Science and Public Policy, 2023, **50**, 742–748
DOI: https://doi.org/10.1093/scipol/scad028
Advance Access Publication Date: 13 June 2023
Special Section

OXFORD

Science diplomacy in the Global South—an introduction

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1. Introduction

Science diplomacy (SD) is both a new and old subject. It is new in that the title 'Science Diplomacy' began to circulate about 15 years ago. The establishment of the Center for Science Diplomacy by the American Association for the Advancement of Science (AAAS) (2008), the 50th anniversary of signing the Antarctic Treaty (Washington, DC, 2009), and the publication of the *New Frontiers in Science Diplomacy* report (Royal Society and American Association for the Advancement of Science 2010) attracted broad interest in the diplomatic and academic communities. As a result of these milestone events, more developed and developing countries have started acknowledging the foreign relations applications of SD as a new tool. They have declared their commitment to SD by including SD in their national strategy and policy documents (Turekian and Kishi 2017). Others have engaged in SD policies or activities de facto without calling them such. This opens a new area for cooperation that reaches beyond the realms of scientific communities to involve both government and scientific domains (Buyuktanir Karacan 2021).

This new vocabulary, SD (which some would preferably call 'science, technology, and innovation diplomacy'), provides renewed relevance to old questions, relating to interactions between the practices of both science and technology (S&T) and diplomacy. The awareness of a scientific dimension to global challenges relating to topics such as climate stability, biodiversity, or human health and their inclusion in the international agenda—specifically after the adoption of the Sustainable Development Goals by the United Nations (UN) in 2015—explains SD's enhanced visibility today. When the concept emerged at the turn of the present millennium, SD was described as the set of practices by which the work of diplomats (and foreign ministries) comes into contact with that of researchers through various initiatives, such as the conclusion of intergovernmental S&T cooperation agreements, the integration of scientific expertise into international negotiations, or the use of S&T achievements to improve the image and positioning of the nation in the world, especially through the use of the soft power of science.

The rationale of SD is twofold: (1) advancing a country's national interest and (2) addressing global challenges. The topic of SD can be addressed from two complementary perspectives: national and global. From a state's perspective, SD is a subset of the national foreign policy and a strategy for advancing its interests and needs. This 'statist' approach is in accordance with the traditional state-centered vision of diplomacy. From a global perspective, SD is perceived as a potential solution for tackling common global problems. One could describe this approach as 'universalist', as it underlines topics such as the governance of S&T-intensive challenges and areas beyond national jurisdictions, such as polar regions. These two complementary dimensions make SD a research field that is both rich and complex.

SD clearly falls within the scope of public policy. It is primarily a lever for action. The practitioners who were its first promoters attributed to SD the capacity to improve international order. They developed from historical examples the idea that scientific cooperation can reduce political tensions between countries, thanks to the universal values of science and to the joint efforts of scientists and diplomats to achieve common goals (Fedoroff 2009; Turekian and Neureiter 2012). Although criticized for its idealism (Rungius and Flink 2020), this transformative and optimistic vision of SD has remained at the forefront of the discourse. Nourished by their experience as scientists, having acceded to positions of advisers to their governments, other authors have tempered the idealism of pioneers by recognizing that 'for a country to make any investment that supports science diplomacy, the actions must be seen to either directly or indirectly advance its national interest' (Gluckman et al. 2017). The overall framework was then established stating that all initiatives claiming SD were necessary 'to balance national interests and common interests' (Berkman 2019). S&T increasingly permeates international relations and can help develop harmonious, cooperative relations between countries and achieve common interests of humanity; however, S&T can also be a tool of competition and support situations of domination and power inequalities between countries (Ruffini 2020).

SD is an attractive concept: the name is flexible enough for everyone to make it their own (at the cost of ambiguity, for the catch-all nature of the wording 'science diplomacy' has often been denounced). However, to be attractive, the concept must also be useful and help make the world more intelligible by naming and promoting explicit diplomatic actions regarding issues that combine scientific knowledge, states' foreign policies, and global governance.

