

LUDOVIKA UNIVERSITY OF PUBLIC SERVICE

Doctoral School of Military Sciences

Bazsó-Vigh Vivien:

The growing importance of the Arctic on the geopolitical world map of the 21st century

SHORT THESIS

for the degree of Doctor of Philosophy (PhD)

Supervisor: Klára Siposné Kecskeméthy CSc

Ret. Colonel

Budapest, 2025

Contents

Presentation of the scientific problem, justification of the topicality of the research	3
Research hypotheses.....	5
Research objectives	6
Research methods.....	7
Short description of the research by chapter	8
Summary of conclusions and scientific results	10
Recommendation and possible applications of the research results.....	14
List of publications by the author in the topic	16
Professional-scientific curriculum vitae of the author.....	17

Presentation of the scientific problem, justification of the topicality of the research

The Arctic region is part of our planet that is different from all other regions. Its uniqueness is due to its vast size and the sea surrounding the region, which can be considered a semi-frozen ocean. The Arctic sea and land areas cover 21 million km², surrounded by the barren tundra of the North American and Eurasian continents. The Arctic covers four percent of the Earth's land area.

Based on these, the boundaries of the Arctic are as follows: the Arctic can be considered the land mass beyond the Arctic Circle – latitude 66° 33' 03'' north – where the sun never sets on at least one day of the summer. However, there are several definitions for the Arctic, one of which is the areas with an average temperature in July below 10 °C, or all areas north of the Arctic Circle.

According to the definition that best matches my research, it is appropriate for me to examine those countries that are located north of the Arctic Circle. Therefore, the countries I examine are the following: Russian Federation, United States of America (Alaska), Canada, Denmark (Greenland), Iceland, Norway, Sweden, Finland. My goal is to show precisely through these countries what interests each country has in the Arctic region and what challenges they face in maintaining and securing the area.

The aim is to present geopolitical processes in the region where countries that are decisive for NATO are present. In the dissertation, I will also examine the chances of a potential conflict between NATO member states and Russia. The USA and the states with Arctic territories in the foreseeable future will have to gain and maintain their competitive advantage over emerging countries in the region. Russia, which has historical and regional involvement, is among the states with opposing interests in the Arctic, as well as China, which wants to exploit new opportunities as quickly as possible. Considering today's events, it is clear that these two states are striving to strengthen their position in the region by various traditional or indirect means. The unity of the region is further weakened by the fact that bilateral and multilateral agreements are not strong enough and unambiguous, and treaties that form a comprehensive legal framework are missing. These facts further weaken the already fragile hierarchical security system in the Arctic.

The region's potential could lead to geopolitical changes as energy demand and related energy dependence increase. This is especially important for Russia, which has the largest Arctic territory. It is important to take into account the fact that 90% of the region is covered by water, most of which is ice. This also shows that this region has a complex ecosystem with specific climatic conditions, as well as a variety of local indigenous cultures, traditions and ways of life.

My choice of topic was further strengthened by the fact that some of the Nordic countries have great power status today and therefore have a military presence in the region. It is important to examine the extent of military presence, because the proportions differ greatly between the individual countries. It is clear that Russia has the most ambitious plans for exploiting the region. This is reflected in the revival of Cold War military bases and the continuous development of shipping technology.

The region's value is also well demonstrated by the fact that a country with great power status such as the People's Republic of China has serious ideas about the shipping routes opening up in the Arctic. Nothing proves these serious concept better than the fact that it has developed its own Arctic strategy, because it believes that its political and economic interests are also linked to the Arctic Circle, which is 1,500 kilometers away. In 2013, it joined the Arctic Council with observer status as a country that calls itself a „near-Arctic” state, and in 2018, it drafted the White Paper, i.e., developed detailed strategic documents regarding the Arctic. Its main goal is to develop the New Silk Road, which would run along the Northeast Passage, shortening sea transportation route to the European continent. This raises security policy issues, as we are talking about a state that has the third strongest army in the world.

