Consultation Paper No.15/2022

TELECOM REGULATORY AUTHORITY OF INDIA

Consultation Paper
on
Licensing Framework and Regulatory Mechanism for Submarine Cable Landing in India

23.12.2022

Mahanagar Doorsanchar Bhawan
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New Delhi – 110002

Stakeholders are requested to furnish their comments to Advisor (BB&PA), TRAI by 20th January 2023 and counter-comments, if any by 03rd February 2023.

Comments and counter-comments would be posted on TRAI's website: www.trai.gov.in. The comments/counter-comments may be sent, preferably in electronic form, to Shri Sanjeev Kumar Sharma, Advisor (Broadband and Policy Analysis), Telecom Regulatory Authority of India, on the email id: *advbbpa@trai.gov.in* with a copy to *jtadvbbpa-1@trai.gov.in*.

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CHAPTER 1

INTRODUCTION AND BACKGROUND

A- Submarine Cables and Cable Landing Station

1.1 Submarine cables are the vital and core infrastructure of the digital age for any country. The web of submarine cables traverses the maritime zones of several countries connecting people and businesses across the globe. The United Nations, long back in 2010, had described submarine communications cables as "critical communications infrastructure" and "vitally important to the global economy and the national security of all States".

1.2 Today, around 99% of the world's digital international communications transit through the global submarine cable networks. These undersea submarine cables are the backbone of today's fast-paced global economy. The loss of communications for a few minutes can have disastrous repercussions in time-sensitive operations and can have high financial implications.

1.3 The submarine cables are laid on the ocean floor and digitally connect countries worldwide. These cables, which are often thousands of kilometers in length, transmit high volumes of data rapidly from one point to another. Submarine cables meet terrestrial networks in cable landing station and interconnect to inland terrestrial backhaul networks. Cable Landing Station (CLS) or a cable landing point is the location in a country or sub-continent, where a submarine or other underwater cable makes a landfall. CLS are units that enable international gateways for providing a way for voice and data to traverse between domestic and international network.

1.4 A Submarine Cable System consists of: -

a) Dry Plant (Cable Landing Station on land) - is the location in a country or sub-continent, where a submarine or other subsea cable makes a landfall called Cable Landing Station (CLS). The Dry Plant of a submarine cable system is a segment between the beach manhole and CLS site, comprises mainly of land cable, Power Feeding Equipment (PFE) and Submarine Line Terminal Equipment (SLTE).

b) Wet Plant (Submarine cables in the seabed) - of a submarine cable lies between the beach manholes and consists of Submarine Cable, Optical repeaters, Gain Equalizers, and Branching Units.