2. The Global South in international scientific relations—an overview

Within the limited framework of this introduction, we leave aside the still open discussion on what 'Global South' means (Clarke 2018; Mahler 2018). We use this shorthand language to designate all emerging and developing countries, most often located in the Southern Hemisphere and home to approximately 80 per cent of the world's population. This is a heterogeneous grouping, which includes both the least developed countries of the UN classification (in particular, landlocked countries in Africa) and China, whose Gross Domestic Product (GDP) is now almost comparable to that of the USA, a permanent member of the UN Security Council and—directly relating to the subject of this special section—is today on par with the USA and Europe, according to the number of scientific publications. However, beyond their heterogeneity, the countries of the Global South have two common characteristics. The first is economic: overwhelmingly, their level of development, as measured, for example, by GDP per capita, is lower than that of the countries of the Global North, where wealth and power are concentrated. In particular, their national S&T system is less developed. The second characteristic is geopolitical: these countries, most former colonies, are often dominated in global power relations while reluctant to align themselves with one or other of the powers of the developed world. Each of these dimensions is essential to understanding Global South perspectives on SD.

It is essential to contextualize the reflection, starting from the situation of the S&T sphere in the Global South. Asymmetries and inequalities characterize the global landscape of the production and circulation of scientific knowledge to the detriment of the South. The means devoted to research and the ability to produce knowledge are unequally distributed. In 2021, among the seventeen countries having a research and development (R&D) expenditure/GDP ratio above 2 per cent, there was only one country of the Global South (China, 2.4 per cent). For Latin America and the Caribbean, the ratio was 0.66 per cent, with significant disparities across countries, and was below 1 per cent for all African countries (UNESCO 2021). The number of researchers per million inhabitants numbered only a few hundred for the countries of the South, whereas the European Union exceeded 3,000 and North America 4,000 (UNESCO 2021). These disparities in the distribution of the world's scientific workforce are fueled by the brain drain of researchers, which, while also affecting some countries of the North, hits harder countries of the South, including India and China, but also Latin America and Africa (Ewers et al. 2021; Varma and Kapur 2013).

The underinvestment in resources for science and research in the South affects performance. In world scientific publications, China occupies a unique position (24.5 per cent of the world total in 2019), and India (6.1 per cent) has produced more publications than Latin America and the Caribbean combined (5.3 per cent). The contributions of all Arab countries (3.6 per cent) and the countries of sub-Saharan Africa (1.8 per cent) place them on the periphery of world scientific production (UNESCO 2021). Inequalities are even more remarkable when considering the number of citations. Apart from the case of China, the geographical distribution of research activities evolves slowly over time, attesting that no substantial change in the global geography of science is at work: 'The vertical center-periphery structure in science persists and continues to reflect the global economic structure' (Olechnicka et al. 2019). Inequalities in performance are also evident regarding innovation. In 2022, there were only four countries of the South among the top forty, according to the ranking of the Global Innovation Index: China, 11th; United Arab Emirates, 31st; Malaysia, 36th; and India, 40th (World Intellectual Property Organization 2022a). And if China far surpassed all the other countries by the number of patents filed, only six other countries of the South were among the thirty best-performing countries according to this indicator in 2021 (World Intellectual Property OrganizationI—PO 2022b).

Several studies report geographical imbalances in scientific publications. Researchers from the Global South are under-represented among top-publishing ecologists (Maas et al. 2021), particularly in producing climate change knowledge (Pasgaard et al. 2015). This near absence of geographical diversity in academic publications is also evident in the social sciences, particularly economics (Fontana et al. 2019). The North is dominant in the rankings, control of scientific journals, and citations of articles (Gomez et al. 2022). Asymmetries also exist in the practices of scientific cooperation between the North and the South. Research agendas often align with funders' interests, most often located in the North (Bradley 2008). More generally, access to funding is a barrier to equity in North–South collaborations (Flint et al. 2022). Other studies show an unequal sharing of responsibilities in research consortia, with researchers from the South considered primarily data collectors and researchers from the North being more concerned with the analysis and publication of results (Matthews et al. 2020).

Based on the observation of these inequalities, some scholars go further by looking at scientific relations between the North and the South through the lens of colonialism and neocolonialism (Mignolo 2009; Polejack et al. 2022; Seth 2009). The so-called 'parachute science' or 'helicopter research' practices are denounced as reminiscent of colonial exploitation. The regions of the South are often characterized as life-size laboratories for the fieldwork of researchers from the North, in a logic of data extraction without significant involvement of researchers from the South or without building research capacity locally (Vos and Schwartz 2022). The lack of recognition and/or denigration of indigenous knowledge by scientists from the North is also denounced (Santos 2016), leading some to call for 'decolonizing science' and to plead for the development of non-Western analyses of global issues. All these questions indicate the extent of the challenges that are posed to SD from a Global South perspective.

