

Guest Editorial

The policy-law-science nexus in the Antarctic

Keywords: Antarctic Treaty System, climate change, law, policy, SCAR, science-based decision-making

Policy-Law-Science Nexus (PoLSciNex), an Action Group under the Standing Committee on Humanities and Social Sciences (SC-HASS), was established in 2018 for a 3 year period under the co-leadership of Luis Valentín Ferrada (Professor of International Law, University of Chile) and Akiho Shibata (Professor and Director, Polar Cooperation Research Centre (PCRC), Kobe University). The objective of PoLSciNex was to examine how science-based decision-making is operationalized within the Antarctic context by studying the nexus between policy, law and science. An analysis of their interplay within the Antarctic Treaty System (ATS) is crucial to our understanding of how this regime can and should evolve to ensure a sustainable and resilient future in the region. To achieve this objective, the Action Group's final deliverable is a collection of relevant research articles in a dedicated subsection of the SC-HASS Special Collection in *Antarctic Science*.

While there are literatures on the policy-science interface and on the role of scientific evidence in legal regimes, the discourse lacks a discussion of the interaction of all three (Naylor *et al.* 2008, Weichselgartner & Kasperson 2010, Berkman *et al.* 2011, Perrings *et al.* 2011, Young 2011, Molenaar *et al.* 2013, Wesselink *et al.* 2013, Woker 2022). This existing scholarship highlights how policymaking relies on scientific knowledge, especially when it comes to environmental governance, which is highly relevant to decision-making in the Antarctic regime. Additionally, the scientific evidence plays a crucial role in legal regimes and the interpretation and application of norms. Hence, both the connections between science and policy and between science and law have been studied, but the interplay among all three remains underexplored. PoLSciNex connects the three disciplines to provide new insights into how the nexus of policy, law and science operates. This knowledge not only contributes to the academic discourse but also provides valuable information critical to making a positive impact in the governance of the Antarctic.

Being a practically orientated study, the Action Group focused on the organizational level when studying the nexus. Exploring the roles of individuals such as lawyers and scientists in policymaking and decision-making processes, as well as governance structures, provides insights into how the international institutions operate at the organizational level. Studying the role of individuals in international policymaking provides for a less common yet valuable angle, as the focus is usually on nation-states (Kelman 1970). Moreover, the analysis of institutional structures is essential to understanding how policy, law and science are operationalized within Antarctic governance. The Action Group therefore focused on an analysis of the Committee for Environmental Protection (CEP), the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) and the Scientific Committee on Antarctic Research (SCAR).

Considering that the ATS does not operate in a vacuum and is set within a broader framework of international law, the Action Group also aimed its analysis at the relationships with external institutions such as the United Nations Environment Programme (UNEP), the United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC). It has been argued that a closer collaboration with the UNEP and UNFCCC is needed to bolster the legitimacy of the ATS (Rothwell 1999, Yermakova 2021). Reflecting on the existing research, one of the fellows of PoLSciNex, Zia Madani, contributes to the topic of external relations in his piece with Akiho Shibata on the ATS and climate change regimes. This subsection on PoLSciNex welcomes submissions from early-career scholars in particular.

Since its inception in 2018, the Action Group has brought together experts in international law, international relations, environmental management and political science by organizing events and presentations at conferences, as well as maintaining online communications among members of the group. Given that one of the aims of the Action Group was to make available and applicable insights of the policy-law-science nexus to policymakers, over the last few years PoLSciNex has made sure that conference discussions were not limited to academics and that practitioners were invited to share their experiences and views in the forum. For example, in 2020, during the 13th Polar Law Symposium, the Action Group organized three presentations on the ATS's environmental policy and

the role of the CEP. These papers were presented by Ewan McIvor (Senior Environmental Policy Advisor with the Australian Antarctic Division), Kevin Hughes (Environmental Research and Monitoring Manager at the British Antarctic Survey) and Neil Gilbert (Editor of SCAR's Antarctic Environmental Portal and Antarctic environmental and policy consultant). These presentations highlighted the interdisciplinary connections of law and science and the implications for policy decisions. The session's discussions reflected the fundamental pillar of PoLSciNex - that is, the view that bridging the gaps between the three areas is necessary for effective protection of the Antarctic environment and adequate responses to climate change impacts in the region. These presenters have produced several papers since this meeting. Three papers in particular highlight the importance of Antarctic science within ATS decision-making and ATS decision-making within Antarctic science. The first, published in *Environmental Science and Policy*, seeks to highlight the advantages of strengthening the links between science and governance within Antarctic environmental protection and calls for more 'effective two-way interaction between scientists and those responsible for policy development [to] further strengthen the governance framework' (Hughes *et al.* 2018). The second, published in *Antarctic Affairs*, focuses specifically on the CEP and its commitment to acquiring the best available scientific advice to address emerging environmental challenges in the region (McIvor 2020). And the third, also published in *Environmental Science and Policy*, explored how ATS protected area policy can help to develop resilience to climate change impacts in Antarctica (Hughes *et al.* 2021). All of these papers and presentations from practitioners in the field fit within the broader project that PoLSciNex adheres to. These policymakers' perspectives are invaluable to the objectives of the Action Group as they provide unique interpretations of the nexus and better define the role of decision-makers within it. Without these perspectives, the puzzle could not be completed. Furthermore, there is great advantage to having those implementing policy being privy to the research addressing its effectiveness, and as such this engagement is one of the primary goals of PoLSciNex.