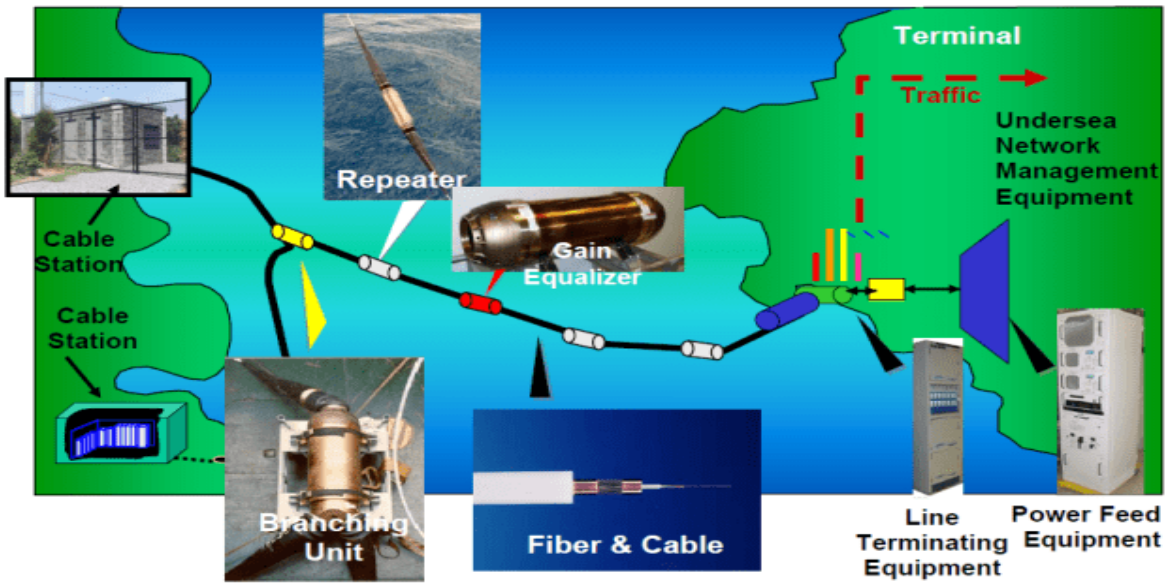


Figure-1.1: - Illustration of Submarine Cable System

1.5 Submarine cable systems are often benchmarked among each other using key characteristics such as capacity, fiber pairs, and useful life.

a) Capacity - Over the past few decades, capacity on new submarine cable systems has increased from hundreds of megabits per second (Mbps) of capacity, to systems with hundreds of Terabits per second (Tbps) of capacity, at present. Notably, only ~20% of a submarine cable's total design capacity is lit capacity, meaning

the capacity that is being utilized by the end user. These significant capacity buffers are normal industry practice because they allow for underwater internet cable systems to respond to unexpected spikes in demand, such as carrying traffic that is rerouted from other systems following a cable fault.

b) Fiber Pairs - Fiber pairs are two individual fiber strands that are paired together for bi-directional, meaning transmit and receive, communication. Historically, submarine cables were built with 4 to 8 fiber pairs. However, presently, these new ocean internet cables are being built with 12, 16, 24, and 36 fiber pairs. Individual fiber pairs can be retained by the owner of an undersea cable or they can be individually leased to third-parties, in order to monetize the submarine's capacity.

c) Useful Life of a Submarine Cable – Submarine cables face two ends to their useful life, physical and economic. Cables are engineered to have a minimum design life of 25 years, but what really matters is the economic life. The economic life depends on a cable's revenue exceeding the costs. If the costs of operating a cable continually exceed the revenues, an operator may consider retiring the cable. Many older cables laid in the late 1990s and early 2000s may soon become candidates for retirement. Newer undersea cables displace older systems because they can operate at a similar level of fixed costs, but, given their higher capacity, their cost per bit delivered is much lower.

1.6 The world continues to consume ever-increasing amounts of data, with an international bandwidth demand projected to almost double every two years for the foreseeable future. This demand – largely driven by a continued shift towards cloud services, continued explosion of mobile device usage and mobile technology like 5G, provides numerous opportunities for the submarine fiber industry. With the global demand increasing at a rapid pace, sustaining infrastructure growth will be challenging, potentially causing demand to exceed supply. To keep up with the demand,

it will be necessary to continue focusing on increasing capacity. For the period 2017-2021 submarine fiber design capacity on major routes has increased at a Compound Annual Growth Rate (CAGR) of 18.2 per cent, including upgrades and new system build. Based on reported data and future capacity estimates, global capacity is estimated to increase up to 100 per cent by the end of 2024. Despite multiple systems planned over the next three years boasting design capacities of more than 100 terabits per second, overall capacity growth will plateau based on currently announced planned system data[1].