3. Which SD for the Global South?

The question of the adaptation of SD to the issues of the Global South must be raised in the context which has just been described. Historically, the concept of SD emerged in the USA and was used to characterize an aspect of the Obama administration's foreign policy as the use of scientific cooperation to reduce tensions between the USA and the Arab-Muslim world. The attention paid to SD was also enhanced by the importance recognized on global issues. The dominant discourse then widened its scope, providing SD with the objective of advancing national interests and needs. Do the countries of the South identify with these questions and these agendas? Originating from the North, is the SD concept transferable to countries and regions that have experienced a different history and have different needs? Considering the keen interest in SD expressed by many actors in the South, especially governments, the answer to this last question is positive.

Quite a number of countries in the South are using SD to renew their discourse on development policy. South Africa announced SD initiatives in 2012 (Pandor 2012). Argentina, Brazil, Chile, Costa Rica, Cuba, Mexico, and Panama have labeled the science–foreign policy interface as 'science diplomacy' and have implemented 'strategies to incorporate science, technology, and innovation into their foreign policy structures' (Gual Soler 2021). In Colombia, SD was included as a priority in the government's agenda in 2020. India first announced SD to be included in the *National Science, Technology and Innovation Policy* in 2018. With the designation of a Science Diplomacy Division to act as a liaison between national S&T stakeholders and international partners, the Ministry of Foreign Affairs of Pakistan launched its *Science Diplomacy Initiative* in 2019. However, the scope of these initiatives must be put into perspective since a gap may exist between stated intentions and concrete achievements. If China and India (Saxena 2021) have long granted a place to S&T in their public policies, this is generally not the case in Latin American countries, where S&T issues are absent from the foreign policy agenda (da Silva et al. 2021; Gual Soler 2021). It should be noted in particular that the countries of the South cannot rely on specialized personnel at their embassies, which, except for China and Brazil, are poorly equipped with science attachés or equivalent positions.

The keen interest in SD in the South is also conspicuous in the scholarly literature emerging from its intellectual communities in each of these countries, of which the references used in this introduction give an overview. As of 2018, a *Science Diplomacy Review* has been published by the Forum for Indian Science Diplomacy. The Indian think tank Research and Information System for Developing Countries has published *Southern Perspectives on Science Diplomacy* annually since 2018. The review *Frontiers* devotes considerable space to research topics such as 'Science Diplomacy and Sustainable Development: Perspectives from Latin America' and 'Engaging Scientific Diasporas for Development: Policy and Practices'. A recently-edited volume has brought numerous contributions from authors from the South (Ittekkot and Baweja 2023). Both the policy initiatives of Global South governments and the analysis of scholars and observers available today make it possible to imagine the potential for SD rooted in Southern priorities.

What can SD do in the face of the asymmetries and imbalances described in this introduction? As previously mentioned, at the heart of SD is the use of S&T to find the best balances and compromises between national interests and needs and the common interests of humanity. It would certainly be a mistake to minimize the importance of common interests in Southern countries' approaches, as the threats to the environment or attacks on human health strike them just as much, and sometimes more, than countries of the North. However, the primary focus of SD in the South is on national interests and needs, with the priority objective of national development.

'In emerging economies, the debate around science diplomacy has inevitably tilted towards developmental objectives' (Polejack et al. 2022). Here is the most robust dividing line between SD as perceived from the South and SD as inherited from the North. The *Royal Society-AAAS* seminal report did not address the topic of the development of the South. The literature from the North has only touched on this issue in passing. In sharp contrast with issues typically addressed in the North-centered SD discourse (international scientific cooperation to mitigate conflicts; exercise of influence through the soft power of science), the theme of development is at the forefront in SD writings and actions relating to countries of the Global South where 'science, technology and innovation diplomacy plays a critical role as an enabler and driver of knowledge and technology for economic development across the borders' (Ittekkot and Baweja 2023). SD is a tool for S&T capacity building, as exemplified by Latin American countries (Bonilla and Serafim 2021; Jarquin-Solis and Mauduit 2021; López-Vergès et al. 2021). A primary objective is access to S&T resources for the overall economic and social development in response to the central question: 'Can foreign policy bridge the scientific and technological gap?' (da Silva et al. 2021). The particular care taken in Brazil to speak officially of 'science *and innovation* diplomacy' also underlines the significance of the purpose of economic development.