Moreover, one of the priorities of the Action Group was to bring together early-career researchers, establishing them as experts in both academia and policymaking. The group provided opportunities for early-career researchers to engage in research and to establish lasting connections in the Antarctic research community. The Action Group provided fellowships, travel opportunities and financial support and has invited early-career researchers to present their work at conferences, participate in a book project, co-write and co-edit papers and assist with organizing sessions and conferences. The active roles of emerging scholars such as Carolina Flores, Gustavo Ramirez Buchheister, Rebecca Hingley and Yelena Yermakova are a testament to the ongoing support from these co-leaders and academically established members of the Action Group. These early-career researchers gained valuable skills that have positioned them securely within the Antarctic research community as well as in academia more generally. Such early-career researchers have not only engaged meaningfully with the project; they have also produced quality academic publications relating to PoLSciNex studies. The 12th volume of *The Yearbook of Polar Law* features several contributions from early-career researchers (Alfredsson 2020). The first is Katharina Heinrich, who explores biological prospecting in Antarctica; the second is Osamu Inagaki, who contemplates legal issues of the Dronning Maud Land Air Network Project under the ATS; the third is Sakiko Hataya, who investigates the legal implications of the Chinese Antarctic Specially Managed Area proposal at Kunlun Station (Dome A); and the fourth is Lynda Goldsworthy, who considers the concept of conservation within the Convention on the Conservation of Antarctic Marine Living Resources. It is these efforts that will maintain the momentum gained by the Action Group beyond its formal existence. These early-career researchers will define the research agenda moving forward and bring with them the insight they have gained through their participation in and contribution to PoLSciNex. For the moment, however, it is well worth reflecting on the achievements to date of the Action Group, as they are many and varied in their contributions to the field.

In April 2019 at the SC-HASS biennial conference in Ushuaia, Argentina, the Action Group held two panels. The first panel focused on the foundations and inspiration for the group. The second panel focused on the resilience of the ATS as a foundation for the book project. During the conference, the co-leaders of the Action Group welcomed early-career researchers to join the group and to participate in the book project. In December 2019 at the 12th Polar Law Symposium in Hobart, Australia, PoLSciNex organized two panels. Amidst the COVID-19 pandemic, in November 2020 the Action Group held sessions online during the 13th Polar Law Symposium. The online portal for the symposium (organized with the help of the PCRC) provided effective and easy access to the symposium materials and encouraged online interaction among researchers for weeks after. Still constrained by the ongoing pandemic a year later in November 2021, Shibata was a convenor of the SC-HASS biennial conference and 14th Polar Law Symposium and built on the success of the online format of the previous Polar

Law Symposium. Although the SC-HASS conference and Polar Law Symposium were held online given pandemic travel restrictions, both still successfully enabled researchers to engage in lively discussions and share their work despite these limitations. The Action Group organized three panels during these two events that encouraged ongoing conversation and collaboration amongst colleagues. One explained how policy, law and science all interact within the governance of the Antarctic global region; another explored where science, policymaking and law fit within a broader discussion of the ATS's resilience; and finally, the third investigated how the policy-law-science nexus has played out in an Antarctic context. The interest and active participation in PoLSciNex sessions by conference and symposium attendees confirmed that such a research group was a welcome addition to the Antarctic research community.

Additionally, several reports have been produced as a result of these events and published in *The Polar Journal*. Notably, these texts have been written by early-career researchers - a key prioritization of the group. They include a report co-written by five early-career researchers on the progress of the Action Group in 2020 (Flores *et al.* 2020), a report written on the future of the science-policy interface in 2021 (Buchheister 2021), a report written on the emerging legal, policy and scientific issues in the region also in 2021 (Madani 2021) and a report on the Action Group's work as applied to a Japanese case (Madani & Shibata 2022).

