

# THE GEOPOLITICS OF SUBSEA CABLES: DELINEATING LESSONS AND PROSPECTS FOR INDIA

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## INTRODUCTION

India has already set its standards high in terms of digitalisation of its economy. A bulletin issued by the Reserve Bank of India (RBI) in December 2022 highlights that between 2014 to 2019, India's digital economy grew 2.4 times faster than its economy, generating around 6.2 crore jobs.<sup>1</sup> According to a Deloitte Report, India is expected to have around one billion smart phone users by 2026.<sup>2</sup> India also recorded 19.5 GB data consumption per month per user in 2022

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1. PTI, "India's Digital Economy Grew 2.4 Times Faster than Economy in 2014-19: RBI Article", *The Economic Times*, December 22, 2022, at <https://economictimes.indiatimes.com/tech/technology/indias-digital-economy-grew-2-4-times-faster-than-economy-in-2014-19-rbi-article/articleshow/96412446.cms?from=mdr>. Accessed on April 20, 2023.
2. "Big Bets on Smartphones, Semiconductors, and Streaming Service: Deloitte's 2022 TMT Predictions for India", Deloitte, February 22, 2022, at <https://www2.deloitte.com/in/en/pages/technology-media-and-telecommunications/articles/big-bets-on-smartphones-semiconductors-and-streaming-service.html>. Accessed on April 21, 2023.

which is expected to jump up to 50 GB per user in 2027.<sup>3</sup> Total value of digital transactions in the past few years has averaged at around Rs 2,000 lakh crore per annum.

While all this paints a picture of very bright digital future prospects for the country, increasing usage of data at such a high speed has also highlighted a lot of infrastructural gaps that need to be filled in to cope with the ever increasing needs of the digitalisation process.<sup>4</sup> Looking at these issues that are surfacing at the forefront, it becomes necessary for India to enhance its digital infrastructure and ensure its security. Subsea cables, that carry about 97 per cent of transmitted data, have become the enablers of this cyber space and, thus, form the core of this digital infrastructure.

Evidently, a major set of events in the subsea cables realm can be seen unfolding in the Indo-Pacific region. Though the Indo-Pacific as a region has started gaining traction since the past decade, communication channels in the form of subsea cables have been concentrated in the Atlantic and Pacific Oceans since the 1850s. Today, the Indo-Pacific as a region is witnessing the fastest construction of subsea cables in the world.

In this backdrop, the paper attempts to present an Indian perspective on the contemporary developments in the subsea cables ecosystem. The paper is divided into five sections. The first section introduces the subsea cables ecosystem and expands upon its geopolitical significance. The next section analyses the positioning of key Asian players, China, India, Japan and Singapore' in the subsea cables ecosystem markets, in the light of the emerging US-China subsea cables competition. The third section discusses the lessons India can learn from the abovementioned countries. The fourth section delineates the future prospects for India. Section five concludes the paper with a holistic idea of India's whereabouts in this ecosystem

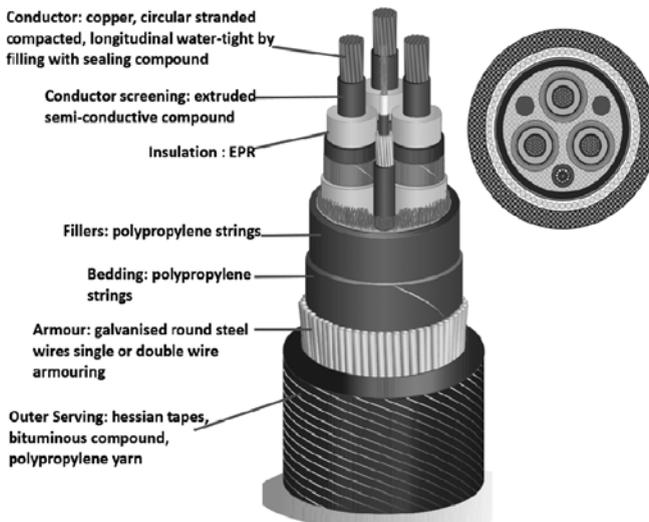
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3. Rajat Mishra, "Exclusive: India's Average Data Usage to Rise up to 50 GB per Month by 2027, says Nunzio Mirtillo of Ericsson", *Business Today*, October 2, 2022, at <https://www.businesstoday.in/latest/corporate/story/exclusive-indias-average-data-consumption-to-rise-up-to-50gb-per-month-by-2027-says-nunzio-mirtillo-of-ericsson-348789-2022-10-02>. Accessed on April 21,2023.
  4. Gagandeep Kaur, "In-depth: Why are so Many Submarine Cables Landing in India?", *The Economic Times*, April 18, 2023, at <https://telecom.economictimes.indiatimes.com/news/industry/in-depth-why-are-so-many-submarine-cables-landing-in-india/99571880>. Accessed on April 20,2023.

and how, if proper steps are taken, India can really benefit from its current geopolitical placing in the subsea cables ecosystem.