In my work, I would like to present a complex region that has undergone significant exploration and development in recent years, mainly thanks to the participating countries. In the case of exploration, I am referring to the mapping of natural gas and oil reserves, as well as the location of mineral resources, and in the context of development, to the modernization of the means necessary to achieve individual state goals.

The dissertation is a gap-filling work, to date, no complex work has been written in Hungarian about the importance of the Arctic and the processes taking place there. In rse of my work, I would also like to draw attention to the extent to which the rapidly increasing

climate change, which greatly affects the Earth's Northern Hemisphere, will change the geopolitical situation in the northern region.

Research hypotheses

During the examination of the research topic, I set up the following hypotheses:

1. During the climate change that has taken place over the past decade, the Northern Hemisphere has begun to warm to such an extent that the mineral resources hidden beneath the Arctic ice cap are becoming increasingly accessible, and all eight (8) Arctic countries present in the region (Russia, the United States, Canada, Norway, Denmark, Iceland, Finland, and Sweden) present in the region wish to share. Due to the region's natural resources (mineral resources, shipping routes), the states present are seeking to gain greater territorial influence around the Arctic.
2. The opening shipping routes (Northwest and Northeast Passage, Transpolar and Arctic Bridge routes) provide an opportunity mainly for countries with sea access located in the Northern Hemisphere, which can bring enormous economic benefits to the countries concerned when using these routes. In order to use these routes, the northern states need to conclude agreements with each other regarding international waters and set up checkpoints to monitor ships. This requires that the Arctic region be on a solid foundation and that territorial issues be settled (especially with regard to the ownership of the Lomonosov Ridge). For this reason, any international legal issues that may arise must be examined, and a unified regulatory system must be established for the states that provide control. The routes must be politically neutral, and the use of the routes must be based on a consensus decision. No state may claim exclusive rights to any route.
3. It can be observed that the military developments in the studied region in recent years are closely related to the consequences of climate change, in particular the new shipping routes opened up by the melting of ice and access to natural resources. The growing geopolitical and economic importance of the region encourages the states concerned to modernize their military infrastructure – including the development of ports and icebreaking vessels, as well as the modernization of equipment – and to

ensure control over the region and the ability to respond quickly to potential threats by building new bases and radar systems.

4. Eight states are involved in the Arctic region. Seven of these states are members of NATO. The Russian Federation is not a NATO member and its relationship with the Alliance is not trouble-free. As climate change progresses, the northern states will have an increasingly important role in the utilization of the region. Although the geopolitical situation may raise the possibility of military conflict in the event of a clash of different state interests, it is worth investigating whether Russia will be able to assert its will against NATO, taking into account the balance of power and the security policy relations of the countries concerned.

Research objectives

The research objectives are as follows:

- presentation of the geostrategic position and geopolitical significance of the Arctic,
- analysis of the security environment of the Arctic, presentation of interrelationships/connections and sources of threats,
- presentation of the Northeast and Northwest gateways and analysis of their security situation,
- description and analysis of the military presence in the region,
- presentation and analysis of the Arctic Council as the most important governmental organization in the region,
- evaluation and analysis of the relationship between NATO and the European Union and the Arctic,
- examination of international treaties related to the region.

The aim of the dissertation is to provide a comprehensive overview of the geopolitical situation of the Arctic and to present possible scenarios for the region. These are greatly influenced by climate change, the extent to which global warming will occur in the region, and whether states can cooperate effectively and utilize this valuable region in the most environmentally friendly way possible.

Another aim of the research is to provide up-to-date information on the plans of the newly joined Finnish and Swedish NATO member states for the Arctic, a region which is becoming

increasingly increasingly important due to rapid global warming and is therefore becoming more vulnerable to exploitation by countries seeking to extract the mineral resources hidden beneath the ice. Furthermore, during the research, I will examine the international treaties currently in force to see what solutions offer for the protection and regulation of the Arctic against exploitation. From these, I will prepare a comprehensive study on the territories that NATO member states have in the region, the economic benefits that these territories would bring to each state, and whether an open military confrontation between NATO and the Russian Federation could arise.