Although this Action Group celebrates a great number and diversity of achievements (mentioned above), the discussion surrounding the nexus does not stop here. PoLSciNex has created a legacy that encourages scholars and policymakers alike to consider how these three integral areas of policy, law and science interact within the practice of Antarctic relations and how a better understanding of their relationship can secure the continent's preservation for peace and science for decades to come. This subsection of the SC-HASS Special Collection in *Antarctic Science* brings together the results of such ongoing research on the policy-law-science nexus in the Antarctic.

Acknowledgements

Research activities under the PoLSciNex Action Group, including its fellowships to early-career scholars during 2019–2021, are partially funded by JSPS KAKENHI 18KT0006, Mitsubishi Foundation 2020-3 and ArCS II JPMXD1420318865.

Author contributions

Yelena Yermakova - writing (original draft, review and editing); resources. Rebecca Hingley - writing (original draft, review and editing); resources. Akiho Shibata - conceptualization; methodology; formal analysis; writing (original draft, review and editing); resources.

References

- ALFREDSSON, G., JABOUR J., KOIVUROVA, T. & SHIBATA, A. 2020. *The yearbook of polar law*. Leiden: Brill Publishers, 492 pp.
- BERKMAN, P., LANG, M., WALTON, D. & YOUNG, O. 2011. *Science diplomacy: Antarctica, science, and the governance of international spaces*. Washington, DC: Smithsonian Institution Scholarly Press, 351 pp.
- BUCHHEISTER, G. 2021. Antarctic science-policy interface: a way forward. *The Polar Journal*, **11**, 231–233.
- FLORES, C., HATAYA, S., INAGAKI, O., BUCHHEISTER, G. & THOMPSON, J. 2020. Meetings of the SCAR Standing Committee on the Humanities and Social Sciences (SC-HASS) PoLSciNex Action Group in 2019. *The Polar Journal*, **10**, 191–195.
- HUGHES, K., CONSTABLE, A., FRENOT, Y., LOPEZ-MARTINEZ, J., McIVOR, E., NJASTAD, B., *et al.* 2018. Antarctic environmental protection: strengthening the links between science and governance. *Environmental Science and Policy*, **83**, 86–95.
- HUGHES, K., CONVEY, P. & TURNER, J. 2021. Developing resilience to climate change impacts in Antarctica: an evaluation of Antarctic Treaty System protected area policy. *Environmental Science and Policy*, **124**, 12–22.
- KELMAN, H. 1970. The role of the individual in international relations: some conceptual and methodological considerations. *Journal of International Affairs*, **24**, 1–17.
- McIVOR, E. 2020. The Committee for Environmental Protection and the important role of science in international efforts to protect the Antarctic environment. *Antarctic Affairs*, **7**, 13–28.
- MADANI, Z. 2021. Emerging legal, policy and scientific issues in the Antarctic. *The Polar Journal*, **11**, 230–237.
- MADANI, Z. & SHIBATA, A. 2022. The global Antarctic through humanities and social sciences perspectives: observation from Japan. *The Polar Journal*, **12**, 180–182.
- MOLENAAR, E., ELFERINK, A. & ROTHWELL, D. 2013. *Law of the Sea and the Polar Regions: interactions between global and regional regimes*. Leiden: Brill Publishers 466 pp.
- NAYLOR, S., SIEGERT, M., DEAN, K. & TURCHETTI, S. 2008. Science, geopolitics and the governance of Antarctica. *Nature Geoscience*, **1**, 143–145.

- PERRINGS, C., DURAIAPPAH, A., LARIGAUDERIE, A. & MOONEY, H. 2011. The biodiversity and ecosystem services science-policy interface. *Science*, **331**, 1139–1140.
- ROTHWELL, D. 1999. UNEP and the Antarctic Treaty System. *Environmental Policy and Law*, **29**, 17–24.
- WEICHELGARTNER, J. & KASPERSON, R. 2010. Barriers in the science-policy-practice interface: toward a knowledge-action-system in global environmental change research. *Global Environmental Change*, **20**, 266–277.
- WESSELINK, A., BUCHANAN, K., GEORGIADOU, Y. & TURNHOUT, E. 2013. Technical knowledge, discursive spaces and politics at the science-policy interface. *Environmental Science & Policy*, **30**, 1–9.
- WOKER, H. 2022. The law-science interface in the Arctic: science and the Law of the Sea. *The Yearbook of Polar Law*, **13**, 341–358.
- YERMAKOVA, Y. 2021. Legitimacy of the Antarctic Treaty System: is it time for a reform? *The Polar Journal*, **11**, 342–359.
- YOUNG, O. 2011. Effectiveness of international environmental regimes: existing knowledge, cutting-edge themes, and research strategies. *Proceedings of the National Academy of Sciences of the United States of America*, **108**, 19853–19860.

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