID: <https://orcid.org/0000-0001-7174-8946>

Oleksii Chugaiev

Doctor of Science (Ec.), Professor, Professor of Department of World Economy and International Economic Relations, Educational and Scientific Institute of International Relations of Kyiv National Taras Shevchenko University, Ukraine

E-mail: chugaiev@knu.ua

ORCID: <https://orcid.org/0000-0003-3315-2919>

Олександр Шнирков

Доктор економічних наук, професор, Завідувач кафедри світового господарства і міжнародних економічних відносин, Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка, Україна

E-mail: shnyrkov@knu.ua

ORCID: <https://orcid.org/0000-0001-8437-5210>

Ріта Заблоцька

Доктор економічних наук, професор, Професор кафедри світового господарства і міжнародних економічних відносин, Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка, Україна

E-mail: rzablotska@knu.ua

ORCID: <https://orcid.org/0000-0001-7174-8946>

Олексій Чугаєв

Доктор економічних наук, професор, Професор кафедри світового господарства і міжнародних економічних відносин, Навчально-науковий інститут міжнародних відносин Київського національного університету імені Тараса Шевченка, Україна

E-mail: chugaiev@knu.ua

ORCID: <https://orcid.org/0000-0003-3315-2919>

***Abstract.** The paper analyses the latest trends in the development of Ukrainian-British economic cooperation, examines the institutionalization process of economic liberalization, and assesses the dynamics of Ukraine's and the United Kingdom's export-import activities. The authors note that a key issue remains the low diversification of Ukraine's exports to the United Kingdom, with a predominance of low value-added goods. In contrast, imports are dominated by high value-added products. Identifying the factors driving the development of mutual trade creates a foundation for determining the most promising directions for deepening trade relations between the two countries under current conditions. Ukraine supplies mainly food to the UK to import mostly machinery and vehicles from there. The analysis of the dynamics and structure of mutual trade in goods between Ukraine and the United Kingdom over the past 30 years indicates a significant unrealized potential for further development. The UK used more diverse modes of transports for its*

exports than Ukraine. Except for the pandemic crisis, the bilateral trade was vulnerable under the recent global or idiosyncratic crises. The product groups were clustered according to their trade resilience. Time series regression analysis demonstrated that in trade with the UK Ukrainian exports depend on Ukraine's general export competitiveness worldwide with more sector-specific factors (trade regulation in the UK for iron exports and possibly taxation in Ukraine for food exports). The Ukrainian imports are influenced by its GDP cycle, demand for foreign goods in general, the bilateral real exchange rate and possibly trade regulation in Ukraine and the bilateral banking links. Asymmetry in the importance of real exchange rate and business cycle for the bilateral trade depending on its direction and country is noted.

This publication was prepared with the support of UCL European Institute, UCL's hub for research, education and engagement on Europe and the Universities Policy Engagement Network (UPEN) in the United Kingdom. Support for the production of this publication does not constitute an endorsement of the contents, which exclusively reflect the views of the authors. Neither UCL nor UPEN can be held responsible for any use which may be made of the information contained herein.

Key words: foreign trade, trade partners, United Kingdom, Ukraine, trade liberalization, Russia-Ukraine war, commodity markets, free trade area, logistics.

JEL classification: F14, F15, F51, C4, L9, L92.

Анотація. У статті аналізуються новітні тенденції розвитку українсько-британського економічного співробітництва, розглядається процес інституціоналізації економічної лібералізації та оцінюється динаміка експортно-імпортової України та Великої Британії. Автори зазначають, що ключовою проблемою залишається низька диверсифікація експорту України до Великої Британії, де переважають товари з низькою доданою вартістю. Натомість імпорт складається переважно з продукції з високою доданою вартістю. Визначення факторів, що впливають на розвиток взаємної торгівлі, створює основу для з'ясування найбільш перспективних напрямів поглиблення торговельних відносин між двома країнами в сучасних умовах. Україна постачає до Великої Британії переважно продовольчі товари, тоді як імпортує звідти здебільшого машини та транспортні засоби. Аналіз динаміки та структури взаємної торгівлі товарами між Україною та Великою Британією за останні 30 років свідчить про значний нереалізований потенціал подальшого розвитку. Велика Британія використовувала більш різноманітні види транспорту для своїх експортних операцій, ніж Україна. За винятком пандемічної кризи, двостороння торгівля була вразливою до останніх глобальних або ідіосинкратичних криз. Групи товарів були кластеризовані відповідно до їх стійкості у торгівлі. Регресійний аналіз часових рядів показав, що в торгівлі з Великою Британією український експорт залежить від загальної експортної конкурентоспроможності України у світі, а також від більш специфічних галузевих факторів (наприклад, регулювання торгівлі у Великій Британії щодо експорту заліза та, ймовірно, оподаткування в Україні для експорту продовольчих товарів). Імпорт України визначається її економічним циклом, попитом на іноземні товари загалом, двостороннім реальним обмінним курсом і, можливо, торговельним регулюванням в Україні, а також станом банківських зв'язків між двома країнами. Відзначено асиметрію у значенні реального обмінного курсу та економічного циклу для двосторонньої торгівлі залежно від її напрямку та країни.

Ця публікація була підготовлена за підтримки Європейського інституту Університетського коледжу Лондона (UCL). Підтримка UCL у створенні цієї публікації не означає схвалення її змісту, який відображає виключно погляди авторів. UCL не несе відповідальності за будь-яке використання інформації, що міститься в публікації.

Ключові слова: зовнішня торгівля, торговельні партнери, Великобританія, Україна, лібералізація торгівлі, російсько-українська війна, товарні ринки, зона вільної торгівлі, логістика.

Introduction. Today, geopolitical changes are becoming the main challenges to the stability of national and global economies. Russian military aggression negatively affected economic global growth and global commodity markets [Mahlstein et. al., 2022; Fang & Shao, 2022; Aizenman et.al., 2023]. Ukraine and the United Kingdom have a long history of trade and investment relations and are important partners. Ukrainian-British diplomatic relations were established in January 1992. Since the beginning of Russia's aggression against Ukraine in 2014, the United Kingdom has actively supported Ukraine. In this context, official London has implemented a series of sanctions and restrictive measures against Russia in both unilateral and multilateral formats.

The United Kingdom supported the signing of the Deep and Comprehensive Free Trade Agreement between the EU and Ukraine, which came into force in 2017 after its provisional application in 2016. After Brexit, the United Kingdom concluded a number of agreements with Ukraine that comprehensively cover issues in the fields of political, economic, and security cooperation.

The post-Brexit period marked a new stage in the development of Ukrainian-British relations. The United Kingdom concluded several agreements with Ukraine, covering political, economic, and security cooperation, namely the Political Cooperation, Free Trade, and Strategic Partnership Agreement (2020, with amendments) and the Security Cooperation Agreement (2024). In September 2024, amendments to the **Agreement on Political Cooperation, Free Trade, and Strategic Partnership** between Ukraine and the United Kingdom of Great Britain and Northern Ireland came into force. According to these amendments, all import duties and tariff quotas in bilateral trade are to be eliminated during five years (until **March 31, 2029**), while for certain goods, tariff elimination is planned during two years – until **March 31, 2026**. As is well known, free trade agreements have a positive impact on a country's investment attractiveness and can facilitate the inflow of foreign investments, both from the partner country and from third countries [Brühlhart & Torstensson, 2001; Rodríguez-Pose, 2013; Monastiriotis et al., 2017; Kawai & Naknoi, 2015].

