Science Diplomacy and Foreign Policy in Northern Europe

Models, Frameworks, and Strategies

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Introduction

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1 Introduction

This monograph represents the culmination of the initial phase of the research project *Science Diplomacy in Northern Europe*.[1] The aim of the authors was to analyse the foreign policy and science diplomacy models of ten Northern European countries, specifically Germany, Poland, Sweden, Norway, Denmark, Finland, Iceland, Lithuania, Latvia, and Estonia. Initially, the analysis was also intended to include the Russian Federation. However, following the Russian Federation's aggression against Ukraine in February 2022 and the subsequent suspension of scientific cooperation with Russian research institutions, it was decided to exclude the Russian Federation from the scope of the study. This decision was partly due to concerns regarding access to the necessary primary and secondary sources, as well as the inability to conduct qualitative research (individual and focus group interviews) with Russian respondents, which had been planned for subsequent stages of the project.

In each of the examined cases, the focus is on presenting the key determinants of the analysed models, including their historical context, normative dimensions, and institutional-operational frameworks. A specific objective of the analysis was to address the question of whether, and how, the foreign policy and science diplomacy models of the ten Northern European countries incorporate priorities and concrete actions aimed at fostering cooperation in the European Arctic region (EAR) and the Baltic Sea region (BSR).

We also recognized that an examination of state-level science diplomacy models would be incomplete without outlining their foundations rooted in the respective foreign policy models of these states. This approach aligns with our understanding and definition of science diplomacy as a dimension of modern diplomacy that operates at the intersection of foreign/international policy and science, technology, and innovation (STI) policy. In our adopted framework, the defining criterion for science diplomacy is a focus on state involvement, distinguishing it from international scientific cooperation. Science diplomacy encompasses activities where the state is invariably present, either as an initiating and implementing actor engaged in activities that fall within the scope of science diplomacy or as one of the stakeholders – either actively or passively involved – alongside a diverse array of non-state actors. In contrast, international scientific cooperation may occur with or without state participation (Szkarłat et al., 2020). For instance, international

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research and development projects may be initiated and coordinated by private businesses, with activities either directly or indirectly aimed at profit generation (Campbell, 2015). By applying this subject-based criterion, our analysis differentiates between state-driven science diplomacy and broader forms of international scientific collaboration.

Science diplomacy is considered one of the dimensions of modern diplomacy, which places significant emphasis on issues traditionally associated with so-called low politics. These matters, historically absent from the focus and activities of so-called old diplomacy or club diplomacy (Cooper, 2013), now hold a prominent position. The emergence of new dimensions reflects the evolution of the institution of diplomacy itself, driven by globalization, the 'crazy-quilt nature of modern interdependence' (Rosenau, 1995, p. 15), networking processes, and technological advancements. This evolution has expanded both the thematic scope of diplomacy, regarded as the engine room of international relations (IR), and its range of actors.

Modern diplomacy is now a multi-specialist practice of external engagement carried out not only by states but also by a broad array of non-state actors, involving a significantly wider group of stakeholders (Puybareau & Talom, 2019; Watson, 1984, p. 223). The progressive blurring of boundaries between what was traditionally considered domestic and foreign policy, alongside the overlap and intersection of issues within the transnational sphere, has led to a broader thematic scope of diplomatic activities. Consequently, there is an ever-increasing demand for expert knowledge, which has become an indispensable component of all decision-making processes (Barston, 2014). This shift underscores the essential role of specialized expertise in addressing the complexities of contemporary diplomacy, which is characterized by its interconnected and multidisciplinary nature.

This broadening of the definition of a diplomat means that a modern diplomat is no longer exclusively a member of a state's foreign service or an official of an international organization. Activities once reserved for foreign affairs officials or the diplomatic and consular service are now undertaken – and often taken over – by officials from other sectoral ministries, government agencies, parliaments, and local and regional authorities, as well as other stakeholders involved in the external dimensions of state activities or non-state actors, such as international organizations (Cooper, 2013). The evolving role of the Ministry of Foreign Affairs (MFA) reflects this shift, with the MFA increasingly functioning as a coordinating and integrative body for the actions of other institutions and entities active in the international arena. The MFA has become a component of the national diplomatic system, engaging in what is termed 'integrative diplomacy' (Hocking et al., 2012). In the context of science diplomacy, this encompasses all structures representing the scientific community, including national academies, higher education institutions and their associations, research institutes, epistemic networks, and science and technology clusters, as well as individual scientists themselves. These actors contribute to a networked approach to diplomacy that integrates expertise and innovation, reinforcing the interconnectedness of modern international engagement.