1.7 Demand for submarine cables is also anticipated to rise with the increasing requirement for route diversity and rising demand for capacity among content providers. These are contributing to the procurement and deployment of submarine cables on a global scale. The global submarine communications cables market size is expected to reach USD 40.58 Billion in 2028 and register a CAGR of 7.2% during the forecast period[2]. However, India is set to register the highest growth in the Asia Pacific submarine cables industry, and the market size is expected to reach US$ 78.6 Mn by 2030. The market in India is anticipated to create an absolute dollar opportunity of US$ 51.7 Mn from 2022 to 2030.[3]

1.8 Bringing a submarine cable from route planning to being Ready For Service (RFS) involves multi-million-dollar capital investments, which largely correspond to the length of the planned cable. For example, a new trans-Atlantic subsea cable currently costs $200millions to $250millions to build. As a rough approximation, a typical submarine cable can be built at a cost of ~$40k per mile, which is equivalent to ~$25k per kilometer[4]. From 2017 to present, $8.1 billion was invested in submarine cable

[1] https://blog.telegeography.com/expectations-for-indias-used-international-bandwidth
[2] https://www.researchandmarkets.com/reports/5351593/submarine-communications-cable-market-size-share#src-pos-1
[3] https://www.futuremarketinsights.com/reports/submarine-cables-market
[4] https://dgtlinfra.com/submarine-cables-fiber-link-internet/

projects, or an average of $1.2 billion and over 50,000 route kilometers per year. Over the period, 30 per cent was invested in systems in the Americas, 29 per cent each in Australasia, 16 per cent in transatlantic, 15 per cent in Transpacific systems and 4 per cent each in EMEA (Europe, Middle East Asia) and Indian Ocean systems with the Polar regions seeing 2 per cent of the total investment.[5]

1.9 The Tele Geography Submarine Cable Map 2022 depicts 486 cable systems worldwide spanning across a total distance of over 1.3 million kilometers and 1,306 landings that are currently active or under construction[6]. In USA, there are 83 submarine cable systems (either operating or planning to enter service). While Singapore and Australia have 25 and 19 submarine cable networks respectively. The period 2017-2021 saw an average of 50,000 kms submarine cable added annually[7]. The greatest amount of cable was clearly added in 2018 with a total of 76,000 kms followed by the 56,000 kms added in 2020. The effects of the COVID -pandemic are likely to ripple across the industry in various ways.

1.10 Content providers like Google, Facebook, Amazon, and Microsoft, are huge drivers for capacity demand across the globe and are moving from capacity purchasers to cable owners. These companies are the dominant users of international bandwidth, accounting for two-thirds of all used international capacity as of 2020. These players now driving where cables are going, they are also helping to push along new innovations inside of the cable systems viz. new transmission technology to handle higher capacity wavelengths, increased fiber counts for more overall system capacity and streamlined network management. Another major change to global networks is shifting the focus from city-

[5] https://issuu.com/subtelforum/docs/submarine_telecoms_industry_report_issue_10
[6] https://blog.telegeography.com/two-new-maps-lots-of-new-cables
[7] https://subtelforum.com/products/submarine-telecoms-industry-report/

to-city connections to data center-to-data center connections. Unlike traditional cable owners, companies like Facebook, Google, and Microsoft, do not necessarily need to build infrastructure in locations with a variety of interconnect options. Instead, they favour locations that provide economic and cost saving benefits to reduce the operational expenditure impact of their data center facilities. Also, the need for increased route diversity and more direct control over critical infrastructure has led to the surge of new submarine cable systems.

B- Cable Landing Stations: Existing Licensing Framework in India

1.11 As per the existing telecom licensing regime, the company laying submarine cables in Indian Territorial Waters must hold a valid ILD license issued by Department of Telecommunications (DoT).

1.12 International Long-Distance Operators (ILDOs) licensees are allowed to set up Cable Landing Station (CLS) for landing of Submarine cables. Relevant clauses of ILD license are as below: -

(i) Clause 2.6 Chapter XI of the Unified License (UL)

"The Licensee may establish Cable Landing Station (CLS) for submarine cable with prior permission of Licensor for which a separate application is to be submitted in the prescribed proforma. Access/ Co-location at the CLS shall be governed by the orders/regulations/directions issued by Licensor/ TRAI from time to time."