Another announced priority of SD in the South is its use to leverage the potential of scientific diasporas, intending to associate them with developing the national scientific ecosystem (Bonilla et al. 2023). China has implemented an ambitious policy to promote the return of expatriate national scientists (Cao et al. 2020). In Brazil, the *Innovation Diplomacy Program* of the Ministry of Foreign Affairs aims at 'mobilizing the Brazilian scientific diaspora abroad' (Ministério das Relações Exteriores—Brasil 2022). One of the challenges of Colombia's SD is 'coordinating the scientific diaspora and Colombian academic communities with international networks' (Marulanda). India's *Science, Technology and Innovation Policy* also foresees intensifying engagement with the scientific diaspora (Government of India 2020). Other expectations can be attributed to SD, such as the development of South–South relations (Bonilla and Serafim 2021). Like the other challenges to be met, correcting the asymmetries and inequalities born of colonialism in scientific practices is a long-term endeavor.

4. SD in the Global South: the articles in the special section

Under the title, 'Science Diplomacy in the Global South', this special section aims to enrich the scholarship by analyzing the particular practices of countries that have remained largely outside the view of dominant approaches and by reflecting on the specific questions relating to the adaptation of the SD concept to their context. As the co-editors of this special section, we are confident that these selected articles contribute to the efforts and strategies for the engagement of SD in the Global South, allowing us to counterbalance the emphasis, focus, and narratives that have dominated the literature. These articles answer some of our primary questions regarding SD in the

Global South and add value from different perspectives with historical, theoretical, and practical approaches. Each offers principles for valuable analysis to all those who wish to better understand the theoretical and practical issues in the South and the North.

The fundamental transitions in international scientific collaboration during the 1970s that were crucial for the processes and institutions of globalization that are relevant today are explored by Robinson and co-authors in a paper titled 'The Globalization of Science Diplomacy in the Early 1970s: A Historical Exploration'. Using a multi-perspective approach, the authors examine five critical research areas: space exploration, oceanography, nuclear technoscience, environmental sciences and health, and population studies. They argue that SD's global expansion can be identified by key features that appeared in different fields of science and diplomacy during the early 1970s. Through this historical approach, the increasing multipolarity, the resistance of newly independent countries, international technocratic organizations, the emergence of regional geopolitical powers and alliances, the increasingly important role of S&T, and the centrality of the UN system are presented as critical futures of those years. The authors treat science as a transnational phenomenon and term it 'Global Science Diplomacy'. They also argue that the globalization of SD was spurred by these transnational frameworks, including South-to-South frameworks and the countries demanding a more equitable distribution of scientific expertise in a technological capacity. The article suggests that the engagement of the Global South countries in transnational science, especially within the UN System, transformed SD into a global phenomenon but underpins that there is a need to expand the geographic scope and inclusivity of SD.

The article 'Coloniality in Science Diplomacy – Evidence from the Atlantic Ocean', by Polejack, presents both theoretical arguments and empirical insights. It reports on perceptions of ocean SD collected through twenty in-depth interviews with South and North Atlantic government officials and researchers involved in the All-Atlantic Ocean Research Alliance (thirteen high-level decision makers and seven research leaders who coordinate large-scale research projects and scientific programs but also provide scientific evidence to policy). The author discusses his findings considering postcolonial and decolonial theories, advocates the need to decolonize ocean SD in the Atlantic Ocean, and groups them under six subheadings covering ocean SD, its perceptions, and perceptions of coloniality and the differences in SD between North and South Atlantic. The article highlights that conflicting issues on the principles of science and policy become evident, and individual positionality from North and South diverge, particularly on the motivations to engage in practices of SD. Values attributed to ocean SD by the interviewees that point to coloniality are further emphasized. The article presents key recommendations, such as decolonizing science practices, democratizing science with high potential to impact evidence-informed diplomacy, indicating SD to local realities, and building meaningful international engagements. In conclusion, three possibilities to progress with change are listed for enhancing South-to-South cooperation: epistemic justice, more balanced capabilities, and dialogue.