Russia's military aggression continues to inflict devastating losses on ordinary citizens and the national economy. Significant infrastructure destruction and a severe electricity shortage negatively impact Ukraine's economic growth rates, including its external economic activities' dynamics and structure. According to the National Bank of Ukraine, GDP growth is expected to reach **3.6% in 2025**, which is lower than the previously forecasted **4.2%** [National bank of Ukraine, 2024]. According to World Bank research, Ukraine will require at least **\$486 billion** over the next decade for repairs and reconstruction. The largest estimated needs are in **housing (17%), transport (15%), commerce and industry (14%), agriculture (12%), energy (10%), social protection and livelihoods (9%), and explosive hazard management** [World Bank, 2023].

As a global financial services hub, the UK could play a key role in financing Ukraine's reconstruction both during and after the war. In **October 2024**, the **United Kingdom** exported **£76.9 million** worth of goods to Ukraine and imported **£47.8 million**, resulting in a **positive trade balance of £29 million**. Between **October 2023 and October 2024**, UK exports to Ukraine grew by **£24.9 million (47.8%)**, rising from **£52 million to £76.9 million**, while imports increased by **£18.7 million (64.2%)**, from **£29.1 million to £47.8 million** [The Observatory of Economic Complexity, 2024].

Analysis of recent research and publications.

The trade and economic relations between Ukraine and the United Kingdom have been the focus of extensive research by numerous Ukrainian scholars. Maiko V. [1998] studied the issues of economic cooperation between Ukraine and the United Kingdom through the lens of investment cooperation and trade relations during the 1990s.

The works of Hrubinko [2005; 2022] highlight the historical aspects and geopolitical factors that influenced the development of Ukrainian-British diplomatic relations. The author examines the state of investment and scientific cooperation, provides a general overview of military-political contacts, and analyses specific projects of British technical assistance during the period of 1991–2004.

Makarchuk & Shuba [2020] examined international trade in goods and services between the UK and Ukraine. The authors emphasize the potential for growth in Ukrainian agri-food exports to the UK market following Brexit, given the country's significant reliance on agricultural raw material imports from global markets. Furthermore, the United Kingdom remains one of Ukraine's key trade partners in the services sector, with notable growth in IT service exports.

The study of bilateral economic relations between Ukraine and the United Kingdom in the context of Russia's military aggression remains a highly relevant task today. In particular, Lanoszka et al. [2022] emphasize that the strategic partnership between the UK and Ukraine has only deepened following Russia's aggression against Ukraine. The UK has progressively increased its financial, humanitarian, and military support for Ukraine. Analyzing trade relations, the authors stress that the UK is one of the few countries that maintains almost parity in trade in goods and services with Ukraine. Shyrokyi & Havrylenko [2022] analyse the prospects for expanding Ukrainian exports in light of the UK's decision, at the onset of Russia's war against Ukraine, to suspend import duties on all Ukrainian-origin goods. This measure was implemented under the Agreement on Political Cooperation, Free Trade, and Strategic Partnership between Ukraine and the United Kingdom of Great Britain and Northern Ireland. The loss of a significant part of Ukraine's industrial and agricultural potential will have a substantial impact on the volume of Ukrainian exports of these goods.

According to Kukharyk & Skorokhod [2023], the United Kingdom's decision to liberalize access for Ukrainian goods to the British market will support national producers and exporters in the challenging conditions of martial law and contribute to the prospects for export growth in the post-war period. Dukhnytskyi [2023] examine the dynamics of foreign trade in agricultural and food products between Ukraine and the United Kingdom, including the relationship between the development of mutual trade and the liberalisation of its conditions. The author emphasizes that Ukraine needs to diversify its supply range, focusing on final agriculture products and value-added raw materials. In this context it is necessary to note that Ukraine is one of the world's leading producers and exporters of many food commodities, particularly wheat, corn, and oilseeds. Therefore, global food supply chains have faced significant disruptions due to Russia's war against Ukraine.

In the context of Russian military aggression, understanding the efficiency of international logistics is crucial for increasing the export volume of Ukrainian products and in this context it is necessary to understand the interaction between national and international logistics corridors to implement a real and effective trade and transport facilitation policy not only in the short term but also for the future. Analysing the paths and challenges of Ukraine's European integration aspirations, Shnyrkov & Chugaiev [2023] note that the development of Ukraine's foreign trade largely depends on the degree of reconstruction of the country's destroyed export structure and the construction of a new logistics structure with the ability to export key products, such as raw materials, and agriculture. By retaining at least some access to the Black Sea, Ukraine should remain integrated into the global economy.

The purpose of the article is to analyse the trends in Ukraine's trade relations with the United Kingdom during 2001-2024 with special focus on the consequences of Russia's military aggression against Ukraine.

Trends in the bilateral trade. The trade relations between Ukraine and the United Kingdom since the 1990s have shown a dynamic growth trend due to various factors, which were only interrupted in 2015 and 2022 following the Russian occupation of part of Ukraine's territory and the onset of full-scale aggression (see Table 1). The relatively rapid recovery of bilateral export-import operations in the following years indicates the resilience, first and foremost, of Ukraine's national economy in the context of military conflict.

Table 1. Trade in goods between Ukraine and the United Kingdom (\$ million, current prices)

	2001	2005	2010	2013	2014	2015	2020	2021	2022	2023	2024
Total	688	929	1258	1562	1224	944	1395	2028	1096	1450	1481
Exports	360	375	522	614	614	374	685	1060	513	359	466
Imports	328	554	736	948	610	570	710	968	583	1091	1015
Balance	+32	-179	-214	-334	+4	-196	- 25	+92	-70	-732	-549

Source: compiled by the authors based on data from Observatory of Economic Complexity [2024] and State Statistics Service of Ukraine [2024] without considering temporarily occupied territories, parts of the anti-terrorist operation zone, and areas where hostilities are (or were) taking place.

Bilateral trade regulation framework. For the purpose of analysing the impact of various factors on mutual trade, it is important to examine the process of trade liberalization between the two countries, as the removal of border customs barriers directly strengthens the influence of other factors on the development of its dynamics and structure.

The United Kingdom was a member state of the EU for a long time, so the institutional foundations of trade between the two countries were formed at the level of the Union as a whole. In the Partnership and Cooperation Agreement between Ukraine and the European Communities and their Member States (1994), the parties granted each other the most-favoured-nation treatment in trade according to paragraph 1 of Article 1 of GATT. It is important to note that even then, the participants of the Agreement undertook to consider, in particular, after Ukraine's further progress in economic reforms, the addition of relevant sections of this Agreement with the aim of creating a free trade area between them.

On September 16, 2014, the Verkhovna Rada of Ukraine and the European Parliament simultaneously ratified the Association Agreement between Ukraine and the EU, which came into full force on September 1, 2017. The Association Agreement between Ukraine and the EU established a free trade area and, in the field of tariff regulation of trade in goods, provided for:

- the abolition of import duties on 97% and 96.3% of tariff lines, respectively;
- an asymmetric nature of tariff liberalization in terms of timelines and depth (the EU has shorter transitional periods, and Ukraine does not fully abolish duties for a number of tariff positions);
 - the transitional period lasts 10 years;
 - the EU retains a significant volume of tariff quotas (13.7% of tariff lines for agriculture, the food industry, and related sectors);
 - the average import duty rates decrease for Ukraine from 4.95% to 0.32%, and for the EU from 7.6% to 0.05%.

The significant growth of trade between Ukraine and the United Kingdom following the liberalization of the trade regime after 2014 was hindered by the Russian occupation of part of Ukraine's territory and the removal of a significant part of the country's economic potential from Ukraine's regulatory space. Thus, this led to the forced disintegration of this territory from the EU's free trade regime as a whole and from individual member states, including the United Kingdom.

