

Coastal State Rights and the Freedom of the Laying of Submarine Cables and Pipelines

Submarine cables and pipelines laid on the seabed remain the foundation of the global communications network and the offshore energy transportation system that facilitate the increasing globalisation and interconnect- edness of the world.¹ International law seeks to strengthen these systems by, *inter alia*, preserving the freedom to lay submarine cables and pipelines in the exclusive economic zone (EEZ).² Legal issues concerning submarine cables and pipelines are also guided by the two legal doctrines of the allocation and exercise of rights and freedoms in the EEZ. Coastal States are obligated not to impede such freedom relating to the realm of communications and transportation, except for exercising their sovereign rights and other authorised jurisdiction as permitted under international law.³ Both the coastal State and the operating State undertake the mutual obligation of having due regard to each other's rights and duties when exercising their rights and freedoms with regard to activities related to submarine cables and pipelines. Considering that the coastal State has sovereign rights over activities for the economic exploitation and explor- ation of the EEZ, and jurisdiction over the use of offshore infrastructures, it can be expected that the primary subjects of the freedom to lay submarine cables and pipelines are those not associated with activities that are under the coastal State's jurisdiction.

The legal framework of submarine cables and pipelines established in the United Nations Convention on the Law of the Sea (UNCLOS),

¹ Douglas R. Burnett, Tara M. Davenport and Robert C. Beckman, 'Introduction: Why Submarine Cables?' in Douglas R. Burnett, Robert C. Beckman and Tara M. Davenport (eds.), *Submarine Cables: The Handbook of Law and Policy* (Martinus Nijhoff 2014) 1–2; M. Wynn Tranfield, 'Unspooling the Legacy of Submarine Cables' (2018) 46(3) *Documents to the People* 8, 8.

² United Nations Convention on the Law of the Sea (adopted 10 December 1982, in force 16 November 1994) 1833 UNTS 3, Article 58(1) (UNCLOS).

³ UNCLOS Article 79.

however, appears to be under increasing pressure in the EEZ.⁴ The challenges are coming from two directions. First, there is a growing trend among some coastal States to exceed the jurisdictional limits recognised by UNCLOS relating to submarine cables and pipelines in their EEZs; second, submarine cables and pipelines are subjected to challenges, as well as undue interference and damage, posed by competing uses of ocean space by both the coastal State and other user States, as well as intentional damages.⁵

This chapter addresses issues relating to the freedom to lay submarine cable and pipelines in the EEZ, as well as mechanisms for their protection. It is divided into five sections. Section 5.1 provides a brief overview of submarine cables and pipelines. Section 5.2 discusses the legal framework on submarine cables and pipelines as laid down in UNCLOS with the aim to clarify the scope of the freedom to lay them in the EEZ. Section 5.3 examines the limitations imposed by law and State practice relating to this freedom, particularly the scope of coastal States' rights and jurisdiction. Section 5.4 explores the means to protect submarine cables and pipelines provided under international law and as developed by State practice, with an emphasis on the potential active role of the coastal State in complying with the legal framework and regulating competing uses in the EEZ. Section 5.5 discusses the dispute settlement mechanisms that could be used to resolve potential disputes between the coastal State and the operating State.

5.1 Basic Facts about Submarine Cables and Pipelines

By function, there are two main types of submarine cables: submarine fibre-optic cables used to transmit data communications traffic; and submarine power cables used to transmit electricity.⁶ Submarine fibre-optic cables,

⁴ UNCLOS Articles 21(1)(c), 51(2), 58(1), 79, 81(1)(c), 112–115, 297(1).

⁵ Tara Davenport, 'Submarine Communications Cables and Law of the Sea: Problems in Law and Practice' (2012) 43(3) *Ocean Dev Int'l L* 201, 202; Robert Beckman, 'Protecting Submarine Cables from Intentional Damage: The Security Gap', in Burnett, Beckman and Davenport (2014) 281–283; Nord Stream, 'Incident on the Nord Stream Pipeline (updated 14/11/2022)' www.nord-stream.com/press-info/press-releases/incident-on-the-nord-stream-pipeline-updated-14112022-529/.

⁶ Max Planck Institute for Comparative Public Law and International Law, *Encyclopedia of Public International Law*, Vol. I (North-Holland 1992) 516–517: 'Cables, Submarine': high-voltage submarine power cables are mainly used to transmit electric energy to offshore installations on the continental shelf; George K. Walker (ed.), *Definitions for*

based on the type of data transmitted, can be further divided into telecommunication cables, scientific research cables and military cables.⁷ Submarine cables are designed for underwater use and are usually laid on or buried under the seabed. The first submarine communication cable – a copper-based telegraph cable – was laid across the English Channel from Dover to Calais in 1851. Subsequently, submarine cable technology evolved through several distinct phases: the submarine telegraph cable in the mid- to late 1800s, the transoceanic telephone cable in the mid-1950s and then the lightweight fibre-optic submarine cable, which has been used since the 1980s.⁸ Modern submarine cables are small in size. The typical deep-ocean fibre-optic cables are 17–22 millimetres (mm) in diameter without protective armour and up to 50 mm with armour; the power cables, comprising solid copper conductor cores, insulation and armouring, are normally between 70 and 150 mm and can be up to 300 mm in diameter.⁹

Broadband communications through submarine fibre-optic cables have become critically important to the world economy and to the security of all States. Today, more than 95 per cent of the world's international telecommunications are provided by submarine fibre-optic cables, including services such as the internet, e-mail, phones and internet banking, as well as support for offshore platforms, military activities and marine scientific research.¹⁰ As the world continues to consume ever-increasing amounts of data, driven by the demand for cloud services and mobile technology like 5G, the demand for submarine fibre-optic

the Law of the Sea: Terms Not Defined by the 1982 Convention (Martinus Nijhoff 2012) 'Submarine Cable', 310–311.

⁷ International Cable Protection Committee (ICPC), 'Cable Data' www.iscpc.org/information/cable-data/; Lionel Carter and Alfred H. A. Soons, 'Marine Scientific Research Cables' and J. Ashley Roach, 'Military Cables', in Burnett, Beckman and Davenport (2014) 323–350. Cables used for military purpose are discussed in Chapter 6 in this volume.

⁸ ICPC and the United Nations Environment Programme (UNEP), Submarine Cables and the Oceans: Connecting the World (UNEP-WCMC 2009) 11–20 www.iscpc.org/publications/; ICPC, 'Information: Narrative History' www.iscpc.org/information/learn-about-submarine-cables/narrative-history/; ICPC, 'Information: Timeline History' www.iscpc.org/information/learn-about-submarine-cables/timeline-history/; History of the Atlantic Cables & Undersea Communications, www.atlantic-cable.com/.

⁹ ICPC and UNEP (2009) 18–19; Lionel Carter, Douglas Burnett and Tara Davenport, 'The Relationship between Submarine Cables and the Marine Environment', in Burnett, Beckman and Davenport (2014) 179–180.

¹⁰ ICPC and UNEP (2009) 3, 8; Submarine Telecoms Forum (STF), Industry Report 2023–2024, Forward <https://subtelforum.com/industry-report/>.

cables will continue to increase.¹¹ Between 1991 and 2021, the submarine telecommunication industry invested approximately 50.7 billion USD to build more than 1.3 million route kilometres (km) of cables, which is an annual average investment of 1.6 billion USD, and 41,600 km of deployed systems.¹² During the COVID-19 pandemic, the sharp increase in demand on remote communications demonstrated beyond doubt the crucial role that submarine telecommunication cables play in connecting the world.¹³

Submarine power cables supply offshore installations and islands with electrical power, and are used as transmission cables to connect power grids between countries.¹⁴ The first underwater power cable was laid across the Isar River in Germany in 1811 and has since been widely used in the North Sea and Baltic Sea, among other regions.¹⁵ The advancement in power cable technology has enabled more ambitious cable projects with increased capacity across great ocean distances and depths between States, including between continents.¹⁶ It is estimated that around 25 per cent of electricity travels to the United Kingdom via power cables, and that figure 'is rapidly expanding'.¹⁷ In 2021, the United

¹¹ STF, Industry Report 2023–2024, Section 2.1: Global Capacity.

¹² STF, Industry Report 2021–2022, Section 2: Ownership Financing Analysis <https://subtelforum.com/industry-report/>.

¹³ Henry Lancaster, 'A Global Crisis: Showcasing Dependence on Submarine Cable Infrastructure after a Global Crisis' and Byron Clatterbuck, 'Beyond COVID-19: Reimagining the Future of Telecommunications', in *Submarine Telecoms Forum Magazine* Issue 112 (May 2020) 20–21, 26–28 <https://subtelforum.com/magazine/>.

¹⁴ Malcolm Eccles, Joska Ferencz and Douglas Burnett, 'Submarine Power Cables', in Burnett, Beckman and Davenport (2014) 301–302; Renato Moreira Vidaurre and Márcio Zamboti Fortes, 'The Interaction of Submarine Cables and the Power Quality of an Oil Rig's Electrical System' (2020) 102 *Electrical Engineering* 1521, 1521–1522; Jeremy Firestone, Alison W. Bates, and Adam Prefer, 'Power Transmission: Where the Offshore Wind Energy Comes Home' (2018) 29 *Environmental Innovation and Societal Transitions* 90, 90–92.

¹⁵ Eccles, Ferencz and Burnett (2014) 302–303; ICPC, 'Power Cable Systems' www.iscpc.org/information/cable-data/power-cable-systems/.

¹⁶ Leslie Hook, 'UK Start-up Plans World's Longest Subsea Electric Cable with Morocco', *Financial Times*, 26 September 2021 (online); 'Octopus Backs 3.6GW Morocco-UK Renewables Cable', *ReNews*, 12 May 2022 <https://renews.biz/77800/octopus-energy-backs-36gw-morocco-uk-renewables-cable/>.

¹⁷ United Kingdom, House of Lords, International Relations and Defence Committee, 2nd Report of Session 2021–22, UNCLOS: The Law of the Sea in the 21st Century, para 316 <https://committees.parliament.uk/publications/9005/documents/159002/default/> (UK House of Lords 2021–22).

Kingdom and Norway completed the world's longest existing interconnector, which costs about 2 billion Euros and stretches 720 km across the North Sea.¹⁸ As the global demand for energy interconnection and offshore wind power development continues to increase, there is a potential market for energy transmission of greater distances using submarine power cables.¹⁹

In recent years, as the importance of submarine cables to world economies and States has grown exponentially, damages to them from natural disasters, fishing and shipping activities, as well as intentional harm have increased considerably.²⁰ Major disruptions to the submarine communication network, as exemplified by the 2006 Hengchun subsea earthquake that damaged nine cables and disrupted international communications for up to seven weeks, has demonstrated the need for increased protection of submarine cables and for the rapid repair of damaged cables.²¹ In 2010, the United Nations General Assembly (UNGA) recognised for the first time the critical importance of fibre-optic submarine cables to 'the global economy and the national security of all States' and that such cables are susceptible to accidental and intentional damages and called for States to take measures to protect them.²²

Submarine pipelines refers to a pipeline that lies beneath the ocean that is 'used or intended to be used for the conveyance of gas (including

¹⁸ Leslie Hook, 'UK and Norway Complete World's Longest Subsea Electricity Cable', *Financial Times*, 15 June 2021 (online).

¹⁹ Xiaoling Zhao et al., 'Technical and Economic Demands of HVDC Submarine Cable Technology for Global Energy Interconnection' (2020) 3(2) *Global Energy Interconnection* 120, 121–122; Arturs Purvins et al., 'Submarine Power Cable between Europe and North America: A Techno-Economic Analysis' (2018) 186 *Journal of Cleaner Production* 131, 134–136; Annad veldi ehf Skuli Johannsson, 'IceLink Submarine Power Cable from Iceland to Britain', Reykjavik Iceland 25th of March 2014, <https://2veldi.files.wordpress.com/2016/04/icelink-submarine-power-cable-from-iceland-to-britain.pdf>; Alex Lawson, 'National Grid to Use Subsea Cable Cash to Help Struggling Energy Users', *The Guardian*, 11 May 2022 (online).

²⁰ 'About Submarine Telecommunication Cables', ICPC, 2011 www.iscpc.org/publications/; Douglas R. Burnett, 'Submarine Cable Security and International Law' (2021) 97 *Int'l Law Stud* 1659, 1675–1679; Group of Experts of the Regular Process, *The Second World Ocean Assessment*, Volume II, (United Nations, 2021) Chapter 14: Changes in Coastal and Marine Infrastructure, 206 (*World Ocean Assessment II*).

²¹ ICPC and UNEP (2009) 9; Lionel Carter et al., 'Insights into Submarine Geohazards from Breaks in Subsea Telecommunication Cables', (2014) 27(2) *Oceanography* 58, 59–60.

²² United Nations General Assembly (UNGA) Res A/RES/65/37, 17 March 2011, *Oceans and the Law of the Sea*, Preamble and para 121.

natural gas), petroleum, oil, water, or any other mineral, liquid, or substance; and includes all fittings, pumps, tanks, appurtenances, or appliances used in connection with a pipeline'.²³ Submarine pipelines in the EEZ can be divided into three types: intra-field pipelines that connect a well and the offshore platform, export pipelines that transport the gas and oil from the field to land, and transport pipelines that are not linked with an operating field.²⁴ The first commercial submarine pipeline was constructed in 1954, and was a 250-mm-diameter concrete-coated gas pipeline of 16 km in length, installed at a depth of 4–10 metres in the Gulf of Mexico.²⁵ Modern submarine pipeline inventory comprises rigid (steel) pipelines and flexible flowlines, which vary in diameter from 50 mm to 1,400 mm.²⁶ Submarine transport pipelines are located predominantly around the Mediterranean, the Baltic and North Seas, with many having been built after 2000.²⁷ Pipelines provide a safe and cost-effective method for transporting natural resources, particularly natural gas.²⁸ It is expected that the demand for submarine pipelines will continue to grow, driven by the global consumption of energy and the advancement of technologies to extract natural resources from the ocean floor at greater distances from land.²⁹

Like submarine cables, offshore pipelines are susceptible to both natural and human hazards, including intentional harm.³⁰ Notably, since

²³ Agreement between the United States of America and the French Republic Regarding the Operation, Maintenance and Security of the Donges-Metz Pipeline System (in force 1 April 1967) (1967) 6(4) International Legal Materials 731, Article 1; New Zealand, Submarine Cables and Pipelines Protection Act 1996 (Version as at 28 October 2021), s 2; Rainer Lagoni, 'Pipelines', last updated April 2011, Max Planck Encyclopedias of International Law www.mpepil.com.

²⁴ Group of Experts of the Regular Process, The First Global Integrated Marine Assessment (United Nations 2016) Chapter 19: Submarine Cables and Pipelines, 10 (World Ocean Assessment I).

²⁵ O-Lay, 'History of Offshore Pipeline Installation' <http://o-lay.net/history-pipe-laying-technology> (accessed in December 2023).

²⁶ Oil & Gas UK, 'Decommissioning of Pipelines in the North Sea Region – Issue 1' (2013), 4 <https://oeuk.org.uk/product/guidelines-on-decommissioning-of-pipelines-in-the-north-sea-region-issue-1/>; World Ocean Assessment I, Chapter 21: Offshore Hydrocarbon Industries, 14.

²⁷ World Ocean Assessment I, Chapter 19: Submarine Cables and Pipelines, 10.

²⁸ John Crowley, 'International Law and Coastal State Control over the Laying of Submarine Pipelines on the Continental Shelf: The Ekofisk-Emden Gas Pipeline' (1987) 56 Nordic J Int'l L 39, 39.

²⁹ World Ocean Assessment II, Volume II, Chapter 19: Changes in Hydrocarbon Exploration and Extraction, 286.

³⁰ Patrick Edozor Igbinovia, *Oil Thefts and Pipeline Vandalization in Nigeria* (Safari Books Ltd 2014) 87–95; Säkerhetspolisen (Swedish Security Service), 'Confirmed Sabotage of the

pipelines are linked to the exploitation and transportation of natural resources, damage to pipelines has the potential to cause serious pollution of the marine environment. Due to these environmental concerns, as well as the linkage to the exploration and exploitation of non-living resources, certain aspects of the laws and regulations with regard to the laying and protecting of pipelines are different from those of submarine cables. The following discussion will begin with a review of the historical development of the legal framework and discuss the scope of the freedom to lay submarine cables and pipelines and their protection under the law of the sea.

5.2 The Legal Framework of Submarine Cables and Pipelines

5.2.1 *The Freedom to Lay Submarine Cables and Pipelines*

When submarine telegraph cables began to be laid across the seabed during the 1850s, coastal States' rights were generally limited to the three-mile territorial waters, with the rest of the vast ocean being freely used by all States.³¹ It was in every State's interest that international communications should be developed as quickly and smoothly as possible.³² As a result, under the general realm of the freedom of the high seas, some States asserted the right to lay submarine cables with minimum resistance from other States.³³

The first international agreement addressing submarine cables was the 1884 Paris Convention for the Protection of Submarine Telegraph Cables (1884 Paris Convention), which 'applies outside territorial waters to all legally established submarine cables landed on the territories, colonies or possessions of one or more of the High Contracting Parties'.³⁴ It focused mainly on the preservation and protection of submarine cables, including

Nord Stream Gas Pipelines' (18 November 2022) <https://sakerhetspolisen.se/ovriga-sidor/nyheter/nyheter/2022-11-18-bekraftat-sabotage-vid-gasledningarna.html>.

³¹ James Crawford, *Brownlie's Principles of Public International Law* (9th ed., Oxford University Press 2019) 245–246, 281–282.

³² Crowley (1987) 48.