The novelty of the research lies in the fact that, due to the nature of applied research, I examine the two newly joined NATO member states in terms of their plans for the Arctic region and the tools they have/are preparing to utilize the area in the future. The topic is particularly timely due to accelerated climate change, as the fight for the mineral resources hidden under the ice has begun.

Research methods

In the course of an analysis based on changes in geopolitical interests, I present the Arctic, describe the geographical challenges and potential risk factors. I take into account the specific needs and capabilities of the northern states in the region, and analyze the shipping routes through the northern region and the challenges associated with them. I present the Arctic along the lines of classical geopolitics, which examines the capabilities of individual countries on land, water and air. I characterize and evaluate the military, economic, political and social factors, i.e. the components of geopolitics.

Depending on the questions that arise during my research, I use the procedure of induction and deduction, i.e. depending on the expediency, sometimes I move from individual characteristics to general conclusions, and sometimes from general conclusions to specific facts. I use qualitative methods, with the greatest emphasis on document analysis in the initial stage of the research. I primarily use secondary sources in Hungarian and English (textbooks, studies, newspaper articles, data sets, maps, etc.), and I strive to present the same and different points of view on the Arctic in a comprehensive way. This method was used throughout the entire research process.. In accordance with the geographical approach, my dissertation pays particular attention to supporting textual information with maps.

In the dissertation, I present the Arctic through a comprehensive comparative analysis, which includes two important questions. One is that the region is on the verge of significant change, and the question is whether this change will lead to a region of potential international conflict, or whether stability in the region can be guaranteed through diplomatic means, cooperation between states, and a peaceful approach guided by common interests. In examining this question, I focus on the geopolitical and geostrategic situation in the Arctic. Since this is a theoretical research, I use a mixture of qualitative and quantitative methodological elements. Regarding the structural structure of the dissertation, I will describe the geographical and historical factors of the region, review the interests and opportunities of individual Arctic states in the northern territory, and after presenting the legal frameworks and governance mechanisms, I will examine the international organizations influencing the region. In addition, the mineral resources found in the region, as well as the importance of shipping routes and the opportunities they provide, are of paramount importance.

My aim is to present the region through four chapters, describing in detail the opportunities and problems inherent in the region in each chapter. The topicality of the thesis is particularly enhanced by the fact that the two Arctic countries, Finland and Sweden, joined NATO in 2023 and 2024, therefore it is of paramount importance to present and evaluate the Arctic ambitions of these two countries.

At the end of each chapter and major subchapter, I will draw conclusions about the region, whether in terms of geopolitics, military affairs, or the international framework. I will analyze the challenges, risks, and threats in detail in my dissertation.

Short description of the research by chapter

When defining the research topic, possible geopolitical changes should be taken into account. It is important to present and analyze the role of the region before the Cold War situation, then from the period that has passed to the present day and in the coming decades. From this interpretation, it can be concluded that there are three important time periods for the study of the Arctic, as the region has become the focus of international attention in recent years. One of the important results of the research is the presentation of the Arctic region through geopolitics and the definition of the foundations of the geopolitical view that is relevant to the research.

It is necessary to define the region under study, since the Northern Hemisphere of the Earth belongs to several states. It is important to present these states in detail, because through this characterization, one can better understand their ideas and goals regarding the Arctic region. I present the presentation of the Arctic region, the results of individual discoveries and its location in detail in Chapter 1. Furthermore, in this chapter I detail the shipping routes. For better understanding, I illustrate these with colored maps. Chapter 2 is about geopolitical interests and the geostrategic role of the region, in which I approach the area with the help of the theories of famous geopolitical thinkers of the time. I present the countries bordering the region in detail in Chapter 3, analyze their military power and strategic documents and draw conclusions from them regarding the interests of each state. The last chapter 4 is about regional cooperation. In this, I analyze in detail the activities of the Arctic Council, its organizational structure and work, I highlight the work of the state holding the current chairmanship (Norway 2023–2025) and analyze it in detail. I also present the ideas of NATO and the European Union in this chapter, how the two regional organizations think about the Arctic. Their ideas are very important because the Russian Federation, which has a significant territory and ambitions in the northern region, is not a member of either of them.