### EXPLAINING THE SUBSEA CABLES ECOSYSTEM

The subsea cables system materialised in the late 1850s in the form of a trans-Atlantic telegraph cable. Its displayed success in communication increased the demand for manufacturing and laying of more such cables. The colonial era ensured Britain's domination in this realm as well. Britain owned nearly two-thirds of the subsea cables connecting its colonies. Telegraphy was later converted to telephony and today, these subsea cables systems carry all sorts of digital telecommunication and internet data. With total length of around 1.4 million km, subsea cables carry around 97 per cent of global data, while the rest is carried by satellites. With a diameter as thin as a strand of hair, these cables are responsible for worldwide communication and information sharing.

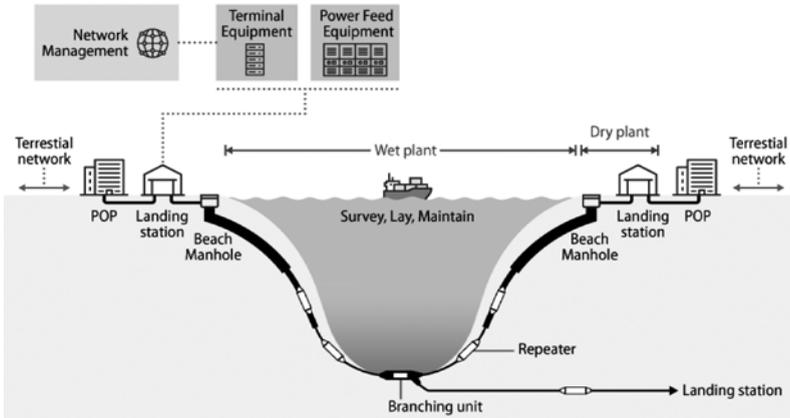
**Fig 1: Inside a Subsea Cable**



Source: Fateme Dinmohammadi, David Flynn, Chris Bailey, Michael Pecht, Chunyan Yin, Pushpa Rajaguru, and Valentin Robu, "Predicting Damage and Life Expectancy of Subsea Power Cables in Offshore Renewable Energy Applications", *IEEE Access*, May 6, 2019, at [https://discovery.ucl.ac.uk/id/eprint/10107606/10/Dinmohammadi\\_08704223.pdf](https://discovery.ucl.ac.uk/id/eprint/10107606/10/Dinmohammadi_08704223.pdf). Accessed on April 24, 2023.

Subsea cables are made of a conductor that transmits the data, surrounded by layers of insulators to keep it protected from corrosion, ship anchors, sea sharks and other forms of disruption (Fig 1). Earlier, copper wires were used as the conductors and rubber was used as an insulator, but these were prone to quicker degradation. Developments in fibre optics in the late 1960s changed the game of data-transmission and telecommunication.<sup>5</sup> Incorporation of fibre channels in subsea cables systems led to their tremendous growth. Currently, thin fibres of plastic or glass are used as conductors, with multiple layers of coating and cladding of plastic and various polymers. The specially assigned ships lay the cables in the seas, with average depth range of 3,600 m below the sea level.<sup>6</sup> Laying of the cables in the seabed is also an art, as it requires assembling the mounting equipment, repeaters and other devices which can work well in water as well as mechanical equipment that can perform the laying process under water (see Fig 2).

**Fig 2: Tracing the Pathway of a Subsea Cable**



Source: Congressional Research Service, “Undersea Telecommunication Cables: Technology Overview and Issues for Congress”, CRS Report, September 13, 2022, at <https://crsreports.congress.gov/product/pdf/R/R47237>. Accessed on April 24, 2023.

5. Geoff Huston, “At the Bottom of the Sea: A Short History of Submarine Cables”, APNIC, February 12, 2020, at <https://blog.apnic.net/2020/02/12/at-the-bottom-of-the-sea-a-short-history-of-submarine-cables/>. Accessed on April 25, 2023.
6. Ibid.

The subsea cables ecosystem can be broadly divided into two parts: the subsea cables which are laid down in the seas and oceans, and their cable landing stations where the cables terminate on land. Thus, a single subsea system would consist of at least two landing stations and the connecting subsea cable. Today, there are over 500 subsea cables and around 1,300 landing stations worldwide. The geopolitics of subsea cables unfolds over their manufacturing, laying and ownership. The subsea cables manufacturing and laying company may or may not be the same company that invests in, and owns, these cables.

Laying down a subsea cable system is a transnational project which requires great investment in addition to the permission of the country whose landing stations and Exclusive Economic Zones (EEZs) are used for these projects. Generally, a multi-national consortium of telecom service providers from various countries, willing to be stakeholders in these projects, overlooks the bidding process and grants tenders for laying the cables based on common consensus. But large cloud, network and internet service providers such as Tata, Meta, Google, Microsoft, etc. also have private proprietorship over many of the cables. The consortium decides the costs, distance, routing patterns, etc. for the cables. The telecom companies aspiring to participate in the process must be licensed international long-distance operators.