As a complementary contribution to the topic, the article 'Science Diplomacy from a Nation-State's Perspective: A General Framing and Its Application to Global South Countries', by Krasnyak and Ruffini, offers both theoretical arguments and empirical insights through semi-structured interviews with high-ranking officials and experts from five Global South countries (Brazil, Colombia, India, Pakistan, and the Republic of South Africa), which have officially expressed their commitment to SD. The authors initially ask why a country might invest resources in SD and try to answer this question from a nation-state perspective by suggesting a realist-constructivist theoretical approach and considering the idealist aspirations and realist necessities. The authors argue that a realist-constructivist perspective in SD helps assess a nation-state's foreign policy decision-making and behavior. They look more profoundly into the SD phenomenon by categorizing the objectives and distinguishing strategic drivers and tools to understand how the Global South countries developed their national styles and SD practices. The authors group the objectives as scientific and non-scientific and see strategic drivers as guidelines that give meaning and structure to policies, i.e. cooperation, attraction, access, and influence. The authors argue that neither realism nor constructivism looks convincing in framing SD and understanding its role in international politics. However, they suggest that a mixed realist-constructivist approach can be helpful, which bonds together ideational factors and material balances of power. The article's empirical part helps the readers assess the meaning of SD as understood and implemented by Global South countries and distinguish SD practices as oriented toward the satisfaction of domestic needs and international positioning. The authors introduce approaches and the governmental institutional framework of these countries. The empirical part and the theoretical discussions illustrate that the Global South might struggle to address the issues of global concerns and that they give a strong priority to national development in their policy-making: realism strongly inspires Global South countries' SD.

The contribution 'Science Diplomacy from the Global South: The Case of Intergovernmental Science Organizations', by Rüland et al., aims to extend the field of SD to include the Global South in the studies of intergovernmental science organizations (IGSOs) dominated by North–North collaboration. In recent years, several countries from the Global South have joined established IGSOs or created new organizations of this type. However, little is known about the roles and interests of Southern actors in IGSOs. This article, combining insights from rational institutional design and SD scholarship, outlines four IGSOs with participation from the global start to discuss the possibilities of Southern actors in the governance and policy-making in these organizations. These four organizations, presented as case studies, are the European Organization for Nuclear Research, the International Thermonuclear Experimental Reactor, the Square Kilometer Array, and the African Light Source, each of which is characterized by a distinct configuration of general institutional rules that provide opportunities and limitations for the participation of Southern countries. The article explains that countries of the Global South can represent their interests if they analyze how their capabilities fit into IGSOs and move from dependency and junior partnership to one of (self-) empowerment and collaboration on equal terms. In that sense, an active and well-connected scientific community; scientific, political, and industrial capacities; continuous and long-term national domestic political support; and geographic features are expressed as the factors that may help the Global South countries strategically leverage their positions and take on more substantial roles in IGSOs.

Scientific collaborations between Latin American and European researchers, exemplifying the SD practices with the Global South countries, are examined in the paper 'Scientific Practices between Latin America and Europe: Engaging Science Diplomacy towards Meaningful International Collaborations', by Echeverria-King et al. The article analyzes how scientific collaborations between Latin American and European researchers are carried out, and the trends, behaviors, and perceptions, using qualitative methods and empirical data through a survey on international joint projects. Awareness, capacity building, and action are used as three dimensions of their approach of Latin America. The authors present the asymmetries in the collaboration between researchers from Europe and Latin America. It is argued that researchers from the Global South countries are under-represented as lead authors in research journals. They have lower visibility and lack prestige as compared to their European counterparts. Language is outlined as a barrier for these researchers. It is also mentioned that the Northern researchers lead most of the projects and become the lead authors in scholarly publications, while Southern researchers are seen as data collectors. Access to research funding was discussed as another barrier, as well as lower research and development expenditure with the dominance of the Northern national and regional funding agencies and their agendas. The indigenous communities are additionally mentioned in the article as underrepresented actors in traditional international scientific schemes. The authors claim that the SD approach may facilitate addressing these challenges. SD is not seen as a panacea; however, it can promote the internationalization of research in terms of mobility, international scientific collaborations, and knowledge exchange. SD provides conditions for transnational cooperation in science and mobilization of resources, bringing scientists from the global North and Global South together. As a result, it is suggested that researchers from the Global South can be regarded as equal partners in international scientific cooperation by their European partners, and concludes that developed countries should put more effort into mitigating the wide gaps in research capabilities, decreasing global inequalities, and promoting science from the periphery.