Modern diplomacy is characterized as network diplomacy (Slaughter, 2009, p. 94), evolving not only vertically – encompassing a multitude of forms such as

two-track diplomacy, track-two diplomacy, and parallel diplomacy through expert bodies (Jones, 2015; Davies et al., 2003) – but also horizontally. This horizontal evolution pertains to the role of the MFA and the diplomatic and consular service, which now share their traditionally exclusive functions with other state institutions, including regional and municipal administrations, as well as civil society organizations and business representatives. Modern diplomacy is also increasingly transparent, subject to public scrutiny and accountability. While traditional club diplomacy, conducted behind closed doors, has not disappeared, it has in many areas been supplanted by open diplomacy. This shift responds to the demands of a new communications architecture, which emphasizes accessibility, public engagement, and the need for diplomatic activities to align with the expectations of a globalized and interconnected public sphere. This transformation reflects the broader dynamics of diplomacy, integrating diverse actors and fostering inclusivity within the framework of IR.

The evolution of the subjective dimension of diplomacy involves an increase in the number and categories of actors engaging in activities traditionally reserved for ministries of foreign affairs and the diplomatic and consular service. Multilateral diplomacy, which includes both states and non-state actors, is taking on increasingly sophisticated forms. A notable example is the diplomatic activity of international, regional, and universal organizations, some of which have developed their own systems of international representation – such as the European Union – while others engage in practices like conference diplomacy (Barston, 2014). This shift reflects the diversification of diplomatic actors and the adaptation of traditional frameworks to the complexities of global governance, where state and non-state entities collaborate to address transnational challenges and objectives.

The early 21st century, particularly the last decade, has witnessed growing interest in science diplomacy. The term has firmly established itself within both political and academic discourse. As a subject of scholarly inquiry, science diplomacy falls within the purview of IR (Ruffini, 2017; Flink, 2010, 2020, 2022; Krasnyak, 2018; Szkarłat, 2020, 2022, 2025; Łuszczuk et al., 2023; Szkarłat et al., 2022; Szkarłat et al., 2025), political science, and, to some extent, legal studies.

Although science diplomacy as a field of scientific inquiry has a relatively short history, it already has a rich literature. Among the authors who focus on this topic, we should distinguish P.-B. Ruffini, who examines how scientific issues influence diplomatic relations and how international scientific cooperation can serve as a factor for peace. His book, *Science and Diplomacy: A New Dimension of International Relations* (2017), addresses these themes comprehensively. The other prominent researcher is T. Flink, who specializes in science diplomacy, science policy, and the sociology of science. In a coauthored (with U. Schreiterer) article, "Science diplomacy at the intersection of S&T policies and foreign affairs: Toward a typology of national approaches" (2010), he examines how various countries integrate science and technology into their foreign policies, proposing a typology of national approaches to science diplomacy. In the article "The Sensationalist Discourse of Science Diplomacy: A Critical Reflection" (2020), he critically analyses the heightened expectations placed on science diplomacy, questioning the romanticized view

of science as a universal solution to global challenges. In his most recent paper, "Taking the Pulse of Science Diplomacy and Developing Practices of Valuation (2022)", he discusses the current state of science diplomacy and proposes methods for evaluating its effectiveness in addressing global challenges. There are also authors who study state models of science diplomacy, e.g., O. Krasnyak, "National Styles in Science, Diplomacy, and Science Diplomacy: A Case Study of the United States and Russia" (2018); and M. Szkarłat, analysing Polish, French, German, and British models (2020, 2022) and Polish science diplomacy in the Arctic (2023, 2025).

One of the emerging and rapidly developing trends in science diplomacy research – driven by the geopolitical tensions of recent years – is the growing focus on the securitisation of scientific research and the concept of research security. This line of inquiry emphasizes the competitive dimension of science diplomacy and the increasing entanglement of science and scientific collaboration with national interests, including those related to internal and international security. It also addresses the implications of technological advancement, particularly in areas such as artificial intelligence (Liebetrau & Monsees, 2024; Walker-Munro, 2024; Szkarłat, 2025).

In this latter context, academic discourse increasingly highlights the need to reconsider the foundational principles of policies such as open science. This stems from concerns over the potential risks associated with scientific cooperation, including dual-use research outcomes and violations of intellectual property rights (Jones & Smith, 2024).

In IR and political science, we also find multiple authors who studied the process of transferring scientific/expert knowledge to decision-making at the international and national level, e.g. A. Wendt in The *Social Theory of International Politics* (1999) discusses how evidence and shared norms influence state actions; R. O. Keohane in *After Hegemony: Cooperation and Discord in the World Political Economy* (1984) analyses how international institutions facilitate informed, cooperative decision-making; and A.-M. Slaughter in *A New World Order* (2004) examines how global networks of policymakers and experts influence international decisions, with a focus on the role of evidence-based cooperation in international governance structures.

