Legally protected communication optical cables



Overview

Safeguarding Global Connectivity: International Law and Cyber. The article concludes by identifying targeted interpretative and institutional development.

Key Takeaways

Communication optical cables, especially undersea cables, must be protected through a combination of international law compliance, national regulations, and operational safeguards to prevent accidental or intentional damage.

Legal Framework

International Law: The primary international legal framework for protecting undersea cables is the 1982 United Nations Convention on the Law of the Sea (UNCLOS).

UNCLO

S grants states the right to lay cables on the high seas and continental shelves while requiring them to prevent willful or negligent damage to these cables. Articles 112–115 specifically address the freedom to lay cables, the obligation to penalize damage, and indemnity for vessels taking precautions to avoid cable damage. Earlier treaties, such as the 1884 Convention for the Protection of Submarine Telegraph Cables, also provide foundational protections.



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National Regulations: Many countries have enacted laws to protect cables within their territorial waters. For example, the United States has the Undersea Cable Control Act (2023), which restricts foreign access to cable technologies and establishes cable protection zones. National authorities, including telecom regulators, cybersecurity agencies, coast guards, and civil protection bodies, often coordinate to enforce these protections.

In the E

U, ENISA supports cybersecurity and resilience measures for critical infrastructure, including subsea cables.

Operational and Technical Measures

Cable Protection Zones (CPZs): Operators establish CPZs to restrict anchoring, dredging, or other activities that could damage cables. These zones are charted and communicated to mariners to prevent accidental harm. Physical Protection: In shallow waters, cables are often buried 1–2 meters below the seabed using specialized plows or trenchers.

Where burial is not feasible, armored cables or rock placement provide mechanical protection. Monitoring and Maintenance: Real-time monitoring systems track signal integrity and integrate with maritime tracking to detect approaching vessels. When faults occur, optical time-domain reflectometry (OTDR) is used to locate breaks, followed by specialized repair operations using cable ships and remotely operated vehicles (ROVs),.

Landing Station Security: Cable landing stations, where cables connect to terrestrial networks, are vulnerable to sabotage, espionage, or power disruptions. Security measures include restricted access, surveillance, and coordination with national security agencies.

Risk Management

Accidental Damage: Most cable damage results from fishing, shipping, or natural events like earthquakes or ice shifts. Operators mitigate these risks through careful routing, CPZs, and public awareness campaigns. Intentional Damage: Sabotage or malicious attacks are less common but increasingly recognized as threats.

International cooperation and national enforcement are critical, though current international law lacks a fully effective regime for holding perpetrators accountable in international waters.

Best Practices

Comply with UNCLOS and national laws regarding cable laying and protection. Establish and maintain CPZs and communicate them to maritime authorities. Use physical protection measures such as burial, armor, or rock placement.

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Implement real-time monitoring and rapid repair protocols. Secure cable landing stations with physical and cybersecurity measures. Coordinate with public and private stakeholders to enhance resilience and response capabilities.

By combining legal compliance, operational safeguards, and international cooperation, communication optical cables can be effectively protected, ensuring the continuity of global digital communications and minimizing economic and security risks.

Article Content

Safeguarding Global Connectivity: International Law and Cyber ...

The article concludes by identifying targeted interpretative and institutional developments necessary to enhance the coherence and predictability of legal protection for submarine data cables

Undersea Cable Protection: International Law and Protocols

Submarine cable protection involves safeguarding the physical infrastructure of fiber optic and power cables laid beneath the ocean surface. These cables are the foundational conduits for

Enhancing International Legal Protections for Undersea Cables and ...

legal framework governing the protection of undersea cables and transoceanic pipelines. Given the paramount importance of these assets to global communications, energy security, and international

INTERNATIONAL LAW ASSOCIATION SUBMARINE CABLES AND

r possible legal basis is the freedom to lay submarine cables and pipelines in LOSC Articles 87 (1) (c) and 112. The First Report observed that different LOSC provisions refer to different

International Cable Protection Committee (ICPC)

Founded in 1958, the International Cable Protection Committee (ICPC) is the world''s leading organisation promoting submarine cable protection and resilience. The ICPC provides a forum in

Legal Considerations on the Protection of Subsea Cables in the ...

The following paper will analyse the different legal mechanisms applicable in the protection of subsea cables or the enforcement of jurisdiction against the perpetrators of sabotage acts.

Conventional Jurisdictional Approaches to Protecting Submarine

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Whilst the legal framework is fragmented and contains significant gaps, the United Nations Convention on the Law of the Sea permits coastal States to enforce their laws for the

Submarine Cables

The application of international law to submarine cables began with the International Convention for the Protection of Submarine Telegraph Cables (Paris Convention).

Protection of Undersea Telecommunication Cables: Issues for Congress

Several public-private working groups studied undersea cable vulnerabilities and provided recommendations for protecting cables from physical damage.

Submarine Cables

This is an introduction to the intercontinental network of undersea fiber-optic cables, including legal regimes, jurisdiction, ownership, and security issues. It was compiled for the Maritime Awareness

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Submarine Cables: Key Principles and International Law of the Sea

This research aims to ascertain appropriate international regimes'' sources on submarine cables and identify its fundamental principles and parameters. It will help in the development of a

Cutting the Cord: The Legal Regime Protecting Undersea Cables

In the modern geopolitical environment, the vulnerability of undersea communications cables stands out as an acute cyber security concern. Relatively little attention, however, has focused on the legal

Factsheet: Submarine Cables – Maritime Awareness Project

Of course, the existence of undersea communication cables long preceded the current massive network of fiber-optic lines. Following the establishment of early transatlantic cables, states attempted to

Dive deep into protecting submarine cables: How to make the ...

Thus, their vulnerability is the vulnerability of modern society. Seabed cables can be vulnerable to damage caused by natural disasters or malicious actors. In this blog post, we will dive

Submarine Cables and the Risks to Digital Sovereignty

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The international network of submarine cables plays a crucial role in facilitating global telecommunications connectivity, carrying over 99% of all internet traffic. However, submarine cables

Submarine Cables and the UNCLOS

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Underwater Fiberoptic Cables: A Customary International Law

This paper analyzes the current legal regime for the protection of underwater fiberoptic cables from nefarious actors. To do so, it first looks at the history of telecommunications and the subsequent

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