Major players in the subsea cables manufacturing and laying industry are the US' SubCom LLC, Japan's Fujitsu Ltd., Nippon Telegraph and Telephone Corporation (NTT) and Nippon Electric Company Ltd. (NEC) and Finland's Alcatel Submarine Networks (ASN). Though the list is not exclusive, these major players handle almost 90 per cent of the current subsea cables manufacturing and laying business by collaborating with the local cable companies to lay the cables. China's Huawei Marine Networks Co. (HMN Tech) is also carving its way into the group. According to the telegeography data<sup>7</sup>, China's HMN Tech has become world's fastest layer of subsea

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7. Joe Brock, "US and China Wage War Beneath the Waves Over Internet Cables", Reuters, March 24, 2023, <https://www.reuters.com/investigates/special-report/us-china-tech-cables/>. Accessed on April 26, 2023.

cables. It has already taken up the business of maintaining and re-constructing around 25 per cent of global subsea cables.

### GEOPOLITICS OF SUBSEA CABLES

The geopolitical significance of the subsea cables is no less than that of the Sea Lines of Communication (SLOCs). The protection of SLOCs is necessary to ensure unhindered supply of essential commodities like oil, gas, petroleum products, cargo, etc. Similarly, protection of subsea cables is necessary to ensure unhindered supply of data. The SLOCs have geographical chokepoints which, if used irresponsibly by a single country, can create problems for the global container traffic. Along similar lines, the subsea cables ecosystem also has internet chokepoints that ensure seamless flow of data traffic which needs to be safeguarded from various hardware and software failures.

There are two major geopolitical implications of a non-resilient subsea cables ecosystem:

Firstly, such an ecosystem is prone to cyber attacks and cyber espionage. Tapping into the military information of the opponent country that flows through these cables has been a historical Cold War affair that continues to the present.<sup>8</sup> Currently, there is a widespread consensus among like-minded countries regarding HMN Tech's spying and espionage activities in this ecosystem.<sup>9</sup>

Secondly, the subsea cables can also be weaponised during the time of heightened tensions between two countries. This isn't a new development. In World War 1, the first thing that Britain did was to cut the German cables, denying Germany the ability to communicate.<sup>10</sup> In March 2023, Taiwan's peripheral island Matsu had to face problems caused by the internet shutdown that resulted due

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8. Olga Khazan, "The Creepy, Long-Standing Practice of Undersea Cable Tapping", *The Atlantic*, July 16, 2013, at <https://www.theatlantic.com/international/archive/2013/07/the-creepy-long-standing-practice-of-undersea-cable-tapping/277855/> Accessed on April 27, 2023.

9. Justin Sherman, "Cyber Defense Across the Ocean Floor", *Atlantic Council*, September, 2021 at <https://www.atlanticcouncil.org/wp-content/uploads/2021/09/Cyber-defense-across-the-ocean-floor-The-geopolitics-of-submarine-cable-security.pdf>. Accessed on April 28, 2023.

10. Khazan, n. 8.

to its severed subsea cables. Taiwan suspected two Chinese ships to be the perpetrators of this. Though the connections were restored, it temporarily put the world into the speculative business of whether China plans to attack Taiwan.<sup>11</sup>

The US-China tech war has given a very different dimension to the geopolitical exploitation of subsea cables. It has shifted from conventional methods of damage, destruction and tampering used in the traditional security domain, to the diplomatic methods that are used in the non-traditional security domain. The whole tender bidding process of Southeast Asia-Middle East-Western Europe 6, commonly known as the SeaMeWe-6 cable (which passes from Singapore to France via West Asia) is one of the latest examples of the unfolding subsea cables rivalry.<sup>12</sup> The competition between SubCom and HMN Tech was provided complete backend support by the US and Chinese governments respectively. This shows how the competition/confrontation has reached the realms that traditionally have been co-managed by all the countries. One of the members of the consortium of telecom operators deciding the winner of the bid was India's Bharti Airtel as well.

This does not mean that only state actors are capable of exploiting the subsea cables systems. Though there has not been any major terrorist attack on the subsea cables infrastructure, there have been many incidents of cable theft and deliberate attempts of cable-cutting around the world.<sup>13</sup> Natural calamities like tornadoes, earthquakes and volcanic eruptions also have the capability to damage the cables. This shows the geopolitical significance and importance of maintaining the resilience of the subsea cables ecosystem.

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11. Wen Lii, "Taiwan Seeks to Improve Its Communications Resilience", *The Diplomat*, April 15, 2023, at <https://thediplomat.com/2023/04/after-chinese-vessels-cut-matsu-internet-cables-taiwan-shows-its-communications-resilience/> Accessed on April 29, 2023.