(ii) Clause 2.7 of Chapter XI of the Unified License (UL)

"Equal access to bottleneck facilities at the Cable Landing Stations (CLS) including landing facilities for submarine cables for licensed operators on the basis of non-discrimination shall be mandatory. The terms and conditions for such access provision and the charges for such access provision shall be governed by the regulations/ orders as may be made by the Licensor/TRAI from time to time."

1.13 (i) The Internet Service Licensees under Unified license are allowed to install operate and commission International Internet Gateway using submarine cable as medium. Relevant clause of Internet Service license is as below: -

Clause 2. (ix) of Chapter IX of the Unified License

"Licensee may install operate and commission International Internet Gateway in the service area ***using satellite or submarine cable as medium*** *after obtaining security clearance/ approval from Licensor."*

(ii) DoT has issued guidelines and general information for setting up of Submarine Cable Landing Stations for International Gateways for Internet[8] along with application for setting up of Submarine Cable Landing Station for International Gateway for Internet.

1.14 DoT is granting permission to set up CLS to ILDOs in consultation with LEAs. As per clause 2.7 of ILD license, submarine cables of only licensed operators can land on CLS, thus the entity laying any submarine cable shall either be an ILD licensee in India or have an Indian ILDO as its member.

C- TRAI's earlier Regulations/ Recommendations related to CLS

1.15 TRAI is regulating the access to essential facilities at a Submarine Cable Landing Station for accessing international capacity on the submarine cables terminating at various CLS in India. The provisions have been made to provide, on fair and non-discriminatory terms & conditions, access to any eligible Indian International Telecommunication Entity for accessing international submarine cable capacity on any submarine cable.

[8] https://dot.gov.in/dataservices/guidelines-and-general-information-setting-submarine-cable-landing-stations

As per existing licensing/ regulatory framework, both the owner of the cable landing station and seeker of international capacity at the CLS must have the valid ILD/ISP license, holding a valid international gateway permission from DoT. Also, Access Facilitation Charges and co-location charges are prescribed, which shall be payable by a class or classes of eligible Indian International Telecommunication Entity to the owner of the CLS. In this regard, TRAI has issued the following Regulations: -

a. *The International Telecommunication Access to Essential Facilities at Cable Landing Stations Regulations, 2007 (5 of 2007) dated 07.06.2007.*
b. *The International Telecommunication Access to Essential Facilities at Cable Landing Stations (Amendment) Regulations, 2012 (No. 21 of 2012) dated 19.10.2012.*
c. *The International Telecommunication Cable Landing Stations Access Facilitation Charges and Co-Location Charges Regulations, 2012 (No. 27 of 2012) dated 21.12.2012.*
d. *The International Telecommunication Cable Landing Stations Access Facilitation Charges and Co-Location Charges (Amendment) Regulations 2018 on 28.11.2018.*

1.16 TRAI, in its Consultation Paper on "Ease of Doing Business in Telecom and Broadcasting Sector" dated 08th December 2021, had dealt with the subject "*Permissions for Cable Landing Station (CLS) and laying and repair of submarine cables*" in detail. In India, setting up a new cable landing station is quite a complex process and various clearances and permits (In-transit, Pre-repair, and Post-repair permit) are required for the repair work of the submarine cable in the maritime zones. The submarine cables are prone to cable faults due to fishing and anchoring activities in shallow waters (<1000m water depth) near the shore, resulting in high costs for repair with long service outages. Majority of the

damage to submarine cables comes from human activity, primarily fishing and anchoring as shown in **Figure 1.2** below.