³³ David Joseph Attard, *The Exclusive Economic Zone in International Law* (Oxford University Press 1987) 123.

³⁴ Convention for the Protection of Submarine Telegraph Cables (14 March 1884), Article I (1884 Paris Convention) <https://cil.nus.edu.sg/wp-content/uploads/2019/02/1884-Convention-for-the-Protection-of-Submarine-Telegraph-Cables-1.pdf>; René-Jean Dupuy and Daniel Vignes, *A Handbook on the New Law of the Sea*, Vol. II (Brill | Nijhoff 1991) 977–979.

for post-construction purposes such as liability for damage and compensation for anchors and fishing gear sacrificed to avoid damaging the cables.³⁵ The 1884 Paris Convention seems to assume that the cables laid between the contracting parties crossing their territorial waters are 'legally established' without explicitly recognising the right of States to freely lay submarine cables on the seabed beneath the high seas.³⁶ The 1884 Paris Convention was later supplemented by a resolution for the guidance of the trawling industry adopted at the London Conference of 1913.³⁷ It is still in force for those States that are not parties to any of the subsequent international conventions. It is worth noting that the 2012 United Nations Secretary-General Report on the Oceans and Law of the Sea expressed the view that the 1884 Paris Convention as amended is 'relevant' with regard to 'the transmission and transport of the renewable energy produced' at sea.³⁸ It can be interpreted that the principle to protect and preserve telecommunication cables can be extended to include high-voltage power cables and pipelines beneath the high seas, which is consistent with the development of the law.³⁹

The regulation of submarine cables was well developed by the time it became necessary and technically possible to lay pipelines for transporting petroleum or gas products across the ocean in the 1950s.⁴⁰ Their similarities to submarine cables made it inevitable that pipelines should share the same legal regime.⁴¹ Therefore, much of the international law relating to offshore pipelines, including the freedom to lay, penalties and liability for damage, and compensation for sacrificed anchors and fishing gear, has been drawn by analogy from the long-established framework for submarine cables.⁴² The legal frameworks of submarine cables,

³⁵ 1884 Paris Convention, Articles II–VII.

³⁶ Myres S. McDougal and William T. Burke, *The Public Order of the Oceans: A Contemporary International Law of the Sea* (Yale University Press 1962) 781.

³⁷ United Nations Conference on the Law of the Sea, Official Records, Vol. IV, Second Committee (High Seas: General Regime), Summary Records of Meetings and Annexes, Geneva, 21 February–27 April 1958, A/CONF.13/40, Thirtieth Meeting, 11 April 1958, 89.

³⁸ UNGA A/67/79, 4 April 2012, Oceans and the Law of the Sea Report of the Secretary-General, para 37.

³⁹ United Kingdom, Continental Shelf Act, 15 April 1964, Article 8.

⁴⁰ Stuart Kaye, 'International Measures to Protect Oil Platforms, Pipelines and Submarine Cables from Attack' (2006–2007) 31 Tul Mar LJ 396–397.

⁴¹ Crowley (1987) 39.

⁴² Max Planck Institute for Comparative Public Law and International Law, *Encyclopedia of Public International Law*, Vol. III (North-Holland 1997) 1035.

including power cables, and pipelines were officially combined after widespread support at the International Law Commission (ILC) session in 1956, and the freedom to lay submarine cables and pipelines on the high seas was included in the Draft Articles Concerning the Law of the Sea (ILC Draft Articles).⁴³

Both the 1958 Convention on the High Seas and 1958 Convention on the Continental Shelf contain provisions on the freedom to lay submarine cables and pipelines and their protection, which were based largely on the ILC Draft Articles.⁴⁴ It was recognised that all States enjoy the freedom to lay submarine cables and pipelines on the seabed of the high seas and, except for taking 'reasonable measures for the exploration of the continental shelf and the exploitation of its natural resources, the coastal State may not impede the laying or maintenance of submarine cables or pipelines on the continental shelf.'⁴⁵ The ILC in 1951 suggested that the coastal State 'may not exclude' the establishment and maintenance of submarine cables by other States, which was changed to 'may not prevent' in 1953 and to 'may not impede' in 1956, which suggests a positive statement in favour of the freedom to lay submarine cables and pipelines on the continental shelf.⁴⁶

With the establishment of the EEZ in UNCLOS, the freedom to lay submarine cables and pipelines, as one of the high sea freedoms for communications and connectivity, was explicitly preserved in Article 58 as a right of all States. The expression 'all States' should be interpreted as including nationals and private entities of the States that are in fact laying submarine cables and pipelines.⁴⁷ Moreover, the term 'other

⁴³ 'Report of the International Law Commission to the United Nations General Assembly, A/3159, Articles Concerning the Law of the Sea with Commentaries' (1956) 2 YB ILC 278, Article 27 Commentary (ILC Draft Articles).

⁴⁴ Ibid Articles 27, 61–65.

⁴⁵ Convention on the High Seas (29 April 1958, in force 30 September 1962) 450 UNTS 11, Articles 2(3), 26; Convention on the Continental Shelf (29 April 1958, in force 10 June 1964) 499 UNTS 311, Article 4.

⁴⁶ Daniel P. O'Connell, *The International Law of the Sea*, Vol. I (Oxford University Press 1982) 508; 'Document A/1858, Report of the International Law Commission Covering the Work of its Third Session, 16 May–27 July 1951' (1951) 2 YB ILC, Annex: Draft Articles on the Continental Shelf and Related Subjects, Article 5; 'Document A/CN.4/76, Report of the International Law Commission Covering the Work of its Fifth Session, 1 June–14 August 1953' (1953) 2 YB ILC, Draft Articles on the Continental Shelf, Article 5.

⁴⁷ Dorota Jadwiga Englender, 'Article 79', in Alexander Proelss (ed.), *United Nations Convention on the Law of the Sea: A Commentary* (Hart 2017) 623; Douglas Guilfoyle and Cameron Miles, 'Article 112', in Proelss (2017) 781; Myron H. Nordquist, Satya N. Nandan and Shabtai Rosenne (eds.), *United Nations Convention on the Law of the Sea 1982: A Commentary*, Vol. III (Martinus Nijhoff 1995) 264; International Law Association (ILA),

internationally lawful uses of the sea related to these freedoms' includes all other activities associated with the operation of such cables and pipelines.⁴⁸ In order to clarify what these associated activities are, it is important to understand the process of how these cables and pipelines are operated. Since these operational procedures are similar between submarine cables and pipelines, they will be described by using the example of telecommunication cable operations.⁴⁹

When planning a cable route, the first step is to undertake a desktop study to design an optimal route based on available data, then a hydrographic ship will conduct a route survey to investigate detailed seabed and environmental conditions before confirming the route.⁵⁰ After the cables and other components are manufactured and tested on land, they will be loaded on a highly specialised cable ship that supports the laying of the cables.⁵¹ In the event of a fault or damage, the submarine cable has to be retrieved from the seabed so that a replacement section can be spliced and re-laid in by the cable ship.⁵² At the end of service, the cable can be reused for other purposes, salvaged or left on the seabed.⁵³ Essentially, the associated activities include all of those spanning across the life cycle of the cable, including the design and survey of routes, manufacture and assembly, laying and installation, inspection, maintenance, repair and salvage.⁵⁴

Committee on Submarine Cables and Pipelines under International Law, Interim Report 2020, para 72 www.ila-hq.org/en_GB/committees/submarine-cables-and-pipelines-under-international-law.

⁴⁸ UNCLOS Article 58(1); Myron H. Nordquist, Satya N. Nandan and Shabtai Rosenne (eds.), *United Nations Convention on the Law of the Sea 1982: A Commentary*, Vol. II (Martinus Nijhoff 1993) 564.

⁴⁹ Stelios Kyriakides and Edmundo Corona, *Mechanics of Offshore Pipelines: Volume 1 Buckling and Collapse* (Elsevier 2007) 34–52; Boyun Guo, et al., *Offshore Pipelines: Design, Installation, and Maintenance* (2nd ed., Elsevier 2014) 1–10; Nord Stream, 'From Pipes to Pipeline' www.nord-stream.com/the-project/construction/.

⁵⁰ ICPC and UNEP (2009) 21–22; Graham Evans and Monique Page, 'The Planning and Surveying of Submarine Cable Routes', in Burnett, Beckman and Davenport (2014) 94–108.

⁵¹ Zhen Sun, 'Protection of Cable Ships Engaged in Operations for Submarine Telecommunication Cables' (2018) 49(2) *Ocean Dev Int'l L* 118, 120–121.

⁵² Douglas R Burnett, 'Recovery of Cable Repair Ship Cost Damages from Third Parties That Injure Submarine Cables' (2010–2011) 35 *Tul Mar LJ* 103, 109.

⁵³ Douglas Burnett, 'Out-of-Service Submarine Cables', in Burnett, Beckman and Davenport (2014) 214–217.

⁵⁴ Douglas Burnett, Tara Davenport and Robert Beckman, 'Overview of the International Legal Regime Governing Submarine Cables', in Burnett, Beckman and Davenport (2014) 79–80; Michael N. Schmitt, *Tallinn Manual 2.0 on the International Law Applicable to Cyber Operations* (Cambridge University Press 2017) 255–256 (Tallinn Manual 2.0);

An important distinction must be made with regard to submarine cables used for marine scientific research, including specific purpose-built systems and those incorporating sensors in or attached to the repeaters of fibre-optic telecommunication cable systems.⁵⁵ States and competent international organisations that intend to lay scientific research cables in the EEZ and on the continental shelf must apply for a permit and comply with the conditions laid down by the coastal State and international law.⁵⁶ The coastal State should, under normal circumstances, grant such consent.⁵⁷ However, the legal distinction becomes blurry regarding the anticipated dual-purpose submarine cables, known as Science Monitoring And Reliable Telecommunications (SMART) cables, an initiative led by a Joint Task Force sponsored by three United Nations agencies.⁵⁸ Recognising the advantages of the global submarine fibre-optic network, SMART cables are expected to integrate sensors into future undersea telecommunications cables, creating the potential for seafloor-based global ocean observing systems for climate monitoring and disaster warning at a modest incremental cost.⁵⁹

The first major SMART project was established in 2021 by Portugal and linked mainland Portugal, the Azores and Madeira, equipping the cable ring with environmental seismic detection.⁶⁰ The use of SMART cables has raised questions concerning the interpretation and application of the legal frameworks of marine scientific research and the laying of

Englander (2017) 624; Robin Churchill, Vaughan Lowe and Amy Sander, *The Law of the Sea* (4th ed., Manchester University Press 2022) 285.

⁵⁵ Lionel Carter and Alfred HA Soons, 'Marine Scientific Research Cables', in Burnett, Beckman and Davenport (2014) 325–332; ICPC, 'Scientific Cables' www.iscpc.org/information/cable-data/scientific-cables/.

⁵⁶ UNCLOS Articles 248–249.

⁵⁷ UNCLOS Articles 56(1)(b)(ii), 246(3).

⁵⁸ International Telecommunication Union (ITU), 'ITU/WMO/UNESCO IOC Joint Task Force' www.itu.int/en/ITU-T/climatechange/task-force-sc/Pages/default.aspx. The ITU, the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (UNESCO/IOC) and the World Meteorological Organization (WMO) established the Joint Task Force (JTF) on SMART cable systems in late 2012.

⁵⁹ Bruce M. Howe et al., 'SMART Cables for Observing the Global Ocean: Science and Implementation' (2019) 6 *Frontiers in Marine Science* 424, doi: 10.3389/fmars.2019.00424; Mike Clare, 'The Science Monitoring and Reliable Telecommunications (SMART) Cables Initiative' (March 2022) 4 *Submarine Cable Protection and the Environment* 13 www.iscpc.org/publications/submarine-cable-protection-and-the-environment/.

⁶⁰ SMART Cables, 'SMART Systems - Launched: Atlantic CAM' www.smartcables.org/systems; 'ANACOM Promotes Debate on Submarine Cables', 27 May 2021 www.anacom.pt/render.jsp?contentId=1663595.

submarine cables in the EEZ.⁶¹ The major difference would be whether the laying of SMART cables is subject to the consent of the coastal State or falls under the freedom available to all States. Given the lack of a definition of marine scientific research in UNCLOS, States hold different interpretations of whether ocean observing systems fall under the scope of marine scientific research.⁶² The Argo programme, operated under the Global Ocean Observing System (GOOS), collects information from inside the ocean using a fleet of close to 4,000 active floats that drift with the ocean currents and move up and down between the surface and mid-water level.⁶³ The Argo Guidelines acknowledge that the coastal State must be informed in advance, through appropriate channels, of the deployment of any float that may enter its EEZ, and may request the implementer to withhold the public release of sensitive data obtained within the EEZ.⁶⁴ This is a compromise position that acknowledges neither that the ocean observing Argo programme is a marine scientific research activity nor a high seas freedom. By analogy, the coastal State could request certain notification or permission from the deployment of a SMART cable within its EEZ. The SMART cable does not fit neatly under the rubric of either marine scientific research or freedom to lay submarine cables; its legal status needs to be clarified by subsequent State practice. Nevertheless, it needs to be acknowledged that all scientific cables are subject to other provisions on submarine cables in UNCLOS, particularly those relating to their protection.

When laying submarine cables and pipelines, States must have due regard to those already in position and must not prejudice the possibilities of repairing the existing ones.⁶⁵ In addition, when exercising such

⁶¹ UNGA A/74/350, 11 September 2019, Oceans and the Law of the Sea Report of the Secretary-General, para 60.

⁶² J. Ashley Roach, *Excessive Maritime Claims* (Brill 2021) 495–496; Aurora Mateos and Montserrat Gorina-Ysern, 'Climate Change and Guidelines for Argo Profiling Float Deployment on the High Seas' (2010) 14(8) ASIL Insights www.asil.org/insights/volume/14/issue/8/climate-change-and-guidelines-argo-profiling-float-deployment-high-seas.

⁶³ Argo, Implementation Status <https://argo.ucsd.edu/about/status/>; National Oceanic and Atmospheric Administration, Atlantic Oceanographic and Meteorological Laboratory, 'Argo Program' www.aoml.noaa.gov/argo/.

⁶⁴ UNESCO Doc IOC/EC-XLI.4, Guidelines for the Implementation of Resolution XX-6 of the IOC Assembly Regarding the Deployment of Profiling Floats in the High Seas within the Framework of the Argo Programme (2008), Annex <https://oceanexpert.org/document/21855>.

⁶⁵ UNCLOS Article 79(5).

freedom, States must have due regard to the rights and duties of other States, particularly the coastal State in the EEZ and on the continental shelf, and must comply with applicable domestic laws and regulations, as well as reasonable measures and other applicable conditions adopted by the coastal State.⁶⁶ Furthermore, the laying of submarine pipelines is subject to the coastal State's right to take reasonable measures to prevent, reduce and control pollution, and to give consent to the delineation of the course.⁶⁷

5.2.2 *The Protection of Submarine Cables and Pipelines*

The first international law on submarine cables, the 1884 Paris Convention, was developed to protect submarine telegraph cables.⁶⁸ It requires contracting parties to provide proper safety measures for the track of the cable and its dimensions, to punish those responsible for intentional damage to a cable, to provide for civil liability for accidental damage to a cable, and to provide compensation for ships that suffered a loss in order to avoid injuring a cable.⁶⁹ Notably, the 1884 Paris Convention prescribes obligations, including observing navigational rules and maintaining distance, for other marine activities such as fishing to avoid interfering with the operations of a cable ship and damaging a cable.⁷⁰

Much of the protective provisions in the 1884 Paris Convention were incorporated and extended to the protection to power cables and pipelines in the ILC Draft Articles.⁷¹ However, the ILC Draft Articles omitted the specific obligations for ships to observe navigational rules and to maintain an appropriate distance from the cable ship and buoys. The only reference to other marine activities is an obligation for States to 'regulate trawling so as to ensure that all the fishing gear used shall be so constructed and maintained as to reduce to the minimum any danger of fouling submarine cables or pipelines'.⁷² The ILC stated that the omission of the matter of collisions was dealt with by the adoption of the 1952 International Convention for the Unification of Certain Rules Relating to Penal Jurisdiction in Matters of Collisions or Other Incidents of Navigation, and further

⁶⁶ UNCLOS Articles 56(3), 58(3), 79(2) and (4).

⁶⁷ UNCLOS Article 79(2)–(4).

⁶⁸ Burnett, Davenport and Beckman (2014) 66.

⁶⁹ 1884 Paris Convention Articles II–IV, VII.

⁷⁰ Ibid Articles V–VI.

⁷¹ ILC Draft Articles 62–63, 65.

⁷² Ibid Article 64.

acknowledged that damage to a submarine cable or a pipeline ‘may be regarded as an “incident of navigation”’.⁷³

The Convention on the High Seas inherited the obligations for States, through domestic legislation, to punish those responsible for intentional damage to a cable or pipeline, to provide for civil liability for accidental damage to a cable or pipeline, and to provide compensation for ships that suffer a loss in order to avoid injuring a cable or pipeline.⁷⁴ Albeit, it deleted the specific reference to any marine activities except for obligating States to ensure that ships under their flag comply with navigational rules to ensure safety at sea.⁷⁵

Under UNCLOS, all States are required to protect submarine cables and pipelines as established under the high seas regime that applies to the EEZ by cross-reference in Article 58(2). The protections provided are in line with the three categories as developed in previous conventions, namely intentional damage, accidental damage and indemnity for loss.⁷⁶ It is notable that UNCLOS extends punishable breaking and injury of a submarine cable and pipeline to include ‘conduct calculated or likely to result in such breaking or injury’ that goes beyond results-based damage.⁷⁷ This language was introduced by the informal consultative group on the high seas to address the specific ‘concerns with fishing vessels anchoring to pipelines in the North Sea and with exploration by researchers around cables,’ an issue which remains alive today.⁷⁸

The legal framework of the freedom to lay submarine cables and pipelines along with other associated activities, as well as the obligation to protect them, has been maintained in the EEZ. With increasing demands to accommodate the economic interests of coastal States, as well as the need to effectively protect submarine cables and pipelines, the freedom to lay submarine cables and pipelines is subject to specified limitations in the EEZ compared with on the high seas. In particular, the laying of pipelines is subject to coastal States’ regulation of environmental protection and control of delineation of the course, which brings into doubt its classification as a preserved freedom.⁷⁹

⁷³ Ibid Article 20 Commentary, Article 35 Commentary.