After the United Kingdom's exit from the European Union, an Agreement on Political Cooperation, Free Trade, and Strategic Partnership between Ukraine and the United Kingdom of Great Britain and Northern Ireland was signed in 2020, which entered into force on January 1, 2021. The Agreement establishes a free trade regime, general principles and rules for the abolition of customs duties, fees, and other payments in the trade of goods, the application of non-tariff measures, special provisions for goods, as well as a schedule and conditions for tariff liberalization by the parties in the trade of goods. However, exceptions to the free trade regime were maintained, which largely coincided with the exceptions in the Ukraine-EU Association Agreement. Moreover, zero tariff quotas were established by the British side, in addition to those provided under the Association Agreement). The number of tariff quotas opened for Ukraine is 36 (+4 additional), and for the United Kingdom, it is 3 (+2 additional) (see Table 2). Ukrainian exports – including, barley,

honey, tinned tomatoes and poultry – were previously subject to tariffs averaging about 22 per cent [*The Independent*, 2022].

Table 2. Number of non-liberalized tariff lines for exports to the United Kingdom and Ukraine

Year	United Kingdom			Ukraine	
	Tariff	Entry price	Tariff quota	Tariff	Tariff quota
2021	163	27	364	603	73
2023	0	27	364	262	73
2026	0	27	362	242	73

Source: Ministry of Economy of Ukraine [2020].

After the start of Russia's full-scale aggression, the United Kingdom was the first country to abolish tariffs on all trade with Ukraine in May 2022, in accordance with the Free Trade Agreement between the UK and Ukraine, which remained in effect until March 2024. Following this decision, similar initiatives were supported by the EU and other partners of Ukraine. The UK also suspended for 9 months the restrictive measures on hot-rolled steel products exported from Ukraine. This period could be extended up to 21 months upon an additional recommendation from the UK Trade Remedies Agency.

In 2024, changes to the Agreement provided for further liberalization of mutual trade. By 2029, all import duties and tariff quotas in bilateral trade will be abolished, except for two product categories – eggs and poultry meat products. Duty-free trade for these products will continue for another 2 years, until April 1, 2026. These changes will certainly stimulate the exchange of goods between the two countries.

UK-Ukraine 100 year partnership declaration, signed in January 2025, envisages further mutual market access through raising awareness and utilisation of the UK-Ukraine Free Trade Agreement, accelerating and broadening the scope of elimination of customs duties on trade, and improving ease of doing business. It will be done through insurance mechanisms, removing trade barriers, de-regulation, rolling guidance, targeted reforms and concerted private sector engagement [*UK-Ukraine 100 year partnership declaration*, 2025].

Throughout the period of developing mutual trade, the trade in goods was of greater importance for Ukraine (for instance, the United Kingdom ranked 14th in Ukraine's trade volume in 2024) [*State Statistics Service of Ukraine*, 2024], than for the United Kingdom (Ukraine ranked only 76th among the UK's trade partners in 2023-2024) [*Office for National Statistics*, 2024]. The share of mutual trade in the total external trade turnover of the partners in recent years has accounted for only 0.1-0.2% for the UK and 1-2% for Ukraine. However, in the context of intensifying global competition, such positions are important, especially for certain commodity groups in mutual trade.

An important role in the development of mutual trade between Ukraine and the United Kingdom will be played by the Digital Trade Agreement (2023), as part of the Agreement on Political Cooperation, Free Trade, and Strategic Partnership. This agreement, in particular, aims to reduce administrative costs in trade through the use of digital products, electronic signatures, contracts, and invoices in mutual trade.

The commodity structure of mutual trade is primarily intersectoral, with UK exports to Ukraine dominated by goods with higher added value, while the commodity structure of Ukrainian exports to the UK is dominated by raw materials and products with minimal added value. However, in recent years, the share of finished products in Ukraine's export structure has been steadily increasing (insulated wire, electric heaters, gas turbines, air pumps) (see Tables 3 and 4) [*The Observatory of Economic Complexity*, 2024].

Table 3. Main goods exported from the United Kingdom to Ukraine (%%)

2001	2005	2010	2015	2020	2022
Broadcasting equipment - 13.1	Cars – 7.28	Cars – 15.8	Packed medicaments – 13.8	Cars – 15.9	Cars – 11.6
Activated carbon – 4.58	Used clothing – 3.9	Packed medicaments – 7.12	Cars – 7.22	Packed medicaments – 9.14	Packed medicaments – 6.9
Razor blades – 2.74	medicaments – 3.08	Used clothing – 6.25	Petroleum gas – 18.6	Petroleum gas – 10.6	Used clothing – 7.74
Packed medicaments – 2.64	Photographic films – 2.87	Compasses – 1.93	Used Clothing – 5.53	Large construction vehicles – 4.59	Petroleum gas - 5
					Pesticides – 4.48

Source: compiled by the authors based on data from The Observatory of Economic Complexity [2024].

Table 4. Main goods exported from Ukraine to the United Kingdom (%%)

2001	2005	2010	2015	2020	2022
Refined petroleum – 33.7	Seeds oils – 22	Semi-finished iron – 2.,5	Semi-finished iron – 16.5	Corn – 15.9	Rapeseed – 13
Industrial printers – 28.7	Semi-Finished iron – 12.9	Ferrolloys – 4.92	Seeds oils 16.5	Rapeseed – 15.9	Corn – 7.9
Non-knit women’s suits – 4.61	Refined petroleum – 10.2	Seeds oils – 14	Corn – 8	Seed oils – 14,5	Seed oils – 11.4
Semi-finished iron – 3.57	Non-knit women’s suits – 5.71	Aluminium oxide - 12	insolated Wire – 6.22	Insolated wire – 9.84	Insolated wire – 12.3
					Electric heaters – 4.14
					Gas turbines – 2.15
					Air pumps - 1.38

Source: compiled by the authors based on data from [The Observatory of Economic Complexity, 2024].

In 2022, the UK had a large net trade with Ukraine in the exports of Chemical Products (\$120 million), Transportation (\$119 million), and Machines (\$108 million). In 2017, Ukraine had a large net trade with the UK in the exports of Vegetable Products (\$128 million), Machines (\$116 million), and Animal and Vegetable Bi-Products (\$60.6 million).

In 2023 Ukrainian main exports to the UK included: food (49%), machinery and transport equipment (17%), iron and steel (10%). The UK exports to Ukraine were mostly machinery and transport equipment (44%), chemical products (19%), beverages and tobacco (10%), textile fibres, yarn, fabrics and clothing (7%), 8% were high-tech products [UNCTAD, 2024a].

As for the pre-war logistical structure of the bilateral trade (table 5), in 2021 most of the Ukrainian exports to the UK were transported by sea transport (the cheapest one). That’s why, blocking of seaports in 2022 at the beginning of the war had a substantial negative effect on the bilateral exports (decrease 2 times). This corresponds to the fact that 56% of the exports in 2023 were primary commodities and resource based manufactures [UNCTAD, 2024a].

The UK exports to Ukraine relied both on road and sea transport as the main modes. The road transport was the cheapest in this case, but the price of transportation varied a lot in various years (e.g. railway transport was the cheapest mode in 2020).

Table 5. Transport costs and structure of the bilateral trade between Ukraine and the United Kingdom by mode of transport, 2021

	Ukrainian exports to the UK			The UK exports to Ukraine		
	Transport cost intensity in US\$ per ton-km	Value, \$ million	%	Transport cost intensity in US\$ per ton-km	Value, \$ million	%
All modes	0.012	1007	100.0	0.021	983	100.0
Air	0.360	13	1.3	0.0409	109	11.0
Sea	0.011	812	80.7	0.054	418	42.5
Railway	0.017	23	2.3	0.063	176	17.9
Road	0.066	92	9.2	0.003*	361	36.7
Other modes		89	8.8		111	11.3
Multimodal adjustment		-23	-2.3		-191	-19.4

Source: UNCTAD [2024b].