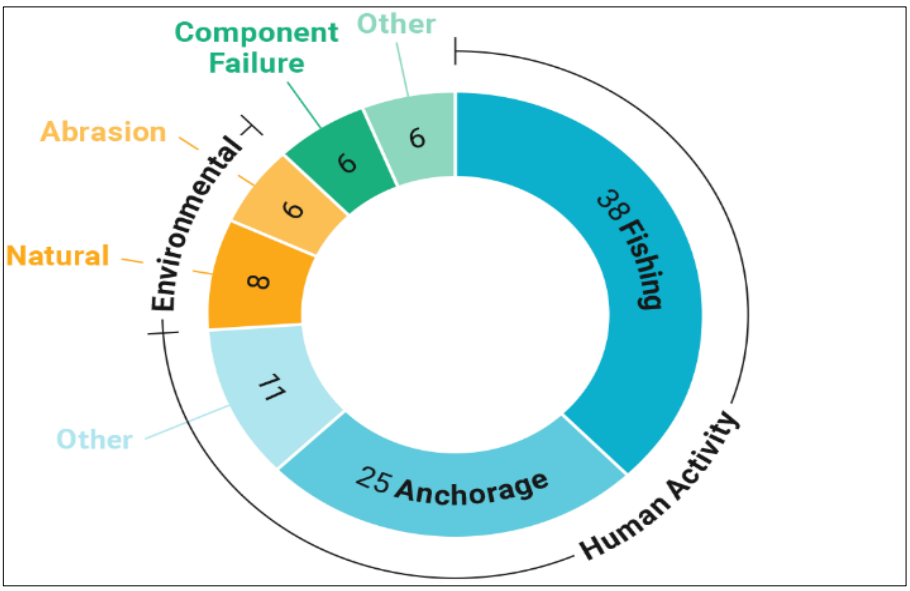


Figure-1.2: - Damage to submarine cable due to different reason

Special corridors and protection zones should be declared for cable laying in shallow waters near shore. The corridor prohibits specified activities posing risks to submarine cables, including fishing, anchoring, and dredging within fixed geographic areas. There is need of an end-to-end simplified procedure for the operation and maintenance of the undersea cable which includes permission for the ships to land, the import of equipment, measurement tools, etc.

The above subject is being handled in TRAI's recommendation on "Ease of Doing Business in Telecom and Broadcasting Sector" and recommendations will be made thereof.

1.17 Also, TRAI in its recommendation on "*Regulatory framework for promoting Data Economy through establishment of Data Centres, Content Delivery Networks, and Interconnect Exchanges in India*" dealt with the challenges faced while accessing international connectivity through cable landing stations and measures,

including incentive provisions, to be taken to improve reliable connectivity to the CLS.

D- Present Reference from DoT

1.18 DoT has been issuing ILD licenses from 2002 onwards and ILD licensees, with prior approval of DoT, are authorized to set up their Cable Landing Stations (CLS) and to lay submarine cables in India.

Recently, DoT noted that in some cases, the Indian ILDOs do not have any stake in the consortium owning submarine cable, but they are seeking MHA/ MoD clearance on behalf of the cable consortiums for laying/maintaining such cables and applying for setting up of CLS for such submarine cables. They are acting as the landing party in India for these cables. The following directions were issued by DoT: -

(i) *The company laying submarine cables have to ensure that it holds a valid ILD license issued by the Department of Telecommunications, Government of India while entering into the Indian territorial waters. In case a consortium is laying submarine cables, they shall ensure that any member of their consortium holds a valid ILD license issued by Department of Telecommunications, Government of India while entering into the Indian territorial waters.*

(ii) *The ILD licensees, licensed in India, while applying for security clearances (i.e MHA/ MoD Clearance) on behalf of any entity for laying/maintaining the submarine cables, shall make sure that they have significant stake in such entities on behalf of whom they are applying for security clearances. else they won't have any locus standi in the case.*

1.19 After issuance of these instructions, some of the ILDOs have started claiming that the portion of submarine cable laying in Indian territorial waters is being owned by them. On further enquiry by CS wing, they submitted copies of agreements signed by them with consortium members and also copies of asset registers were also sought from ILDOs. The clearances were issued to ILDOs by CS wing, DoT due to the urgent maintenance requirements and based on the statements of ILDOs that they own these assets in Indian territorial waters.