⁷⁴ Convention on the High Seas Articles 27–29.

⁷⁵ Ibid Article 10.

⁷⁶ UNCLOS Articles 113–115.

⁷⁷ UNCLOS Article 113.

⁷⁸ Nordquist, Nandan and Rosenne (1995) 268; Douglas Guilfoyle and Cameron Miles, ‘Article 113’, in Proelss (2017) 783.

⁷⁹ UNCLOS Article 79(2)–(3); Churchill, Lowe and Sander (2022) 244, 285.

5.3 Limitations on the Freedom to Lay Submarine Cables and Pipelines

5.3.1 *Reasonable Measures Taken by the Coastal State*

Consistent with the legal doctrine for allocating uses in the EEZ, without impeding the laying or maintenance of submarine cables and pipelines, coastal States may take ‘reasonable measures for the exploration of the continental shelf, the exploitation of its natural resources and the prevention, reduction and control of pollution from pipelines’.⁸⁰ However, it is unspecified as to what ‘reasonable measures’ a coastal State could take and to what extent such measures might affect the freedom of the laying of submarine cables and pipelines.⁸¹

5.3.1.1 Exploration and Exploitation Considerations

Many States have recognised the freedom of all States to lay submarine cables and pipelines in their EEZs by incorporating Article 58(1) in their domestic legislation.⁸² With respect to a coastal State’s right over natural resources and the continental shelf, it can be argued that measures that impose restrictions to avoid damage to fishing grounds or significant marine habitats, or restrictions on the laying of such cables and pipelines in areas designated for the exploitation of oil, gas or other mineral resources, would be considered reasonable.⁸³ Pipelines, particularly those associated with an operational field, are closely linked with the exploration of the seabed and the exploitation of the natural resources that are usually subject to tighter regulations on delineation and pollution by the coastal State. However, there is some inconsistent State practice with regard to activities associated with the use of submarine cables, such as requiring permission for survey, laying, maintenance and repair activities.⁸⁴

⁸⁰ UNCLOS Articles 56(1), 79(2).

⁸¹ Englander (2017) 624–625.

⁸² United Nations, Division for Ocean Affairs and the Law of the Sea, *The Law of the Sea: National Legislation on the Exclusive Economic Zone* (United Nations 1993).

⁸³ Robert Beckman, ‘Submarine Cables – A Critically Important but Neglected Area of the Law of the Sea’, International Conference on Legal Regimes of Sea, Air, Space and Antarctica, India, January 2010, 6 <https://cil.nus.edu.sg/wp-content/uploads/2010/01/Beckman-PDF-ISIL-Submarine-Cables-rev-8-Jan-10.pdf>; Englander (2017) 624.

⁸⁴ Evans and Page (2014) 119–122; ICPC Recommendation No. 10, The Minimum Requirements for Load and Lay Reporting and Charting, Issue 3A, 1 June 2014, available by request at www.iscpc.org or secretariat@iscpc.org; Roach (2021) 557–560.

One of the reasons for some States to require a permit for cable survey activities is that they consider the survey to be part of marine scientific research activity over which they have jurisdiction. There are no provisions in UNCLOS that define marine scientific research, nor are there provisions specifically governing survey activities in the EEZ or on the continental shelf.⁸⁵ Because of the lack of clarity in UNCLOS, State practice varies with regard to survey activities in the EEZ. Some States consider survey activities as part of the freedoms confirmed in Article 58 (1), while others argue that such activities are a form of marine scientific research and therefore subject to the coastal State's consent as provided for in Articles 56(1)(b)(ii) and 246 of UNCLOS.⁸⁶ For example, China has claimed jurisdiction over surveys in the EEZ, whereby foreign organisations or individuals that wish to undertake surveying and mapping must obtain approval from local authorities and observe relevant Chinese laws and regulations.⁸⁷

It goes beyond the scope of this chapter to discuss the historical and contemporary debates on the definition and scope of marine scientific research and survey.⁸⁸ Rather it follows the legal doctrine of allocating uses in the EEZ by examining the purpose of the cable route survey. As discussed earlier, the survey is an integral part of the operations of submarine cables given its essential role in determining the delineation of the route and design of installation procedures and protection strategies.⁸⁹ Hence, the cable route survey is closely linked with the need to

⁸⁵ United Nations Division for Ocean Affairs and the Law of the Sea Office of Legal Affairs, *Marine Scientific Research: A revised guide to the implementation of the relevant provisions of the United Nations Convention on the Law of the Sea* (United Nations, 2010) 4–6.

⁸⁶ EEZ Group 21, Guidelines for Navigation and Overflight in the Exclusive Economic Zone (26 September 2005, Tokyo, Japan, Ocean Policy Research Foundation), Article IX www.spf.org/opri/en/news/05_7.html; Sam Bateman, 'Hydrographic Surveying in the EEZ: Differences and Overlaps with Marine Scientific Research' (2005) 29 *Marine Policy* 167; Davenport (2012) 211–212; Youri Van Logchem, 'Submarine Telecommunication Cables in Disputed Maritime Areas' (2014) 45(1) *Ocean Dev Int'l L* 107, 111–112.

⁸⁷ China, Surveying and Mapping Law of the People's Republic of China (amended in 2002), Article 7 www.asianlii.org/cn/legis/cen/laws/samlotproc506/.

⁸⁸ Roach (2021) 486–541; Nele Matz-Luck, 'Article 238', in Proelss (2017) 1609–1610.

⁸⁹ Alexander Lott, 'Marine Environmental Protection and Transboundary Pipeline Projects: A Case Study of the Nord Stream Pipeline' (2011) 27(73) *Merkourios International and European Environmental Law* 55, 58; Evans and Page (2014) 99–108; David Langlet, 'Transboundary Transit Pipelines: Reflections on the Balancing of Rights and Interests in Light of the Nord Stream Project' (2014) 63(4) *Int'l & Compar LQ* 977, 985–988; Roach (2021) 553–554.

facilitate international communications rather than direct economic benefit to the coastal State. Even if some States argue that a survey in general is a form of applied science,⁹⁰ the cable route survey could be exempted from coastal State jurisdiction because it is an ancillary activity, a lawful use of sea associated with the laying of submarine cables.

Another reason for some States to require a permit for cable survey activities is the concern that data obtained through the survey might be relevant to the exploitation of the seabed and its natural resources.⁹¹ It is important to understand what data is collected during the survey to distinguish a cable route survey from a survey for natural resources. The main purpose of the cable route survey is to understand the hydrographic and geologic conditions of the pertinent region before laying a submarine cable. The survey ship usually employs a range of technologies to collect data along a narrow strip of seabed, typically ranging from 500 to 1,000 metres in shallow water and three times the water depth in deep water.⁹² The cable route survey usually contains data components of bathymetry, seabed imagery, high-resolution seismic reflection profiling, seabed soils, submarine geology, electronic burial and plow assessment, and oceanography.⁹³ From a technical perspective, a cable route survey uses similar techniques and collects some of the same data as in surveys for exploration of natural resources.⁹⁴ However, the limited scanned area and data, both in terms of the width of the area and the depth of the seabed, determine that the data collected during a cable route survey is not sufficient to discover, evaluate or exploit economic resources on the seabed.⁹⁵ In other words, the cable route survey is not designed to perform systematic investigations into and study of the marine environment, but is merely to establish facts and provide information to confirm or amend the preliminary data for cable installation.

⁹⁰ 余敏友和周昱圻,《专属经济区海洋科学研究与测量活动的国际法分析》,时代法学,2021年6月,第19卷第3期,11-19,第14-15页 (YU Min-you and ZHOU Yu-qi, 'A Study on Marine Scientific Research and Survey Activities in the EEZ' (2021) 19(3) *Presentday Law Science* 11, 14-15).

⁹¹ Evans and Page (2014) 111-113.

⁹² Ibid 103.

⁹³ Ibid 103-106.

⁹⁴ Ibid 110-111.

⁹⁵ Ibid 111-113.

In addition, some coastal States, notably China,⁹⁶ India⁹⁷ and Seychelles,⁹⁸ require permits for foreign vessels or nationals to undertake submarine cable laying, maintenance and repair activities in their EEZs.⁹⁹ The permission requirements for operational activities vary from State to State and range from straightforward application to highly complex with different associated conditions. These conditions includes a combination of annual fees, security checks for crew, a list of the nationalities of the crew, registration documents for the vessel, requirements for an on-board security officer or observer, pre-approved locations and a copy of the survey data and reports.¹⁰⁰ These conditions of permission can cause significant delays in cable operations and, in the case of repair activities, may lead to multiple cable failures and increased loss of revenue.¹⁰¹ The situation will be even more complicated if the fault location is uncertain or if it spans the EEZ of more than one State or is in a disputed sea area.¹⁰² If the attribution of jurisdiction over survey activity in the EEZ is unclear, the requirement of attaining permission to conduct the laying, maintenance or repair work on submarine cables is inconsistent with UNCLOS. Article 79(2) specifically states that ‘the coastal State may not impede the *laying or maintenance* of such cables’ (emphasis added). Additionally, the 2011 UNGA Resolution on the Oceans and the Law of the Sea clearly recognised the importance for States to act in

⁹⁶ China, Exclusive Economic Zone and Continental Shelf Act, 1998, Article 11 www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/chn_1998_eez_act.pdf; China, Provisions Governing the Laying of Submarine Cables and Pipelines 1989, Article 10 www.asianlii.org/cn/legis/cen/laws/pgtloscap600/; Surveying and Mapping Law of the People’s Republic of China, 2002, Article 7. In the event of emergency repairs on China’s continental shelf, foreign vessels may enter the site to start operations simultaneously with a report submitted to the competent authorities, and such operations must not impair China’s sovereign rights and jurisdiction.

⁹⁷ India, The Territorial Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act, 1976, Act No. 80 of 28 May 1976, Article 7(8) www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/IND_1976_Act.pdf.

⁹⁸ Seychelles, Maritime Zones Act, 1999 (Act No. 2 of 1999), Article 14(1)(b) www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/SYC_1999_Act2.pdf.

⁹⁹ Keith Ford-Ramsden and Douglas Burnett, ‘Submarine Cable Repair and Maintenance’, in Burnett, Beckman and Davenport (2014) 169–176.

¹⁰⁰ Roach (2021) 557–560; Anjali Sugadev, ‘India’s Critical Position in the Global Submarine Cable Network: an Analysis of Indian Law and Practice on Cable Repairs’ (2016) 56 Indian J Int’l L 173.

¹⁰¹ ICPC, Submarine Cable Network Security (2009) 30–32 www.iscpc.org/information/Openly%20Published%20Members%20Area%20Items/Submarine_Cable_Network_Security_PDF.pdf.

¹⁰² Van Logchem (2014) 113–114; UK House of Lords 2021–22 para 323.

conformity with UNCLOS with regard to the maintenance, including the repair, of submarine cables.¹⁰³

Considering that the EEZ is for all intents and purposes a resource zone, the 'reasonable measures' taken by the coastal States must be closely linked to the exploration of the continental shelf or the exploitation of its natural resources and must be proportionate.¹⁰⁴ A measure would be unreasonable if it rendered the laying of a submarine cable or pipeline impossible or if it disproportionately increased the cost of laying them or is of a discriminatory character.¹⁰⁵ The practice of some State to require a permit for cable route survey, laying, maintenance and repair can hardly be justified as a reasonable measure or the execution of the due regard obligation. Alternatively, in order to reduce tension, the operating State may, as fulfilling its due regard obligation in good faith, provide the coastal State with notification of the purpose, route, timing and work plan of the cable operation activities.¹⁰⁶ The coastal State may require permits as a reasonable measure for pipeline operations in a direct link to its right over pollution control measures and the delineation of pipeline courses.

5.3.1.2 Environmental Considerations

Compared to the regime applicable to submarine cables, pipelines are subject to coastal States' jurisdiction over pollution control in the EEZ. This jurisdiction was only introduced during the negotiation of UNCLOS, as it did not exist in the 1958 Geneva Conventions.¹⁰⁷ Article 79(2) of UNCLOS specifies that the freedom of laying pipelines be subject to a coastal States' right to take 'reasonable measures ... for the prevention, reduction and control of pollution from pipelines'. This also gives the coastal State jurisdiction over transiting pipelines, often owned and operated by a foreign entity, that do not land on its coast or connect to its offshore operational fields. The exercise of this jurisdiction should be consistent with the rules established in Article 56 and Part XII Articles 208 and 214 with regard to pollution in connection with seabed activities that are subject to national jurisdiction, where such measures

¹⁰³ UNGA A/RES/66/231, 5 April 2012, Oceans and the Law of the Sea, Preamble, para 126.

¹⁰⁴ UNCLOS Articles 56(1), 79(2); Beckman (2010) 9; Sam Bateman, 'A Response to Pedrozo: The Wider Utility of Hydrographic Surveys' (2011) 10 Chinese J Int'l L 177, 180–181.

¹⁰⁵ Englander (2017) 624; Tallinn Manual 2.0 (2017) 254–255.

¹⁰⁶ Roach (2021) 558; Evans and Page (2014) 120; Van Logchem (2014) 112.

¹⁰⁷ Nordquist, Nandan and Rosenne (1993) 912.

‘shall be no less effective than international rules, standards and recommended practices and procedures’.¹⁰⁸ It is important to point out that, unlike the international shipping regulations that have been developed under the auspice of the International Maritime Organization (IMO), States have not adopted any binding international rules and regulations for the use and operation of submarine pipelines.¹⁰⁹

Coastal States must ensure that these pollution prevention and control measures meet the requirements of ‘reasonableness’ and the ‘due regard’ obligation in such a way as not to impede the laying or maintenance of pipelines. The German legislation on the continental shelf offers an example of such reasonable measures. Other States, through private entities, that intend to install and operate a transiting pipeline must seek authorisation from the German government, which may only be denied ‘where there is reason to fear a danger to human life or health or to material property, or a threat to overriding public interests, which cannot be prevented or removed by means of conditions or restrictions’.¹¹⁰ It further defines ‘a threat to overriding public interests’ to include activities hindering or impairing German rights on the continental shelf, causing pollution of the sea or threatening the security of Germany.¹¹¹ Other than these specified considerations, the German authority may not withhold its permission for the laying of pipelines on its continental shelf.

The environmental considerations for issuing permission for the laying of pipelines may also be affected by geopolitical situations and the broader economic context. The first Nord Stream twin pipeline system provides Europe with approximately 55 billion cubic metres of natural gas per year for at least 50 years from Russia through two 1,224-km offshore pipelines passing by the territorial sea and/or EEZ of Russia, Finland, Sweden, Denmark and Germany.¹¹² The operators provided an

¹⁰⁸ UNCLOS Articles 56(1)(b)(iii), 208(3), 214.

¹⁰⁹ Saeed Hashemi Lalehabadi, ‘Legal Problems of Submarine Pipelines in the Continental Shelf and the Exclusive Economic Zone’ (2018) 163 *Ocean and Coastal Management* 528, 528–529.

¹¹⁰ Germany, Act of 24 July 1964 on Provisional Determination of Rights Relating to the Continental Shelf as Amended on 2 September 1974, Article 2(4) www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/DEU_1974_Act.pdf.

¹¹¹ Germany, Provisional Determination of Rights Relating to the Continental Shelf 1974, Article 2(4).

¹¹² Nord Stream, ‘The Pipeline’ www.nord-stream.com/the-project/pipeline/; Timo Koivurova and Ismo Pölönen, ‘Transboundary Environmental Impact Assessment in the Cases of the Baltic Sea Gas Pipeline’ (2010) 25 *Int’l J Marine & Coastal L* 151, 176–179; Lott (2011) 61–63.

extensive 2,585-page environmental impact assessment (EIA) report to the relevant coastal States on the environmental impacts of the construction, operation and decommissioning of the pipelines justifying that the design and routing of the pipelines are safe and environmentally sound.¹¹³ It took the operators five years after the announcement of the project to secure all the permits to begin construction in 2010, and the two pipelines have been in operation since 2011 and 2012, respectively.¹¹⁴ A new Nord Stream 2 project, with two more pipelines that possess the same capacity, was proposed to run roughly parallel to the existing Nord Stream pipeline, and construction was completed by September 2021 at an estimated cost of 11 billion Euros.¹¹⁵ The operators went through a similar process to obtain permits from the five coastal States and consulted with the other coastal States of the Baltic Sea.¹¹⁶ However, despite meeting the legal requirements of obtaining permits from the coastal States to build the Nord Stream 2 pipeline, the project has been put on hold due to the change in geopolitics, most notably the relationship between Europe and Russia.¹¹⁷

¹¹³ Nord Stream, Espoo Report – Nord Stream Environmental Impact Assessment Documentation for Consultation under the Espoo Convention (2009) www.nord-stream.com/press-info/library/; Nord Stream, ‘Comprehensive Studies for Ecological Compatibility’ www.nord-stream.com/environment/research/; Rolf Lidskog and Ingemar Elander, ‘Sweden and the Baltic Sea Pipeline: Between Ecology and Economy’ (2012) 36 *Marine Policy* 333, 334–335; David Langlet, ‘Nord Stream, the Environment and the Law: Disentangling a Multijurisdictional Energy Project’ (2014) 59 *Scandinavian Stud L* 79, 98–107.