It is also crucial to consider the broader analytical context, including research conducted by sociologists and philosophers of science and knowledge (Plato, 380 BCE; Bacon, 1620; Mill, 1859, 1843; Popper, 1959; Arendt, 1958, 1972; Foucault, 1977, 1980; Habermas, 1981; Mannheim, 1936; Fuller, 2006; Keller, 2024).[2] In this context, science diplomacy is treated as a subcategory within the study of the relationship between politics and science. Although the concept has gained significant discursive potential, there remains no consensus on how to define science diplomacy. Divergent narratives and analytical approaches exist regarding its objectives, actors, and instruments. These variations highlight the complexity and multidimensional nature of science diplomacy, underscoring its relevance across multiple disciplines and its evolving role in addressing contemporary global challenges.

It is essential to distinguish between science diplomacy as a set of practices and science diplomacy as an analytical category. The origins of research on science diplomacy are relatively recent, dating back to the late 20th and early 21st centuries. In contrast, activities related to international scientific cooperation have a much longer history, beginning with the establishment of the earliest scientific institutions and universities. This form of social interaction predates what we now classify as science diplomacy, understood as the intersection of science with foreign and international policy (Turekian et al., 2015). The next chronological stage involves the deliberate design and implementation of science diplomacy strategies as a form of external state activity, coinciding with the development of scholarly research on the topic.

This stage in the evolution of science diplomacy is characterized by a growing awareness, both among practitioners and scholars who study it as a social phenomenon. However, this heightened awareness of science diplomacy as a distinct phenomenon has not translated into an accelerated process of its definition or conceptualization – neither in its practical application nor in academic discourse. The challenge of defining science diplomacy persists, or more precisely, reaching consensus on a shared definition of a concept that continues to evolve.

The set of practices currently categorized under the term 'science diplomacy' has been known to humankind for centuries. While recent years have witnessed increased interest from both state and non-state actors – manifested, inter alia, in efforts to formalize science diplomacy through strategic frameworks, policy documents (whether legally binding or of a purely political nature), and its institutionalization through the establishment of dedicated offices and positions – science diplomacy in practice remains predominantly bottom-up in nature. It is shaped, initiated, and implemented by a broad and diverse range of stakeholders.

The personal and institutional landscape of science diplomacy is becoming increasingly diversified, owing to the growing involvement of non-state actors in this sphere. These are not limited to international organisations, which are often seen as extended arenas of state-driven international engagement. Contemporary science diplomacy also attracts the interest of private actors, who are particularly active in the innovation-driven and technological dimensions of science diplomacy.

The evolution of science diplomacy increasingly intertwines it with other types of diplomacy, particularly economic diplomacy. As a result, an expanding group of states is conceptualizing and implementing innovative forms of diplomacy, such as innovation diplomacy, technology diplomacy, and STI diplomacy.

Among stakeholders in science diplomacy, there is a growing awareness of the real value and potential of knowledge generated across various knowledge regimes. This includes the monetization of knowledge – especially concerning the market for new technologies and pro-innovation activities – as well as the securitization of science and its outputs (European Commission, 2024). These trends reflect the expanding strategic importance of science diplomacy in addressing global challenges and advancing national and regional interests in a highly interconnected and competitive world.

Knowledge serves as a source of competitive advantage, making access to it – and, in the context of rapidly advancing artificial intelligence, access to data, the generation of new data, its processing, and sharing – the modern battleground. The evolution of science diplomacy towards innovation diplomacy is closely tied to the concept of the knowledge-based economy, a model in which knowledge, rather than (or not solely) natural resources, becomes the principal asset. This shift also entails changes in the scope of actors involved in such diplomacy, with a greater role and influence for private entities – a departure from the traditional state-centric model of science diplomacy. According to the approach proposed by J. Leijten, innovation diplomacy is defined as 'the use of the full spectrum of tools of the state to achieve its (national) innovation interest in the global geopolitical arena' (Leijten, 2017, p. 20). This perspective highlights the strategic importance of innovation diplomacy as a tool for states to position themselves within a competitive global landscape, leveraging technological advances and knowledge generation to secure national interests and promote sustainable growth. The increasing involvement of private stakeholders underscores the need for collaboration across sectors to effectively navigate the complexities of the modern geopolitical and economic environment.

