

REPORT

CIL – NCLOS DIALOGUE 2025

ARCTIC GOVERNANCE: CONTEMPORARY TRENDS IN SHIPPING, ENVIRONMENT AND SECURITY

CIL

CENTRE FOR INTERNATIONAL LAW
National University of Singapore

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NORWEGIAN CENTRE
FOR THE LAW OF THE SEA

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Orchard Rendezvous Hotel, Singapore



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About the dialogue

On 18–19 November 2025, the Centre for International Law (CIL) at the National University of Singapore, and the Norwegian Centre for the Law of the Sea (NCLOS) at the University of Tromsø – The Arctic University of Norway and with support from the Singapore Maritime Institute (SMI), hosted a closed-door dialogue on current issues and challenges in Arctic shipping. The event examined legal, regulatory, and operational developments in the rapidly evolving Arctic maritime domain.



AT ORCHARD RENDEZVOUS HOTEL, SINGAPORE

PHOTO CREDIT: CHARLOTTE BUKSRUD, UIT THE ARCTIC UNIVERSITY OF NORWAY

Across two days, speakers and participants examined developments shaping Arctic governance and security, the laws applicable to Arctic straits, traffic along the NSR, environmental protection imperatives, the impacts of cyber and Artificial Intelligence (AI) incidents in the Arctic, and the applicability of the BBNJ agreement in polar contexts. Each session featured two to three speakers delivering approximately 15-minute presentations, moderated by a subject-matter expert, followed by commentary and an open Q&A.



THE OPENING ADDRESS

PHOTO CREDIT: CHARLOTTE BUKSRUD, UIT THE ARCTIC UNIVERSITY OF NORWAY

Welcome address

The welcome address was delivered by Mr Valentin Musangwa, First Secretary & Deputy Head of Mission at the Royal Norwegian Embassy in Singapore, who underscored the value of scholarship in this field and the progress made by Singapore and Norway in shipping—growth that can be further advanced through collaborations such as this joint dialogue. Professor Vito De Lucia, Director of NCLOS, and Emeritus Professor Robert Beckman, Co-Head of the Ocean Law and Policy programme at CIL, then welcomed speakers and participants, highlighting the long-standing ties and cooperation between the two countries and their respective centres of excellence.



SESSION 1: SETTING THE STAGE

PHOTO CREDIT: CHARLOTTE BUKSRUD, UIT THE ARCTIC UNIVERSITY OF NORWAY

Session 1: Arctic governance and NSR legal frameworks ***Presenters: Professor Vito De Lucia; Dr. Jan Jakub Solski*** ***Moderator: Emeritus Professor Robert Beckman***

Professor De Lucia examined Arctic governance through the lens of environmental security, tracing how climate change, ecosystem fragility, and cumulative impacts from shipping, resource extraction, and tourism drive a precautionary approach. Discussion touched on the interplay between United Nations Convention on the Law of the Sea (UNCLOS), the International Maritime Organization (IMO) Polar Code, regional and bilateral arrangements, and indigenous/community perspectives—emphasising the need for adaptive governance, integrated environmental assessments, and robust monitoring and enforcement.

Dr. Solski addressed the legitimacy and practical application of legal regimes governing the Northern Sea Route (NSR), including coastal state regulations, transit passage norms, and the debated scope of UNCLOS Article 234 (ice-covered areas). He outlined compliance and access considerations for foreign vessels, the evolution of ice conditions and navigability, and how future shipping along the NSR may hinge on risk management (ice forecasting, pilotage, Search and Rescue (SAR) capacity), and harmonisation with IMO instruments.