¹¹⁴ Nord Stream, ‘Who We Are’ www.nord-stream.com/about-us/.

¹¹⁵ Nord Stream 2 www.nord-stream2.com/ (this website was taken down after March 2022); Holly Ellyatt, ‘Nord Stream 2 Cost \$11 Billion to Build. Now, the Russia-Europe Gas Pipeline Is Unused and Abandoned’, *CNBC*, 31 March 2022 (online).

¹¹⁶ Nord Stream 2, ‘Environment’ www.nord-stream2.com/environment/ (accessed in February 2022).

¹¹⁷ Steve Wood and Otto Henke, ‘Denmark and Nord Stream 2: A Small State’s Role in Global Energy Politics’ (2021) 148 *Energy Policy* 111991; ‘Nord Stream 2: How Does the Pipeline Fit into the Ukraine-Russia Crisis?’ *BBC News*, 22 February 2022 (online); ‘Ukraine Crisis: Germany Halts Nord Stream 2 Approval’. *Deutsche Welle*, 22 February 2022 (online); Nord Stream, Press Statement, 4 March 2022 www.nord-stream.com/press-info/press-releases/press-statement-523/. In the Statement, Nord Stream distinguished itself from the Nord Stream 2 project in light of sanctions against Russia. See also Valerie Volcovi, ‘Ukraine Lobbies for Cuts in Russian Nord Stream 1 Gas Shipments’, *Reuters*, 21 April 2022 (online).

Article 79(2) of UNCLOS limits a coastal State's right to taking reasonable measures for pollution control to submarine pipelines. The omission of submarine cables, however, cannot be interpreted such that they are completely exempted from environmental protection considerations. When exercising the freedom to lay submarine cables, States must have due regard to the coastal State's rights and duties in the EEZ, including its rights to conserve and manage natural resources, and its jurisdiction and obligation to protect and preserve the marine environment.¹¹⁸ The laying and use of submarine cables inevitably interact with the marine environment to varying degrees at different phases. For example, route surveys employ instruments that produce acoustic pulses that might affect marine mammals; the laying of cables requires mechanical plowing into the seabed for burial in shallow waters; cables laid on the surface of the seabed will interact with water, sediment and marine biota; and electromagnetic fields generated by power cables may have an impact on the marine environment.¹¹⁹ Existing research and studies are not conclusive on the environmental impacts, particularly the cumulative impacts, that cables have on the marine environment through their lifespan. Nonetheless, the cable industry has lobbied that any threats are not detrimental to the marine environment.¹²⁰

The operating State has the primary responsibility to address the environmental impacts of the laying and use of submarine cables. It has the general obligation to protect and preserve the marine environment, among which is to ensure that activities under its jurisdiction or control do not cause damage by pollution to other States and their

¹¹⁸ UNCLOS Articles 56(1)(a) and (b)(iii), 58(3), 192.

¹¹⁹ Carter, Burnett and Davenport (2014) 179–195; Magdalena Jakubowska et al., 'Effect of Low Frequency Electromagnetic Field on the Behavior and Bioenergetics of the Polychaete *Hediste Diversicolor*' (2019) 150 *Marine Environmental Research* 104766; Luana Albert et al., 'A Current Synthesis on the Effects of Electric and Magnetic Fields Emitted by Submarine Power Cables on Invertebrates' (2020) 159 *Marine Environmental Research* 104598.

¹²⁰ ICPC and UNEP (2009) 29–30; OSPAR Commission, 'Background Document on Potential Problems Associated with Power Cables other than those for Oil and Gas Activities' (2008) www.ospar.org/documents?v=7128; OSPAR Commission, 'Assessment of the Environmental Impacts of Cables' (2009) https://qsr2010.ospar.org/media/assessments/p00437_Cables.pdf; Bastien Taormina et al., 'A Review of Potential Impacts of Submarine Power Cables on the Marine Environment: Knowledge Gaps, Recommendations and Future Directions' (2018) 96 *Renewable and Sustainable Energy Reviews* 380, 388–389; UNGA A/67/79 paras 84, 87; ICPC, Intervention at BBNJ IGC-4 Opening Session, 7 March 2022 www.un.org/bbnj/statements.

environment, to monitor and to assess the environmental impact.¹²¹ However, the decision to monitor the risk of pollution and to conduct an EIA is at the discretion of the operating State, such that only when it has 'reasonable grounds for believing' that the planned activities 'may cause substantial pollution of or significant and harmful changes to the marine environment', it is obligated to conduct an EIA.¹²² The coastal State has limited ground to challenge or influence the operating State's assessment and monitoring of cable operations, particularly for transiting cables in the EEZ.

The balance of environmental concerns over submarine cables will fall back on the mutual due regard obligations. The fulfilment of the due regard obligations should be determinate by the circumstances and by the nature of those rights.¹²³ It could be argued that if the proposed cable operation occurs within an existing specially protected area or a critical marine habitat, the operating State should consult the coastal State in good faith in the laying of cables to minimise the risks to the marine environment. The coastal State, on the other hand, could arguably introduce restrictive measures on cable operations in such special marine areas in the EEZ.¹²⁴ For example, the United Kingdom sought to control the routing of a new cable system from entering a special conservation area, and the United States restricted access to a designated critical habitat area to protect the leatherback sea turtle.¹²⁵

The right of the coastal State to adopt and apply these reasonable measures must meet the requirements imposed by other provisions of UNCLOS. First, these measures must be 'reasonable' as they must be kept within the limits of respect for the law and implemented impartially so as to 'not infringe or result in any unjustifiable interference with' the freedom of other States to lay submarine cables and pipelines.¹²⁶ Second, the coastal State must recognise such freedom and must have

¹²¹ UNCLOS Articles 194(2), 204, 206.

¹²² UNCLOS Articles 204–206.

¹²³ In the Matter of the Chagos Marine Protected Area Arbitration Before an Arbitral Tribunal Constituted under Annex VII to the United Nations Convention on the Law of the Sea between the Republic of Mauritius and the United Kingdom of Great Britain and Northern Ireland, Award, 18 March 2015, PCA Case No. 2011-03, para 519 (Chagos MPA Arbitration).

¹²⁴ UNCLOS Articles 194(5), 211(5)–(6); Yoshifumi Tanaka, *The International Law of the Sea* (3rd ed., Cambridge University Press 2019) 175–176.

¹²⁵ Carter, Burnett and Davenport (2014) 205–206.

¹²⁶ UNCLOS Articles 78(2), 79(2).

due regard for their interests to exercise this freedom.¹²⁷ Third, the coastal State must exercise its rights in a manner so as not to 'constitute an abuse of right'.¹²⁸ Hence, these measures should not amount to a right for a coastal State to require a permit or payment as a condition for other States to conduct operational activities related to the submarine cables in its EEZ. Where there is a dispute on the scope and application of measures adopted by the coastal State, the coastal State and the operating State should consult with one another in good faith to resolve their dispute before seeking settlement through other peaceful means.¹²⁹

5.3.2 *Delineation of the Course of Submarine Cables and Pipelines*

Careful route planning is essential for effective laying and protection of submarine cables and pipelines. Planning must take into account all current and proposed marine activities, especially fishing and the exploitation of natural resources, and all relevant natural and cultural seabed features in the pertinent region in order to determine the most appropriate route.¹³⁰ The coastal State's jurisdiction over the delineation of the course of submarine cables and pipelines are different, with the latter falling under its jurisdiction.

The coastal State's jurisdiction to regulate the delineation of the course of pipelines was only introduced in Article 79(3) of UNCLOS.¹³¹ This authorisation also gives coastal States rights over the delineation of transiting pipelines that do not land on their coast or connected with any offshore platforms under their jurisdiction. The extended coastal State jurisdiction was introduced by States that were in favour of restricted freedom to lay pipelines on their continental shelf, notably China and Denmark.¹³² The Danish proposal provided that, considering the significant difference between the laying of submarine cables and the

¹²⁷ UNCLOS Article 56(2).

¹²⁸ UNCLOS Article 300.

¹²⁹ UNCLOS Article 279.

¹³⁰ ICPC and UNEP (2009) 21–22.

¹³¹ Convention on the Continental Shelf Article 4; Convention on the High Seas Article 26 (2); UNCLOS Article 79(3).

¹³² 'Denmark: Continental Shelf' (Article 67 RSNT II) [1977], reproduced in Renate Platzöder (ed.), *The Third United Nations Conference on the Law of the Sea: Documents*, Vol. IV (Oceana Publications 1990) 470; Crowley (1987) 49; Nordquist (1993) 911, 914.

laying of pipelines, the laying of pipelines across the continental shelf/EEZ should be subject to the coastal State's consent.¹³³ This Danish position was used in the negotiations with Norway relating to the delineation of a transiting gas pipeline across its continental shelf in the 1970s. The Ekofisk-Emden pipeline carries natural gas from the Ekofisk field on the Norwegian continental shelf in the North Sea to the operations plant at Emden in Germany, of which approximately 50 km passes through the Danish continental shelf.¹³⁴ Denmark granted permission for the construction and operation of such a pipeline on the condition that the pipeline was buried to a depth of one metre along the entire length.¹³⁵ Moreover, Denmark established a safety zone of 100 metres on each side of the pipeline in which fishing and anchoring were prohibited.¹³⁶

As far as submarine cables are concerned, the intention of granting coastal States jurisdiction over the delineation of the laying of their course was implied in the ILC Draft Articles. Commenting on a coastal State's 'right to take reasonable measures for the exploration of the continental shelf and the exploitation of its natural resources', the ILC stated that Article 61(2) was added to 'make it quite clear that the coastal State is obliged to permit the laying of cables and pipelines ... but that it may impose conditions as to the route to be followed, in order to prevent undue interference with the exploitation of the natural resources of the seabed and subsoil'.¹³⁷ The comments to Article 70, which only dealt with submarine cables, repeated the statement that the coastal State 'may impose conditions concerning the route to be followed'.¹³⁸ These comments clearly illustrate that the coastal State's right to take 'reasonable measures' could include imposing conditions on the route of submarine cables.

During the negotiation of the Convention on the Continental Shelf, Venezuela stated that it was 'prepared to recognize the right of States to

¹³³ Third United Nations Convention on the Law of the Sea, Official Records, Vol. XIV: Resumed Ninth Session, Summary Records of the Plenary, A/CONF.62/SR.138, Plenary Meetings, 26 August 1980, 61–62.

¹³⁴ Crowley (1987) 50; Industrial Heritage EKOFISK, 'Platforms: Norpipe B11' <https://ekofisk.industriminne.no/en/norpipe-gnsc-b11-2/>.

¹³⁵ Crowley (1987) 53–55; Per A. Loeken, 'Engineered Backfilling on the 36" Ekofisk-Emden Gas Pipeline', Paper presented at the Offshore Technology Conference, Houston, Texas, May 1980 <https://doi.org/10.4043/3741-MS>.

¹³⁶ Crowley (1987) 56.

¹³⁷ ILC Draft Articles Article 61 Commentary 3.

¹³⁸ ILC Draft Articles Article 70 Commentary 1.

lay cables on the continental shelf, but considered that prior consultation with the coastal State and its consent were essential'.¹³⁹ Further,

if the coastal State had the right to take reasonable measures for the exploitation of the continental shelf, it obviously had the right to make regulations on the laying of submarine cables on the continental shelf. In that way, the coastal State could protect the interests of States if a conflict arose regarding exploitation and the laying of submarine cables.¹⁴⁰

Venezuela's proposal of inserting the phrase 'and to its right to make regulations ... concerning the routes to be followed,' however, was rejected by 22 votes to 18, with 15 abstentions.¹⁴¹ Therefore, the Convention on the Continental Shelf only recognised the coastal State's right to take 'reasonable measures for the exploration of the continental shelf and the exploitation of its natural resources' without specifying delineation of the course of submarine cables and pipelines.¹⁴² The negotiation records show that the delegations had different understandings of whether or not the right to take 'reasonable measures' included adopting regulations concerning cable and pipeline routes.¹⁴³

Before the Third United Nations Conference on the Law of the Sea, China proposed to the Sea-Bed Committee that '[t]he delineation of the course for laying submarine cables and pipelines on the continental shelf by a foreign State is subject to the consent of the coastal State'.¹⁴⁴ However, this proposal was never incorporated into the negotiation text.¹⁴⁵ Article 79 of UNCLOS was adopted based on the text drafted by the Evensen Group that the right to take 'reasonable measures'

¹³⁹ United Nations Conference on the Law of the Sea, Official Records, Vol. VI, Fourth Committee (Continental Shelf), Summary Records of Meetings and Annexes, Geneva, 24 February – 27 April 1958, A/CONF.13/42, Tenth Meeting, 14 March 1958, 21.

¹⁴⁰ Ibid Twenty-Seventh Meeting, 1 April 1958, 79.

¹⁴¹ Ibid Twenty-Seventh Meeting, 1 April 1958, 80; United Nations Conference on the Law of the Sea, A/CONF.13/C.4/L.34, 21 March 1958, 136, Venezuela: Proposal, Article 70.

¹⁴² Convention on the Continental Shelf Article 4; Convention on the High Seas Article 26 (2).

¹⁴³ United Nations Conference on the Law of the Sea, Official Records, Vol. VI, Fourth Committee (Continental Shelf), A/CONF.13/42, Fourth Meeting, 4 March 1958, 3; Seventh Meeting, 11 March 1958, 9; Tenth Meeting, 14 March 1958, 22; Twenty-seventh Meeting, 1 April 1958, 79–81.

¹⁴⁴ UNGA A/AC.138/SC.II/L.34, 16 July 1973, Working Paper on Sea Area within the Limits of National Jurisdiction, Submitted by the Chinese Delegation; Dupuy and Vignes (1991) 985.

¹⁴⁵ Nordquist, Nandan and Rosenne (1993) 913–915; Engländer (2017) 626.

provided the coastal State with an explicit right to give consent to the delineation of the course of pipelines.¹⁴⁶ Nevertheless, even without explicit authorisation under UNCLOS, subsequent national legislation of Cabo Verde,¹⁴⁷ China,¹⁴⁸ Guyana,¹⁴⁹ Grenada,¹⁵⁰ India,¹⁵¹ Malaysia,¹⁵² Mauritius,¹⁵³ Pakistan,¹⁵⁴ Poland,¹⁵⁵ Portugal,¹⁵⁶ Saint Kitts and Nevis,¹⁵⁷ Saint Lucia,¹⁵⁸ São Tomé and Príncipe,¹⁵⁹ Syria,¹⁶⁰ Russia¹⁶¹ and Trinidad and Tobago¹⁶² extended the coastal State's right to require consent to the delineation of the course for the laying of submarine cables in their EEZ.¹⁶³

¹⁴⁶ Nordquist, Nandan and Rosenne (1993) 912–914.

¹⁴⁷ Cabo Verde, Law No.60/IC/92 of 21 December 1992, Article 21 www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/CPV_1992_Law.pdf.

¹⁴⁸ China, Exclusive Economic Zone and Continental Shelf Act, 1998, Article 11.

¹⁴⁹ Guyana, Maritime Boundaries Act, 1977, Act No.10 of 30 June 1977, Articles 14, 20 www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/GUY_1977_Act.pdf.

¹⁵⁰ Grenada, Territorial Sea and Maritime Boundaries Act, 1989 (Act No. 25 of 1989), Article 14 (3) www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/grd_act_25_1989.pdf.

¹⁵¹ India, The Territorial Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act, 1976, Act No. 80 of 28 May 1976, Article 6(7).

¹⁵² Malaysia, Exclusive Economic Zone Act, Act No. 311, 1984, Article 22(1) www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/MYS_1984_Act.pdf.

¹⁵³ Mauritius, Maritime Zones Act 2005 (Act No. 2 of 2005), (2006) 62 LOSB 56–57, Articles 17(b), 21(1)(b).

¹⁵⁴ Pakistan, Territorial Waters and Maritime Zones Act, 1976 (22 December 1976), Articles 5 (6), 6(6) www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/PAK_1976_Act.pdf.

¹⁵⁵ Poland, Act Concerning the Maritime Areas of the Polish Republic and the Marine Administration, 21 March 1991, Article 27 www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/POL_1991_Act.pdf.

¹⁵⁶ Portugal, Act No. 33/77 of 28 May 1977 Regarding the Juridical Status of the Portuguese Territorial Sea and the Exclusive Economic Zone, Article 7 www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/PRT_1977_Act.pdf.

¹⁵⁷ Saint Kitts and Nevis, The Maritime Areas Act No.3 of 30 August 1984, Article 13(2)(a) www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/KNA_1984_Act.pdf.

¹⁵⁸ Saint Lucia, Maritime Areas Act, No.6 of 18 July 1984, Article 13(2)(a) www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/LCA_1984_Act.pdf.

¹⁵⁹ Sao Tome and Principe, Law No.1/98 on Delimitation of the Territorial Sea and the Exclusive Economic Zone, Article 7(2) www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/STP_1998_Law.pdf.

¹⁶⁰ Syria, Law No. 28 of 19 November 2003, (2004) 55 LOSB 16–17, Article 24(2).

¹⁶¹ Russia, Federal Act on the Exclusive Economic Zone of the Russian Federation 1998, Article 7 (20) www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/RUS_1998_Act_EZ.pdf.

¹⁶² Trinidad and Tobago, Archipelagic Waters and Exclusive Economic Zone Act, 1986, Act No. 24 of 11 November 1986, Article 20(c) www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/TTO_1986_Act.pdf.