Note: * 0.012 in 2020.

According to International Trade Centre (2025), actual exports of machinery from Ukraine to the UK are 42% of their potential (unrealized potential is estimated to be \$81 million), ferrous metals 50% (+\$34 million), wheat 9% (+\$46 million), mineral resources 1% (+\$37 million), vegetal residues and animal feed 33% (+\$33 million), processed meat 11% (+\$28 million) etc. On the contrary, exports of maize, sunflower and rapeseed are above their potential.

Actual exports of machinery from the UK to Ukraine are 52% of their potential (unrealized potential is \$79 million), motor vehicles and parts 75% (+\$61 million), pharmaceutical components 54% (+\$50 million), chemicals 56% (\$47 million), alcoholic beverages 48% (+\$39 million), optical products, watches and medical instruments 39% (+\$37 million), plastic and rubber 38% (+\$29 million) etc. Exports of some specialized vehicles (such as tractors, excavators), diagnostic and laboratory reagents, used textile and textile articles are above their potential level [International Trade Centre, 2025].

Thus, the analysis of the dynamics and structure of mutual trade in goods between Ukraine and the United Kingdom over the past 30 years indicates a significant unrealized potential for further development. Identifying the factors driving the development of mutual trade creates a foundation for determining the most promising directions for deepening trade relations between the two countries under current conditions.

Resilience and vulnerability of the bilateral trade under crises. At the next stage changes in % in bilateral trade in goods (large products groups) during the four crisis events were calculated to assess vulnerability under various circumstances [UNCTAD, 2024a]. The first crisis (2009 relatively 2008) was a regular cyclical economic crisis which put half of the countries into recession and was a demand driven event. The second crisis (2015 relatively 2013) was idiosyncratic to Ukraine under hybrid war and was demand driven and partially supply-driven (in South East of the country). The third crisis (2020 relatively 2019) was a unique event in modern history since it was caused by the COVID-19 pandemic and the associated lockdown measures affecting both demand and supply. The fourth crisis (2022 relatively 2021) was rather idiosyncratic for Ukraine under large-scale Russia-Ukraine war which caused mostly supply shock. The demand shock was partially smoothed thanks to international aid. Several product groups were considered:

- Total – total all products;
- Food – food, basic (SITC 0 + 22 + 4);
- Bev – beverages and tobacco (SITC 1);
- Agro – agricultural raw materials (SITC 2 less 22, 27 and 28);
- Ore – ores and metals (SITC 27 + 28 + 68);
- Fuel – fuels (SITC 3);

- Manuf – manufactured goods (SITC 5 to 8 less 667 and 68);
- Chem – chemical products (SITC 5);
- Mach – machinery and transport equipment (SITC 7);
- Iron – iron and steel (SITC 67);
- Textile – textile fibres, yarn, fabrics and clothing (SITC 26 + 65 + 84).

Table 6 shows that the bilateral trade was stable only during the pandemic crisis, while both Ukrainian and British exports substantially decreased during the other three crises. But there were asymmetries in vulnerabilities of exports in various products on Ukrainian and British side. The most vulnerable bilateral Ukrainian exports were exports of fuels, ores, iron, steel and other metals with high traditional dependency on business cycles. The most vulnerable bilateral British exports were exports of machinery, transport equipment and agricultural raw materials. Contrasting low vulnerability of Ukrainian machinery exports and high sensitivity of British machinery exports can be possibly explained by shift of the demand during the crises to cheaper products from developing economies. The same regularity may be relevant for food, beverages and agricultural raw materials.

Table 6. Changes in the UK – Ukraine bilateral trade under crises, %

Direction of trade	UA-UK exports					UK-UA exports				
	2009/ 2008	2015/ 2013	2020/ 2019	2022/ 2021	Geometric mean	2009/ 2008	2015/ 2013	2020/ 2019	2022/ 2021	Geometric mean
Total	-46	-33	6	-58	-36	-53	-50	4	-29	-35
Food	-3	-22	36	-60	-20	-21	-68	6	-34	-35
Bev	0	1	66	147	43	-42	-38	5	-24	-27
Agro	8	-9	-47	-60	-32	-10	-95	98	-16	-48
Ore	67	-81	-82	-75	-66	-13	-61	-15	44	-20
Fuel	-88	-75	-60	-81	-78	-59	1662	4	-43	44
Manuf	-70	-15	-15	-56	-44	-55	-57	0	-34	-40
Chem	-73	-54	8	-61	-52	-13	-46	0	-39	-27
Mach	-1	-12	52	-11	4	-72	-67	5	-36	-50
Iron	-83	-12	-42	-87	-67	-15	-42	6	14	-12
Textile	-32	-14	-39	-34	-30	-9	-78	54	-9	-27

This data was used for K-means cluster analysis to create 6 clusters of relatively homogeneous patterns of reaction of exports from the UK to Ukraine (UK-UA) and Ukraine to UK (UA-UK) to the shocks (table 7). According to results of cluster analysis in table D, Ukrainian exports of beverages (the only member of cluster 3) and British exports fuels (cluster 1) can be treated as outliers as there were extremely large positive trends in them during one of the crises. In both cases this can be explained by the base effect as originally their shares in the bilateral trade were small.

Most Ukrainian export product groups and British total, manufactures and machine exports (cluster 6) followed a pattern when there were substantial drop in them during 3 crises and a milder dynamics under pandemic crisis. Several types of British exports (cluster 4) suffered the most in 2015 with milder drop in 2009 and 2022 and on average had stable value during the pandemic crisis. Cluster 2 exports were characterized by increase during the pandemic crisis contrasting with a drop during 2015 or 2022. Ukrainian commodity exports within cluster 5 were vulnerable to all the crises except for the crisis in 2008-2009.

Table 7. Cluster analysis results

No of cluster	Cluster members	Mean values			
		2009/2008	2015/2013	2020/2019	2022/2021
1	UK-UA: Fuels	-59	1662	4	-43
2	UA-UK: Food, Mach UK-UA: Agro, Textile	-6	-52	60	-24
3	UA-UK: Bev	0	1	66	147
4	UK-UA: Food, Bev, Ore, Chem, Iron	-21	-51	0	-8
5	UA-UK: Agro, Ore	37	-45	-65	-67
6	UA-UK: Total, Fuel, Manuf, Chem, Iron, Textile UK-UA: Total, Manuf, Mach	-64	-42	-15	-53

Factors of the bilateral trade. The annual data for analysis of the factors of the bilateral trade in goods is for 1996-2023. Unfortunately, the available detailed time series for the services bilateral trade data are much shorter. Therefore merchandise trade was considered only at this stage.

We analyse several dependent variables, which are indicators of bilateral trade in all or main traded products (e.g. in 2023 the 3 relevant products constituted 75% of the bilateral export of Ukraine to the UK and 78% of the bilateral imports):

- UAExpUK – growth of Ukrainian exports to the UK, total all products, % (relatively preceding year);
- UAExpUKFood – growth of Ukrainian exports to the UK, all food items (SITC 0 + 1 + 22 + 4), %;
- UAExpUKMach – growth of Ukrainian exports to the UK, machinery and transport equipment (SITC 7), %;
- UAExpUKIron – growth of Ukrainian exports to the UK, iron and steel (SITC 67), %;
- UAImpUK – growth of Ukrainian imports from the UK, total all products, %;
- UAImpUKFood – growth of Ukrainian imports from the UK, total all products, All food items (SITC 0 + 1 + 22 + 4), %;
- UAImpUKChem – growth of Ukrainian imports from the UK, chemical products (SITC 5), %;
- UAImpUKMach – growth of Ukrainian imports from the UK, machinery and transport equipment (SITC 7), %.