12. Brock, n. 7.

13. Robert Beckman, "Protecting Submarine Cables from Intentional Damage—The Security Gap." *Submarine Cables*, January 1, 2014.

## TRACING THE TRAJECTORY OF MAJOR STAKEHOLDERS IN THE SUBSEA CABLES ECOSYSTEM

### *Subsea Cables Ecosystem in India*

India, being a former British colony was also a party to the British mission of connecting its colonies in the web of telegraphic communication. Owing to its advantageous geographical position, India was one of the most important landing stations for British subsea cables in the late 1800s. The British Indian Submarine Telegraph Company, which was established in 1869, looked after the management of subsea cables coming to India.<sup>14</sup> But even prior to that, Britain had already established the Persian Gulf Line between Britain and India. In the 1870s, the British company built the cable passing through Australia-Singapore-India-UK.

Independent India's subsea cables journey started in 1997 with the laying of 'FLAG Europe Asia' by SubCom. The whole cable covering 13 countries, running from Japan to the UK was owned by Global Cloud Xchange, whose parent company was Reliance Communications. FALCON, ready for service in 2006, was Reliance Communications' final project before fading away. During the first decade of the 21st century, most of the newly constructed subsea cables that passed through India were owned by Tata Communications, along with some share of Bharti Airtel. After 2011, the trend has been changing. While Bharti Airtel has managed to partner in ownership of three subsea cables since 2011 in India, Reliance Jio Infocomm, the newest comer in the market, has already become a part of four projects, out of which two are as a member of a consortium, while two are solely owned.

This has also created competition between Reliance Jio Infocomm and Bharti Airtel for laying of subsea cables.<sup>15</sup> Currently, Jio is building

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14. PTI, "Documents Reveal Contents of the First Telegraph Message Between India & England", *The Economic Times*, February 22, 2012, at <https://economictimes.indiatimes.com/documents-reveal-contents-of-the-first-telegraph-message-between-india-england/articleshow/11976488.cms>. Accessed on April 29, 2023.

15. ET Bureau, "Undersea Cable New Battleground for Airtel, Jio", *The Economic Times*, February 23, 2022, at <https://economictimes.indiatimes.com/industry/telecom/telecom-news/undersea-cable-new-battleground-for-jio-and-airtel/articleshow/89736464.cms?from=mdr> Accessed on April 29, 2023.

two cables<sup>16</sup>, India-Asia-Xpress (IAX) passing from Chennai and Mumbai in India, landing into Maldives, passing through Singapore, Malaysia, Maldives, Sri Lanka and Thailand, and the India-Europe Xpress (IEX) passing from India to Italy via Egypt, Djibouti, Saudi Arabia and Oman. Meanwhile, Bharti Airtel is collaborating with Meta to extend the 2Africa cable, which is the largest constructed subsea cable, to India.<sup>17</sup>

Bharat Sanchar Nigam Limited (BSNL) is present in not more than four subsea cables projects. And yet, it has established the connectivity of mainland India with the Andaman and Nicobar as well as Lakshadweep Islands. It has been a party to projects covering smaller distances and fewer countries. Datawave Networks Pvt. Ltd., an Indian subsidiary of Datawave Networks, not only owns its sole project, the Singapore India Gateway Cable (SING), but is also manufacturing the equipment and laying the same. Founded in 2019, it is unique in terms providing services of subsea cables manufacturing and laying business based in India.

The involved players also have many overseas stakes. Tata Communications operates in more than 150 countries, and has the longest wholly owned subsea cables infrastructure.<sup>18</sup> Besides that, out of 17 countries where Airtel operates, 14 are in Africa.<sup>19</sup> BSNL has its roaming services in almost all the countries.<sup>20</sup> Jio also has its international roaming services in more than 120 countries.<sup>21</sup>

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16. Winston Qiu, "Jio Moves Forward with IAX and IEX Projects", *Submarine Cable Networks*, May 18, 2021, at <https://www.submarinenetworks.com/en/systems/intra-asia/iax/jio-moves-forward-with-iax-and-iex-projects>. Accessed on May 1, 2023.

17. "Airtel and Meta Collaborate to Accelerate India's Digital Ecosystem", Airtel Press Release, December, 5, 2022, at [https://www.airtel.in/press-release/12-2022/airtel-and-meta-collaborate-to-accelerate-indias-digital-ecosystem#:~:text=\(%E2%80%9CMeta%E2%80%9D\)%20today%20announced,customers%20and%20enterprises%20in%20India](https://www.airtel.in/press-release/12-2022/airtel-and-meta-collaborate-to-accelerate-indias-digital-ecosystem#:~:text=(%E2%80%9CMeta%E2%80%9D)%20today%20announced,customers%20and%20enterprises%20in%20India). Accessed on May 14, 2023.

18. "Tata Communications Fast Facts", Tata Communications home page, at <https://www.tatacommunications.com/about/>. Accessed on May 12, 2023.