SESSION 2: SHIPPING IN ARCTIC & THE ENVIRONMENT: ICE-CLASS CONTAINER SHIPS AND ICE-CLASS TANKERS

PHOTO CREDIT: CHARLOTTE BUKSRUD, UIT THE ARCTIC UNIVERSITY OF NORWAY

Session 2: Traffic along the NSR—containers, crude, and LNG
Presenters: Emeritus Professor Robert Beckman; Ms. Bikashita Choudhury
Moderator: Dr. Jan Jakub Solski

The session mapped current and potential traffic patterns across the NSR, differentiating the economics and operational profiles of container vessels, crude and LNG tankers. Discussion considered seasonal windows, ice-class requirements, escort and pilotage practices, Port State Controls, and insurance/finance constraints. It further explored the interests of the neighboring States in container shipping, like China and South Korea, and the future possibility of the use of the transpolar route for container shipping.

Challenges and risks included environmental incident response in remote areas, limited SAR and spill-response capacity, ice and weather unpredictability, crew safety, and data gaps. The group highlighted the implications of sanctions on routing and fleet composition, the need to further develop container shipping facilities along the NSR, the need for clearer contingency planning, transparent reporting, and alignment of coastal regulations with IMO frameworks to support safe, responsible transits.



SESSION 3: BLACK CARBON AND THE HEAVY FUEL OIL (HFO) BAN: PATHWAYS TO CLEANER ARCTIC SHIPPING
PHOTO CREDIT: CHARLOTTE BUKSRUD, UIT THE ARCTIC UNIVERSITY OF NORWAY

Session 3: Heavy fuel oil (HFO) ban, alternatives, and black carbon

Presenters: Dr. Liu Yulu; Ms. Amanda Wee

Moderator: Professor Simone Borg

The discussion reviewed the phased implementation of the IMO HFO carriage/usage restrictions in Arctic waters and practical pathways for operators to transition. Alternatives considered included distillate fuels, LNG, methanol, and emerging e-fuels—each assessed for lifecycle emissions, cold-weather performance, availability, and infrastructure constraints.

The session then explored black carbon impacts in the Arctic, summarising monitoring challenges and the status of proposals at the IMO Marine Environment Protection Committee (MEPC) to reduce emissions (e.g., operational measures, fuel switching, technical controls, and reporting). Speakers emphasised the co-benefits of better fuel quality, improved engine maintenance, and voyage optimisation for both emissions and safety, while noting the need for consistent Arctic-specific standards and enforcement.



SESSION 4 - ARCTIC MARITIME SECURITY & THE FUTURE: SEABED MINING, MARITIME AUTONOMOUS VEHICLES (MAVS), AND CYBER RESILIENCE
PHOTO CREDIT: CHARLOTTE BUKSRUD, UIT THE ARCTIC UNIVERSITY OF NORWAY

Session 4: Deep seabed mining, MAV, and cyber resilience in the Arctic

Presenters: Ms. Dita Liliansa; Dr. Su Wai Mon; Dr. Maria Madalena Neves

Moderator: Dr. Tara Maria Davenport

The session surveyed the legal landscape for deep seabed mining- the race to natural resource extraction and the increased threat of sabotage to seabed mining and shipment. This discussion highlighted another relevant issue in the disruption of seabed mining and shipment: protests and how that shapes the ecosystem-based approaches to Arctic seabed mining, including the recognition of unresolved scientific, regulatory, and socioenvironmental questions in fragile Arctic ecosystems.

The session next examined the use of Maritime Autonomous Vehicles (MAVs) in the Arctic and their broader security implications. It underscored the dual-use nature of data collection by MAVs and how this can generate strategic concerns, including suspicions of covert military or economic activities, as well as fears of espionage or potential interference with underwater critical infrastructure. While these issues are not unique to the Arctic, the region's distinct conditions, such as ice-covered waters that reduce detectability, limited monitoring capabilities, and a seabed that remains poorly mapped and understood, intensify these challenges. The session also considered whether Arctic states should work toward a shared understanding of whether MAVs ought to be treated as ships, given the legal and operational implications of such a classification.

The session further examined the rising threat of maritime cyber incidents—ports, logistics systems, and vessel OT/IT—highlighting guidance from IMO and industry, the need for Arctic-tailored contingency planning, and the interdependence between cyber resilience and safety.