The independent variables include trade with the entire world to consider overall export competitiveness of a country and overall demand in a country for imported goods (same product group as in a dependent variable):

- UAExpW – growth of Ukrainian exports to the world, %;
- UAImpW – growth of Ukrainian imports from the world, %;
- UKExpW – growth of exports of the UK to the world, %;
- UKImpW – growth of imports of the UK from the world, % [UNCTAD, 2024a].

Business cycle and price competitiveness factors include ($t-1$ index is added if an indicator is with 1 year lag):

- GDPUK – GDP growth in the UK, % (GDP is used to consider business cycles; it is an alternative way to consider growth of export capacities and demand);
- GDPUA – GDP growth in Ukraine, %;

- RER – growth of real exchange rate of hryvnia to the pound (calculated based on official exchange rates, LCU per US\$, and inflation, consumer prices), % (when GDP deflator based real exchange rate was tested as alternative, correlation analysis showed no significant difference in the effect; and the data to calculate unit labour cost based real exchange rate was missing for Ukraine; therefore only consumer prices based real exchange rate was left);

- RIR – real interest rate in Ukraine, % (it shows costs of borrowing money for domestic financing for purchases of imported goods and for developing export capacities) [*World Bank, 2024*].

Economic freedom factors are (besides trade freedom, only dimensions with relatively large variance are included; additional 1 year lag is envisaged considering publication lag, e.g. score for 2024 is based on the data between the 2nd half of 2022 and 1st half of 2023):

- EFUK – change in overall economic freedom index in the UK, pp (i.e. change in 0-100 scale score);

- EFUA – change in overall economic freedom index in Ukraine, pp;

- TrFUK – change in trade freedom index in the UK, pp (considers trade-weighted average tariff rate and qualitative evaluation of nontariff barriers);

- TrFUA – change in trade freedom index in Ukraine, pp;

- TxUA – change in tax dimension of freedom index in Ukraine, pp (considers top marginal tax rate on individual income, top marginal tax rate on corporate income, and the total tax burden as a percentage of GDP);

- MFUA – change in monetary freedom index in Ukraine, pp (considers weighted average rate of inflation for the most recent three years and a qualitative judgement about the extent of government manipulation of prices through direct controls or subsidies) [*Heritage Foundation, 2023*].

Bilateral financial relations factors include (unfortunately, the detailed FDI times series are too short to be included in the analysis here):

- BL – change in cross-border total liabilities of the UK banks vis-a-vis residents of Ukraine, pp GNI (i.e. calculated as change in % GNI);

- BC – change in cross-border total claims of the UK banks vis-a-vis residents of Ukraine, pp GNI (the liabilities and the claims are correlated strongly enough to each other, therefore they can be treated as a single factor) [*Bank for International Settlements, 2024; World Bank, 2024*].

Correlation analysis is done with Pearson correlation coefficients, but robustness check with Spearman correlation is carried out for indicators with outliers leading to substantial deviation from normal distribution (there was an abnormally high increase in Ukrainian exports of food, machinery and iron in 2003, 2001 and 2008 respectively). Within regression analysis OLS method is used for unweighted cases and then robustness is checked by using weighted cases, where more recent years receive higher weight (e.g., 1997 is assigned weight 7 and 2023 – weight 33).

Correlation analysis (see table 8) shows that Ukrainian exports to the UK (all products) may depend on its *exporting capacities* (or its global exporting competitiveness). In particular, the effect is present for machinery and iron (the latter shows a very strong Spearman correlation 0.83), although the positive effect for food exports is insignificant under annual data analysis. But an alternative explanation of positive association with GDP may be a reverse causality: under open economy of Ukraine exports may be a GDP growth driver. In such a case a confounding variable (such as global commodity prices increase) may affect both exports to the UK and worldwide, with the latter leading to GDP growth.

Table 8. Correlation Analysis of the bilateral trade between Ukraine and the UK and its factors

	UAE _{exp} UK	UAE _{exp} UK _{fo}	UAE _{exp} UK _{Ma} _{ch}	UAE _{exp} UK _{Iro} _n	UAI _{mp} UK	UAI _{mp} UK _{fo}	UAI _{mp} UK _{Ch} _{em}	UAI _{mp} UK _{Ma} _{ch}
UAE _{exp} W	0.47**	0.05/0.30	0.16/0.39**	0.64**/0.83**				
UAI _{mp} W					0.77*	0.61*	0.80*	0.85*
UKE _{exp} W					0.40*	0.31	0.27	0.26
UKI _{mp} W	-0.02	0.37*/0.01	-0.17/-0.29	0.44**/0.65**				
GDP _{UK}	0.10	0.07/0.05	0.03/-0.09	0.12/0.21	0.16	-0.06	0.14	0.19
GDP _{UA}	0.45**	0.24/0.16	0.19/0.21	0.37*/0.50*	0.58*	0.62*	0.64*	0.64*
RER	0.38**	-0.10/0.02	0.28/0.31	0.37*/0.24	0.40*	0.41*	0.52*	0.50*
RIR	0.16	0.14/0.07	0.23/-0.11	-0.25/-0.16	-0.13	-0.20	0.08	-0.15
EF _{UK}	0.25	-0.03/0.08	0.07/-0.14	-0.01/-0.15	-0.03	-0.08	0.19	-0.04
EF _{UA}	0.09	0.17/0.12	0.02/0.08	0.11/0.32	0.14	-0.08	0.27	-0.02
Tr _{FUK}	-0.13	0.19/-0.12	0.01/0.18	-0.16/-0.19	0.22	-0.08	-0.10	0.19
Tr _{FUA}	0.00	-0.03/-0.11	-0.01/0.09	0.22/0.08	0.33*	0.04	0.25	0.25
T _{xUA}	0.05	0.09/0.44*	0.01/-0.09	-0.22/-0.01	0.09	-0.10	0.37*	0.04
MF _{UA}	-0.08	0.00/0.06	-0.07/-0.01	-0.00/0.06	-0.15	-0.24	-0.19	-0.33
BL	-0.13	0.04/-0.04	-0.00/-0.21	-0.26/0.07	-0.13	-0.24	0.01	-0.20
BC	-0.29	0.02/-0.03	0.01/-0.08	-0.44**/-0.06	-0.14	-0.29	0.12	-0.13
GDP _{UK} _{t-1}	-0.20	-0.03/-0.25	0.13/-0.40**	-0.26/-0.17	-0.17	-0.24	-0.20	-0.21
GDP _{UA} _{t-1}	0.22	0.17/0.31	0.15/0.29	0.08/-0.06	-0.02	0.07	0.03	-0.09
RER _{t-1}	-0.07	-0.05/0.01	0.01/-0.02	-0.16/-0.24	-0.06	-0.06	0.17	0.06
RIR _{t-1}	0.20	0.26/0.20	0.09/0.02	-0.05/0.10	-0.04	-0.25	-0.07	-0.16
EF _{UK} _{t-1}	0.23	0.19/0.28	0.18/0.34*	-0.04/-0.03	-0.04	-0.06	-0.18	-0.12
EF _{UA} _{t-1}	0.19	0.00/0.17	0.32*/0.05	-0.21/-0.15	-0.21	-0.16	0.13	-0.28
Tr _{FUK} _{t-1}	0.23	0.18/-0.05	-0.03/-0.06	0.70**/0.44**	0.42*	0.50*	0.25	0.48*
Tr _{FUA} _{t-1}	0.35*	0.01/0.17	0.61**/0.08	0.10/0.31	0.11	0.18	0.45*	0.13
T _{xUA} _{t-1}	-0.25	0.09/0.10	-0.09/-0.12	-0.41**/-0.12	-0.02	0.01	-0.25	0.00
MF _{UA} _{t-1}	0.22	-0.16/0.02	0.39**/-0.02	-0.09/-0.06	-0.04	-0.07	0.21	-0.07
BL _{t-1}	-0.02	0.28/0.02	0.01/0.01	0.08/0.01	0.47*	0.24	0.26	0.45*
BC _{t-1}	0.28	0.08/0.30	-0.01/0.05	0.31/0.05	0.42*	0.32	0.33*	0.47*

Notes: ** denotes significant correlations at $p < 0.05$, * – marginally significant correlations at $p < 0.1$. Since UAExpUKFood, UAExpUKMach and UAExpUKIron are not normally distributed, Spearman correlations are added after /.