19. "A Connection for All", Airtel home page, at <https://www.airtel.in/about-bharti/about-bharti-airtel/>. Accessed on May 14, 2023.

20. Bala Yogesh, "BSNL Unveils Roaming Services in Five Countries", *Telecom Talk*, January 19, 2021, at <https://telecomtalk.info/bsnl-unveils-roaming-services-in-five-countries/326889/>. Accessed on May 10, 2023.

21. International Services of Jio, at <https://www.jio.com/jcms/international-services/>. Accessed on May 10, 2023.

In all, India has around 17 subsea cables, around 14 landing stations and eight cables under process. The SeaMeWe-3 cable with total length of 39,000 km, which is also the longest submarine cable constructed till now, passes through India<sup>22</sup> (see Table 1.). These cable systems have at an average around 2-3 terrabit capacity. India has many strong players who can increase and strengthen the subsea cables ownership stakes of India globally. But, it yet does not have any firm structure in place for the manufacturing and laying process.

### *Subsea Cables Ecosystem in China, Japan, US and Singapore*

The US company SubCom, Japan's NEC and France's ASN are the three most important players in the subsea cables ecosystem in the Indo-Pacific region. Some of these companies have been around since a century and have been the pioneers of the telecommunication revolution and laying of subsea cables. At the start of the 21st century, Nippon Telegraph and Telephone (NTT) had a monopoly over the communications market in Japan. Today, NTT is present in more than 70 countries. The current subsea cables projects in Japan are majorly handled by NTT and NEC.

China's subsea cables journey started in 1997 with the laying of the 'FLAG Europe Asia'. Today, China has over 19 subsea cables with around nine landing stations. China has three major telecom operators. China Telecom, has its presence in around 41 countries and has ownership in around 47 subsea cables.<sup>23</sup> China Unicom has a presence in around 30 countries, with ownership in more than 60 subsea cables.<sup>24</sup> China Mobile has roaming services in more than 150 countries.

Apart from the subsea cables passing through China itself, HMN Tech has 134 projects around the world, serving around 78 countries worldwide.<sup>25</sup> Its projects can mainly be seen in Asia, Africa and Latin

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22. Monit Khanna, "A Giant Web of Submarine Cables Connects India to the Internet and World", *India Times*, at <https://www.indiatimes.com/technology/news/submarine-cable-network-india-internet-link-world-537327.html>. Accessed on May 7, 2023.

23. China Telecom Key Figures, at <https://www.chinatelecomglobal.com/company/about-us>. Accessed on May 7, 2023.

24. China Unicom, at <https://www.chinaunicomglobal.com/hk/>. Accessed on May 8, 2023.

25. HMNTECH, "HMN Tech's Business Highlights in 2022 and Best Wishes for 2023 to You", at <https://www.hmntechnologies.com/enPressReleases/38010.jhtml>. Accessed on May 8, 2023.

**Table 1: Major Indian Subsea Cable Projects**

<b>Cable Name</b>	<b>Cable Supplier</b>	<b>Cable Owners</b>	<b>RFS</b>	<b>Total Length</b>	<b>Total Countries/ Two Extreme Landing Points</b>
FLAG Europe Asia (FEA)	SubCom	Global Cloud Xchange	1997	28,000 km	13 /Japan-UK
SeaMeWe-3	ASN, Fujitsu, Sub Com	Consortium with Tata Communications	1999	39,000 km	30/ Portugal- Australia
I2icn	ASN	Bharti Airtel	2002	3,200	2/ India-Singapore
SAFE	Sub Com	Consortium with Tata Communications	2002	13,500	6/ South Africa-India
Tata-TGN Tata IndiCom	Sub Com	Tata Communications	2004	3,175 km	2/ India-Singapore
FALCON	ASN	Global Cloud Xchange	2006	10,300 km	14 Egypt-India
Bharat Lanka System	NEC	BSNL, Sri Lanka Telecom	2006	325 km	2 India- Sri Lanka
Asia Africa Europe-1	NEC/ Sub Com	Consortium with Reliance Jio	2017	25,000 km	18/ France-China
Chennai-Andaman and Nicobar Islands Cable	NEC	BSNL	2020	2,300 km	Connecting islands of Andaman and Nicobar

Kochi-Lakshadweep Islands	NEC	BSNL	2023	1,989 km	Connecting Kochi to Lakshadweep
India Asia Express	Sub Com	Reliance Jio Infocomm	2023	5,791 km	6 India-Singapore
2 Africa	ASN	Consortium with Bharti Airtel	2023	45,000 km	35 India-UK
India Europe Express	Sub Com	Reliance Jio Infocomm	2024	9,775 km	7 Italy-India
SeaMeWe-6	Sub Com	Consortium with Bharati Airtel	2025	19,200	11/ France-Singapore
Singapore India Gateway Cable (SING)	Datawave Networks	Datawave Networks	2026	10,189 km	4/Oman-Singapore

RFS= Ready for Service;

Source: Compiled by author from the data of TeleGeography and Submarine Networks., <https://www.submarinenetworks.com/en>

America. HMN Tech also helps many countries in Southeast Asia and Africa to make their domestic connections via subsea cables. Though HMN Tech is currently the world's fastest subsea cables layer, China has only four subsea cables to be laid in its territory in the upcoming years (see Table 2 for more details).