The shifting international landscape has also prompted the authors of the New Frontiers in Science Diplomacy report to revisit and reassess the conceptual framework for science diplomacy they introduced in 2010 (The Royal Society & American Association for the Advancement of Science [AAAS], 2010). Another impetus for this revision was the emergence of critical perspectives – particularly those questioning the practical utility of the tripartite classification of science diplomacy into diplomacy for science, science in diplomacy, and science for diplomacy.

In their 2025 publication, the authors propose a simplified typology, distinguishing between science impacting diplomacy and diplomacy impacting science. Notably, however, despite the 15 years that have passed since the initial Royal Society/ AAAS report, the institutions have yet to offer a concrete definition of science diplomacy. Nonetheless, a clear strength of the latest report is its emphasis on the dual nature of science diplomacy as both cooperative and competitive. Particular attention is given to those dimensions in which science and its outputs become arenas of competition among international actors (American Association for the Advancement of Science [AAAS]/The Royal Society, 2025).

The report further highlights the risks inherent in the science–policy interface, including mutual instrumentalization and the politicization of science. Repeated reference is made to the evolving nature of this relationship in response to geopolitical shifts and emerging threats. This evolution necessitates increased awareness of the connections between national security risks and international scientific collaboration, the devaluation of scientific evidence, the proliferation of disinformation, and the growing relevance of research security.

Another key point is the transformation of the actor landscape in science diplomacy, particularly the growing prominence and activity of non-state actors – most notably, private entities.

The European Union has also sought to address these new challenges. In 2025, the European Commission, supported by a panel of experts, published A European

Framework for Science Diplomacy (European Commission, Directorate-General for Research and Innovation, 2025a). Significantly, this document underscores the notion that enhancing the EU's global competitiveness should be a strategic objective of its foreign and security policy, with science diplomacy serving as a key instrument for achieving that objective.

The European Commission echoes the approach of the Royal Society and AAAS by recognising that science diplomacy should be employed as both soft and hard power. Science is increasingly viewed not only as a domain of cooperation and the shared advancement of knowledge for the common good but also as a source of competitive advantage, an instrument of strategic rivalry, and, in certain contexts, a form of coercive power.

In discussions on the dimensions of science diplomacy and its evolution – observed, for instance, in the analysis of foreign policy and science diplomacy models in Northern European states – it is crucial to acknowledge the significant role of scientific knowledge and other knowledge regimes, such as traditional knowledge from indigenous communities, in decision-making processes at both national and international levels. This phenomenon, often referred to in the literature as the politics of expertise or international expertise, involves the mobilization of experts – both domestic and foreign – to achieve specific foreign policy objectives. The utilization of experts and the transfer of expert knowledge and know-how into international decision-making processes form a key component of influence diplomacy. Although in most cases experts operate independently of governments and are not bound by directives from state institutions, their international activities contribute to shaping the image and standing of their home country on the global stage (Tenzer, 2013). Moreover, there is a group of states that actively pursue policies to define their international position and role through their intellectual achievements, expert potential, and research infrastructure. This includes most Northern European countries, particularly the Nordic states, which strive to be perceived as knowledge hubs. Germany provides an illustrative example with its internationally unique network of technical experts embedded within the Gesellschaft für Internationale Zusammenarbeit (GIZ). Such initiatives underline the strategic use of expertise not only as a diplomatic tool but also as a means to enhance a nation's reputation and influence in the competitive arena of global governance and innovation.

Regardless of the emphasis or priorities within science diplomacy, it is important to underscore that these activities invariably have a cooperative-competitive character. Science – whether understood as scientific or expert knowledge transferred into decision-making processes, international scientific cooperation, or the human resources contributing to national or international expert bodies – can serve multiple roles. It may act as a servant to politics, functioning as an instrument for achieving political objectives, or it may be a resource upon which a state's position and image on the international stage are built. Similarly, science can be the means through which an international organization legitimizes its decisions. In the contemporary world, science represents a source of power, a tool for generating advantages within the realm of IR (Flink, 2020; Rungius & Flink, 2020). Its dual

role as both a cooperative bridge and a competitive asset highlights its centrality in shaping the dynamics of global governance, diplomatic engagement, and the projection of influence on the international stage.

This is particularly evident in times of geopolitical tensions, uncertainty, and polarisation within the international community. One of the dimensions of the geopolitical shifts occurring in recent months is the policy direction of Donald Trump's administration, which targets, among others, Canada, Greenland, other European partners, and the Arctic and involves significant changes in the United States' science policy. In international discourse, these developments are often referred to as the Trump 2.0 policy, a term that alludes to Donald Trump's second term as President of the United States. The announcement made by President Trump in early 2025 regarding the possible acquisition of Greenland has been interpreted by IR analysts as a warning sign of an adverse turn in U.S. foreign policy – one that entails a redefinition of its engagement on the global stage, including a decreased emphasis on multilateral cooperation. This shift may ultimately result in negative consequences for collaboration within frameworks such as the North Atlantic Treaty Organization (NATO), the Arctic Council, and EU–U.S. relations (Lavelle, 2025).