SESSION 5 - ROUNDTABLE DISCUSSION ON THE IMPLICATIONS OF THE BBNJ AGREEMENT FOR THE ARCTIC

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Session 5 (Day 2): Roundtable on BBNJ, environmental protection tools, and integrated ocean governance
Panellists: Dr. Nguyen Thanh Trung; Professor Simone Borg;
Dr. Liu Nengye
Moderator: Professor Vito De Lucia

The roundtable considered how the BBNJ Agreement could shape the high seas governance adjacent to the Arctic, including area-based management tools, environmental impact assessments, and capacity building/technology transfer—framed within existing Arctic regional and global regimes.

Participants discussed the prospects and constraints of designating a Particularly Sensitive Sea Area (PSSA) in Arctic contexts, noting scientific, procedural, and political considerations, as well as potential opposition and overlap with existing measures.

A recurring theme was the need for holistic treatment of the high seas, Exclusive Economic Zones (EEZ), and potential deep seabed activities—aligning conservation and sustainable use, and strengthening cooperation among flag, coastal, and port states, indigenous and local communities, and industry.

The roundtable touched on the Central Arctic Ocean Fisheries Agreement (CAOFA), its precautionary approach to commercial fishing in areas previously ice-covered, and the importance of science-based decision-making, monitoring, and collaborative governance before any expansion of fishing routes or effort. Participants noted the role of bycatch controls, data sharing, and enforcement in safeguarding nascent ecosystems.



VOTE OF THANKS, DR. TARA DAVENPORT, OCEAN LAW & POLICY (CIL)
PHOTO CREDIT: CHARLOTTE BUKSRUD, UIT THE ARCTIC UNIVERSITY OF NORWAY

Vote of thanks

The dialogue concluded with votes of thanks from Professor Vito De Lucia and Dr Tara Maria Davenport, who emphasised the importance of sustaining these engagements and expressed support for convening further events.

The dialogue drew participants from the Royal Norwegian Embassy in Singapore, Innovation Norway, the Maritime and Port Authority of Singapore (MPA), the Attorney-General's Chambers (AGC), and Singapore Management University (SMU), reflecting strong cross-sector interest in the governance and practice of Arctic shipping.

The dialogue provided a candid forum for exchanging insights, identifying priority areas for research and capacity building, and strengthening links between Singapore, Norway and international partners engaged in Arctic maritime governance.

List of speakers (in alphabetical order by last name)

Emeritus Professor Robert BECKMAN, Co-head, Ocean Law and Policy, Centre for International Law, National University of Singapore

Professor Simone BORG, University of Malta , Malta's Ambassador for Climate Action

Ms. Bikashita CHOUDHURY, Research Associate, Ocean Law and Policy Programme, Centre for International Law, National University of Singapore

Dr. Tara Maria DAVENPORT, Co-Head, Ocean Law and Policy Programme, Centre for International Law, National University of Singapore

Ms. Dita LILIANSA, Research Fellow, Ocean Law and Policy Programme, Centre for International Law, National University of Singapore

Dr. LIU Nengye, Associate Professor, Yong Pung How School of Law, Singapore University of Management

Dr. LIU Yulu, Research Fellow, Ocean Law and Policy Programme, Centre for International Law, National University of Singapore

Professor Vito De LUCIA, Director, The Norwegian Centre for the Law of The Sea, UiT The Arctic University of Norway

Dr. Maria Madalena das NEVES, Associate Professor, The Norwegian Centre for the Law of The Sea, UiT The Arctic University of Norway

Dr. NGUYEN Thanh Trung, Research Fellow, Ocean Law and Policy Programme, Centre for International Law, National University of Singapore

Dr. Jan Jakub SOLSKI, Associate Professor, The Norwegian Centre for the Law of The Sea, UiT The Arctic University of Norway

Dr. SU Wai Mon, Research Fellow, Ocean Law and Policy Programme, Centre for International Law, National University of Singapore

Ms. WEE Jia Tong Amanda, Research Assistant, Ocean Law and Policy Programme, Centre for International Law, National University of Singapore