1.20 DoT has stated that though the ILDOs have undertaken that they own the assets in the Indian territorial waters, however, concerns are being raised by the industry that enforcing stake condition in submarine cables can put the country on disadvantageous position for international connectivity and have urged DoT not to mandate this condition.

1.21 DoT vide reference letter dated 12th August 2022 (Annexure-I) has requested TRAI for recommendations on licensing framework and regulatory mechanism for submarine cables landing in India within existing UL-ILD/ standalone ILD license under section 11(1)(a) of TRAI Act 1997. It is also requested to examine global practices adopted by other countries for regulating submarine cables landing in their countries/ territorial water while giving these recommendations.

1.22 Based on the reference received from DoT, the Authority had preliminary interactions with some stakeholders. During these interactions and during ongoing consultation processes related to 'Ease of doing business' and 'Regulatory Framework for Promoting Data Economy Through Establishment of Data Centres, Content Delivery Networks, and Interconnect Exchanges in India', certain other issues related to undersea cable landings were also flagged. The purpose of this Consultation Paper (CP) is to seek views of stakeholders on issues flagged in the reference

received from DoT as well as on certain other issues related to undersea submarine cables that the Authority has *suo-moto* identified. Thus, this CP focuses on some of the important issues pertaining to laying of submarine cables in Indian Territorial waters and intends to review the existing licensing framework and regulatory mechanism for submarine cables landing in the country.

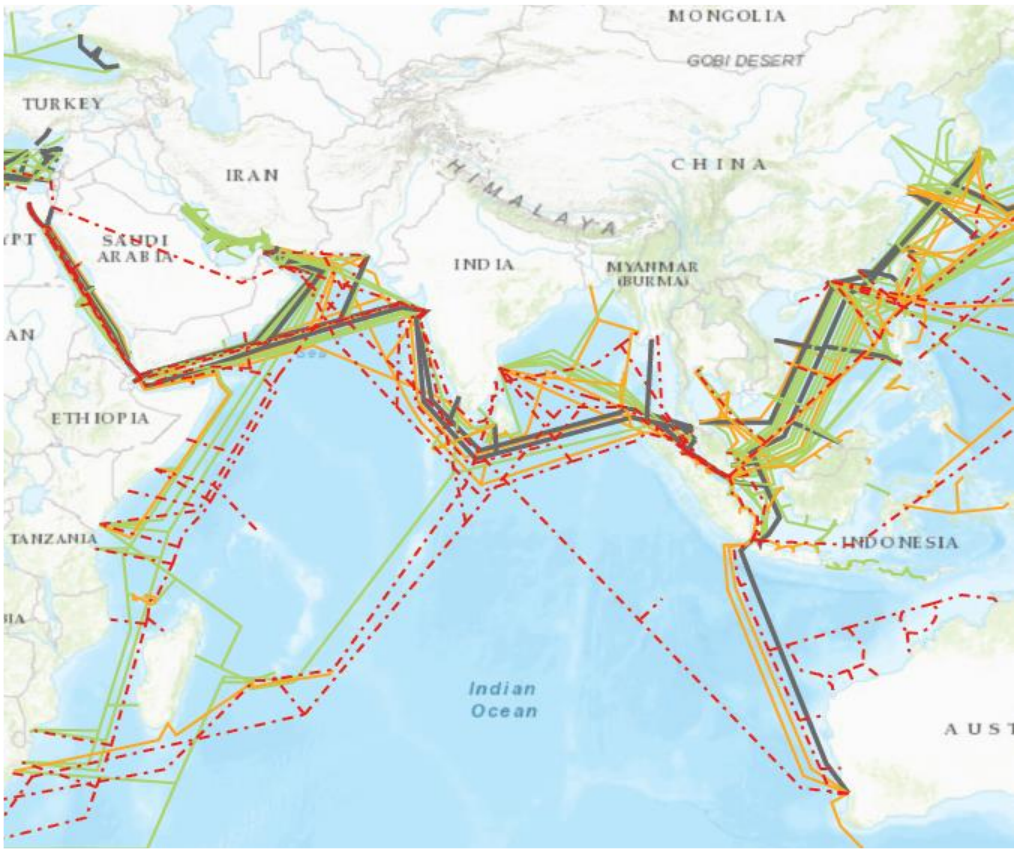
1.23 This consultation paper is divided into five chapters. The first chapter introduces the detailed background on which this consultation is being initiated. The second chapter deals with the status of submarine cables in India and Vessel for submarine cable operation and maintenance in Indian Territorial waters. The third chapter discusses the additional issues relating to Domestic submarine cable, stub-cable, terrestrial connectivity. The fourth chapter deals with international practices. The last chapter lists the issues for consultation.