There have been many examples of how China installs its surveillance equipment in the hardware it sells to other countries, building espionage threats. Despite these incidents, China is successfully able to manoeuvre the narrative in its direction, especially in the countries of the Global South. Furthermore, China's policy of detaching itself completely from the internal matters of other countries while providing technological equipment, especially surveillance technologies, makes it a better option for countries having authoritarian tendencies. The Digital Silk Road (DSR), acting with the Maritime Silk Road (MSR), creates broader agendas for China, to increase its geographical footprint in the oceans and functional footprint in the global digitalisation process.

Singapore, having a colonial history, has witnessed the development of subsea cables infrastructure over the same trajectory as India. In 1871, the first telegraph cables were laid between Madras and Singapore. During the same year, it also got linked to Vietnam, Hong Kong and Australia.<sup>26</sup> Currently, Singapore hosts the largest number of subsea cables in the region.

**Table 2: Comparing India with the Key Asian Players**

Participant in	Japan	China	India	Singapore
Total subsea cables under process	7	4	8	14
Total subsea cables landing	More than 24	Around 19	Around 17	Around 26
Total landing stations	More than 20	Around 9	Around 14	Around 9

Source: Compiled by the author from the data by TeleGeography and Submarine Networks, <https://www.submarinenetworks.com/en>.

26. Ulrich Speidel, "A Short History of Singapore's Role in the Cable World", *APNIC*, September 12, 2022, at <https://blog.apnic.net/2022/09/12/a-short-history-of-singapores-role-in-the-cable-world/>. Accessed on April 30, 2023.

## LESSONS FOR INDIA FROM EXPERIENCE OF VARIOUS COUNTRIES

Owing to its increasing infrastructural requirements, India has taken a wise decision to increase its stakes in the subsea cables infrastructure. India can customise and then develop its own experiences by learning from the already established players in the market.

The economic aspects of this technological pursuit need to be considered. China's biggest plus point is its cost-effectiveness. China's low-cost solutions for technological and infrastructural problems are very alluring, especially for countries which are not able to afford the high costs offered by companies from other countries. The low prices are complemented with strong government subsidisation and backend support, which also includes strong diplomacy.

Indian telecoms have started acquiring sole ownership of some cables in collaboration with prominent subsea cable companies. If India decides to take-up any projects of subsea cables laying in the future, along with quality, it will also have to offer low cost solutions for laying, as well as maintenance and repair, especially to the countries in the Global South.

It is important to keep the process attractive for the investors. Hurdles created for a short term can impede the long-term will of the stakeholders involved. For example, China is creating problems for permitting the landing stations of the cable system SJ2C due to the involvement of Meta.<sup>27</sup> If such behaviour continues, China is risking its integration with the global digital economy.

Japan has always responded quickly to the changing world dynamics. It has always been open to Western technology. The growth of NEC as one of the most prominent subsea cables manufacturing and laying companies was possible because of Western help and investment.<sup>28</sup> Laying of subsea cables, just like their ownership, is also a feat to achieve. If a country intends to enter the subsea cables laying business, it needs to open-handedly embrace technological

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27. Andrew Wooden, "China Reportedly Impeding Subsea Internet Cable Projects Near its Borders", *telecoms.com*, March 14, 2023, at <https://telecoms.com/520613/china-reportedly-impeding-subsea-internet-cable-projects-near-its-borders/>. Accessed on June 2, 2023.

28. Kenichi Ohno, *The History of Japanese Economic Development: Origins of Private Dynamism and Policy Competence* (Taylor & Francis, London, 2018).

inputs and assistance from other countries. The mindset, especially in the initial stage of learning, must be cooperative. Although India aspires to become *Atmanirbhar* in various sectors, this sector will need external impetus to grow.

While Japan, owing to its geographical insularity from Europe and Africa, had to invest heavily to get itself connected, Singapore's geographical location made its task easier. Singapore, lying at the strategic chokepoint of the Strait of Malacca, serves as a connecting point for Southeast Asia, while India strategically connects the Indian and Pacific Oceans. In this context, there are two things to learn from Singapore. Firstly, Singapore can teach us on how to make optimum use of geography. It is because of Singapore's position, that it has become the hotspot of subsea cables. Secondly, Singapore has not become a party to the geopolitical rivalry that could reduce the prospects of its growth in the digital market. Singapore has landing stations for cables made by all the major companies, including HMN Tech. This helps Singapore's digital economy operate at commendable speed, making its digital markets more reliable for conducting large businesses. Thus, such digital efficiency indirectly increases the ease of doing business and, hence, attracts more customers, contributing to the economy of the country.<sup>29</sup>