At the same time, the narrative introduced into the political discourse by the current U.S. administration is noteworthy. The rationale offered to justify the plans for the purchase or acquisition of Greenland is framed primarily in strategic and economic terms, while discourse on climate change has been largely sidelined. The confrontational tone adopted by President Trump and his administration has provoked firm responses from the authorities of Greenland and the government of the Kingdom of Denmark, supported by several European leaders, including the President of France and the President of the European Commission (Hansen, 2025a, 2025b; Zellen, 2025).

The new chairship of the Arctic Council, assumed in May 2025 by Greenland, the Kingdom of Denmark, and the Faroe Islands, has set out a clear agenda prioritising climate action, the rights and wellbeing of Indigenous peoples, and sustainable development. These objectives stand in marked contrast to the United States' current business-driven approach. The resolute stance and direction taken by the new chairship may pose a challenge to the Trump administration's continuing efforts to persuade the people of Greenland to accept the American "offer" (Andreeva, 2025; Hansen, 2025a, 2025b).

Another dimension of the negative developments in U.S. policy, with both domestic and global repercussions, concerns science policy. In recent months, there has been a notable wave of dismissals, budget cuts for scientific research, and the suspension or cancellation of programmes designed to support continuous environmental monitoring. These measures are likely to have adverse effects across many sectors of the economy, particularly in relation to climate change research. As is well known, the Arctic serves as a natural laboratory where environmental changes can be closely observed and monitored. The United States has long been an active participant in the international Arctic research community. In U.S. Arctic policy, the scientific dimension has traditionally been as important as the strategic

and economic ones. At present, there is a real threat of restricted access to research data, declining scientific and innovation potential within the American R&D sector, and a brain drain as the most talented researchers consider relocating abroad (Quinn, 2025).

European countries – not only through criticism of the new conditions affecting the U.S. science and innovation sector, but also through concrete diplomatic responses – have begun to implement measures consistent with science diplomacy. This includes initiatives from Northern European states, which, either as part of the broader EU response or through national programmes, have started developing mechanisms to encourage researchers formerly employed in the American scientific system to move to European research institutions. Notable among these is the European Commission's 'Choose Europe for Science' programme, with a budget of €500 million for the years 2025–2027. As part of this initiative, the 27 EU Member States have proposed 70 measures aimed at facilitating the participation of researchers from outside the EU (European Commission, Directorate-General for Research and Innovation, 2025b).

The science diplomacy of Northern European states is closely linked to their visions and strategies for foreign policy. It is also shaped by historical and economic conditions, as well as by the role and position of science in the social life of the countries under analysis. Therefore, any attempts to conduct a comparative analysis of these models may lack significant cognitive value and, in the context of science diplomacy practice, may lead to misguided conclusions by implying that instruments, tools, and specific actions can be adopted without proper adjustment to the specific conditions of the adopting entity.

Referring, for instance, to the institutional dimension of science diplomacy, one can observe certain general similarities. In most countries – including those in Northern Europe – stakeholders in science diplomacy can be divided into entities with a legal mandate to undertake activities falling within the scope of science diplomacy and those without such a mandate. However, the institutional ecosystem of science diplomacy in each country is unique and embedded in constitutional frameworks and administrative structures.

Similarly, when analysing the models of science diplomacy in Northern European countries from the perspective of activities or initiatives, it is evident that they align with global patterns, where bottom-up actions initiated and carried out by the scientific community at various levels of organisation, structure, and institutionalisation predominate (for example, research teams, university departments, research institutes, and organisations representing or bringing together scientists). In contrast, top-down initiatives are far less common and tend to reflect the early stage of science diplomacy conceptualisation. One exception among the ten countries analysed may be Germany, which in 2020 adopted the foundations of a science diplomacy strategy.

Moreover, among the ten countries analysed, all but Germany and Poland are classified as small states,[3] which significantly influences the assumptions and priorities of their foreign policies as well as their international roles – both declared and actual (in line with the classification of international roles based on effectiveness

criteria) (Holsti, 1970, pp. 245–247; Pietraś 1990, pp. 25–26). Geographically, these are peripheral states. Each of the countries analysed emphasizes the importance of multilateral cooperation, particularly regional cooperation, primarily within the framework of or with the European Union, Nordic cooperation, and other formats, such as the BSR states' activities in the Arctic (as A-8 states and observers of the Arctic Council). Another commonality among these states is their approach to the role of science, knowledge, and technological progress as critical dimensions of their domestic policies, tools for building international standing and recognition, and instruments of influence in the international arena. The capacity-related approach and the limitations faced by most Northern European states define their international activities. This is reflected in their selective focus, specialization, and profiling of international engagement, which leads to prioritization and concentration on a specific group of issues (Panke & Thorhallsson, 2024, pp. 506–508).