¹⁶³ Barbara Kwiatkowska, *The 200 Mile Exclusive Economic Zone in the New Law of the Sea* (Martinus Nijhoff 1989) 217; Keith Ford-Ramsden and Tara Davenport, 'The

Article 79(3) indicates that the delineation of the course for the submarine cables in the EEZ is not subject to the consent of the coastal State. However, the interpretation of 'reasonable measures' included in Article 79(2) seems to provide that the coastal State can place certain requirements on the laying of submarine cables, albeit such measures may not equal the requirement of consent for the delineation of the course. Coastal States may arguably require notification or pre-consultation regarding the proposed cable route, particularly in relation to its rights over natural resources and the protection of the marine environment, and as per the reciprocal due regard obligation of the operating State. It is also in the best interest of the cable operator to obtain all relevant information of the pertinent region to avoid potential conflicts with the coastal State's existing and planned exploration and exploitation activities when designing the route for a submarine cable. In case of a conflict – for example, where the route of a proposed submarine cable would interfere with the potential exploitation of an oil field – the coastal State and the operating State should consult with each other in good faith. It is arguable that the outcome would likely be a re-routing of the cable to give priority to the sovereign rights of the coastal State, but the coastal State should not rely on potential interference with its rights in an abusive manner.¹⁶⁴

5.3.3 *Regulations of Specific Submarine Cables and Pipelines*

Article 79(4) of UNCLOS gives coastal States additional rights and jurisdiction over two specific types of submarine cables and pipelines laid in its EEZ. The coastal State has the right to fix any conditions necessary relating to the laying of submarine cables and pipelines that enter its territory or territorial sea, and it has jurisdiction over those used in connection with the exploration and exploitation of the continental shelf and its natural resources, as well as the operation of artificial islands, installations and structures.¹⁶⁵

With respect to cables and pipelines that enter the territory or territorial sea, the first unclarified issue is where these conditions apply. If a

Manufacture and Laying of Submarine Cables', in Burnett, Beckman and Davenport (2014) 148; Tanaka (2019) 175; Roach (2021) 559.

¹⁶⁴ Alexander Proelss, 'The Law on the Exclusive Economic Zone in Perspective: Legal Status and Resolution of User Conflicts Revisited' (2012) 26 *Ocean YB* 87, 100.

¹⁶⁵ UNCLOS Article 79(4).

submarine cable or pipeline were to be constructed between different States, or from offshore infrastructure to the coast, it would typically transit the EEZ or continental shelf, where the coastal State has sovereign rights, to the territorial sea or territory, where it has sovereignty.¹⁶⁶ Since a coastal State's rights over submarine cables and pipelines within its territory and territorial sea has been explicitly articulated in other provisions of UNCLOS, the authorisation in Article 79(4) is not merely repetitive.¹⁶⁷ The terminology used to supplement the coastal State's right is 'conditions', which imply much less authority than 'sovereignty'. The conditions are attachments to the coastal State's right to issue permits to lay cables and pipelines in the territorial sea. In addition, the fact that this authorisation is placed in Article 79 under the continental shelf regime suggests that it applies to this ocean area and within the EEZ.¹⁶⁸ Therefore, the additional conditions imposed by coastal States would apply to the sections, either the entire section or selected segment closer to the outer limit of the territorial sea, of the submarine cables and pipelines that lie on its continental shelf or within the EEZ. After the submarine cables and pipelines physically enter the territory or territorial sea of the coastal State, the more rigorous rules, which are a concomitant of sovereignty, would apply.

The second issue is the scope of these conditions. A guiding point could be that the scope is reasonable and proportionate, whereas the conditions themselves should be linked to protecting the sovereignty of the coastal State in the territorial sea and should not render the laying of cables and pipelines impractical. These conditions arguably may include pre-consultation on the delineation of the course for the laying of cables, burial requirements or other protective measures, and requirements to minimise interference with other marine activities. It is not clear whether such conditions may include levies or other charges. The Spanish Supreme Court, for example, decided that the Spanish Ministry of the Environment was not entitled to impose a fee on submarine telecommunication cables beyond Spain's territorial sea.¹⁶⁹

With respect to the second category of cables and pipelines, UNCLOS confirms that the coastal State's jurisdiction over these infrastructures extends to the connected cables, notably power cables, and pipelines.¹⁷⁰

¹⁶⁶ UNCLOS Articles 2(2), 56(1)(a), 77(1).

¹⁶⁷ UNCLOS Articles 2(1), 19(2)(l), 21(1)(c).

¹⁶⁸ UNCLOS Article 56(3).

¹⁶⁹ Englander (2017) 627.

¹⁷⁰ UNCLOS Articles 56(1)(b)(i), 60(1)–(2), 79(4).

First, this would make such submarine cables subject to the coastal State's right to adopt and enforce laws and regulations 'to prevent, reduce and control pollution of the marine environment arising from or in connection with seabed activities subject to their jurisdiction and from artificial islands, installations and structures under their jurisdiction'.¹⁷¹ Second, it could be argued that the coastal State has the right to lay, authorise and regulate the laying, operation, maintenance and repair of such cables and pipelines connected to infrastructure, as well as regulate relevant matters on customs, fiscal, health, safety and immigration.¹⁷²

The wording in Article 79(4) seems to suggest that the specific cables and pipelines are in supporting positions to infrastructure that is under the jurisdiction of the coastal State. It does not, however, include infrastructure that can be constructed or used to support the operation of cables and pipelines. It has been acknowledged that submarine cables and pipelines per se are not considered installations and structures that are under the jurisdiction of the coastal State,¹⁷³ but the operating State may arguably construct or use artificial islands, installations or structures to support their laying, operation or protection, or have a standalone purpose such as the establishment of underwater database installations.¹⁷⁴ Under Article 60, the coastal State has 'exclusive right to construct and to authorize and regulate the construction, operation and use of artificial islands and installations and structures for economic purposes and those may interfere with the exercise of its rights. However, it is not clear whether it is the coastal State or the operating State that has to decide whether such use is for economic purposes or may interfere with the exercise of the coastal State's rights. While subject to debate and different State practices, given its potential interference with the marine environment and the jurisdiction of the coastal State, the operating State should be obliged to consult, if not apply for permission, to use

¹⁷¹ UNCLOS Articles 208, 214.

¹⁷² UNCLOS Articles 60(1)–(2), 80.

¹⁷³ UNCLOS Article 56(1)(b)(i); Yoshinobu Takei, 'Law and Policy for International Submarine Cables: An Asia-Pacific Perspective' (2012) 2 *Asian J Int'l L* 205, 209; Englander (2017) 623.

¹⁷⁴ John Roach, 'Microsoft Finds Underwater Datacenters are Reliable, Practical and Use Energy Sustainably', Microsoft, 14 September 2020 <https://news.microsoft.com/innovation-stories/project-natick-underwater-datacenter/>; Peter Judge, 'Project Natick: Microsoft's Underwater Voyage of Discovery', DCD, 5 January 2021 www.datacenterdynamics.com/en/analysis/project-natick-microsofts-underwater-voyage-discovery/.

permanently established infrastructure associated with submarine cables and pipelines.

Article 79(4) provides the coastal State with additional competence beyond the ‘right to take reasonable measures’ over these specific cables and pipelines.¹⁷⁵ The intention is to make it clear that the obligation of coastal States not to impede the laying or maintenance of submarine cables and pipelines on the continental shelf or in the EEZ will not affect the more intensified rights generated from their sovereignty over their territory and territorial sea and sovereign rights over the EEZ and the continental shelf.

5.3.4 *Due Regard Obligation and Other Limitations*

A general limitation on the freedom to lay submarine cables and pipelines is the ‘due regard’ obligation found in the regimes of the EEZ, the continental shelf and the high seas.¹⁷⁶ The operating State, when laying submarine cables and pipelines in the EEZ and on the continental shelf, is required to have due regard to both the coastal State and other user States as regards their rights and duties in the same marine area. Although the term ‘due regard’, together with ‘reasonable regard’, is repeatedly used in UNCLOS, there is no agreed definition of it.¹⁷⁷ As discussed in Chapter 3, due regard indicates not only a duty to refrain from activities that unreasonably interfere with the exercise of other internationally lawful uses of the same area but also a positive duty to consider the actual rights and interests involved in any given circumstance and aims to achieve a balance between parties.¹⁷⁸

¹⁷⁵ UNCLOS Article 79(2).

¹⁷⁶ UNCLOS Articles 58(3), 79(5), 87(2).

¹⁷⁷ ‘Due regard’ is used in UNCLOS, Preamble, Articles 27(4), 39(3)(a), 56(2), 58(3), 60(3), 66(3)(a), 79(5), 87(2), 142(1), 148, 161(4), 162(2)(d), 163(2), 167(2), 234, 267; ‘reasonable regard’ is used in Article 147(1) and (3).

¹⁷⁸ Fisheries Jurisdiction Case (United Kingdom of Great Britain and Northern Ireland v. Iceland), Merits, Judgment of 25 July 1974, ICJ Reports 1974, p.3, paras 68, 72; Fisheries Jurisdiction Case (Federal Republic of Germany v. Iceland), Merits, Judgment of 25 July 1974, ICJ Reports 1974, p. 175, paras 60, 64; Churchill, Lowe and Sander (2022) 288–290; Moritaka Hayashi, ‘Military and Intelligence Gathering Activities in the EEZ: Definition of Key Terms’ (2005) 29 Marine Policy 123, 133; Chagos MPA Arbitration para 519; Shotaro Hamamoto, ‘The Genesis of the “Due Regard” Obligations in the United Nations Convention on the Law of the Sea’ (2019) 34 Int’l J Marine & Coastal L 1, 23–24.

As discussed earlier, State practice is not consistent concerning, *inter alia*, the interpretation and application of the law on whether the coastal State may regulate cable survey and other operational activities, the delineation of cable routes and the environmental consideration of submarine cables. Based on the due regard obligation, the operating State is expected to take into consideration the rights and jurisdiction of the coastal State as specified in Articles 56 and 79 while laying and operating submarine cables. It could be argued that the operating State should provide the coastal State with information through notification or consultation about the planned activities to avoid misunderstandings or conflicts. However, this obligation by no means gives the coastal State a right to require a permit. It would be for a court or tribunal to decide whether the operating State has fulfilled the due regard obligation in case of a dispute.

In addition, when laying submarine cables or pipelines, the operating State must have due regard to cables or pipelines already in position, and must not prejudice the possibilities of repairing existing ones.¹⁷⁹ This obligation aims to resolve potential conflicts between proposed cables and pipelines and those already in position by giving priority to the latter. This is strengthened by the general obligation contained in Articles 78(2) and 87(2), where the freedom to lay submarine cables and pipelines must be exercised with due regard for further interests of other States and their internationally lawful uses of the sea area.¹⁸⁰

A less-addressed issue relating to the laying of submarine cables and pipelines is the end of service arrangement. The design and commercial life of a submarine fibre-optic cable system is typically twenty to twenty-five years, and between forty and sixty-five years for power cables, with the possibility of further life extensions.¹⁸¹ For pipelines associated with an operational platform, the commercial lifespan is between twenty and thirty years.¹⁸² There is no general obligation under the law of the sea to remove cables and pipelines that are abandoned, decommissioned or out

¹⁷⁹ UNCLOS Article 79(5); Convention on the High Seas Article 26(3).

¹⁸⁰ Englander (2017) 627–628; Geneviève Bastid Burdeau, ‘The Respect of Other States’ Rights (Freedom of Navigation and Other Rights and Freedoms Set Out in the LOSC) as a Limitation to the Military Uses of the EEZ by Third States’ (2019) 34 Int’l J Marine & Coastal L 117, 117, 120–122 Churchill, Lowe and Sander (2022) 288.

¹⁸¹ Eccles, Ferencz and Burnett (2014) 308; Douglas Burnett, ‘Out-of-Service Submarine Cables’, in Burnett, Beckman and Davenport (2014) 213.

¹⁸² Youna Lyons, ‘The New Offshore Oil and Gas Installation Abandonment Wave and the International Rules on Removal and Dumping’ (2014) 29 Int’l J Marine & Coastal L 480, 480–481.

of service.¹⁸³ Those that are connected with the use of installations or structures should be removed to ensure the safety of navigation, while having due regard to fishing, the protection of the marine environment and the rights and duties of other States.¹⁸⁴

In practice, it is the cable or pipeline owners who decide on removal, unless the coastal State provides a valid jurisdictional basis for requiring such removal of the sections laid in its EEZ.¹⁸⁵ The jurisdictional basis can be found under the coastal State's right to take reasonable measures and the specific jurisdiction over certain cables or pipelines.¹⁸⁶ If the cables and pipelines in question have the potential to interfere with the coastal State's right to explore or exploit the continental shelf and its natural resources, or pose a threat to the marine environment, the coastal State may take measures to request such removal. The coastal State may also require the removal of cables and pipelines that enter its territorial sea and territory, are constructed or used in connection with the exploration and exploitation of the continental shelf and its resources, or with the operation of artificial islands, installations and structures under its jurisdiction. Moreover, the coastal State may make the removal of abandoned or disused pipelines a condition when giving consent to the delineation of the course of such pipelines.¹⁸⁷ However, the coastal State may at times find it less straightforward to establish such a jurisdictional basis, particularly with regard to submarine telecommunication cables and transiting pipelines.¹⁸⁸

¹⁸³ J. M. Anderson, 'Decommissioning Pipelines and Subsea Equipment: Legislative Issues and Decommissioning Processes' (2002) 25(2) *International Journal of the Society for Underwater Technology* 105, 107.

¹⁸⁴ UNCLOS Article 60(3).

¹⁸⁵ Burnett (2014) 219–220; Mišo Mudrić, 'Rights of States Regarding Underwater Cables and Pipelines' (2010) 29 *Australian Resources & Energy LJ* 246, 251; ICPC Recommendation No. 1, Management of Decommissioned and Out-of-Service Cables, Issue 14A, 12 June 2020, available by request at www.iscpc.org; Mark J. Kaiser and Siddhartha Narra, 'A Hybrid Scenario-based Decommissioning Forecast for the Shallow Water U.S. Gulf of Mexico, 2018–2038' (2018) 163 *Energy* 1150, 1152–1153.

¹⁸⁶ UNCLOS Article 79(2)–(4).

¹⁸⁷ UNCLOS Article 79(3); Mudrić (2010) 251.

¹⁸⁸ Convention on the Continental Shelf Articles 5, 6; UNCLOS Articles 21(1), 56(1)(b)(i), 60, 78–79, 80, 87, 145, 147; Kaye (2006–2007) 403; Burnett (2014) 218–219; Anderson (2002) 107; Soheil Manouchehri, 'Subsea Pipelines and Flowlines Decommissioning – What We Should Know for a Rational Approach', Proceedings of the ASME 2017 36th International Conference on Ocean, Offshore and Arctic Engineering, OMAE2017, 25–30 June 2017, Trondheim, Norway, OMAE2017–61239.

There has been some practice of changing decommissioned telecommunication cables into scientific cables for various research purposes, or recovering for repurposing and recycling purposes.¹⁸⁹ These cables would normally change owners as they cease to be part of the telecommunications industry and are subsequently removed from charts or marked as out of service. Cable owners may also choose to salvage out-of-service cables for their scrap value. The International Cable Protection Committee (ICPC) recommends cable owners, when deciding whether or not to remove out-of-use cables, consider any potential effects on the safety of navigation or other marine uses, the effects on the marine environment, and the costs, benefits and technical feasibility associated with the removal of such cables.¹⁹⁰ Between 2013 and 2023, around 113 submarine telecommunications cable systems with a combined length of 257,000 kilometres of cable have been taken out of service.¹⁹¹ It has been estimated that 85 cable systems are expected to reach their end of service by 2028 with an additional 53 expected by 2032.¹⁹²

The current practice of decommissioning submarine pipelines is often associated with the decommissioning of offshore platforms. The United Kingdom, for example, requires a comprehensive assessment of all relevant factors, including decommissioning options, before making a decision on a case-by-case basis for any removal or partial removal of a pipeline on the continental shelf.¹⁹³ Although estimates vary, it is likely that between 2013 and 2022, it will cost more than 10 billion Pounds to decommission the end-of-life offshore oil and gas platforms on the continental shelf of the United Kingdom.¹⁹⁴ Among the common

¹⁸⁹ ICPC, 'Scientific Cables'; Burnett (2014) 214–215; STF, Industry Report 2023–2024, Section 1.5: Out of Service Systems Analysis.

¹⁹⁰ ICPC Recommendation No. 1, Management of Redundant and Out-Of-Service Cables.

¹⁹¹ STF, Industry Report 2023–2024, Section 1.5: Out of Service Systems Analysis.

¹⁹² Ibid.

¹⁹³ United Kingdom, Department for Business, Energy and Industrial Strategy, Guidance Notes Decommissioning of Offshore Oil and Gas Installations and Pipelines, November 2018, Chapter 10 www.gov.uk/guidance/oil-and-gas-decommissioning-of-offshore-installations-and-pipelines.