CHAPTER 2

SUBMARINE CABLE AND CLS

A- Status of Submarine Cables in India

2.1 India as of now has total 17 submarine cables coming from different parts of the world to connect with terrestrial network at the cable landing stations near the coast. Mumbai and Chennai have the maximum concentration of submarine cables. Also, new submarine cables, under planning/construction, are going to make a landfall at the different coastal cities of the country including some new locations like Digha (in West Bengal) and Mahuva (in Gujarat).



Submarine Cables around India

2.2 According to the data held with TRAI, the submarine cable wise lit capacity and activated capacity (Gbps) for last two years as reported by ILDOs owning Cable Landing Station(s) is tabulated below: -

No. of Cables	Name of Cable System	Location of CLS	Lit Capacity (Gbps)		Activated Capacity (Gbps)	
			2020	2021	2020	2021
1	AAE-1 (Asia Africa Europe-1)	Mumbai	6590	7110	5250	5750
2	BBG (Bay of Bengal Gateway)	Chennai and Mumbai	23100	23800	12830	15900
3	Bharat Lanka Cable System	Tuticorin	40	40	0	30
4	EIG (Europe India Gateway)	Mumbai	4800	6400	3554	3759
5	FALCON (FLAG Alcatel-Lucent Optical Network-1)	Mumbai	4210	4150	4210	4150
6	FALCON (FLAG Alcatel-Lucent Optical Network-2)	Trivandrum	170	70	40	30
7	FLAG Europe Asia (FEA: Fiber-Optic Link Around the Globe)	Mumbai	50	50	42	23
8	GBICS (Gulf Bridge International Cable System)	Mumbai	260	260	98	98
9	Network I2I	Chennai	16730	27230	14078	22760
10	IMEWE (India-Middle East-Western Europe)	Mumbai (2)	9432	13805	4209	4684
11	MENA (Middle East North Africa)	Mumbai	2700	2700	2670	2670
12	SAT3/WACS/SAFE	Cochin	480	480	30	34
13	SEA Cable+TGN EA (SEACOM)	Mumbai	3520	4620	3430	4470
14	SEA ME WE 3 (South-East Asia-Middle East-Western Europe 3)	Mumbai and Cochin	680	680	59	56
15	SEA ME WE 4 (South-East Asia-Middle East-Western Europe 4)	Chennai and Mumbai	20640	17515	4473	4546
16	TGN Gulf	Mumbai	260	360	230	320
17	TIISC (Tata Indicom India-Singapore Cable System)	Chennai	7680	14600	7480	14520
TOTAL			101342	123870	62681	83800

Table 2.1: - Submarine cable-wise lit and activated capacity (Gbps)