The most important lesson that can be learnt from the US-China subsea cables race is on the importance of backend government support to these ventures of national importance. The Chinese companies receive tremendous backend support from the government, putting the US government on its toes in terms of providing not just economic but also diplomatic support to its companies. Great political effort is put into even activity such as tender bidding for a cable laying project. The US officials had contacted the embassies of the consortium members of SeaMeWe 6 cable, to help SubCom win the tender.<sup>30</sup> The US Trade Representative, along with US Department of State and Commerce, was involved. The hint of probable sanctions by the US government on HMN Tech also discouraged the consortium

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29. Market Trends, "VPS in Singapore vs. Indian VPS: Which One for an Asian Website?", *Analytics Insight*, April 12, 2023, at <https://www.analyticsinsight.net/vps-in-singapore-vs-indian-vps-which-one-for-an-asian-website/>. Accessed on May 2, 2023.

30. Brock, n. 7.

members from voting for HMN Tech, as the sanctions would restrain the big businesses of the US from using the cable bandwidths.

The Indian government will also need to support its telecom companies for obtaining good deals with the existing cables companies. If Indian companies enter the manufacturing and laying business, the Indian government must also not shy away from providing diplomatic backend support to the companies trying to enter the business.

The second important lesson that must be learnt from the US-China tech competition is on the power of narrative building. The US is backing the narrative of China using surveillance equipment in its ecosystem and using it to turn the stakeholders against choosing the Chinese alternative. Though China's spying and espionage actions have put it in a negative light, deriving the conclusion that every Chinese company will continue to do so in all its projects is reductionist. But the narrative is getting stronger and is affecting China. India will not be on the negative side of the narrative, but the costs are high, as the examples show.

### EXPLORING FUTURE PROSPECTS

There have been significant developments in the field of fibre optics in India. India produces around 100 million fibre km per year, which is more than double of its domestic consumption.<sup>31</sup> India has also exported the fibre to around 100 countries in the past three years.<sup>32</sup> The whole subsea cables laying business includes producing the necessary equipment to sustain subsea fibre cables, and procuring technology to lay the cables in the seabed. With proper awareness about the emerging geopolitical trends and India's increasing role in the field, there are many companies that can initiate and sustain the subsea cables laying process in India. Companies like Tata and L&T<sup>33</sup>

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31. Jaijit Bhattacharya, "Atmanirbhar India Needs to Nurture its Infra-Tech Progress in Optical Fibre", *The Economic Times*, June 15 2022, at <https://telecom.economicstimes.indiatimes.com/blog/atmanirbhar-india-needs-to-nurture-its-infra-tech-progress-in-optical-fibre/92217063>. Accessed on May 3, 2023.

32. *Ibid.*

33. Offshore Staff, "GE, L&T to Produce Subsea Equipment for Deepwater Projects off Eastern India", *Offshore*, August 11, 2016, at <https://www.offshore-mag.com/subsea/article/16768463/ge-lt-to-produce-subsea-equipment-for-deepwater-projects-off-eastern-india>. Accessed on May 4, 2023.

are capable enough to learn the process and emerge as viable Indian alternatives.

Large telecom operators like Reliance Jio and Bharti Airtel can seek collaboration with Japan's NEC on training of personnel and subsea cables laying technology independently.<sup>34</sup> Apart from that, Indian subsidiary companies like Datawave Networks Pvt. Ltd., that have started making their presence felt, must be encouraged and facilitated by the government to integrate them in the supply chain. Local companies must also be encouraged to collaborate with the bigger giants in the field. India has good potential to develop the entire vertical supply chain of the subsea cables ecosystem on its own, with coordination and facilitative mechanisms for small and big companies. As a positive start, the government has announced subsidies, especially for the building of subsea cables laying ships.<sup>35</sup>

India must find strategic points of contact that can help it increase its footprint. While signing the strategic partnership on the 75th anniversary of India-Egypt relations, the Indian prime minister talked about the urgency to address cyber threats. The subsea cables, being enablers of this space, must also be included in the discussions on development. Egypt can prove to be a great access point for West Asia as well as Europe. Similarly, SEACOM, a 75 per cent African owned company, can help in covering more of Africa. Along with the expansion of cable routes, routing diversity also needs to be focussed upon to reduce overdependence on single points of contact.

BSNL has been successful in connecting the most inaccessible regions of the country. With government support, it may further help in increasing connectivity in the Andaman and Nicobar Islands, which can be an important transit point. Increasing the connectivity of the Andaman and Nicobar Islands is important not only from a civilian perspective, but also for strategic reasons. Increased internet connectivity may work in favour of enhancing the "information"

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34. Manjeet Kripalani, "Space and Undersea Cables", Gateway House, October 27, 2022, at [https://www.gatewayhouse.in/space-and-undersea-cables/#\\_ftn7](https://www.gatewayhouse.in/space-and-undersea-cables/#_ftn7). Accessed on May 3, 2023.