With its growing Science, Technology, and Innovation (STI) capacity, increasing investment in R&D, and a desire to become the world's S&T power, China has recently become the forefront of interest for many countries. However, the number of scholarly research on the SD of China is deficient. Due to these reasons, the article 'China's Use of Formal Science and Technology Agreements as a Tool of Diplomacy', by Wagner and Simon, fills a gap by providing China's extensive activities in negotiating and signing formal science and technology agreements (STAs), which constitute one aspect of SD. This article outlines an overall analysis of STAs, which China has signed formally with at least fifty-two countries, and encompasses broader agreements on topics and subjects for cooperation signed with sixty-four other countries. Although there are various implicit and explicit limits that have been placed on the expansion of cooperation in many fields, China uses STAs as a tool of its foreign policy to grow its national investment in science, technology, and innovation; to cooperate with other countries to co-fund large-scale scientific projects and research infrastructure; and to attract talent—especially from developed and developing, even low-income countries. The authors explore China's use of S&T to achieve its strategic aims and the extent to which China uses SD to serve policy rather than scientific goals. In that sense, the authors focus more on the 'science for diplomacy' dimension of SD by exploring the extensive nature of China's STAs with the rest of the world, the rise of the deals, and the changing momentum with other countries. The article additionally presents how China has enlarged its geographical selection of STAs to help create political ties while accessing the latest S&T know-how from the 1950s until recent years. The changing political interests can be seen through these agreements that started being signed with the communist countries, opened to the West, and included middle- and lower-income countries.

5. Concluding remarks: what the Global South teaches us about SD

Can SD contribute to reducing inequalities between countries? Can it contribute to reducing the gap between the North and South concerning S&T development? By providing some answers to these central questions, none of the authors of the special section made the mistake of considering S&T an all-powerful tool, nor was SD a miracle remedy for the satisfaction of the legitimate objectives of countries. All contributed, in one way or another, to the enrichment of our understanding of SD. SD is a conceptualization of Northern origin. Considering it from a Global South perspective means questioning it in two ways: (1) testing the robustness of the concept and its transferability to the context of Global South countries and (2) on a practical level, testing its ability to meet the challenges these countries are facing. Priority concerns of countries of the North have given SD its initial coloring. Refocusing the concept on the South means that different priorities must be considered. In the vision of scientifically dominant countries, having a certain level of S&T development is implicitly understood as a prerequisite for engaging in SD, as projecting influence through S&T is a core aspect of their strategy. The transfer of the concept to the South shifts the focus to an inverted sequence: SD for leveraging the development of the S&T system. The North has produced a discourse on SD primarily adapted to its interests and needs. Countries of the South are adapting the existing SD logic and implementing practices according to their needs and priorities. Such an approach, however, does not cover all of what is at stake. SD entails a confrontation between national interests, and how it is implemented reflects the interplay of powers on the world stage. But the working of SD also means opening the way to a better world through the satisfaction of interests that are common to all countries. Smart use of SD could allow the reduction of the North–South divide. It has been noted that 'in traditional histories of science, technology, and diplomacy, the regions of the Global South were treated as a passive periphery' (Adamson and Lalli 2021). One can only hope that acclimating SD to the South will make it possible to write a new page in history: that of a better world, thanks to a balanced and inclusive use of S&T in international relations.

Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Funding

No Funding Provided.

Conflict of interest statement. None declared.

Acknowledgements

Co-editing this special chapter was an enriching experience. We were impressed by all of the submitted papers' depth, breadth, and quality, although we could not include all of them in this volume. We would like to thank all of the authors for their contributions and for positively and timely responding to various editorial requests. We also thank all reviewers who contributed immensely to the final quality of the papers through their diligence and insightful comments. Finally, we thank the journal editors for giving us this opportunity and the journal staff, who have been very responsive and helpful to various logistical needs to make this special issue possible. We hope this issue will contibute to the growing interest in studying and understanding the dynamics of SD from the perspective of different countries and will be a valuable contribution to meeting the needs of the scientific community.

References

Adamson, M. and Lalli, R. (2021) 'Global Perspectives on Science Diplomacy: Exploring the Diplomacy-Knowledge Nexus in Contemporary Histories of Science', *Centaurus*, 63: 1–16.

Berkman, P. A. (2019) 'Evolution of Science Diplomacy and Its Local-Global Applications', *European Foreign Affairs Review*, 24: 63–80.