Summary of conclusions and scientific results

The new millennium has brought new security challenges for humanity, one of the most pressing of which is the issue of energy hunger. Dependence on fossil fuels is encouraging world political actors to explore new areas and extraction methods. My chosen research area, the Arctic, may become one of the latest arenas for this in the next decade. The territory is extremely rich in non-renewable energy sources, a fact further reinforced by its geographical location. As a result of global warming, its mineral resources and shipping routes are becoming accessible, making the Arctic one of the most valuable areas on Earth. There are countless sources of conflict hidden in this trend, both political, economic and ethnic.

A new security policy challenge is emerging in connection with the Arctic. The region seems to be gaining in value, increasingly becoming the scene of a major geopolitical game. The region is of decisive importance from a political, economic, military and environmental perspective. Global climate change is significantly increasing the importance of the region and changing the geopolitical balance of power. I have also presented this statement with maps. Maps play a major role in understanding the facts contained in the dissertation, and they provide easier reading for those interested.

The aim of my dissertation is to present and evaluate the great power games taking place in the Arctic and the consequences of global warming in the region. My research covered the geostrategic situation of the studied region, the assessment of its natural, social, economic and military conditions, and the examination of the impact of all of these on security.

Thanks to the UN Conventions on the Law of the Sea, I have summarized different perspectives on the geopolitical interests of individual countries, territorial disputes and the geostrategic importance of the region. The analysis of climate change is an important part of the first chapter, as thanks to the forecasts mentioned in subchapter 1.2, we can better see the extent to which the natural resources of the region are being destroyed as a result of global warming.

In the second chapter of my dissertation, I presented the geopolitical significance of the Arctic, the characteristics of its political, economic, international legal, natural, environmental, and military factors. I came to the conclusion that states must resolve their

territorial claims peacefully, since several major powers are present in the region (USA, Russia, China), which have sufficient armed force to acquire the desired territory even during minor wars. It is important to preserve the wildlife of the region and to reduce global warming, since the increase in temperature leads to the melting of permafrost, which causes serious problems. The ethnic groups living there must be protected so that they can continue to live in a place that has been their home for centuries.

It can be stated that early classical geopolitical theories did not deal specifically with the Arctic region, but they are well applicable when examining current local processes. I tried to prove that classical geopolitical theories are best applicable to the current processes in the Arctic region. This is because the acquisition of traditional resources is in the geopolitical interest of states within the region and in many cases outside it.

NATO has made great progress in the 360-degree geopolitical security approach in recent years. In addition to the eastern strategic direction – deterrence and protection against Russian threats – which has been a priority since 2014, the regional management of the southern strategic direction was finalized by 2018, the southern “connecting” center became operational, its task system and operational activities were established. It has also become clear that the 360-degree “circular” approach must also address tasks – such as cyber warfare, hybrid threats, resilience – that are important from the perspective of all directions, and their impact cannot be separated according to geographical directions. It is clear from NATO summits that the Arctic region is gaining an increasingly important role over the years, and this has also been noticed by the states present at the summits. Increasing emphasis is being placed on protecting the security situation of the northern countries. It is fortunate that seven of the eight northern states involved are NATO members. This is a guarantee that Russia will not expand its territory at the expense of other states.

The Arctic was once a forgotten region. From the many 19th-century expeditions, explorers concluded that the northern reaches of the Earth held little promise – apart from frostbite and ice. Since then, the region has undergone major changes. The time that has passed has highlighted the potential and economic benefits of the region. The Arctic, unlike Antarctica, is a frozen sea. And the ice is melting, faster than expected. This has significant security implications. The borders are partly clear, as I wrote in detail in Chapter 2.