35. Twesh Mishra, "Centre Offers Subsidy to Make Ships that Deploy Offshore Wind Projects and Subsea Cables", *The Economic Times*, May 18, 2023, at <https://economictimes.indiatimes.com/industry/transportation/shipping-/-transport/centre-offers-subsidy-to-make-ships-that-deploy-offshore-wind-projects-and-subsea-cables/articleshow/100330634.cms?from=mdr>. Accessed on May 3, 2023.

component of modernisation of the armed forces, and help in better incorporation of advanced technologies such as Artificial Intelligence (AI), robotics, etc.

There must be an attempt to build synergy amongst the Indian players. Major players like Reliance Infocomm and Bharti Airtel can work on collaborative projects, by sharing the fibres in the cables and developing mechanisms for maintenance, repair and remote management of the cables.

Conditions for foreign suppliers to procure the cable ship, joint equipment, submarine cable, beach joint, terrestrial cable, etc. only from Indian suppliers for Indian territorial waters may be put forward to protect Indian suppliers. But, at the same time, new entrants must also be encouraged via easier permission procedures and making the cables laying market available and accessible for them.<sup>36</sup>

India must work towards ensuring the security of these subsea cables. The India-France strategic partnership has protection of the Indian Ocean as one of its most important pillars. The two countries can work together to build a participatory platform to increase awareness on the matters of subsea cables.

The International Cable Protection Committee (ICPC) performs the task of spreading awareness and maintaining the security of the subsea networks. It comprises several governmental bodies, cable manufacturers, owners, layers as well as maintainers. Indian participation in the ICPC is limited only to Tata Communications. The US currently has more than 30 members in the ICPC. As India intends to increase its stakes in the ecosystem, it must also showcase its image of a responsible stakeholder by increasing its participation in the ICPC.<sup>37</sup> Membership may be made compulsory for the international long distance service licensees.

As of now, apart from Article 113 of the United Nations Convention on the Law of the Sea (UNCLOS) which calls deliberate destruction

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36. R. Aparna, "BIF Suggests New Framework to Improve Subsea Cable Systems", March 7, 2023, at <https://telecomtalk.info/bif-suggests-newframework-improve-subsea-cable-systems/682944/>. Accessed on May 3, 2023.

37. Aishwarya Acharya, "India Needs More Membership in the International Cable Protection Committee", *The Financial Express*, May 19, 2023, at <https://www.financialexpress.com/business/defence-india-needs-more-membership-in-the-international-cable-protection-committee-3094085/>. Accessed at May 20, 2023.

and damage to the subsea cables a “punishable offence”, there has not been much progress in developing an international framework for ensuring their protection. The Quadrilateral Security Dialogue (QUAD) countries treat cyber threats and cyber security issues as some of the most important emerging non-traditional security concerns. As the subsea cables form the first building block of this cyberspace, QUAD must make concentrated efforts to streamline the discussions on subsea cables securitisation and protection.<sup>38</sup>

## CONCLUSION

Though satellite communication infrastructure is becoming more efficient by the day, subsea cables will remain a more preferred and better way of data transfer. Subsea cables are comparatively efficient, produce less lag in data dissemination and are more cost-effective. India’s ambitions to rise on the ladder of development of high-technology capabilities such as artificial intelligence, machine learning, robotics, etc. will need a more robust backend infrastructure. But the material utility of enhancing the backend infrastructure is not limited only to these high-tech developments. Increasing digital penetration will also help India to develop digital public services, bridge the digital divide and ensure digital inclusion.

It is important to understand the geopolitics of subsea cables from the vantage point of India. The US-China tech rivalry has given a new impetus to the discussions on subsea cables. But the importance of subsea cables is not limited to the value attached by the established players. India, as a rising player, has a huge scope of establishing itself as a major stakeholder in this ecosystem.

What flows inside the cables is not merely data, but information. In a world where every aspect of civilian life and the military is being converted into some form of data, access to sensitive and crucial information can lead to unprecedented changes in the global power dynamics. Thus, it is very important to ensure the security of these cables as well. India, along with the major players in the Indo-Pacific, must focus more upon tackling the various threats to subsea cables,

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38. Aishwarya Acharya, “The Quad Needs to Talk Security for Subsea Cables”, Lowy Institute, May 24, 2023, at <https://www.lowyinstitute.org/the-interpreter/quad-needs-talk-security-subsea-cables>. Accessed on May 26, 2023.

and create an accountable global framework to ensure the security of this ecosystem. The subsea cables ecosystem is in the process of being developed as a new front in the tech war. India must make use of its current status and positioning to contribute more to this ecosystem, which will not only help it to establish itself as a major stakeholder in the digitalisation process but will also provide a boost to its growing digital infrastructure.