Ukrainian exports of food and iron to the UK are *demand driven* (caused by larger propensity to buy foreign goods but not by business cycle). Insignificant correlation with economic growth in the UK may be potentially explained by two mutually offsetting effects. Under recession buyers tend to buy less, but they may tend to switch to cheaper goods like the ones originating in less developed economies. There is also non-robust negative Spearman correlation with lagged economic growth in the UK for the bilateral exports of machinery.

The bilateral *real exchange rate* of the hryvnia is positively associated with exports growth to the UK, which is contrary to the theory. A possible explanation may be a reverse effect: large income from exports may lead to appreciation of national currency especially under open economy like in Ukraine. Moreover sectoral exports (food and machinery) do not have significant correlation with it. Marginally significant positive Pearson correlation in case of iron exports does not pass robustness check with Spearman correlation.

Real interest rate affects neither the bilateral exports nor the bilateral imports, possibly considering lower financial sector development level in Ukraine and possibly low contribution of domestic bank lending to financing of international trade.

Except for taxation dimension, it takes some time lag (about a couple of years) for *economic freedom* indicators to affect exports of Ukraine to the UK. There is a marginally significant non-robust effect of overall freedom in the UK and Ukraine on exports of machinery. Trade freedom in the UK stimulates Ukrainian exports of iron, while trade freedom in Ukraine primarily stimulates its exports of machinery. The negative effect of low taxation burden on iron exports turns out to be non-robust, while its positive effect on exports of food is more justified. A positive effect of monetary freedom on machinery exports is not robust.

Change in intensity of *international banking relations* between Ukraine and the UK seems to have a neutral effect on their bilateral trade.

As for imports of Ukraine from the UK, neither business cycle in the UK nor trends in its exports worldwide (*supply factors*) affect it significantly, except for a minor positive effect (0.40) of the latter when all products are considered.

Instead, they are highly dependent on *demand* in Ukraine in general (GDP) and especially for foreign goods (imports from the entire world). Larger correlation with the latter may be explained by assumption that British goods take a more expensive and higher quality segment of the market. Under recession Ukrainian buyers not only decrease consumption, but also may switch to cheaper domestic or other foreign alternatives from developing economies.

Sensitivity to prices on British goods is also proved by positive correlation with the bilateral *real exchange rate* of the hryvnia to the pound. Appreciation of hryvnia under higher inflation in Ukraine than in the UK stimulates Ukrainian imports from the UK, while hryvnia's devaluation has an opposite effect. No lagged effect of the business cycle and price competitiveness indicators was registered.

Economic freedom factors affect the bilateral imports with a time lag of a couple of years (except for two marginally significant effects). Overall economic freedom has no effect. Trade freedom is more important for most of the products. But imports of chemical products depend significantly positively more on trade freedom and marginally on low taxation burden in Ukraine. Monetary freedom does not provide a significant effect.

Unlike for the bilateral exports, growing intensity of *international banking relations* (both claims and liabilities) between Ukraine and the UK positively affects the bilateral imports in general and in particular of machinery (other main sectoral imports are insignificantly positively correlated).

According to the regression analysis results (see table 9), Ukrainian exports to the UK positively depend on overall Ukrainian competitiveness globally. Ukrainian iron exports to the UK

even stronger depend on Ukrainian exports of iron worldwide, which may either reflect dependence on the global commodity market conditions (global demand) or export capacity building (supply factor). In alternative specifications the iron exports may depend on the UK iron imports (local demand) and economic growth in Ukraine (supply/global demand) or trade liberalization in the UK (regulation favouring larger propensity to imports). Ukrainian food exports to the UK marginally positively depend on easiness of taxation in Ukraine. No robust results were found for the factors of Ukrainian machinery exports to the UK. Unlike the bilateral iron exports (with coefficient of determination up to 0.65), food and machinery exports are much less predictable.

Table 9. Regression models for the Ukrainian exports to the UK

Y	UAExpUK	UAExpUKFood	UAExpUKIron	UAExpUKIron	UAExpUKIron
b₀	6.65/4.51 (8.34)	9.14/8.99 (12.8)	13.64/16.25 (9.24)	9.57/9.21 (10.18)	16.96/16.41 (13.48)
b_{UAExpW}	0.99/1.14 (0.37)**		1.86/1.72 (0.30)***		
b_{UKImpW}				1.83/1.74 (0.48)***	
b_{GDPUA}				2.50/2.80 (1.31)*	
b_{TrFUKt-1}					32.6/31.0 (13,5)**
b_{TxUA}		5.73/5.33 (2.98)*			
R²	0.22** /0.38	0.14* /0.16	0.62*** /0.65	0.57*** /0.62	0.19** /0.20
N	27	26, excl. 2003	26, excl. 2008	26, excl. 2008	26, excl. 2008

Notes. The coefficients for unweighted and weighted cases are separated with a slash (/). The significance according to t- and F-test is mentioned for unweighted cases: *** at $p < 0.01$, ** at $p < 0.05$, * at $p < 0.01$. Standard errors are in brackets. The last row contains the number of years and excluded outlier year, when it is relevant.

The Ukrainian imports of the main products from the UK are usually predictable enough with the analysed factors (tables 10-11). For all the products, the bilateral Ukrainian imports depend on total import demand in Ukraine, especially when machinery is considered. In alternative specifications we further decompose the effect of import demand into the effect total local demand (GDP growth in Ukraine matters for all the three types of the products and especially for machinery, demand for which is more pro-cyclic as it includes either durable consumer goods or investment goods) and factors affecting propensity to imports.

Table 10. Regression models for the Ukrainian imports from the UK (part1)

Y	JAImpUK	JAImpUK	JAImpUK	JAImpUK Food	JAImpUK Food
b₀	3.21/2.87 (4.75)	8.91/9.87 5.36	7.08/8.45 (4.21)	5.72/9.81 (5.79)	8.69/12.06 (6.16)
b_{UAImpW}	1.14/1.10 (0.19)***			0.52/0.53 (0.23)**	
b_{GDPUA}		1.78/1.86 (0.68)**	1.58/1.75 (0.53)***	1.77/1.53 (0.78)**	
b_{RER}			0.96/0.73 (0.35)**		1.03/0.95 (0.49)**
b_{TrFUKt-1}					13.38/12.55 (4.90)**
b_{TrFUA}		2.10/2.11 (1.10)*			
b_{BLt-1}		5.16/4.21 (2.70)*			
R²	0.59*** /0.62	0.50*** /0.52	0.51*** /0.51	0.49*** /0.54	0.36*** /0.36
N	27	27	26, excl.2003	27	27

Table 10. Regression models for the Ukrainian imports from the UK (part2)

Y	JAImpUK Chem	JAImpUK Chem	JAImpUK Mach	JAImpUK Mach
b₀	-0.21/-0.83 (3.01)	4.62/3.80 (3.04)	3.44/3.40 (4.66)	15.87/17.29 (5.86)**
b_{UAImpW}	0.84/0.89 (0.14)***		1.14/1.17 (0.14)***	
b_{GDPUA}		1.35/1.44 (0.36)***		2.65/2.72 (0.72)***
b_{RER}		0.57/0.50 (0.25)**		1.18/1.02 (0.48)**
b_{TrFUAt-1}	1.04/0.63 (0.55)*	1.16/1.07 (0.58)*		
b_{TxFUA}		1.38/1.25 (0.73)*		
R²	0.69*** /0.73	0.69*** /0.72	0.77***/ 0.76	0.52*** /0.54
N	27	26	27	27

Unlike for bilateral Ukrainian exports, price competitiveness of British goods (inverse to the real exchange rate of the hryvnia to the pound) stimulates Ukrainian bilateral imports from the UK especially for machinery and food, which is expected to have higher elasticity of demand to prices. This is not a typical regularity for food products as essential goods, but we may assume that British food and beverages products belong to a relatively more expensive segment than domestically produced ones in Ukraine.

