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# Protection of Submarine Cables in the Arctic

Yurika Ishii
Juha Saunavaara

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# Protection of Submarine Cables in the Arctic


## SUMMARY

1. In the Arctic region, submarine cables play a crucial role in meeting the diverse needs of local communities, facilitating interregional connectivity, and serving Arctic societies. Currently, several submarine cables are operational and four transarctic cable projects are under development. However, the existing international and national laws, including the United Nations Convention on the Law of the Sea, do not adequately address the security of submarine cables.

2. National laws regulate telecommunications, the laying and maintenance of cables on the continental shelf, and penalties for disturbances. However, they do not proactively protect submarine cables in their territorial waters or address security issues arising from deliberate infrastructure sabotage.

3. International cooperation in the Arctic has faced challenges since Russia annexed the Crimea in 2014 and its full invasion of Ukraine in 2022. The Arctic Council is not an appropriate forum to address this issue, and the Coordination Cell for Critical Subsea Infrastructure, established as a response by the North Atlantic Treaty Organisation (NATO), underlines that additional efforts and coordinated action are needed to address legal gaps.

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## 1 Challenges Facing Submarine Cables in the Arctic

The purpose of this fact sheet is to provide an update on submarine cable development in the Arctic region. The need for submarine cables in the Arctic region has long been acknowledged. A report by the Arctic Council Task Force on Telecommunications Infrastructure in the Arctic (TFTIA) shows the various needs of local communities and interregional and pan-Arctic societies. The Arctic Council Ministerial Meeting's Reykjavik Declaration of 2021 confirmed the demand for the development of connectivity infrastructure. Furthermore, data cables can be used for scientific research and exploration in the Arctic, while fibreoptic cables can be used as sensing components. In addition, various types of sensors can be embedded in cable systems to constantly collect data, such as temperature, water pressure, ocean current, and graphics, that can be applied when installing the cable system. The installation of cables will enhance human knowledge in the region. (Arctic Council 2017, Arctic Council 2021)

However, the advancement of networks has faced various challenges such as insufficient construction and maintenance infrastructure, harsh weather conditions, operational challenges for cable ships, and economic feasibility concerns. Laying submarine cables has only become a viable option in the last two decades. The problem is that current international and domestic laws are insufficient to address safety and security. Threats to submarine infrastructure are manifold and not all linked to natural hazards. First, human error can result in destruction. Accidental disruptions, often caused by commercial activities such as bottom-contact fishing, anchoring, and dredging, account for nearly two-thirds of cable disruptions annually in areas other than the Arctic. Second, deliberate attempts have been made to sever cables. Finally, cables are subject to systemic disruptions, such as data interception. Offenders may target cable landing stations and data centres through cyber-attacks. (Saunavaara 2018)

Experts have long criticised the general shortcomings in addressing the safety and security issues related to submarine cables. The United Nations Convention on the Law of the Sea (UNCLOS) of 1982, Articles 87 and 113–115, allows for the laying, maintaining, and repairing of cables and outlines the obligations to impose civil and criminal penalties for intentional or negligent injury to cables in the high seas and Exclusive Economic Zones (EEZ). However, existing rules do not require member states to protect infrastructure proactively. (Burnett, Beckman & Davenport 2013)

The International Cable Protection Committee (ICPC) has provided recommendations for cable owners and other seabed users. However, these guidelines are not legally binding with no method in place to prevent operators from deviating from them. In addition, environmental concerns have been raised regarding the impact of cables on the marine ecosystem. Several instruments, including the Guidelines based on the Convention on the Protection of the Marine Environment of the North-East Atlantic (OSPAR Guidelines), briefly address this issue, but do not touch upon the security matter. (International Cable Protection Committee 2023; Saunavaara, Kylli & Salminen 2021)

The private sector primarily drives submarine cable projects, and states may support these initiatives. Ensuring the security and maintenance of submarine cables involves a complex network of collaborations among corporations which encompasses entities engaged in cable manufacturing and installation, firms responsible for infrastructure operation, and companies that supply vessels for repair purposes. From the perspective of public international law, this suggests that no particular state is responsible for protecting the cable network. (ENISA 2023)