¹⁹⁴ Mick Borwell, 'UK Pipeline Decommissioning Provides Potential for Innovation', Offshore, 5 February 2014 www.offshore-mag.com/pipelines/article/16757230/uk-pipeline-decommissioning-provides-potential-for-innovation; Judith Aldersey-Williams, 'Chapter I-13 Decommissioning Security', in Greg Gordon, John Paterson and Emre Üşenmez (eds.), *UK Oil and Gas Law: Current Practice and Emerging Trends: Volume I: Resource Management and Regulatory Law* (Edinburgh University Press 2018) 297.

practices in the United Kingdom, trenched and buried pipelines are often decommissioned in situ whereas surface laid pipelines are returned to shore for reuse, recycling or disposal.¹⁹⁵

There are different interpretations of whether pure abandonment of submarine cables and pipelines, where no new use is intended, could be considered dumping. Under UNCLOS, 'deliberate disposal' of 'man-made structures at sea' fall within the definition of 'dumping'.¹⁹⁶ The 1996 London Protocol further clarified this definition whereby the abandonment or toppling at site of 'man-made structures at sea' such as submarine cables and pipelines for 'the sole purpose of deliberate disposal' is considered dumping.¹⁹⁷ Such dumping could be permitted should the State party consider that this is consistent with the objective and obligation to protect and preserve the marine environment.¹⁹⁸ The regional practice of the North-East Atlantic through the OSPAR Convention presents another side of the argument.¹⁹⁹ Dumping is defined to include 'any deliberate disposal in the maritime area of . . . offshore pipelines', but it does not include 'the leaving wholly or partly in place of a . . . disused offshore pipeline, provided that any such operation takes place in accordance with any relevant provision of the Convention and with other relevant international law'.²⁰⁰ Industry practice has shown a tendency to not classify the abandonment of cables or pipelines as dumping to avoid regulation by the coastal State.²⁰¹ It is worth noting that a cable or pipeline that is decommissioned or out of service does not change ownership rights, responsibilities and obligations under international law.²⁰² Hence, the owners remain liable for claims by coastal States for pollution from pipelines and claims for sacrificed fishing gear

¹⁹⁵ United Kingdom, Department for Business, Energy and Industrial Strategy, 'Draft Decommissioning Programmes under Consideration' www.gov.uk/guidance/oil-and-gas-decommissioning-of-offshore-installations-and-pipelines; Sally Rousea, Peter Hayesb, Ian M Daviesb, and Thomas A. Wildinga, 'Offshore Pipeline Decommissioning: Scale and Context' (2018) 129 *Marine Pollution Bulletin* 241, 242.

¹⁹⁶ UNCLOS Article 1(5)(a).

¹⁹⁷ 1996 Protocol to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Protocol) (7 November 1996, in force 24 March 2006) 2006 ATS 11, Articles 1.4.1.4, 1.4.2.3.

¹⁹⁸ *Ibid* Articles 2–3, Annex 1 Article 1(4).

¹⁹⁹ Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) (22 September 1992, in force 25 March 1998) 2354 UNTS 67.

²⁰⁰ *Ibid* Article 1(f) and (g).

²⁰¹ Englander (2017) 626; Burnett (2014) 219–220; UNCLOS Article 210(5).

²⁰² ICPC Recommendation No. 1, Management of Redundant and Out-Of-Service Cables; Burnett (2014) 220.

or anchors in avoiding injury to a cable or pipeline.²⁰³ It can also be argued that the owner should make the information on abandoned or out-of-service cables and pipelines available to other marine users and mark them on nautical charts.²⁰⁴ The limited examples of decommissioning cables and pipelines during the past few decades have not been sufficient to establish any customary practices.²⁰⁵

The freedom to lay submarine cables and pipelines has been expressly preserved in the EEZ. The exercise of such a freedom is, however, subject to a number of explicit limitations, most notably from the coastal State. The limitations imposed by the coastal State must meet its due regard obligation and must not amount to any infringement or unjustifiable interference with the laying of such cables and pipelines. Nevertheless, as State practice indicates, the growing interest of coastal States in preserving natural resources and protecting the marine environment in the EEZ, particularly by some unilateral excessive claims for permits for cable operations, have, to varying degrees, eroded this preserved freedom.

5.4 Protecting Submarine Cables and Pipelines

The fact that the EEZ is a multifunctional zone means that the freedom to lay submarine cables and pipelines needs to co-exist with other uses of the same area.²⁰⁶ With the increase in competing uses in the EEZ, submarine cables and pipelines often have been interfered with or damaged by other marine uses, particularly in water depths less than 1,000 metres. For example, the laying, maintenance and repairing activities by the cable-laying ship often are interrupted by fishing vessels or other marine activities, and cables and pipelines are also at risk of being damaged by ship anchoring, fish trawling, dredging, dumping, sand extraction, oil or gas exploitation and other offshore activities.²⁰⁷

²⁰³ UNCLOS Articles 79(2), 115.

²⁰⁴ Mudrić (2010) 247; ICPC, 'Cable Data'; TeleGeography, 'Submarine Cable Map' www.submarinecablemap.com.

²⁰⁵ Seline Trevisanut, 'Decommissioning of Offshore Installations: A Fragmented and Ineffective International Regulatory Framework', in Catherine Banet (ed.), *The Law of the Seabed: Access, Uses, and Protection of Seabed Resources* (Brill 2020) 452–453.

²⁰⁶ Kwiatkowska (1989) 4.

²⁰⁷ ICPC and UNEP (2009) 45–47; Stephen C. Drew and Alan G. Hopper, *Fishing and Submarine Cables: Working Together* (ICPC 2009) 19–33; ICPC, Submarine Cable Network Security (2009) 8; ICPC, About Submarine Telecommunications Cables (2011) 37.

Natural effects, including submarine earthquakes, density currents and waves, tsunamis, hurricanes and volcanic activities, may also dislocate, break or bury cables or pipelines.²⁰⁸ Moreover, there are growing concerns that critical submarine cables and pipelines might be subject to security threats from intentional harm for varying purposes.²⁰⁹

Unlike the territorial sea, where the coastal State has the right to adopt laws and regulations to protect submarine cables and pipelines,²¹⁰ the coastal State has neither the right nor the obligation to protect those laid in its EEZ beyond regulating activities under its jurisdiction, particularly with regard to transiting cables and pipelines. Nevertheless, there is an emerging trend for all States to treat fibre-optic submarine cables as 'critical communications infrastructure' that deserves stronger protection and to take effective measures to promote their safety and security in accordance with international law.²¹¹

5.4.1 *Protecting Operational Activities Ancillary to the Laying of Submarine Cables and Pipelines*

The surveying, laying, maintenance and repair of submarine cables and pipelines require a ship to physically operate on site. These specialised ships are often limited in speed and are at risk of being interfered with by other marine activities, especially fishing.²¹² Neither the 1958 Geneva Conventions nor UNCLOS have any provisions offering special protection to these ships, such as authorising the use of floating safety zones around ships engaged in cable or pipeline operations or requiring other vessels to keep a minimum distance away from such ships. Nevertheless,

²⁰⁸ ICPC, About Submarine Telecommunications Cables (2011) 37; ICPC, 'Subsea Landslide is Likely Cause of SE Asian Communications Failure', Press Release, 21 March 2007 www.iscpc.org; Cuiwei Fu et al., 'Effects of Parameter Uncertainties on Interaction between Submarine Telecommunication Cables and Lateral Seabed Movements' (2020) *Advances in Civil Engineering* Article ID 8824391; Shantanu Joshi, Amit Prashant, Arghya Deb and Sudhir K. Jain, 'Analysis of Buried Pipelines Subjected to Reverse Fault Motion' (2011) 31 *Soil Dynamics and Earthquake Engineering* 930, 930–931.

²⁰⁹ Kaye (2006–2007) 377–379; Stuart Kaye, 'Threats from the Global Commons: Problems of Jurisdiction and Enforcement' (2007) 8(1) *Melb J Int'l L* 185, 190–191.

²¹⁰ UNCLOS Article 21(1)(c).

²¹¹ UNGA A/RES/65/37 para 121; UNGA A/70/74, 30 March 2015, Oceans and the Law of the Sea Report of the Secretary-General, paras 53–55.

²¹² Drew and Hopper, *Fishing and Submarine Cables* (2009) 5.

all vessels must obey the international navigation rules and regulations to enhance maritime safety, including 'the use of signals, the maintenance of communications and the prevention of collisions'.²¹³

Insofar as submarine cables are concerned, the 1884 Paris Convention contains requirements for other vessels to maintain a minimum distance from cable ships or buoys. Under Article V, cable ships that are engaged in laying or repair operations are required to exhibit signals that are agreed among contracting member States, while 'other vessels which see them, or are able to see them, shall withdraw to or keep beyond a distance of one nautical mile at least from the ship in question, so as not to interfere with her operations' and must keep the fishing gear and nets at the same distance. Article VI further states that vessels which see, or are able to see, the buoys showing the position of a cable that is being laid, is broken or out of order, must keep a minimum distance of one-quarter nautical mile and must keep their fishing nets and gear at the same distance. However, the 1884 Paris Convention is limited in efficacy because it only has thirty-six parties, and there is no clear evidence showing that its rules have gained the status of customary international law binding on all States.²¹⁴

With respect to the international rules on navigation, the 1972 Convention on the International Regulations for Preventing Collisions at Sea (COLREG) is the main international agreement with 164 contracting States representing approximately 98.91 per cent of the gross tonnage of the world's merchant fleet.²¹⁵ These rules are applicable to 'all vessels upon the high seas and in all waters connected therewith navigable by seagoing vessels' regardless of its size, including the EEZ.²¹⁶ COLREG provides that 'a vessel engaged in laying, servicing, or picking up a . . . submarine cable or pipeline' is considered a 'vessel restricted in her ability to manoeuvre . . . and is therefore unable to keep out of the way of another vessel'.²¹⁷ A vessel that is restricted in her ability to

²¹³ UNCLOS Article 94(3)(c).

²¹⁴ 1884 Paris Convention; Burnett, Davenport and Beckman (2014) 64.

²¹⁵ Convention on the International Regulations for Preventing Collisions at Sea, 1972 (20 October 1972, in force 15 July 1977) 1050 UNTS 16 (COLREG); International Maritime Organization (IMO), 'Status of IMO Treaties: Comprehensive information on the status of multilateral Conventions and Instruments in respect of which the International Maritime Organization or its Secretary-General performs depositary or other functions, 24 July 2024', 110 www.imo.org/en/About/Conventions/Pages/StatusOfConventions.aspx.

²¹⁶ COLREG Rule 1(a).

²¹⁷ COLREG Rule 3(g).

manoeuvre is required to exhibit specific visual and sound signals to warn other vessels so they are aware of its operations.²¹⁸ Other vessels, including power-driven vessels, sailing vessels, and fishing vessels, must 'keep out of the way' of the vessel restricted in its ability to manoeuvre.²¹⁹ In contrast to the 1884 Paris Convention, which specifies the minimum distance between other ships and the cable ship, COLREG does not provide clarification on the meaning of 'keep out of the way'.

The practical issue is that, even though vessels engaged in cable or pipeline operations strictly comply with the COLREG rules, other vessels often ignore them, especially when the operations are taking place near a fishing ground.²²⁰ The United States and Marshall Islands, supported by other States, unsuccessfully attempted to introduce specific distance requirements for the phrase 'keep out of the way' in the relevant rules of COLREG.²²¹ The main opposing argument for introducing specific distance requirements is that as a goal-based standard, the responsibility for interpretation and application of the requirement to 'keep out of the way' is a matter for a mariner to decide under the circumstances, and a strict distance requirement might not be practical in narrow waterways.²²² When encountering a ship engaged in cable or pipeline operations, mariners may choose the most effective manner to keep out of the way by shifting course, keeping a distance or reducing speed. The basic requirement is to ensure that the cable or pipeline ship is not interrupted, and hence reduce the chance of a collision.

The flag State has the primary duty to take all necessary measures for ships flying its flag to ensure safety at sea, including 'the use of signals, the maintenance of communications and the prevention of collisions'.²²³ Since most marine activities in the EEZ, particularly fishing, involve

²¹⁸ COLREG Rules 27(b), 35(c).

²¹⁹ COLREG Rule 18(a)–(c).

²²⁰ ICPC, Submarine Cable Network Security (2009) 28–29.

²²¹ IMO, Sub-Committee on Navigation, Communications and Search and Rescue (NCSR), NCSR 2/22/3, 2 January 2015, Protection of Cable Ships and Repair Operations for International Submarine Cables, Submitted by the United States; IMO NCSR 3/25/1, 16 November 2015, Interpretation of COLREG 1972 rule 18 – Protection of Cable Ships, Submitted by the Republic of the Marshall Islands; IMO NCSR 3/29, 22 March 2016, Report to the Maritime Safety Committee, para 25.17; Sun (2018) 125–126.

²²² COLREG Rule 2; IMO NCSR 3/WP.4, 3 March 2016, Report of the Navigation Working Group, para 5.2.

²²³ UNCLOS Article 94(3)(c).

coastal vessels, it is important for the coastal State to enforce navigation rules with due diligence. Such measures taken by the flag State include enforcing penal jurisdiction in matters of collision or any other incident of navigation.²²⁴ The phrase ‘incident of navigation’ has been interpreted as including ‘damage to a submarine telegraph, telephone or high-voltage power cable or to a pipeline’.²²⁵ This jurisdiction over navigation rules is complementary to the jurisdiction provided to States regarding the breaking or injury to submarine cables and pipelines discussed below.

5.4.2 *Protecting Submarine Cables and Pipelines from Competing Uses*

Submarine cables and pipelines are exposed to natural and human hazards in all water depths. Generally speaking, submarine cables are more vulnerable than pipelines. The breaking strength of modern submarine cables of 17–50 mm in diameter ranges from only a few tonnes to more than 40 tonnes.²²⁶ In contrast, a pipeline of up to 550 mm in diameter will not be damaged by trawling activities, even without burial.²²⁷ However, managing the risks related to these threats is equally important for maintaining the integrity and efficiency of submarine cable and pipeline systems. On average, there are approximately 200 submarine cable faults worldwide every year, and the average cost of a single repair is between 1 million and more than 3 million USD, and the loss of revenue and costs of using alternative satellite communication are often higher.²²⁸ Although less frequent, interruptions to offshore pipelines pose serious threats to the marine environment if the damage leads to a rupture. There are various ways to protect submarine cables and pipelines from damage, ranging from calculated route planning, to burial and other measures to increase the safety of the cables and pipelines, to providing incentive measures to avoid damage, and to promoting collaboration among different maritime users.²²⁹

²²⁴ UNCLOS Article 97.

²²⁵ ILC Draft Articles Article 35 Commentary; Nordquist, Nandan and Rosenne (1995) 168.

²²⁶ ICPC and UNEP (2009) 44.

²²⁷ Crowley (1987) 51.

²²⁸ Burnett (2010–2011) 108.

²²⁹ Eric Wagner, ‘Submarine Cables and Protections Provided by the Law of the Sea’ (1995) 19(2) Marine Policy 127, 132–133.

5.4.2.1 Burial of Submarine Cables and Pipelines

Submarine cables and pipelines have the potential to be interrupted by other marine activities operated on or near the seabed. Approximately 65–75 per cent of all submarine cable failures recorded between 1959 and 2000 were caused by fishing and shipping activities within water depths shallower than 200 metres.²³⁰ A study of pipeline incidents in the North Sea between 1971 and 2001 showed that among 65 incidents reported that resulted in a leakage, 17 per cent were related to anchoring and 14 per cent were caused by trawling.²³¹

In order to reduce potential conflicts with other marine activities, submarine cables and pipelines are often buried to a certain depth (from 1 metre and exceptionally up to 10 metres), according to the type of cable and pipeline involved and the seabed conditions, in areas up to approximately 2,000 metres water depth.²³² However, even with the latest technology, there are areas of the seabed where burial is either impractical or impossible, for example in rugged rocky areas or zones of high sediment mobility. The cable industry has introduced other forms of protection including the use of covers of rocks, concrete mattresses and steel or plastic conduits where practical and environmentally sound.²³³

5.4.2.2 Designation of Protection Zones

In order to minimise the threats of human activities to submarine cables and pipelines, some coastal States impose restrictions on the conduct of activities in areas where cables and pipelines are at risk. The proposal to establish ‘safety zones’ that preclude anchoring and trawling within 250 metres of each side of a submarine pipeline was rejected by the ILC in 1956, as it was considered impractical and ‘would constitute a further encroachment on the freedom of navigation and fishing and that it is consequently unjustified’.²³⁴ Instead, the ILC Draft Articles required States to take the necessary measures to punish deliberate and negligent breaking or injuring of submarine cables and pipelines beneath the high

²³⁰ ICPC and UNEP (2009) 34, 39.

²³¹ Det Norske Veritas (DNV), Recommended Practice DNV-RP-F116, Integrity Management of Submarine Pipeline Systems (DNV, October 2009) 39 <https://rules.dnv.com/docs/pdf/dnvpmp/codes/docs/2009-10/RP-F116.pdf>.

²³² ICPC, About Submarine Telecommunications Cables (2011) 21–22; Ford-Ramsden and Davenport (2014) 135–136; DNV (2009) 28, 39.

²³³ ICPC and UNEP (2009) 23–24; Eccles, Ferencz and Burnett (2014) 314–315.

²³⁴ ‘Regime of the High Seas and Regime of the Territorial Sea, Doc A/CN.4/97, Report by JPA Francois, Special Rapporteur, 27 January 1956’ (1956) 2 YB ILC 12, para 67.

seas,²³⁵ a provision which was later included in both the Convention on the High Seas and UNCLOS.

Several States have taken the initiative to establish protective zones in which certain activities are prohibited or restricted to protect submarine cables or pipelines.²³⁶ New Zealand, for example, has claimed the right to establish protected areas in the EEZ to regulate potentially harmful activities to submarine cables and pipelines.²³⁷ Fishing operations and anchoring are generally prohibited within these protected areas, and both the owner and the master of a ship who commit an offence are liable for monetary penalties.²³⁸ However, this legislation has limited effects on foreign nationals or foreign ships in the EEZ, since it only applies to a person on board or by means of a New Zealand ship, and by a New Zealand citizen on board or by means of a foreign ship.²³⁹ Australia separated submarine cables from pipelines and adopted protection zones for the former.²⁴⁰ In 2007, Australia declared three submarine cable protection zones, two off the coast of Sydney and one off the coast of Perth, which stretch up to 50 NM into its EEZ.²⁴¹ Within these zones, certain activities are prohibited, including bottom trawling, demersal gill net fishing, sand mining and dumping, and other activities are restricted, such as line fishing and constructing or maintaining navigational aids and installations.²⁴² Engaging in conduct that contravenes a prohibition or restriction in the protected zone is a punishable offence, subject to

²³⁵ Ibid 12.