Trade liberalization in the UK stimulates its exports of food to Ukraine, while trade and tax liberalization in Ukraine marginally positively affects the British exports of chemical products (as well as all products in total in case of trade regulation) to Ukraine. Bilateral banking relations have a marginally significant positive impact on Ukrainian imports from Britain, although the factor is not present in the sectoral models.

Conclusions

The process of trade liberalization between the United Kingdom and Ukraine mainly started in 2014 on multilateral basis, then deepened on bilateral basis in 2022 and directly strengthened the influence of other factors on the development of the trade dynamics and structure.

The bilateral trade between Ukraine and the UK is largely inter-industry: virtually a half of Ukrainian exports are food and almost a half of the UK exports are machinery or transport equipment. In pre-war logistics Ukraine relied mostly on the sea transport for its exports to the UK, which became vulnerable under the war. The UK exporting logistics was more diversified. There is still much potential for further development of the bilateral trade, especially in machinery, vehicles, chemical and some agrifood products.

The bilateral trade was subject to vulnerability under global (the great recession) or idiosyncratic (Russia-Ukraine hybrid and then full-scale war) crisis events leading to demand or supply shocks, but it was resilient enough under the pandemic crisis. Ukrainian commodity exports and the UK machinery (including transport equipment) vehicles were the most vulnerable under the crises. The relatively most resilient main export products in the short run were Ukrainian machinery and food, and the UK chemical products. In the middle run the UK exports turned out to be more resilient than Ukrainian ones and already had exceeded the pre-war level, which is natural under international aid to Ukraine.

Ukrainian exports to the UK depend on the overall growth of Ukrainian exports worldwide (denoting either national export competitiveness or world price effects). This effect is primarily attributable to iron exports together with the positive effect of large propensity to imports and trade freedom in the UK. The food exports might be stimulated by favourable taxation. Meanwhile, real devaluation of hryvnia cannot be an efficient instrument to stimulate Ukrainian sales in the UK. Ukrainian imports from the UK depend on business cycle in Ukraine (GDP growth and propensity to import), real exchange rate (price competitiveness) and possibly on trade freedom in Ukraine and the bilateral financial relations intensity. Trade freedom or taxation may be important for some sectoral imports (food and chemical products). Business cycle in the UK, real interest rate in Ukraine and general economic freedom in both countries seem to have an insignificant impact on the bilateral trade in both directions.

References

1. *Mahlstein, K., McDaniel, Ch., Schropp, S., & Tsigas, M. (2022). Estimating the economic effects of sanctions on Russia: An Allied trade embargo. The World Economy, 45(11), 3344-3383.*
2. Fang, Y., & Shao, Z. (2022). The Russia-Ukraine conflict and volatility risk of commodity markets. *Finance Research Letters, 50*, 103-113.
3. Aizenman, J., Lindahl, R. Stenvall, D., & Uddin, G. (2023). Geopolitical Shocks and Commodity Market Dynamics: New Evidence from the Russian-Ukraine Conflict. *NBER Working Paper*, No. w31950, SSRN: URL: <https://ssrn.com/abstract=4660277>
4. Brühlhart, M. and Torstensson, J. (2001). Regional Integration, Scale Economies and Industry Location in the European Union. *CEPR Discussion Paper* No. 1435.
5. Rodríguez-Pose, A. (2013). Regional Studies Do Institutions Matter for Regional Development? Do Institutions Matter for Regional Development? *Regional Studies, 477*, 1034–1047.
6. Monastiriotis, V., Kallioras, D., & Petrakos, G. (2017). The regional impact of European Union association agreements: an event-analysis approach to the case of Central and Eastern Europe. *Regional Studies, 51(10)*, 1454-1468.
7. Kawai, M., & Naknoi, K. (2015). ASEAN Economic Integration through Trade and Foreign Direct Investment: Long-Term Challenges. *ADB Working Paper 545*. Tokyo: Asian Development Bank Institute. URL: <http://www.adb.org/publications/asean-economic-integration-throughtrade-and-foreign-direct-investment-long-term>

8. National Bank of Ukraine. (2024). Inflatsiia pochno znyzhuvatsia z seredyny roku, a zrostantia ekonomiky pryshvydshytsia [Inflation will start to decline in the middle of the year, and economic growth will accelerate]. URL: <https://www.bank.gov.ua> [in Ukrainian]
9. World Bank (2023). Ukraine – Third Rapid Damage and Needs Assessment (RDNA3): February 2022 – December 2023. Washington, D.C.: World Bank Group. URL: <http://documents.worldbank.org/curated/en/099021324115085807/P1801741bea12c012189ca16d95d8c2556a>
10. The Observatory of Economic Complexity (2024). URL: <https://oec.world/en/profile/bilateral-country/gbr/partner/ukr>
11. Maiko, V. A. (1998). Bez istotnykh proryviv. Ukrainsko-brytanski torhovelnno-ekonomichni vidnosyny za suchasnykh umov [Without significant breakthroughs. Ukrainian-British trade and economic relations in modern conditions]. *Polityka i chas*, 11–12, 14–24 [in Ukrainian].
12. Hrubinko, A. V. (2005). Ukrainsko-brytanski vidnosyny 1991–2004 [Ukrainian-British relations 1991–2004]. Ternopil: Vydavnychy viddil TNPU im. V. Hnatiuka [in Ukrainian].
13. Hrubinko, A. V. (2022). Mizhnarodna rol Velykoi Brytanii v umovakh rosiisko-ukrainskoi viiny [The international role of Great Britain in the context of the Russo-Ukrainian war]. *Naukovi zakhody Yurydychnoho fakultetu Zakhidnoukrainskoho natsionalnoho universytetu*, 293–299 [in Ukrainian].
14. Makarchuk, K. O., & Shuba, M. V. (2020). Torhovelne spivrobitnytstvo Ukrainy ta Velykoi Brytanii: suchasnyi stan i perspektyvy [Ukraine and Great Britain Trade Cooperation: The Current State and Prospects]. *Biznes Inform*, 12, 65–71. URL: https://www.business-inform.net/export_pdf/business-inform-2020-12_0-pages-65_71.pdf [in Ukrainian]
15. Lanoszka, A., Rogers, J., & Shelest, H. (2022). *Deepening British-Ukrainian Relations in a More Competitive Era*. URL: <https://www.geostrategy.org.uk/app/uploads/2022/07/SBIPP08-20072022.pdf>
16. Shyrokyi, H., & Havrylenko, N. (2022). Liberalizatsiia Velykoiu Brytaniieiu torhivli z Ukrainoiu: analiz mozhlyvosti dlia ukrainskoho eksportu [Liberalization of trade with Ukraine by Great Britain: analysis of opportunities for Ukrainian exports]. URL: <https://niss.gov.ua/doslidzhennya/mizhnarodni-vidnosyny/liberalizatsiya-velykoyu-brytaniyeyu-torhivli-z-ukrayinoyu> [in Ukrainian]/
17. Kukharuk, V., & Skorokhod, I. (2023). Torhovelno-investytsiine spivrobitnytstvo Ukrainy ta Velykoi Brytanii [Trade and investment cooperation between Ukraine and Great Britain]. *Prychornomorski ekonomichni studii*, 80, 30–34 [in Ukrainian].
18. Dukhnytskyi, B. (2023). Foreign trade in agri-food products between Ukraine and the United Kingdom of Great Britain. *Ekonomika APK*, 30(3), 29-36.
19. Shnyrkov, O., & Chugaiev, O. (2023). Economic Integration of Ukraine: Context of the Russian-Ukrainian War. *Journal of European Economy*, 1(22), 48-69. <https://doi.org/10.35774/jee2023.01.048>.
20. State Statistics Service of Ukraine (2024). URL: <https://www.ukrstat.gov.ua>
21. Ministry of Economy of Ukraine. (2020). Informatsiia shchodo uhody pro politychne spivrobitnytstvo, vilnu torhivliu ta stratehichne partnerstvo mizh Ukrainoiu ta Spoluchenym Korolivstvom Velykoi Brytanii ta Pivnichnoi Irlandii [Information on the agreement on political cooperation, free trade, and strategic partnership between Ukraine and the United Kingdom of Great Britain and Northern Ireland]. URL: <https://me.gov.ua/Documents/Detail?lang=uk-UA&id=abfb9436-0d38-4a01-b9c7-0fccb08fc6a8&title=InformatsiiaSchodoUgodiProPolitychneSpivrobitnitstvo-VilnuTorgivliuTaStrategichnePartnerstvoMizhUkrainoiuTaSpoluchenimKorolivstvomVelikoiBritaniiTaPivnichnoiIrlandii> [in Ukrainian].
22. UK – Ukraine 100 year partnership declaration (2025). URL: https://www.president.gov.ua/storage/j-filesstorage/01/36/13/556138bddfcebe80318608e7c26fdab2_1737044973.pdf