Although such limits are generally present and geopolitical tensions have cast a shadow over the future of the cable industry, several challenges specific to the Arctic exist. The primary concern is regional geopolitics, which is the key factor shaping the trajectory of submarine cable projects. Several acts of sabotage have occurred in the region since the late 2010s. Furthermore, most cables would need to pass through territorial seas and the internal waters of coastal states. Therefore, coastal states must have adequate legislation to protect the safety of cables and allow operators to maintain the infrastructure. Despite these security concerns, coastal states in the region often lack proactive legislation to secure submarine cables, thereby exposing potential vulnerabilities in their protection.

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## 2 Transarctic Submarine Cable Projects

Submarine fibreoptic cables already connect various Arctic countries and regions (Table1). In addition, ongoing transarctic cable projects are attempting to connect East Asia, North America, and northern Europe (Map1). While envisioning landings in a few Arctic coastal communities and receiving support from public authorities, transarctic projects are primarily undertaken by private entities and focus on improving connectivity through the Arctic.

**(1) The Russian *Polar Express* project**

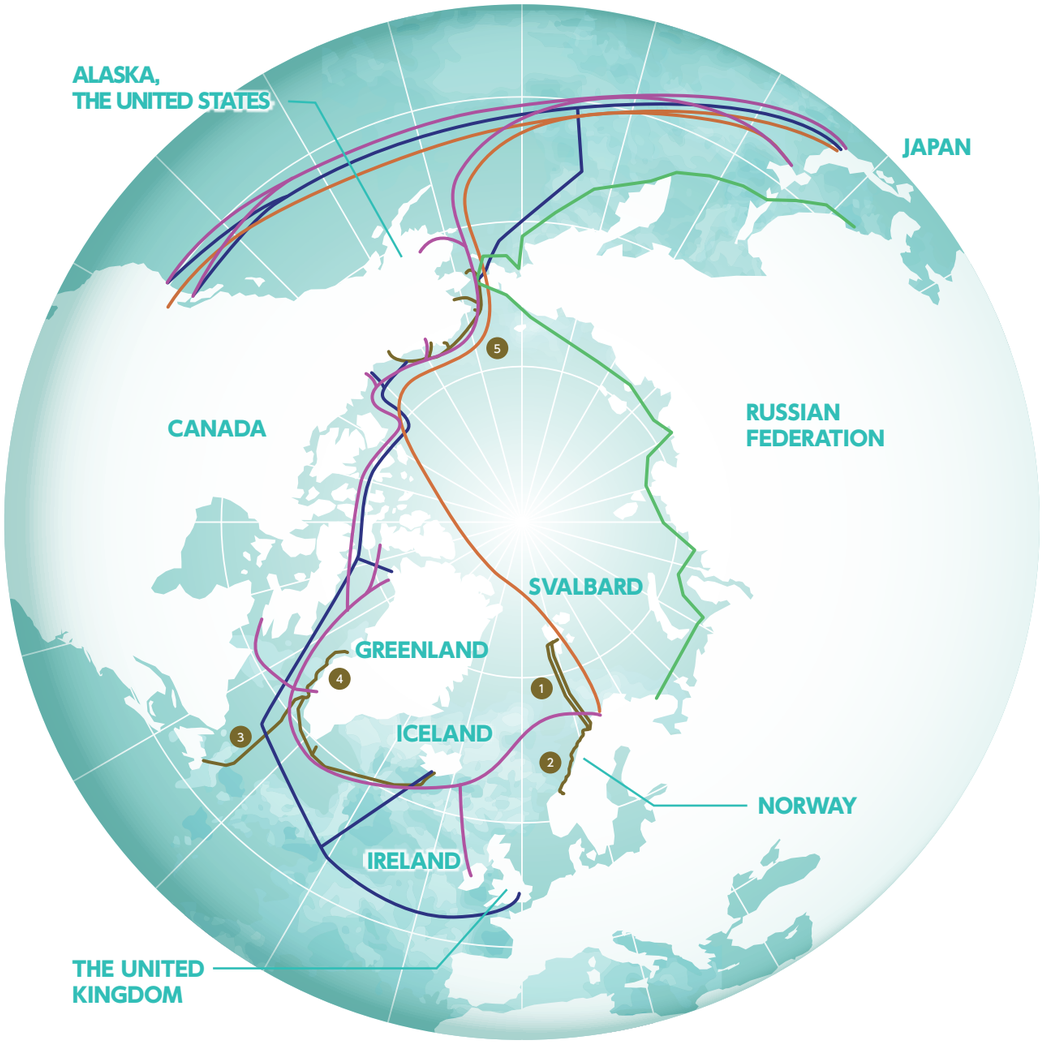
A Russian project called *Polar Express*, envisioned as a cable system from Murmansk to Vladivostok, is a continuation of the series of initiatives attempting to develop a route through the Northeast Passage. Although the Russian Optical Trans-Arctic Submarine Cable System (ROTACS) project was inaugurated in 2011, its roots date back to the early 2000s. Initially, the Russian State-owned Polarnet Project Company and the American Tyco Electronic Subcom joined the project; however, it was halted in 2014 after Russia annexed the Crimea and the United States imposed sanctions on high-tech exports to Russia. Following ROTACS, Russian military authorities proposed initiatives in 2018 and 2019, but these did not progress. (Saunavaara & Salminen 2020; Middleton & Rønning 2022)