²³⁶ China, Provisions on the Protection of Submarine Cables and Pipelines, Order of the Ministry of Land and Resources of the People's Republic of China (No. 24), effective from 1 March 2004, Articles 7–8.

²³⁷ New Zealand, Submarine Cables and Pipelines Protection Order 2009 (SR 2009/41) (as at 2016), 'Schedule Protected areas', www.legislation.govt.nz/regulation/public/2009/0041/latest/whole.html?search=ts_act%40bill%40regulation%40deemedreg_submarine_resel_25_a&p=1#DLM1847701; New Zealand, Submarine Cables and Pipelines Protection Act 1996, s 12.

²³⁸ New Zealand, Submarine Cables and Pipelines Protection Act 1996, s 13(1), 15.

²³⁹ Ibid s 4(b)–(c).

²⁴⁰ Australia, Telecommunications Act 1997 as amended up to June 2024, Schedule 3A Protection of Submarine Cables, Part 2 Protection Zones; Telecommunications and other Legislation Amendment (Protection of Submarine Cables and Other Measures) Act 2005, No. 104, 2005.

²⁴¹ Australia, Telecommunications Legislation Amendment (Submarine Cable Protection) Bill 2013, paras 1.22–1.27 www.aph.gov.au/parliamentary_business/committees/senate/environment_and_communications/submarine_cable_protection/report/c01.

²⁴² Australia, Telecommunications Act 1997, Schedule 3A, Part 2, Division 2, Clauses 10–11.

monetary penalties and imprisonment.²⁴³ Similar to the New Zealand law, the application of the Australian legislation, despite being applicable to activities within the EEZ, exempts foreign nationals and foreign ships.²⁴⁴

While international law provides a sufficient basis for cable protection zones within the territorial sea,²⁴⁵ there is no equivalent clear norm with respect to either the EEZ or the continental shelf, and certainly not for the high seas. The establishment of protection zones of submarine cables and pipelines within their EEZs by Australia and New Zealand is not without controversy.²⁴⁶ However, since both States established these protection zones for cables or pipelines landed on their shore, and restricted their application to activities done by nationals and national ships in the EEZ, it should not impede the exercise of the freedom to lay submarine cables and pipelines by other States. These unilateral actions may be seen as good practice to protect submarine cables and pipelines from competing uses, and can rectify a legal gap in their protection in the EEZ.

The coastal State may adopt navigation rules that apply to foreign ships in certain parts of the EEZ if it can justify them within the current legal framework. For example, through IMO, the coastal State may adopt ships' routing systems, in particular precautionary areas and no-anchoring areas, within its EEZ if it can justify that damage to submarine cables and pipelines poses a danger to the safety of navigation or causes pollution to the marine environment.²⁴⁷ When discussing the flag State's jurisdiction over collisions on the high seas, the ILC recognised that 'damage to a submarine . . . cable or to a pipeline may be regarded as an "incident of navigation"'.²⁴⁸ Hence, the coastal State may argue that the existence of submarine cables and pipelines in converging areas forms an unfavourable condition to navigation, where certain marine activities need to be carried out with great caution or need to be avoided

²⁴³ Ibid, Schedule 3A, Part 2, Division 4, Subdivision B, Clauses 40–41, 44.

²⁴⁴ Ibid, Schedule 3A, Part 2, Division 4, Subdivision B, Clause 44A.

²⁴⁵ UNCLOS Article 21(1)(c).

²⁴⁶ Robert Wargo and Tara Davenport, 'Protecting Submarine Cables from Competing Uses', in Burnett, Beckman and Davenport (2014) 275–276.

²⁴⁷ International Convention for the Safety of Life at Sea, as amended (1 November 1974, in force 25 May 1980) 1184 UNTS 2, Chapter V, Regulation 10; IMO, 'Ships' Routing' www.imo.org/en/OurWork/Safety/Pages/ShipsRouteing.aspx.

²⁴⁸ ILC Draft Articles Article 35 Commentary 2.

completely.²⁴⁹ In the case of pipelines, the intention of protecting the marine environment could be another reason for the coastal State to propose a routeing system.²⁵⁰ The implementation of navigation rules in specific risk areas could reduce potential damage to submarine cables and pipelines in the EEZ.

5.4.2.3 Collaboration between Marine Users

Another measure that could promote effective protection of submarine cables and pipelines is to enhance collaboration between industries and between operators within the same industry. This requires coordination in planning and routing and cooperation in the protection, maintenance and repair of cables and pipelines in areas of multiple marine uses. Moreover, there is an appeal for States to adopt laws and regulations, as well as establish a dedicated government agency or department, to coordinate all competing marine uses to minimise external interruptions of submarine cables and pipelines.

The operating State undertakes the obligation to have ‘due regard to cables or pipelines already in position,’ particularly to the possibility to repair them, when laying new ones.²⁵¹ Under Article 114 of UNCLOS, all States are further obligated to adopt laws and regulations to provide that the owners of a submarine cable or pipeline who, in laying or repairing their cable or pipeline, break or injure an existing one are liable for the cost of the repairs. The combination of the obligation to avoid damages and to provide civil liability by the owner fills the gap to cover both accidental and incidental damage to existing cables and pipelines. However, the owner’s liability is limited to bearing ‘the cost of the repairs’ that excludes the cost of alternative uses and any profit loss incurred as a result of the damage, or the cost associated with restoration of the marine environment.²⁵² This liability was first included in the 1884 Paris Convention, which provides that where ‘the owner of a cable who, on

²⁴⁹ IMO Res A.572(14), 20 November 1985, General Provisions on Ships’ Routeing, Annex, para 1.

²⁵⁰ IMO MSC/Circ.1060, 6 January 2003, Guidance Note on the Preparation of Proposals on Ships’ Routeing Systems and Ship Reporting Systems for Submission to the Sub-Committee on Safety of Navigation, Annex, para 3.5.

²⁵¹ UNCLOS Article 79(5).

²⁵² Nordquist, Nandan and Rosenne (1995) 272–273; Douglas Guilfoyle and Cameron Miles, ‘Article 114’, in Proelss (2017) 786–787; Dupuy and Vignes (1991) 983.

laying or repairing his own cable, breaks or injures another cable, must bear the cost of repairing the breakage or injury'.²⁵³ This phrase seemed to be broadened when it was considered by the ILC, which obliged the owner who caused such damage to 'bear the cost,' implying the cost of all collateral damage.²⁵⁴ The phrase was changed back to 'the cost of repairing' in the Convention on the High Seas based on a Danish proposal²⁵⁵ and was maintained in UNCLOS. Nevertheless, the cable or pipeline owner responsible for such a damage may be liable for economic or other consequential loss under the tort law of the relevant State.²⁵⁶

Moreover, Article 115 of UNCLOS requires all States to adopt laws and regulations concerning the indemnification by the owner of a submarine cable or pipeline to the owner of a ship who was forced to sacrifice an anchor, a net or any other fishing gear in order to avoid injuring a submarine cable or pipeline. The claim for indemnity is conditioned on the shipowner taking 'all reasonable precautionary measures beforehand' and being able to prove that they have suffered a loss to avoid injury to the cable or pipeline.²⁵⁷ This is in line with the ILC's statement that 'compensation cannot be claimed if there has been any negligence on the part of the ship'.²⁵⁸ Guaranteeing the indemnification of the shipowner's sacrifice encourages the shipowner to choose to protect submarine cables and pipelines in case of an emergency.

UNCLOS does not specify what precautionary measures need to be taken or what procedures are required to make the indemnity claim, but such a claim should be balanced against the obligation of all ships to avoid damaging submarine cables and pipelines in the first place.²⁵⁹ In the case of submarine cables and fishing, the ICPC has published detailed guidance on how to avoid catching a cable, including improving communication between the cable industry and fishers.²⁶⁰ The premise

²⁵³ 1884 Paris Convention Article IV.

²⁵⁴ ILC Draft Articles Article 63.

²⁵⁵ United Nations Conference on the Law of the Sea, Official Record, Vol. IV: Second Committee (High Seas: General Regime), A/CONF.13/42, 13th Meeting, 11 April 1958, 89, 95.

²⁵⁶ Guilfoyle and Miles 'Article 114' (2017) 788.

²⁵⁷ UNCLOS Article 115.

²⁵⁸ ILC Draft Articles Article 65 Commentary 2.

²⁵⁹ Nordquist, Nandan and Rosenne (1995) 277; Douglas Guilfoyle and Cameron Miles, 'Article 115', in Proelss (2017) 790.

²⁶⁰ Drew and Hopper, *Fishing and Submarine Cables* (2009) 50–54.

for fishers to avoid catching a cable is to know where it is and to act with caution to prevent disrupting it.²⁶¹ Hence, access to updated submarine cable and pipeline charts and electronic data services, which rely on the information provided by the cable and pipeline industries, is essential. Claim procedures, including the standard of proof, are to be decided by the applicable municipal law system.²⁶² The procedure provided in the 1884 Paris Convention could provide some guidance:

[I]n order to establish a claim to such compensation, a statement, supported by the evidence of the crew, should, whenever possible, be drawn up immediately after the occurrence; and the master must, within 24 hours after his return to or next putting into port, make a declaration to the proper authorities.²⁶³

Increasingly, coastal States are using marine spatial planning as a tool to proactively plan activities in maritime waters under national jurisdiction to coordinate the expanding range of conflicts of maritime uses.²⁶⁴ For example, Germany developed maritime spatial plans for its EEZ in the North Sea and the Baltic Sea in 2009 that were revised in 2021 following an extensive process that included national and international consultations.²⁶⁵ The German plans contain provisions aimed at coordinating the individual uses and functions of shipping, the exploitation of resources, laying of submarine cables and pipelines, marine scientific research, wind power production, fisheries and mariculture, as well as protection of the marine environment.²⁶⁶ Similar State practice can be observed in other European countries in their surrounding seas,²⁶⁷ in Canada regarding the area of the Scotian Shelf²⁶⁸ and in South Africa, which divides its EEZ into western, eastern and southern marine areas

²⁶¹ Ibid 50–51.

²⁶² Guilfoyle and Miles 'Article 115' (2017) 790.

²⁶³ 1884 Paris Convention Article VII.

²⁶⁴ World Ocean Assessment II, Volume II, Chapter 26: Developments in Marine Spatial Planning, 434.

²⁶⁵ Bundesamt für Seeschifffahrt und Hydrographie, 'Maritime Spatial Planning' www.bsh.de/EN/TOPICS/Offshore/Maritime_spatial_planning/maritime_spatial_planning_node.html.

²⁶⁶ Ibid.

²⁶⁷ European MSP Platform, 'Projects' <https://maritime-spatial-planning.ec.europa.eu/msp-practice/msp-projects>.

²⁶⁸ Canada, Oceans Act, SC 1996, c 31, Preamble para 8, s 31; Heather Breeze and Tracy Horsman (eds.), Scotian Shelf: An Atlas of Human Activities (Fisheries and Oceans Canada 2005) www.dfo-mpo.gc.ca/oceans/publications/scotian-atlas-ecossais/page08-eng.html.

and the Prince Edward Islands, for which statutory marine spatial plans are to be developed.²⁶⁹

It also worth emphasising the importance of international cooperation in protecting submarine cables and pipelines. The submarine cable industry, through the ICPC, has for more than half a century provided a forum for government administrations and private entities to work on relevant technical, legal and environmental issues.²⁷⁰ There is also emerging regional cooperation in Europe to promote marine safety and protect cable installations²⁷¹ and in Southeast Asia to promote good practices to reduce conflicts between the coastal State and the operating State, and to protect submarine cables and pipelines from competing uses and intentional damage.²⁷²

In addition to the protective measures taken by the industry, States can play an active role in protecting submarine cables and pipelines from competing uses. This includes implementing legislation to provide clear legal obligations for operators to avoid damage to submarine cables and pipelines, to impose civil liabilities on those who have caused accidental and incidental damages, and to offer indemnification to those operators who suffered a loss to avoid damaging such cables and pipelines. It is worth noting that since most of the competing uses in the EEZ are conducted by locals, it is particularly important for the coastal State to diligently exercise these rights over its nationals and ships flying its flag.

5.4.3 *Protecting Submarine Cables and Pipelines from Intentional Damage*

All States are required to adopt laws and regulations to ensure that it is a punishable offence for their ships or nationals that wilfully, or through

²⁶⁹ South Africa, National Framework for Marine Spatial Planning in South Africa, 26 May 2017 <https://cer.org.za/wp-content/uploads/2016/08/National-Framework-for-Marine-Spatial-Planning-in-South-Africa.pdf>; South Africa, Marine Spatial Planning Act, Act No. 16 of 2018 <https://www.gov.za/documents/acts>; Marine Spatial Planning Global, South Africa, www.mspglobal2030.org/msp-roadmap/msp-around-the-world/africa/south-africa/.

²⁷⁰ ICPC, 'About the ICPC' www.iscpc.org/about-the-icpc/.

²⁷¹ European Subsea Cables Association www.escaeu.org/.

²⁷² Association of Southeast Asian Nations (ASEAN), ASEAN Guidelines for Strengthening Resilience and Repair of Submarine Cables (2019) <https://asean.org/wp-content/uploads/2012/05/ASEAN-Guidelines-for-Strengthening-Resilience-and-Repair-of-Submarine-Cables.pdf>; Utpal Kumar Raha and Raju KD, 'Submarine Telecommunication Cable Infrastructure in South Asia under International Law: Opportunity for Sri Lanka and India' (2018) 26 Sri Lanka J Int'l L 79, 97–101; Beckman (2014) 290–295.

culpable negligence, break or injure a submarine cable or pipeline beneath the high seas or in the EEZ.²⁷³ The history of this obligation in UNCLOS Article 113 can be traced to Article II of the 1884 Paris Convention, which formed the basis for Article 27 of the Convention on the High Seas. UNCLOS extended the scope of States' jurisdiction to include conduct that is 'calculated or likely to result in' the breaking or injury of a submarine cable or pipeline, excluding actions taken by the persons who were acting merely with the purpose of saving their lives or their ship, after having taken all necessary precautions to avoid such break or injury.²⁷⁴ As a result, the intention or attempt to break or injure a cable or pipeline associated with such conduct is also a punishable offence, even without the conduct resulting in an actual break or injury.²⁷⁵

Both acts that result in damage and are likely to result in damage are punishable only when performed 'wilfully or through culpable negligence'.²⁷⁶ However, Article 113 does not specify which party bears the burden of proof. According to general criminal procedures, the prosecution is responsible for proving all the essential elements to justify the crime charged.²⁷⁷ Therefore, the ship or person involved will not be punished unless the prosecution can prove, *prima facie*, that their acts were performed with wilful intent or culpable negligence. The interpretation of what constitutes wilful intent or negligence is largely a decision of domestic courts, and State practices vary. Under Australian law, for instance, it is an offence 'if the person engages in conduct, and the conduct results in damages to a submarine cable', but the penalty is lighter when 'the person is negligent as to the fact that the conduct results in that damage'.²⁷⁸ This legislation disregards whether or not the person was 'wilful' when engaged in

²⁷³ UNCLOS Articles 58(2), 113.

²⁷⁴ UNCLOS Article 113.

²⁷⁵ Nordquist, Nandan and Rosenne (1995) 270.

²⁷⁶ UNCLOS Article 113.

²⁷⁷ Barton L. Ingraham, 'The Right of Silence, the Presumption of Innocence, the Burden of Proof, and a Modest Proposal: A Reply to O'Reilly' (1995–1996) 86 J Crim L & Criminology 559, 562; Alleged Violations of Sovereign Rights and Maritime Spaces in the Caribbean Sea (Nicaragua v. Colombia), Judgment of 21 April 2022, ICJ Reports 2022, p. 266, para 64.

²⁷⁸ Australia, Telecommunications and Other Legislation Amendment (Protection of Submarine Cables and Other Measures) Act 2005, Schedule 1, Part 1, Division 4, Subdivision A, Clauses 36–37.

such conduct but focuses on actual damage, and the offender is subjected to a lighter punishment if proven 'negligent'. It also excludes conduct that is 'calculated or likely to result in' such damages.

Article 113 of UNCLOS in effect obligates States to adopt legislation for an offence by their nationals, including ships flying their flags, for activities that may have occurred outside of their territorial jurisdiction.²⁷⁹ By limiting the jurisdictional basis to nationality and registration, Article 113 did not create universal jurisdiction over such an offence.²⁸⁰ However, it is not difficult to anticipate the insufficiency of the implementation of such jurisdiction. States are reluctant to adopt legislation for offences committed outside their territories, and for those that have legislated, enforcement is very limited.²⁸¹ This situation is even more worrying when it comes to States with open registration that lack both the willingness and capacity to enforce such legislation for the large fleet. It worth noting that the 1884 Paris Convention provided State parties a right of visit over other parties' vessels suspected of offences of the Convention and obliged such States to report offences to the State has jurisdiction.²⁸² This police power was omitted from both the Convention on the High Seas and UNCLOS.²⁸³

The coastal State has the same obligation to punish intentional damage to submarine cables and pipelines by its nationals and ships flying its flag. However, it has no straightforward jurisdiction over damage to such cables and pipelines caused by foreign nationals or ships in its EEZ. Coastal State jurisdiction over suspected foreign ships may only be established on its sovereign rights or specific jurisdiction claimed in the

²⁷⁹ Christopher Staker, 'Jurisdiction', in Malcolm D. Evans (ed.), *International Law* (5th ed., Oxford University Press 2018) 289, 296–298.