The roles these states aspire to and actively fulfil include mediator (e.g., Norway), provider of assistance (e.g., Norway, Sweden with its concept of a 'humanitarian superpower', and Estonia), leader in innovation and a knowledge powerhouse (e.g. Norway, Germany, Sweden, Estonia, Iceland, and Denmark), advocate and provider of expert knowledge in environmental protection (e.g., Germany, Sweden, Estonia, Finland with its concept of water diplomacy, and Denmark), and states avoiding the use of military force (e.g., Germany with its 'civilian power' concept and Sweden).

In addition to prioritizing regional cooperation – within the EU, the BSR, Nordic cooperation, the Arctic Council, and international scientific cooperation in the Arctic – countries such as Poland and the Baltic states position themselves as recipients and beneficiaries of support. This includes access to international scientific and technological infrastructure, expert knowledge, research funding mechanisms, and innovation-related initiatives. These engagements reflect both their strategic objectives and their reliance on multilateral frameworks to enhance their scientific and technological capacities.

Discussions on the role and position of small states have a centuries-old tradition. They form part of the broader analysis of power, studies on hegemony, and the contrast between the possession and the lack or insufficiency of resources and capabilities among actors in IR. These themes, rooted in the realist tradition, were addressed by ancient philosophers and historians, including the Greek historian Thucydides. In his History *of the Peloponnesian War*, specifically in the Melian Dialogue (Book 5, Chapters 84–116), he famously wrote 'The strong do what they have the power to do, and the weak accept what they have to accept' (Thucydides, 1954). This statement encapsulates the fundamental realist perspective on power dynamics, highlighting the vulnerability of weaker actors in the face of stronger ones. It also underscores the enduring relevance of these considerations in contemporary IR, where small states must navigate the constraints imposed by their limited capabilities while seeking to assert themselves within a competitive global system.

The literature on foreign policy analysis and the concept of small state actorness highlights several strategies that distinguish the international activity of small

states. One prominent strategy is the shelter-seeking approach, which posits that small states, lacking the capacity to act as leaders in the international arena, seek protection or patronage from stronger players, such as other states or international organizations (Thorhallsson, 2019). This behaviour, particularly evident in sectors like education and science, allows small states with limited human resources to build intellectual and innovative capacity through collaboration with other countries. This realist perspective interprets the position of international actors through the lens of their power, suggesting that the survival and avoidance of isolation for small states – consistent with the centre-periphery logic – depend on maintaining continuous interactions with other international actors (Rokkan & Urwin, 1983). Neoclassical realists argue that a state's behaviour in the international arena results from its specific internal structure, which acts as a transmission belt or lens through which external events are perceived and addressed. States assess their resources and potential and adapt according to the external environment. In some cases, particularly when dealing with stronger partners, states adopt a bandwagoning strategy, recognizing their dependence on the well-being of the stronger partner and refraining from confrontation or opposition (Schweller, 2004). This pragmatic assessment of capabilities also aligns with the rationalist explanations of state behaviour advanced by neoliberal institutionalists, such as R. Keohane. Small states exemplify the rational actor model, as their foreign policies are often characterized by 'consistent, hierarchically ordered preferences and the capacity to calculate the costs and benefits of alternative courses of action to maximize perceived utility based on those preferences' (Grieco, 1993, p. 125). Crucially, both shelter-seeking strategies and bandwagoning behaviour are directed not only toward other states but also toward non-state actors. Small states disproportionately benefit from multilateral cooperation, particularly within international organizations, which amplifies their influence and provides access to resources. This pattern is also evident in Northern European states, which prioritize both regional cooperation and engagement within broader structures. This is true not only for small states but also for larger countries like Germany and Poland, which similarly emphasize the importance of multilateralism and regional partnerships.