The *Polar Express* project was developed by the Ministry of Transport of the Russian Federation, Federal Agency for Maritime and River Transport (Rosmorrechflot), and Federal State Unitary Enterprise (FSUE) Rosmorport. According to the project website, the first phase linking Teriberka and Amderma was completed in October 2022. The Amderm–Dikson–Tiksi segments are expected to be completed by 2025, and the remaining portions are scheduled to be in service by 2026. Although possible international cable interconnections were mentioned in the project's early stages, Western actors' interest in the Russian government-controlled cable system was questioned even before the Russian invasion of Ukraine. (Polar Express 2023)

Table1 List of established submarine cable projects in the Arctic region

| Projects | Year of Est. | Landing Points | Owners & Suppliers |
|---|---|---|---|
| **Svalbard Undersea Cable System** | 2004 | Breivika (Norway) - Longyearbyen (Svalbard, Norway) | Owners - Space Norway<br>Suppliers- SubCom |
| **Polar Circle Cable** | 2007 | The west coast of Norway | Owners - KystTele |
| **Greenland Connect** | 2009 | Milton (Canada) - Nuuk (Greenland) - Qaqortoq (Greenland) - Landeyjar (Iceland) | Owners- Tusass A/S<br>Suppliers - ASN |
| **Greenland Connect North** | 2017 | The west coast of Greenland (Aasiaat - Maniitsoq - Nuuk - Sisimiut) | Owners - Tusass A/S<br>Suppliers- ASN |
| **Quintillion Subsea Cable Network** | 2017 | The coast of Alaska, the United States (Kotzebue - Nome - Point Hope - Prudhoe Bay - Utiqiagvik - Wainwright) | Owners - Quintillion<br>Suppliers - ASN |

Source: TeleGeography, Submarine Cable Map, available at https://www.submarinecablemap.com/ (accessed 30 January 2024)




Map1 Submarine cables in the Arctic

This map is for illustrative purposes only and does not reflect the exact location of the cables.