The following maritime boundary disputes currently exist in the Arctic:

- Northwest Passage case (international waters – Canada),
- demarcation of the exact boundary of the Beaufort Sea off the northwest coast of Alaska and Canada,
- the problem of the Northern Sea Route (international waters – Russia's opposition),
- disputes over the ownership of Hans Island (located north of Greenland – belongs to Denmark or Canada),
- status of Lomonosov Ridge (does the area belong to Denmark or Russia).

Resolving these minor maritime border disputes will be a long process as each country involved insists on their claims, but international rules apply to this region just as they do to any other region on Earth.

The issues surrounding the ownership of natural resources have been clarified. Thanks to climate change, research has been able to determine which minerals are located in which areas under the ice. This means that the countries concerned can extract them after the ice melts.

The most pressing issue in the 21st century geopolitics of the Arctic is currently the accession of Finland and Sweden to NATO. Of these 8 Arctic states, 7 are NATO members. The remaining Arctic country, the Russian Federation, may create geopolitical tension and, in the future, may pose a geopolitical risk, confronting the 7 countries mentioned above. The current situation is characterized by the fact that NATO has to adapt to a very complex strategic environment, the main characteristics of which are geopolitical rivalry, open confrontation with Russia, and the growth of China's influence. That is why the accession of these two states to NATO is very significant. NATO, strengthened by the two Arctic states, now also includes the western states of the Arctic Council, thereby representing a more pronounced political and military influence. So far, NATO has largely avoided involvement in the Arctic, despite the increase in Russian and Chinese activity. With the newly joining member states, the Arctic region could become significantly more valuable to the Alliance.

The strategic importance of the region has been a high priority for the Nordic countries. The Nordic countries have been developing a well-functioning and pragmatic cooperation under the auspices of the Nordic Defence Cooperation for more than a decade before Sweden and Finland were even considered for NATO membership. However, it is

difficult to predict at this time what direct impact the accession of Sweden and Finland will have on the Arctic region. The currently stagnant and dysfunctional Arctic governance could certainly be influenced by more decisive and concerted action against Russia, in cooperation with the new members. NATO's approach to Arctic security, taking into account the capabilities of the newly joining states, may in the short term be oriented towards strong deterrence rather than confidence-building measures. Currently, the northern wing of NATO is fundamentally defined by Norway, which is why the geostrategic position of the two newly admitted countries is significant, as they are Norway's immediate neighbours. If the northern wing has already played a decisive role, then with these two member states it can be assumed that this area will be strengthened even more.

The European Union is a less dominant international actor in the Arctic region, focusing primarily on climate change, natural resources and sustainable development, with a high priority on supporting climate change mitigation and protecting Arctic ecosystems.

I consider the following to be the scientific results of the dissertation:

1. My research has shown that the Arctic region has become a new type of security challenge for the states of the world, but the northern states are the ones most affected. My analysis has confirmed that the strategic importance of control over the region is outstanding, especially in terms of the extraction of raw materials and mineral resources, as well as the security of shipping routes. I have highlighted that the eight Arctic countries play a central role in shaping the future of the region, and my research has shown that cooperation between states is essential in order to maintain stability.
2. My analysis has explored the power relations between the Russian Federation and NATO and other states in the region, and identified possible security policy scenarios. My research has shown that China's increasing presence in the region is generating new geopolitical tensions, especially for NATO. My findings have demonstrated that China's growing strategic interests and influence pose challenges that must be addressed to maintain peace in the region.
3. During my research, I have analyzed in detail the four main shipping routes in the Arctic and determined their expected exploitation opportunities. I have proven that the volume of cargo transportation in the region will inevitably increase due to the melting of the ice, which will raise new economic opportunities and regulatory challenges. My

research has proven that in order to maintain the stability of the region, proper regulation and control of shipping traffic is necessary.