The second approach, the neutrality approach, similarly stems from the lack of sufficient resources – specifically, those necessary to ensure national security. Adopting neutral status relieves states of the obligation to take sides in conflicts (Cottey, 2018). This approach was particularly evident in the cases of two Nordic states, Sweden and Finland, which chose to maintain (Sweden) or adopt (Finland) a policy of neutrality during the Cold War. Despite partially differing circumstances in each country, this policy emphasized impartiality and a balanced approach toward both Eastern and Western superpowers, as well as institutionalized forms of political and economic cooperation (Hanhimäki, 1997; Möller & Bjereld, 2010, pp. 364–368). The neutrality approach significantly influenced the national identities of both states. Even after the collapse of the Soviet Union and the end of the Cold War, Sweden and Finland continued to base their security policies on nonalignment (remaining outside military alliances) and maintaining strong and credible national defence systems. This strategy reflects the principles of small

state realism (Musiał & Szacawa, 2024; Pesu & Iso-Markku, 2024; Tiilikainen, 2006). The neutrality approach allowed these states to navigate the Cold War's bipolar tensions while preserving their sovereignty and avoiding entanglements in superpower conflicts. This policy not only shaped their security strategies but also reinforced their roles as mediators and advocates of multilateralism within the international community.

According to the third approach, small states often adopt a hedging strategy. This involves pursuing economic, social, or military goals by simultaneously seeking cooperation with multiple regional powers or hegemons (Jokela, 2023; Wivel & Thorhallsson, 2018). In the context of the region, the hedging approach is reflected in Sweden's security policy, which during the Cold War led to the formation of the so-called Nordic Balance (Arter, 2016, pp. 368–381). Sweden played a central role in this balance, delineating two spheres of influence. Its global activities and role as an international mediator and bridge-builder – evident during events such as the Israeli-Arab conflict in 1948, the war between Iraq and Iran, and the Myanmar crisis (Bergman Rosamond, 2016; Magnusson & Pedersen 2012, pp. 8–10) – were accompanied by local impartiality and the development of Nordic cooperation.

This cooperation has a multifaceted nature, but it primarily focuses on culture (rooted in a shared Nordic identity and values), education, research, and environmental issues. As a result, regional structures such as the Nordic Council and the Nordic Council of Ministers have proven instrumental in addressing policy challenges in areas like the environment, energy, consumer protection, technology, and regional development (Etzold, 2024, pp. 76–77; Musiał, 2009, pp. 296–297). By leveraging this approach, Sweden has managed to balance global engagement with regional stability, enhancing its influence while contributing to the cohesion and functionality of Nordic structures. The hedging strategy exemplifies the adaptability of small states in navigating complex international and regional dynamics to safeguard their interests and maximize their impact.

The fourth approach, the capacity-related approach, emphasizes that while small states often pursue similar substantive goals to larger states in bilateral or multilateral negotiations, they face challenges due to limited resources. This is particularly evident in diplomatic representation and can result in reduced influence and a diminished capacity to shape international policy. However, paradoxically, the lack of an extensive state administrative structure and the presence of streamlined bureaucracies can create decision-making environments where decisions are made more efficiently, often facilitated by less formalized interactions between institutions.

This approach is frequently observed in the context of small states holding prestigious positions, such as serving as nonpermanent members of the United Nations Security Council – examples include Sweden (2017–2018), Estonia (2020–2021), Norway (2021–2022), and Denmark (2025–2026) (Ekengren & Möller, 2020, pp. 35–41). When combined with clearly defined priorities and thematic areas of focus for their international activities, this adaptability and efficiency can lead to small states outperforming their larger and more powerful international partners in terms of effectiveness (Panke & Thorhallsson, 2024). This capacity for strategic focus and rapid decision-making allows small states to maximize their impact

in international forums, leveraging their strengths and overcoming resource constraints to maintain a meaningful presence in global governance and diplomacy.

Another identifiable approach is the status-seeking approach, which highlights that the ability of small states to operate effectively on the international stage often involves behaviours aimed at gaining or reaffirming recognition and legitimacy – factors that are typically taken for granted by larger states. Such actions are also linked to building international standing and prestige within the global community. Constructing an image based on professionalism and expertise in specific areas is a hallmark of the international activities of the Nordic states, which have achieved prominence in fields such as international mediation, peacebuilding, and development and humanitarian assistance (Musiał & Šime, 2021). The choice of these areas is not driven by threats to their own security or the necessity to address economic or developmental challenges. Instead, it reflects a deliberate effort to gain prestige and proactively establish their position on the international stage (Panke & Thorhallsson, 2024). This approach underscores the strategic emphasis small states place on reputation and soft power. By specializing in key areas of international cooperation, they not only enhance their visibility but also secure a voice and influence in the global arena disproportionate to their size. This status-seeking behaviour allows small states to carve out niches where they can excel and contribute meaningfully, thereby reinforcing their legitimacy and authority in the international system.