**Established submarine cable projects in the Arctic region**

1. Svalbard Undersea Cable System
2. Polar Circle Cable
3. Greenland Connect
4. Greenland Connect North
5. Quintillion Subsea Cable Network ( Phase 1 )

Polar Connect
Far North Fiber
Polar Express
Quintillion ( Phase 2 and 3 )

FACT SHEET

**(2) *Far North Fiber* and other Northwest Passage projects**

The Northwest Passage route was first developed by Arctic Fibre, a Canadian company that merged with the Alaska-based Quintillion Subsea Holdings. Quintillion managed to complete the first part of their project, a regional system that included submarine and terrestrial cables in Alaska. However, their planned connections with Japan and Europe have been significantly delayed. (Saunavaara 2021)

Meanwhile, in progress is the *Far North Fiber* project, which attempts to connect Japan, Ireland, Norway, and Finland off the coasts of Alaska in the United States and Canada through a 15,000km long cable system. *Far North Fiber* is a joint venture between Cinia Oy (mainly a Finnish government-owned company), Far North Digital (a company based in the United States), and Arteria Networks Corporation (a subsidiary of the Japanese company Marubeni). Alcatel Submarine Networks (Nokia's group company, Finland) is the project's principal supplier. In December 2021, Cinia and Far North Digital launched the *Far North Fiber* project, estimated to be ready for service by the end of 2026. The project was funded by the European Union (EU) Digital Global Gateways at the end of 2023. (Far North Fiber 2023; European Health and Digital Executive Agency 2023)

Finland and Cinia first became involved through the *Arctic Connect* project. After years of preparation, Cinia and its Russian partner MegaFon launched a project to connect Japan and Europe through the Northeast Passage Route in 2018. Various companies from Nordic countries and Japan (under the leadership of the Sojitz Corporation) joined the International Cinia Alliance and conducted the first seabed surveys. However, MegaFon terminated the project in May 2021, soon after the *Polar Express* project was announced.

**(3) Other projects currently in progress**

In addition to the Northwest and Northeast Passage projects described in Sections (1) and (2), the *Polar Connect* project is set to develop the shortest possible route connecting Europe and East Asia under the ice cap of the North Pole. This project also received funding at the end of 2023 through the EU Digital Global Gateways call. (European Health and Digital Executive Agency 2023)

Furthermore, Quintillion's project to connect Alaska and London through the Arctic is in progress, with a plan to expand the submarine cable network to cover the continental United States and Canada. According to its website, Quintillion also intends to build other landings in 'London and other parts of Europe that are connected through potential landings in the Canadian Arctic'. (Quintillion 2021)



## 3 Domestic Legislation and Policies of the Coastal States

This section provides an overview of the relevant domestic laws of the member States of the Arctic Council (Canada, Denmark, Finland, Iceland, Norway, Sweden, the Russian Federation, and the United States) and the participating states in the cable projects described in Section 2 (Ireland and Japan) (Table 2). The regulations concerning the protection of submarine cables mainly exist for three distinct purposes. First, states typically have laws for telecommunications mandating that a regulatory body supervise the licensing and functioning of telecommunications infrastructures, including submarine cables on its territory. Some countries may provide additional protection for submarine cables, whereas others do not distinguish between undersea and land-based infrastructure.

Second, states may have laws governing operators' laying and maintaining of cables on the continental shelf. Delineating the course for laying cables on the continental shelf is not subject to the consent of coastal states. Submarine cable operation falls under the freedom of the seas in the EEZ (Article 58(1)). However, some states have legislation that is excessive in light of existing international law, as they require operators to acquire their consent before laying cables on continental shelves. (Shvets 2017)

Third, states may have laws sanctioning intentional and negligent disturbances of submarine communication cables in the high seas and the EEZ. UNCLOS Article 113 obliges member states to adopt laws and regulations necessary to ensure that breaks or other damage to a submarine cable beneath the high seas caused either wilfully or through culpable negligence by a ship flying its flag or a person subject to its jurisdiction is a punishable offense. Article 114 stipulates that member states should adopt such laws or regulations as may be necessary to ensure that persons under their jurisdiction who, in the course of laying or repairing a submarine cable or pipeline on the high seas, cause damage to another cable or pipeline, bear the cost of repairs. Article 115 also provides that member states shall take measures as necessary to ensure that ship owners who can prove that they have sacrificed an anchor, net, or other fishing gear to avoid damaging a submarine cable or pipeline are compensated by the owner of the cable or pipeline. However, not all states comply with these obligations.

In addition to legislation, states may issue policy statements specifying their plans and policies for the protection and development of submarine cables.