4. By analyzing data sets, I verified to what extent climate change has been, is and will be present in the Arctic, as well as how it affects the ecosystem and geopolitical significance. I established that the rate of warming in the region exceeds previous forecasts, and this accelerates the possibility of exploiting the mineral resources hidden under the ice. I verified that due to the large-scale warming occurring earlier than expected, the exploitation of the mineral resources hidden under the ice in the northern region will take place sooner than expected. I established that the states are in a state of readiness, they are aware that they must prepare for the exploitation of the northern territories, the extraction of mineral resources, and the development and transformation of the necessary technical equipment due to weather changes.

Recommendation and possible applications of the research results

The Arctic region is considered a seemingly remote area. However, due to climate warming, the exploitation of the area and the extraction of mineral resources in the region will occur much sooner than we think. Therefore, a deeper, more detailed understanding and exploration of the area is very important. Preserving the ecosystem of the region is a high priority, in order for the northern countries to start exploiting the Arctic region as soon as possible.

Research must be continued, NATO strategic documents must be monitored so that the region receives even greater international attention. NATO summits and the most important decisions related to the region must also be monitored, because my dissertation also shows that ideas related to the Arctic region have been emerging for ten years. The Arctic Council is a very good organization in terms of providing its member states with a research base and opportunities for development. It is important to implement these, because they contribute to focusing international attention on the Arctic.

The completed dissertation can serve as educational material for students participating in the undergraduate and master's programs in international security and defense policy, as well as for doctoral students at the Doctoral School of Military Science and the Doctoral School of Military Technology of the Ludovika University of Public Service. It can be a

source of information at conferences and workshops organized on this topic. Furthermore, thanks to the detailed geographical analysis, the dissertation can provide a good basis for those who are interested in the Arctic region and geography.

The importance of the Arctic region is increasingly prominent in the research fields of military science, earth sciences and security studies. The results achieved during further research in the Arctic can provide good feedback on the environmental, economic, political and geopolitical impacts of the region.

I recommend my dissertation primarily to researchers in the region, experts preparing for the region, soldiers, and relevant domestic political and military decision-makers, in the hope that it will provide them with authentic, objective, and current information about the geopolitical situation of the Arctic. The material can serve as an important source of information, especially for those working in the fields of earth sciences, security studies, and military sciences. The dissertation can be well utilized not only in the fields of geopolitics, international relations, international studies, security policy, or military training, but it can also play a useful role in the social sciences in order to acquire geographical knowledge related to the Arctic.

The chapter structure of the dissertation is clear and logical, following the processes taking place in the region and including the most important events for understanding the geopolitical, economic, political and ecological changes in the Arctic. This gives the reader a comprehensive picture of the Arctic as a whole.

The topicality of the topic is of particular importance today, as scientific publications related to the Arctic region are appearing more and more frequently in Hungary. Taking into account international publications, studies related to the Arctic are appearing every month. These deal with environmental protection, the economy, the special interests of certain states, or even their military activities. For this reason, it can be stated that the dissertation is very topical in the study of current world political events. It is also evident in the literature used in the dissertation that many sources are written in English.

In Hungary, experts who deal with the Arctic can supplement their professional knowledge of the region with useful knowledge and connect many elements of my dissertation with their research that is already underway or planned in the future.

List of publications by the author in the topic

Scientific journal article

- 1) Vigh Vivien: Az Arktisz geopolitikai jelentősége a 21. században, Hadtudományi Szemle 13: 2 pp. 47–61. 15 p. (2020)
- 2) Vigh Vivien: Az északi-sarki hajózási útvonalak megnyílása és hatása a Mediterráneum térségére, Mediterrán Világ 50 pp. 264–278. , 15 p. (2021)
- 3) Bazsó-Vigh Vivien: Geopolitikai érdekek és haderőfejlesztés az Északi-sarkon, Hadtudományi Szemle 16: 3 pp. 5–15. , 11 p. (2023)
- 4) Bazsó-Vigh Vivien: Északi-sarkvidéki hadviselés I. rész, Haditechnika 58: 1 pp. 24–31. , 8 p. (2024)
- 5) Bazsó-Vigh Vivien: Északi-sarkvidéki hadviselés II. rész, Haditechnika 58: 2 pp. 17–21. , 5 p. (2024)