This book is divided into ten chapters, each dedicated to one of the ten Northern European countries, with every chapter divided into two parts. The first part focuses on an analysis of the country's foreign policy, while the second examines its science diplomacy model. The sequence of analysis covers the Nordic states (Denmark, Finland, Iceland, Norway, and Sweden), the Baltic states (Estonia, Latvia, and Lithuania), and the other states in the BSR (Germany and Poland). The analysis of foreign policy includes a discussion of its underlying conditions and institutional dimensions, as well as its objectives and instruments. Meanwhile, the section devoted to the science diplomacy model of each country begins with an introduction providing a historical context and key determinants. It then offers an overview of the country's scientific sector, followed by an analysis of the normative and institutional-operational dimensions of its science diplomacy. This structure ensures a comprehensive examination of both foreign policy and science diplomacy, highlighting their interconnections and contextual factors across the diverse states of Northern Europe.

Notes

1 The chapter is based on research funded by the National Science Centre in Poland (NCN) under agreement UMO-2021/43/B/HS5/01638. The primary research objective of the project is to address the question of whether, and how, science diplomacy can (and does) effectively contribute to the political processes of regional cooperation and governance. This exploratory study aims to advance a comprehensive, evidence-based understanding of science diplomacy in its regional dimensions and scales. The research focuses on the regional cooperation and governance systems operating in Northern Europe, encompassing both the Baltic Sea region (BSR) and the European Arctic region

(EAR). Regional governance is understood here as a set of institutional actors (primarily states and intergovernmental organisations) with the capacity to make decisions regarding territorial cooperation within agreed decision-making frameworks. These actors frequently play a central role in regional governance and innovation processes through the policies and programmes they implement within their respective mandates. Simultaneously, science diplomacy is perceived both as a domain of interaction and as a tool employed in the relations between states in Northern Europe and regional organisations. These entities form two overlapping and interconnected governance systems: one in the BSR and the other in the EAR.

2 Plato in *The Republic* (c. 380 BCE) discusses the ideal relationship between knowledge, governance, and the role of philosopher-kings who possess scientific and philosophical wisdom. F. Bacon in *Novum Organum* (2000/1620) advocates for the use of empirical methods in science and their application to governance and public good. J. S. Mill in *On Liberty* (2003/1859) explores the role of knowledge and free speech in creating a well-informed and just society, whereas in *A System of Logic* (2002/1843), he examines the principles of reasoning that underpin scientific inquiry and their implications for policy and ethics. K. Popper in *The Logic of Scientific Discovery* (2002/1959) explores the philosophy of science and its critical role in shaping rational decision-making. H. Arendt in *The Human Condition* (2008/1958) discusses the relationship between science, technology, and political action in modern societies. M. Faucault in *Discipline and Punish: The Birth of the Prison* (1995/1977) investigates how knowledge systems, including science, are linked to power structures and governance. He continues the analysis of the relationship between knowledge production and political power in *Power/Knowledge: Selected Interviews and Other Writings, 1972–1977* (1980). J. Habermas in *The Theory of Communicative Action* (1984, 1987/1981) discusses the role of rational discourse, including scientific knowledge, in achieving consensus in political contexts. Sociologists have also written on this subject, such as K. Mannheim, author of the *Ideology and Utopia: An Introduction to the Sociology of Knowledge* (1991/1936), a foundational text exploring how ideologies and utopias influence political thought and decision-making. S. Fuller in *The Philosophy of Science and Technology Studies* (2006) examines the role of science in society and its intersection with politics. R. Keller offers methodological tools (sociology of knowledge approach to discourse) to analyse the nexus of knowledge, politics, and discourse (*The Sociology of Knowledge Approach to Discourse (SKAD)*).

3 The definition of a small state can be based on either objective or subjective premises, as well as quantitative (demographic, geographic, and economic) and qualitative (limited capacity to guarantee security and reliance on external support) criteria. Using demographic criteria, a small state is defined by R. Pace (2000) as one with a population not exceeding 10 million citizens. D. Vital adds an economic dimension, distinguishing between highly developed states (10–15 million citizens) and developing states (20–30 million citizens) (Vital 1971). B. Thorhallsson (2000), however, emphasizes the importance of resources and institutional capabilities, noting that small states often have limited capacities, which makes them dependent on multilateral forms of cooperation. For I. B. Neumann and S. Gstöhl (2006), the perception of small states – both their self-perception and how they are viewed by other actors in international relations – is significant. Thus, the classification of a state as ‘small’ is determined not only by material factors but also by the perceived relative ability to influence policy within a given context (Foster & Mosser 2024; Steinmetz & Wivel 2016). Typical characteristics of small states include a preference for multilateralism, niche diplomacy, and the phenomenon described as *punching above their weight* (Jesse & Dreyer 2016). These attributes enable small states to leverage limited resources strategically, emphasising specialisation and multilateral engagement to amplify their influence within the international system.

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