FACT SHEET

## 4 Lack of International Cooperation and Security Concerns

Submarine cable projects developed in the Arctic region reflect not only the societal needs of the local community but also the geopolitical reality that states need to secure infrastructure against potential threats. (Bueger, Liebetrau & Franken 2022)

Russia played a crucial role in promoting cable projects in the region until the early 2010s. As described in Section 2, Russia previously cooperated with corporations based in the United States and Finland. Intergovernmental cooperation in the Arctic further deteriorated after Russia's full invasion of Ukraine in February 2022. The other seven members of the Arctic Council declared that they would not travel to Russia for Council meetings, with Russia serving as the Council chair at the time, and temporarily paused participation in all meetings of the Council and its subsidiary bodies. In May 2023, Norway became the Chair of the Arctic Council, and in June 2023, the same seven members expressed their intentions to resume the work of the Arctic Council on a limited basis. However, the Arctic Council continues to face several challenges to international cooperation.

## 5 The Way Forward

Amidst these considerations, security concerns have come to the forefront, as evidenced by acts of sabotage against submarine cables and pipelines. These incidents underscore the need for heightened vigilance and comprehensive legal frameworks to address potential threats to the integrity of submarine cable systems. (Canova & Pic 2023; Kraska & Pedrozo 2022; Shvets 2020)

For instance, on 10 November 2021, a Norwegian broadcaster reported the disappearance of 4.3km of undersea cable off the north Norwegian coast near the Lofoten and Vesterålen archipelagos. Internet communications were disrupted on 3 April 2021 and sabotage was only evident after seven months. On 7 January 2022, Norwegian authorities discovered damage to one of the two fibreoptic connections of the Svalbard Undersea Cable System. On 10 October 2023, the Finnish and Estonian governments announced finding deliberate damage to a subsea telecommunications cable and gas pipeline connecting Finland and Estonia. The subsea telecommunications cable connecting Estonia and Sweden also suffered damages at the same time. (Olaisen 2021; Nilsen 2022; Kauranen & Solsvik 2023)

As outlined above, the current legislation inadequately addresses deliberate disruptions to critical infrastructure because it primarily focuses on negligent acts during peacetime. For example, although the first two incidents occurred in Norwegian territory, neither the Act Relating to Electronic Communications nor the Law on the Protection of Undersea Cables and Pipelines Beyond Sea Territory is applicable in this context. Stealing and sabotaging cables are domestic crimes; however, dealing with external forces that destroy infrastructure is beyond the power of the police. Therefore, additional efforts and coordinated actions are urgently needed to patch the holes in current legal frameworks.

In 2013, the European Programme for Critical Infrastructure Protection (EPCIP) designated submarine cables as critical infrastructure. The EPCIP is the EU framework for enhancing the protection and resilience of critical infrastructure within its member states. The programme relies on an all-hazards approach, with the threats to which it aims to respond including terrorism, criminal activities, natural hazards, and other causes of accidents.

In February 2023, NATO announced the creation of a Critical Undersea Infrastructure Coordination Cell at its headquarters. This plan involves increased military presence around critical infrastructure and the establishment of a joint NATO – EU task force. NATO's approach includes contributing to the Defence and Deterrence of the Euro-Atlantic Area, leveraging intelligence and surveillance capabilities to detect threats, and employing various response options, such as counter-hybrid support teams and the NATO Response Force. (NATO 2023)

In addition, Japan and the EU signed a Memorandum of Cooperation to support secure and resilient submarine cable connectivity at the first Japan–EU Digital Partnership Council meeting in July 2023. They will collaboratively advocate for initiatives to enhance submarine cable connectivity through the Arctic region, ensuring secure and high-quality communication between the EU and Japan. Expanding this connectivity to Southeast Asia and the broader Pacific region is also possible. Such enhanced collaborative mechanisms among states sharing common values are essential for safeguarding critical infrastructure in the Arctic region. (European Commission 2023)