²⁸⁰ Dupuy and Vignes (1991) 982.

²⁸¹ Takei (2012) 216–217; Davenport (2012) 219; Beckman (2010) 13–14; UNGA A/65/69, 29 March 2010, Oceans and the Law of the Sea Report of the Secretary-General, para 71.

²⁸² 1884 Paris Convention Article X.

²⁸³ Douglas Guilfoyle, 'Article 110', in Proelss (2017) 769; Guilfoyle and Miles 'Article 113' (2017) 783; Tallinn Manual 2.0 (2017) 257. In 1959, the United States invoked Article X of the 1884 Paris Convention to board and investigate the Soviet trawler *Novorossiisk* for damaging five transatlantic cables. With the master's consent, a US warship inspected the vessel and determined that there was a 'strong presumption' that the *Novorossiisk* violated the proscription in Article II of the Convention against intentional, wilful or culpably negligent breaking or injuring a submarine cable. See The *Novorossiisk*, Department of State Bulletin (20 April 1959), Vol. 40, No. 1034, 555.

EEZ. For instance, if the damaged cable or pipeline was ‘used in connection with the exploration of its continental shelf or exploitation of its resources’, the coastal State could exercise jurisdiction over the foreign ship that caused such damage.²⁸⁴ Further, if the damage resulted in pollution from a pipeline, the coastal State may assert jurisdiction over the foreign ship for the protection and preservation of the marine environment.²⁸⁵ However, such claims could be challenged, since coastal State jurisdiction over foreign vessels in the EEZ is limited to ‘pollution from vessels’.²⁸⁶ Pollution caused by a collision between a vessel and a pipeline, which could be considered incident of navigation, would, *prima facie*, remain under the jurisdiction of the flag State, and the coastal State may only assert concurrent jurisdiction.

There has been increasing discussion about the security issues associated with intentional damage to submarine cables and pipelines.²⁸⁷ Submarine communication cables are susceptible to being physically tapped, for instance by purpose-built submarines, whereas the data transmitted through them can be collected, altered or jammed.²⁸⁸ In response to an incident of stolen cable and an optical amplifier by Vietnamese vessels in 2007, arguments were made to treat the incident as piracy under international law because it was an ‘act of depredation’ committed for private end by a private ships against ‘property in a place outside the jurisdiction of any State’.²⁸⁹ In September 2022, three out of the four pipelines of the Nord Stream and Nord Stream 2 were torn open by explosives and released over 220,000 tonnes of methane into the

²⁸⁴ UNCLOS Articles 56(3), 77(1), 79(4).

²⁸⁵ UNCLOS Articles 56(1)(b)(iii), 79(2).

²⁸⁶ UNCLOS Article 220(3) and (5)–(6).

²⁸⁷ STF, Industry Report 2023–2024, Section 9.1: Legal and Regulatory Matters Year Review. Tara Davenport, ‘Intentional Damage to Submarine Cable Systems by States, Hoover Working Group on National Security, Technology, and Law, Aegis Series’ Paper No. 2305 (October 26, 2023) www.lawfaremedia.org/article/intentional-damage-to-submarine-cable-systems-by-states.

²⁸⁸ Tallinn Manual 2.0 (2017) 253; Marcia Wendorf, ‘Operation Ivy Bells: The U.S. Top-Secret Program That Wiretapped a Soviet Undersea Cable’, Interesting Engineering, 3 January 2022 <https://interestingengineering.com/innovation/operation-ivy-bells-the-us-top-secret-program-that-wiretapped-a-soviet-undersea-cable>.

²⁸⁹ Mick P. Green and Douglas R. Burnett, ‘Security of International Submarine Cable Infrastructure: Time to Rethink?’ in Myron H. Nordquist, Rüdiger Wolfrum and Ronán Long (eds.), *Legal Challenges in Maritime Security* (Brill 2008) 557; Robert Beckman, ‘Protecting Submarine Cables from Intentional Damage: The Security Gap’, in Burnett, Beckman and Davenport (2014) 289.

atmosphere.²⁹⁰ The damaged pipelines were located on the seabed of the EEZs of Denmark and Sweden where both States have limited jurisdiction over these transiting pipelines.²⁹¹ While Denmark, Germany, Sweden and Russia all initiated investigations over the alleged acts of sabotage against the Nord Stream pipelines, with Russia been isolated from the collaboration among the other three States, it remains unclear how to categorise such intentional damage under international law.²⁹² There has been discussion on whether or not the act of attacking submarine communication cables or pipelines amounts to an armed attack such that the affected State could invoke the right of self-defence to use force.²⁹³ Moreover, it is questionable whether the attack on this infrastructure could be treated as an international crime, including maritime terrorism, if it was done for the purpose of intimidating a population, or compelling a government or an international organisation to act in a certain way or to abstain from any act.²⁹⁴ With respect to submarine cables, the Global Maritime Crime Programme lead by the United Nations Office on Drugs and Crime has been developing a framework to assist States in ensuring the protection and resilience of submarine

²⁹⁰ Nord Stream, 'Incident on the Nord Stream Pipeline (updated 14/11/2022)' Press Release, 14 November 2022 www.nord-stream.com/press-info/press-releases/incident-on-the-nord-stream-pipeline-updated-14112022-529/; Mengwei Jia et al., 'The Nord Stream Pipeline Gas Leaks Released Approximately 220,000 Tonnes of Methane into the Atmosphere' (2022) 12 *Environmental Science and Ecotechnology* 100210.

²⁹¹ Åklagarmyndigheten Swedish Prosecution Authority, 'The prosecutor closes the Swedish investigation concerning gross sabotage against Nord Stream', 7 February 2024 www.aklagare.se/en/media/press-releases/2024/february/the-prosecutor-closes-the-swedish-investigation-concerning-gross-sabotage-against-nord-stream/.

²⁹² United Nations Security Council S/PV.9266, 21 February 2023, Threats to International Peace and Security; United Nations, Meeting Coverage, Security Council, SC/15206, 21 February 2023, 'Avoid Speculation' about Responsibility for 2022 Nord Stream Pipeline Incident, Official Urges Security Council, Stressing United Nations Cannot Verify Claims <https://press.un.org/en/2023/sc15206.doc.htm>.

²⁹³ Blair Shepherd, 'Cutting Submarine Cables: the Legality of the Use of Force in Self-Defense' (2020) 31 *Duke J Compar & Int'l L* 199, 208–216; Yusuke Saito, 'Reviewing Law of Armed Conflict at Sea and Warfare in New Domains and New Measures: Submarine Cables, Merchant Missile Ships, and Unmanned Marine Systems' (2019) 44(107) *Tul Mar LJ* 107, 112–116; Danae Azaria and Geir Ulfstein, 'Are Sabotage of Submarine Pipelines an "Armed Attack" Triggering a Right to Self-defence?', *EJIL:Talk!*, 18 October 2022 www.ejiltalk.org/are-sabotage-of-submarine-pipelines-an-armed-attack-triggering-a-right-to-self-defence/; Davenport (2023), 10–13.

²⁹⁴ Kaye (2006–2007) 378; Beckman (2014) 290–295.

cables within their maritime zones.²⁹⁵ Another potential channel to address crimes against submarine cables or pipelines is to incorporate such offences under the international agreements on the suppression of unlawful acts against the safety of maritime navigation, or fixed platforms located on the continental shelf.²⁹⁶

The laying and operation of submarine cables and pipelines need to be protected even at the expense of putting certain limitations on other marine uses. The need for protection is expected to continue, because most nations are increasingly dependent on submarine fibre-optic cables for international communications and on pipelines for transporting offshore and inland resources. Although UNCLOS requires States to develop domestic legislation related to the protection of submarine cables and pipelines, many States still have not done so.²⁹⁷ It is particularly important for the coastal State to adopt and enforce effective measures because its nationals and ships conduct most of the competing uses in the EEZ.

5.5 Resolving Disputes Concerning the Laying of Submarine Cables and Pipelines

As one of the preserved freedoms in the EEZ, it is essential that disputes on the interpretation and application of provisions on the laying of submarine cables and pipelines be subject to the compulsory dispute

²⁹⁵ United Nations Office on Drugs and Crime (UNODC), 'Key Actions to Protect Submarine Cables from Criminal Activity Identified at UNODC Global Expert Meeting', 7 February 2019 www.unodc.org/unodc/en/frontpage/2019/February/key-actions-to-protect-submarine-cables-from-criminal-activity-identified-at-unodc-global-expert-meeting.html; UNGA A/74/350, para 44; UNODC, 'Protecting submarine cables in the Indian Ocean', 13 January 2021 www.unodc.org/eastnafrica/en/Stories/protection-of-submarine-cables-in-indian-ocean.html.

²⁹⁶ Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (10 March 1988, in force 1 March 1992) and Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf (14 October 2005, in force 28 July 2010) 1678 UNTS 221; see also IMO, 'Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation, Protocol for the Suppression of Unlawful Acts Against the Safety of Fixed Platforms Located on the Continental Shelf' www.imo.org/en/About/Conventions/Pages/SUA-Treaties.aspx.

²⁹⁷ UK House of Lords 2021-22 para 321; 王赞,《破坏海底电缆、管道罪国内法化研究》2013年第1期, 学术论坛, 111-115, 第112页 (WANG Zan, 'Studies on Domestic Implementation of the Crime to Damage Submarine Cables and Pipelines' (2013) 1 Academic Forum 111, 112).

settlement procedures under UNCLOS.²⁹⁸ When it is alleged that either a coastal State or the operating State has acted in contravention of the provisions relating to their respective rights and duties in relation to the laying of submarine cables and pipelines, the other party may initiate the dispute settlement procedures where the parties have reached no agreement.²⁹⁹

The practical issue is that, under the international law of the sea, States are the right holders that normally delegate the exercise of the freedom to lay submarine cables and pipelines to corporations or other private entities through the link of nationality or registration.³⁰⁰ These corporations and private entities are precluded from using the dispute settlement procedures under UNCLOS, which are only open to State parties.³⁰¹ Hence, the difficulty lies both in how to identify which State has a legitimate stand and in how to provide it with sufficient incentives to initiate procedures on behalf of these private actors. For example, international submarine cables and pipelines are usually owned by a large consortium of companies incorporated in different States, and the suppliers, operators and end users could be located in many different countries and territories.³⁰² Determining which States may represent the cable or pipeline for a particular case can be challenging. As demonstrated in the above-mentioned Nord Stream incidents, both pipeline systems are operated by an independent consortium, based in Switzerland, of multiple companies, among which the Russian State-owned Gazprom Group company holds over 50 per cent of the shares.³⁰³ Nearly two years after the incidents, there is no public report indicating that Switzerland, as the State where the consortiums are registered, has taken any action.³⁰⁴

The challenge of lack of State-level representation is particularly evident in the case of submarine fibre-optic cables. Take, for example, the case where the coastal State requires a permit for repair work of a transiting fibre-optic cable that is located in its EEZ, which *prima facie*

²⁹⁸ UNCLOS Article 279(1); Kwiatkowska (1989) 216–217; Dupuy and Vignes (1991) 986.

²⁹⁹ UNCLOS Articles 281, 286, 297(1)(a)–(b).

³⁰⁰ Nordquist, Nandan and Rosenne (1995) 264; Mudrić (2010) 238–239; Guilfoyle and Miles ‘Article 112’ (2017) 781; ILA, Committee on Submarine Cables and Pipelines under International Law, Interim Report 2020, para 207.

³⁰¹ UNCLOS Article 286.

³⁰² Mick Green, ‘The Submarine Cable Industry: How Does It Work?’ in Burnett, Beckman and Davenport (2014) 41–45; Nord Stream, ‘Our Shareholders’ www.nord-stream.com/about-us/our-shareholders/; UK House of Lords 2021–22 para 322.

³⁰³ The operators of Nord Stream 2 were Gazprom, Shell and ENGIE.

³⁰⁴ United Nations Security Council SC/15206 (2023).

is inconsistent with the rights and jurisdiction of the coastal State over such cables. Under normal practice, the cable owner, a large consortium, would charter a specialised cable ship to undertake the repair work, whose flag State is usually not the same as the national State of the cable owner. It may be more straightforward if the flag State of the cable ship could challenge the coastal State's requirement of permission. However, the flag State of the cable ship often does not have the political will or interest to challenge a coastal State on behalf of the cable owner.³⁰⁵ The cable owner, which often consists of multiple telecom or content companies from different States and territories that co-own the cable system's capacity and operate the cable system according to a commercial agreement, can hardly avail itself of a representing State for the dispute settlement procedures.³⁰⁶ Submarine cables are, unlike ships, neither registered under any flag nor operated under the auspice of any international organisation or agency.³⁰⁷ Should States be willing to establish a formal registration process for international fibre-optic cables, it would provide legal clarity as to which State may represent the cable operator's and owner's interest when a coastal State has acted in contravention of the provisions concerning the freedom of the laying of submarine cables in the EEZ.

Apart from disputes directly related to the coastal State's conduct, submarine cables and pipelines may face challenges from competing uses and intentional damage. These cases are often resolved at the domestic level through procedures between the two private parties over commercial claims, or through procedures brought by a government agency to prosecute intentional damage. Only when such cases exhaust local remedies and do not resolve the dispute may the claimant State bring an international claim over its counterpart under UNCLOS or other relevant fora.

The parties to the dispute have the right to decide which procedure applies to the settlement of their dispute.³⁰⁸ Both parties could accept the same procedure, or go to arbitration if they cannot agree on the procedure.³⁰⁹ A court or arbitral tribunal would clarify the interpretation and application of a number of provisions, including the scope of the

³⁰⁵ Van Logchem (2014) 117.

³⁰⁶ Burnett, Davenport and Beckman (2014) 88–89.

³⁰⁷ Robert Beckman and Tara Davenport, Workshop Report – Workshop on Submarine Cables and Law of the Sea, 14–15 December 2009, Singapore (Centre for International Law, National University of Singapore 2010) <https://cil.nus.edu.sg/wp-content/uploads/2009/10/Workshop-Report-29-Jan-2010.pdf>.

³⁰⁸ UNCLOS Article 280.

³⁰⁹ UNCLOS Article 287(4)–(5).

reasonable measures and conditions that could be taken by the coastal State, and the due regard obligation that could be invoked by both parties under various scenarios. The court or tribunal, when finding jurisdiction *prima facie*, may prescribe appropriate provisional measures to preserve the respective rights of the parties or to prevent serious harm to the marine environment.³¹⁰ As of 2024, no State has pursued dispute settlement procedures under UNCLOS relating to the freedom of the laying of submarine cables or pipelines.

5.6 Conclusion

With the increasing demand for submarine cables and pipelines worldwide, it is critically important to preserve the freedom of the laying of such cables and pipelines and to protect their operation and use. The exercise of such freedom in the EEZ, however, is under growing pressure to accommodate the coastal State's sovereign rights and jurisdiction, as well the challenges and threats posed by competing uses and intentional damage.

In terms of the legal framework, the freedom to lay submarine cables, in theory, has been well preserved in the EEZ, with limited interference from the coastal State in taking reasonable measures for the exploration and exploitation of the seabed and its natural resources. It is notable that submarine pipelines are subject to additional regulation by the coastal State compared to submarine cables. The delineation of the course of a pipeline is subject to the coastal State's consent, and the laying of pipeline is subject to its jurisdiction over pollution control. This is mainly because the use of pipelines is often associated with the exploitation of natural resources or offshore infrastructures, and it is well known that materials transported by pipelines have the potential to cause harm to the marine environment. Hence, the freedom to lay pipelines in the EEZ is further restricted compared with submarine cables to give priority to the sovereign rights and jurisdiction granted to the coastal State.

In terms of State practice, some coastal States have made excessive claims over activities related to the laying of submarine cables and pipelines in the EEZ, particularly with regard to communication cables. Many of these excessive claims were based on the coastal State's broad interpretation of its sovereign rights and jurisdiction. States exercising the freedom to lay submarine cables and pipelines are required under

³¹⁰ UNCLOS Article 290(1).

UNCLOS to give due regard to the coastal State's rights and to comply with their laws, but this does not give the coastal State the right to decide how such an obligation is undertaken or to adopt laws and regulations contrary to UNCLOS. The excessive coastal State claims, particularly with regard to permits for cable operations and the delineation of cable routes, may not only erode the freedom to lay submarine cables but may also interfere with the freedom of navigation. This constitutes a threat to the delicate balance of rights and duties in the EEZ. A possible solution is for these coastal States to retreat from excessive claims that are inconsistent with UNCLOS and to act with due regard to other State's rights and duties. The operating State could facilitate the transition of such coastal State practice by voluntarily providing information and consultation to ensure that their operations will not interfere with the coastal State's exercise of its sovereign rights or jurisdiction.

It needs to be emphasised that the coastal State can play an important role in protecting the safety and security of submarine cables and pipelines in the EEZ. In addition to the obligation to have due regard to the exercise of such freedom, the coastal State has an interest in protecting these cables and pipelines in light of their importance to global communications and energy security, particularly if such cables and pipelines are landed on its coast. The coastal State should actively fulfil its duty to adopt the laws and regulations necessary to punish those who damage a cable or pipeline wilfully or through culpable negligence, impose civil liability for damages caused by non-criminal acts, and provide indemnity for loss incurred to avoid injury to the cable or pipeline. Moreover, the coastal State should diligently regulate competing uses by its nationals and ships flying its flag, and promote cooperation between different marine uses to avoid unnecessary interference with submarine cables and pipelines.