23. Office for National Statistics (2024). Trade and investment factsheets. URL: <https://assets.publishing.service.gov.uk/media/6798e528e0edc3fbb060640c/ukraine-trade-and-investment-factsheet-2025-01-31.pdf>
24. UNCTAD (2024a, July 31). Merchandise trade matrix, annual. URL: <https://unctadstat.unctad.org/datacentre/dataviewer/US.TradeMatrix>
25. UNCTAD (2024b, May 24). Trade-and-Transport Dataset (experimental), annual, 2016 onward. URL: <https://unctadstat.unctad.org/datacentre/dataviewer/US.TransportCosts>
26. International Trade Centre (2025, January 9). Export Potential Map. URL: <https://exportpotential.intracen.org/en/>
27. World Bank (2024, September 19). World Development Indicators. URL: <https://databank.worldbank.org/source/world-development-indicators#>
28. Heritage Foundation (2023, October). Index of Economic Freedom. All country scores. URL: <https://www.heritage.org/index/pages/all-country-scores>
29. Bank for International Settlements (2024, July 31). Locational banking statistics. URL: <https://data.bis.org/topics/LBS>

ЗМІСТ

ПОЛІТИЧНІ ПРОБЛЕМИ МІЖНАРОДНИХ ВІДНОСИН

Pashaieva K.

CURRENT FOREIGN POLICY OF UKRAINE: A TOUGH WAY TO FORGE PEACE
.....4

Nataliia Pipchenko, Alina Yurii

MEDIA LITERACY AND PSYCHOLOGICAL RESILIENCE: THE SWEDISH APPROACH TO
COUNTERING DISINFORMATION.....16

Maksym Skrypnyk

THREAT TO THE US' NUCLEAR ORDER: CHINA AND RUSSIA DETERRENCE CRISIS
2024.....24

Denysenko K.Yu.

THE INDIVIDUAL IN INTERNATIONAL RELATIONS: THE TRANSFORMATION OF THE
PARADIGM.....35

Oleksandra Feduń, Nataliia Papish, Mariia Olkhovych-Novosadyuk

THE EASTERN EXTERNAL BORDER OF THE EU: TRANSFORMATION OF FUNCTIONS IN
THE CONTEXT OF THE RUSSIAN-UKRAINIAN WAR.....44

Dmytro Dubov, Svitlana Dubova

A GLOBAL SHORTFALL OF CYBER WORKFORCE: EVALUATING THE U.S. STRATEGY
APPROACH AND UKRAINE'S EMERGING CHALLENGES.....55

СУЧАСНА СИСТЕМА МІЖНАРОДНОГО ПРАВА

Medvedieva M.O., Bilotskiy S.D.

EXTRATERRITORIAL JURISDICTION IN INTERNATIONAL RIGHTS-BASED CLIMATE
LITIGATION.....63

ОСОБЛИВОСТІ РОЗВИТКУ СВІТОВОГО ГОСПОДАРСТВА ТА МЕН

Olena Pryiatelchuk, Vasyl Namoniuk

STRUCTURE AND DYNAMICS OF THE GLOBAL ARMS AND MILITARY EQUIPMENT
MARKET.....73

German Panikar, Volodymyr Morozov

THE ROLE OF STATE ECONOMIC POLICY IN THE IMPLEMENTATION OF NEW
TECHNOLOGIES AND INNOVATIONS: THE CASE OF PUBLIC-PRIVATE PARTNERSHIPS
IN EU COUNTRIES.....83

Iryna Shevchenko

SIMULATION OF THE INFLUENCE OF GENERATION Z, ALPHA AND BETA ON THE DEVELOPMENT OF DIGITAL MARKETING101

Oleksandr Shnyrkov, Rita Zablotska, Oleksii Chugaiev

THE UNITED KINGDOM – UKRAINE MERCHANDISE TRADE: RESILIENCE AND FACTORS.....109

АКТУАЛЬНІ ПРОБЛЕМИ МІЖНАРОДНИХ ВІДНОСИН

Збірник наукових праць

ВИПУСК 162

Заснований в 1996 році.
Established in 1996

Засновник : Інститут міжнародних відносин
Київського національного університету імені Тараса Шевченка.

Founder: Educational and Scientific Institute of International Relations,
Taras Shevchenko National University of Kyiv

Свідоцтво про державну реєстрацію: К1 №292 від 05.11.1998 р.
Certificate of state registration as a scientific journal: K1 №292 від 05.11.1998 р.

Перереєстрація у 2020 році. Засновник: Київський національний університет імені Тараса Шевченка. Certificate for state registration prolonged in 2020.

Свідоцтво про державну реєстрацію: серія КВ №24308-14148ПР від 13.02.2020 р.

Науковий редактор: **Дорошко М. С.**, доктор історичних наук, професор. Scientific editor:
Mykola S. Doroshko, Dr. of Sc., professor

Рекомендовано до друку Вченою радою Навчально-наукового інституту міжнародних відносин Київського національного університету імені Тараса Шевченка.

Протокол №7 від 28 лютого 2025 року.

Approved for print by the Scientific Council of Educational and Scientific Institute of International Relations, Taras Shevchenko National University of Kyiv Protocol № 7 (28 of February, 2025)

Підписано до друку 03.03.2025 року.

Наклад 100 примірників

Навчально-науковий інститут міжнародних відносин
Київського національного університету імені Тараса Шевченка

Тел. +38 0444814468

Сайт: <http://apir.iir.edu.ua/index.php/apmv/>