Table 2: List of relevant legislations

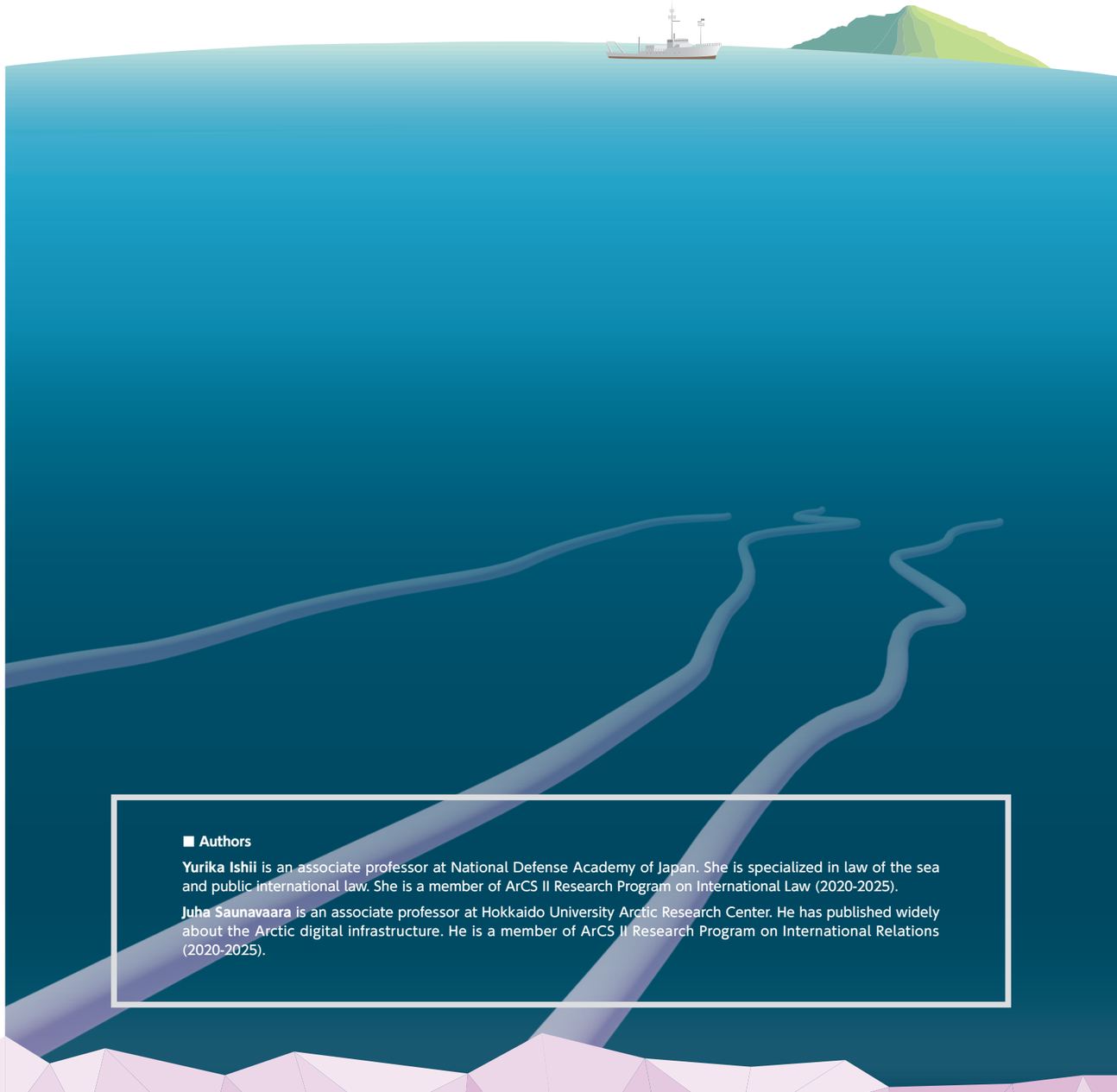
| Country | Legislation and other relevant instruments |
|---|---|
| Canada | Telecommunications Act of 1993 and the International Submarine Cable Licences Regulations.<br>https://laws-lois.justice.gc.ca/eng/acts/t-3.4/ |
| Denmark | Act No. 128 of 7 February 2014 on Electronic Communications Networks and Services with subsequent amendments ("Tele Act"); Act No. 259 of 9 June 1971 concerning the Continental Shelf with the amendments resulting from Act No. 278 of 7 June 1972 and Act No. 654 of 21 December 1977; Order on Protection of Submarine Cables and Pipelines, Order No. 939, 1992.<br>https://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/DNK_1971_Act.pdf<br>https://dma.dk/Media/637792377883187147/Order%20on%20the%20protection%20of%20submarine%20cables%20and%20pipelines.pdf |
| Finland | Act on Electronic Communications Services, No. 13/2003; Act on the Protection of Certain Submarine Cables and Pipelines (No. 145/1965, amended by Acts No. 597/1995 and 1071/2004); Act on the EEZ, 26 November 2004, Section 5.<br>https://www.finlex.fi/en/laki/kaannokset/2003/en20030013.pdf<br>https://www.un.org/Depts/los/doalos_publications/LOSBulletins/bulletinpdf/bulletin57e.pdf |
| Iceland | Electronic Communications Act, No. 81/2003; Draft bill submitted to the parliament in 2022.<br>https://www.dataguidance.com/news/iceland-bill-telecommunications-law-passes-first |
| Ireland | Communications Regulation and Digital Hub Development Agency (Amendment) Act 2023; Submarine Telegraph Act of 1885; Continental Shelf Act No. 14 of 11 June 1968.<br>https://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/IRL_1968_Act.pdf |
| Japan | Telecommunication Business Act, Act No. 86 of 1984; Act on the Punishment of the Destruction of Submarine Cable and Others implementing the High Seas Convention, Act No. 102 of 1968.<br>https://elaws.e-gov.go.jp/document?lawid=359AC0000000086<br>https://elaws.e-gov.go.jp/document?lawid=343AC0000000102 |