Book excerpt

- 1) Bazsó-Vigh Vivien: Amerikai, olasz és norvég együttműködés az Északi-sark meghódítása és felfedezése érdekében, In: Szelei, Ildikó (szerk.) A hadtudomány és a 21. század, 2022
- 2) Bazsó-Vigh Vivien: Az Oroszországi Föderáció speciális érdekei az Északi-sarkon, In: Szelei, Ildikó (szerk.) A hadtudomány és a 21. század 2023
- 3) Bazsó-Vigh Vivien: A Kínai Népköztársaság érdekei az Északi-sarkon, In: Göcze, István (szerk.) A hadtudomány aktuális kérdései 2023
- 4) Bazsó-Vigh Vivien: Az Északi-sarkvidék változó biztonságpolitikai környezete 2024: Az Északi-sarkvidék felértékelődése a 21. században pp. 17–36.
- 5) Bazsó-Vigh Vivien: Kína - A Középső Birodalom 2025: Az Északi-sark, mint a geopolitika új színtere - Kína helye a nagyhatalmi erőegyensúly alakulásában pp. 238-250.

Conference paper in a journal or conference volume

- 1) Bazsó-Vigh Vivien: A klímaváltozás hatásai az Északi-sark térségére, In: Dimenziók V. Katasztrófák után. (KUT) Természeti csapások, járványok és ökológiai folyamatok a történelemben (2021)

- 2) Vigh Vivien: The geopolitical significance on the Arctic in the 21st century, In: Peter, SPILÝ (szerk.) Zborník príspevkov z medzinárodnej vedeckej konferencie: Národná a medzinárodná bezpečnosť 2020
- 3) Vigh Vivien: A NATO kiemelt figyelme az Északi-sark térségére, In: Szabó, Csaba (szerk.) Tavaszi Szél 2020 Konferencia = Spring Wind 2020: Konferenciakötet
- 4) Vigh Vivien: Russia's demonstration of strength and military presence in the Arctic, In: Daniel, Brezina (szerk.) National and International Security 2021
- 5) Vigh Vivien: The connection between NATO and the Arctic region, In: ŠILINGER, Karel (szerk.) New Approaches to State Security Assurance: 15th Annual Doctoral Conference 2021

Professional-scientific curriculum vitae of the author

Vivien Bazsó-Vigh was born on February 25, 1993 in Szentes.

In 2012, she graduated from Bányai Júlia High School in Kecskemét. She began her university studies at the Budapest College of Communication, majoring in international studies, where she graduated in 2015. She continued her studies at the Ludovika University of Public Service, majoring in security and defense policy, where she graduated in 2017. She earned her second MSC degree in international public relations at the Ludovika University of Public Service in 2020. Her diploma theses were all related to the Arctic. The first examined general geopolitics in the region, the second revealed NATO's plans in the northern region. She began her studies at the Doctoral School of Military Science of the Ludovika University of Public Service in 2019.

Between 2018 and 2020, she worked as an EU referent at the European Union Department of the Ministry of Innovation and Technology. From 2020, she worked at the Office of Scientific Affairs of the Ludovika University of Public Service as an employee responsible for habilitation matters, and from 2022, she worked as a chief research referent at the Office of Science Strategy. From January 2025, she will be on maternity leave due to the birth of her first child.

To date, she has published 15 publications in her research topic, three of which are in English. She has given numerous scientific conference and university lectures. She has worked as an opponent and reviewer. She continued her research for 12 months with the support of the New National Excellence Program, obtaining an excellent qualification. She is a member of the Geoinformation Department of the Hungarian Military Science Society. She has a C-type state higher language exam in English and a B-type state intermediate language exam in Spanish.