Bonilla, K., Echeverría-King, L. F., Serafim, M., et al. (2023) 'Editorial: Engaging Scientific Diasporas for Development: Policy and Practices', *Frontiers in Research Metrics and Analytics*, 7: 1–3.

Bonilla, K. and Serafim, M. (2021) 'Relevance of Science, Technology and Innovation Diplomacy for STI Capacity Building in Central America: The Cases of Guatemala, El Salvador and Honduras', in L. A. Orozco, G. Ordóñez-Matamoros, J. H. Sierra-González, et al. (eds) *Science, Technology and Higher Education: Governance Approaches on Social Inclusion and Sustainability in Latin America*, pp. 21–53. Springer International.

Bradley, M. (2008) 'On the Agenda: North–South Research Partnerships and Agenda-setting Processes', *Development in Practice*, 18: 673–85.

Buyuktanir Karacan, D. (2021) 'Science Diplomacy as a Foreign Policy Tool for Turkey and the Ramifications of Collaboration with the EU', *Humanities and Social Sciences Communications*, 8: 1–12.

Cao, C., Baas, J., Wagner, C. S. et al. (2020) 'Returning Scientists and the Emergence of China's Science System' *Science and Public Policy*, 47: 172–83.

Clarke, M. (2018) *Global South: What Does It Mean and Why Use the Term?* (University of Victoria, Global South Political Commentaries) <https://onlineacademiccommunity.uvic.ca/globalsouthpolitics/2018/08/08/global-south-what-does-it-mean-and-why-use-the-term/> accessed 18 May 2023.

da Silva, R. G. L., Ferreira, G. G. C., Onuki, J., et al. (2021) 'The Institutional Building of Science and Innovation Diplomacy in Latin America: Toward a Comprehensive Analytical Typology', *Frontiers in Research Metrics and Analytics*, 6.

Ewers, M. C., Khattab, N., Babar, Z., et al. (2021) 'Skilled Migration to Emerging Economies: The Global Competition for Talent beyond the West', *Globalizations*, 19: 268–84.

Fedoroff, N. (2009) 'Science Diplomacy in the 21st Century', *Cell*, 136: 9–11.

Flint, A., Howard, G., Baidya, M., et al. (2022) 'Equity in Global North–South Research Partnerships: Interrogating UK Funding Models', *Global Social Challenges Journal*, 1: 76–93.

Fontana, M., Montobbio, F., and Racca, P. (2019) 'Topics and Geographical Diffusion of Knowledge in Top Economic Journals', *Economic Inquiry*, 57: 1771–97.

Gluckman, P. D., Turekian, V. C., Grimes, R. W., et al. (2017) 'Science Diplomacy: A Pragmatic Perspective from the Inside', *Science & Diplomacy*, 6: 1–13.

Gomez, C. J., Herman, A. C., and Parigi, P. (2022) 'Leading Countries in Global Science Increasingly Receive More Citations than Other Countries Doing Similar Research', *Nature Human Behaviour*, 6: 919–29.

Government of India—Ministry of Science and Technology (2020) Science, Technology, and Innovation Policy <https://dst.gov.in/sites/default/files/STIP_Doc_1.4_Dec2020.pdf> accessed 18 May 2023.

Gual Soler, M. (2021) 'Science Diplomacy in Latin America and the Caribbean: Current Landscape, Challenges and Future Perspectives', *Frontiers in Research Metrics and Analytics*, 6.

Ittekkot, V. and Baweja, J. K., eds (2023) *Science, Technology and Innovation Diplomacy in Developing Countries—Perceptions and Practice*. Singapore: Springer.

Jarquin-Solis, M. E. and Mauduit, J.-C. (2021) 'Institutional Capacity for Science Diplomacy in Central America', *Frontiers in Research Metrics and Analytics*, 6.

López-Vergès, S., Macías-Navarro, L., Hernández-Mondragón, A. C., et al. (2021) 'Closing the Gap between Emerging Initiatives and Integrated Strategies to Strengthen Science Diplomacy in Latin America', *Frontiers in Research Metrics and Analytics*, 6.

Maas, B., Pakeman, R. J., Godet, L., et al. (2021) 'Women and Global South Strikingly Underrepresented among Top-Publishing Ecologists', *Conservation Letters*, 14: 1–10.

Mahler, A. G. (2018) *From the Tricontinental to the Global South: Race, Radicalism, and Transnational Solidarity*. Durham: Duke University Press.