| Norway | Act relating to electronic communications, enacted in 2003 and law consolidated in 2013; Law on the protection of undersea cables and pipelines beyond sea territory, established in 1884 and last modified in 2005.<br>https://lovdata.no/dokument/NLE/lov/2003-07-04-83<br>https://lovdata.no/dokument/NL/lov/1884-06-14-3?q=LOV-1884-06-14-3 |
| Russian Federation | Federal Law on the Continental Shelf, Article 5 and Article 22; Regulation on Approval of Rules for Issuing Permits for Laying of Submarine Cables and Pipelines on the Continental Shelf of the Russian Federation; Rules for Issuing Permits on Drilling Operations for the Purposes, not Related to Regional Geological Study, Exploration, Exploitation and Mining of Mineral Resources of the Continental Shelf, No. 417P of 9 June 2010; The Presidential Decree of 26.10.2020 No. 645: "the Russian Arctic Strategy of 2035".<br>https://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/RUS_1995_Law.pdf<br>http://publication.pravo.gov.ru/Document/View/0001202010260033 |
| United States | The Communications Act of 1934 and the Telecommunications Act of 1996; Submarine Cable Act of 1888. |

Note: Denmark, Finland, and Ireland are member States of the EU. Under Treaty on the Functioning of the European Union Article 114, the EU has the mandate to adopt measures relating to the establishment and functioning of the internal market, including telecommunication regulations. Directive (EU) 2018/1972 establishing the European Electronic Communications Code is the regulatory framework concerning cables systems used for transmitting signals. Member States are obliged to align with this Directive and mandate their national regulatory authorities to implement their domestic laws.

*All URL information accessed 30 January 2024







■ **Authors**

**Yurika Ishii** is an associate professor at National Defense Academy of Japan. She is specialized in law of the sea and public international law. She is a member of ArCS II Research Program on International Law (2020-2025).

**Juha Saunavaara** is an associate professor at Hokkaido University Arctic Research Center. He has published widely about the Arctic digital infrastructure. He is a member of ArCS II Research Program on International Relations (2020-2025).

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