Marulanda, C. S. (2021) Vice-minister of Knowledge, Innovation and Productivity of Colombia, Presentation at the 2021 InnSciD São Paulo Summer School.

Matthews, K. R. W., Yang, E., Lewis, S. W., et al. (2020) 'International Scientific Collaborative Activities and Barriers to Them in Eight Societies', *Accountability in Research*, 27: 477–95.

Mignolo, W. D. (2009) 'Epistemic Disobedience, Independent Thought and Decolonial Freedom', *Theory, Culture & Society*, 26: 159–81.

Ministério das Relações Exteriores—Brasil (2022) *Innovation Diplomacy Program* <https://www.gov.br/mre/en/subjects/science-technology-and-innovation/innovation-diplomacy-program> accessed 18 May 2023.

Olechnicka, A., Ploszaj, A., and Celińska-Janowicz, D., eds (2019) *The Geography of Scientific Collaboration*. London: Routledge.

Pandor, N. (2012) 'South African Science Diplomacy: Fostering Global Partnerships and Advancing the African Agenda', *Science & Diplomacy*, 1.

Pasgaard, M., Dalsgaard, B., Maruyama, P. K., et al. (2015) 'Geographical Imbalances and Divides in the Scientific Production of Climate Change Knowledge', *Global Environmental Change*, 35: 279–88.

Polejack, A., Goveas, J., Robinson, S., et al. (2022) *Where Is the Global South in the Science Diplomacy Narrative?* <https://ssrn.com/abstract=4278557> (Accessed 18 May 2023).

Royal Society and American Association for the Advancement of Science (2010) *New Frontiers in Science Diplomacy: Navigating the Changing Balance of Power*, p. 32 <http://diplomacy.aaas.org/files/New_Frontiers.pdf> accessed 18 May 2023.

Ruffini, P.-B. (2020) ‘Collaboration and Competition: The Twofold Logic of Science Diplomacy’, *The Hague Journal of Diplomacy*, 15: 371–82.

Rungius, C. and Flink, T. (2020) ‘Romancing Science for Global Solutions: On Narratives and Interpretative Schemas of Science Diplomacy’, *Humanities and Social Sciences Communications*, 7.

Santos, B. D. S. (2016) *Epistemologies of the South—Justice against Epistemicide*. London and New York: Routledge.

Saxena, M. (2021) ‘The Role of Science and Technology Diplomacy in Indian Foreign Policy: An Assessment of Issues and Opportunities’, Thesis submitted for completion of the MPhil/PhD Contemporary India Research degree, King’s College London.

Seth, S. (2009) ‘Putting Knowledge in Its Place: Science, Colonialism and the Postcolonial’, *Postcolonial Studies*, 12: 373–88.

Turekian, V. and Kishi, T. (2017) ‘Science and Technology Advising in Today’s Foreign Policy’, *Science & Diplomacy*, 6.

Turekian, V. C. and Neureiter, N. P. (2012) ‘Science and Diplomacy: The Past as Prologue’, *Science & Diplomacy*, 1.

UNESCO (2021) *UNESCO Science Report—The Race against Time for Smarter Development* <https://www.unesco.org/reports/science/2021/en?TSPD_101_R0=080713870fab2000a0842995cf824c6de15fdc7da17ecbd686bf6c923c5921a78b5c07a82c8226f408c6a5d4881430003c09130b257763d830ff73c7c552fd71577d96be1122d93a99982e668fa03691f09bf66f02ae0c1ac413c758ad31b673> accessed 18 May 2023.

Varma, R. and Kapur, D. (2013) ‘Comparative Analysis of Brain Drain, Brain Circulation and Brain Retain: A Case Study of Indian Institutes of Technology’, *Journal of Comparative Policy Analysis: Research and Practice*, 15: 315–30.

Vos, A. and Schwartz, M. W. (2022) ‘Confronting Parachute Science in Conservation’, *Conservation Science and Practice*, 4: 3–5.

World Intellectual Property Organization (2022a) *Global Innovation Index 2022 - What is the future of innovation-driven growth?* <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2022-en-main-report-global-innovation-index-2022-15th-edition.pdf> accessed 18 May 2023.

World Intellectual Property Organization (2022b) *World Intellectual Property Indicators* <https://www.wipo.int/publications/en/details.jsp?id=4632WIPO> accessed 18 May 2023.