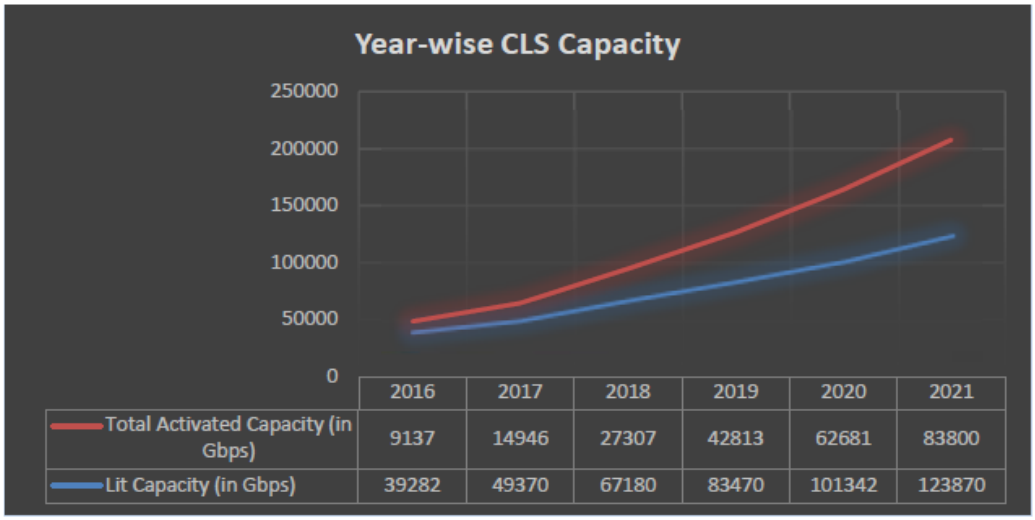


Figure 2.1: - Year-wise total lit and activated capacity of India (as reported by ILDOs)

2.3 India's used international bandwidth is expected to grow at a compounded annual rate of 38% between 2021 and 2028. This rate of growth implies that international bandwidth demand will increase 10 times over this period[9]. India is experiencing an influx in its data centres due to its significant market potential and relaxed policies and regulatory environment. India currently has 11 cloud regions as of June 2022. Google recently launched a region in Delhi in 2021 and both AWS and Microsoft Azure plan to launch regions in Hyderabad soon.[10]

2.4 Submarine cable system are built on the following two types of financing models: -

(i) **Private Ownership Model** - directly owned by an operator or telecom group that sees direct synergies in owning a subsea cable.

(ii) **Consortium Model** - private operators and groups teamed up into consortiums, with the view of either owning international

[9] https://blog.telegeography.com/expectations-for-indias-used-international-bandwidth
[10] https://www.capacitymedia.com/article/2a88i7p8hdloajue9ghz4/news/india-set-to-surge-in-international-bandwidth-demand

broadband access for their own operations, or to be able to offer competitive wholesale solutions.

2.5 Cable Landing Station owners are generally the consortium members, and they incur the total cost of building and operating the landing stations. These costs are then retrieved from the consortium either in one shot upon RFS or along the lifetime of the cable.

2.6 The activity of submarine cable laying in India is not defined under the scope of work / service for UL- ILD license. However, the clause 2.4 under scope of license of Chapter -1 under UL is as below: -

"*Licensee shall make its own arrangements for all infrastructure involved in providing the service and shall be solely responsible for the installation, networking, operation and commissioning of necessary infrastructure, equipment and systems, treatment of subscriber complaints, issue of bills to its subscribers, collection of revenue, attending to claims and damages arising out of its operations etc. However, the Licensee may share the infrastructure as permitted under the scope of respective service authorization in PART-II of the Schedule to the License Agreement or as per the directions/instructions issued by the Licensor from time to time.*"

2.7 While the above license condition talks about ***Licensee making its own arrangements for all infrastructure involved in providing the service and shall be solely responsible for the installation, networking, operation and commissioning of necessary infrastructure, equipment, and systems,*** it is silent on ownership aspects. The question that arises is - whether the ILDOs seeking for laying/ maintaining the submarine cable in India, should also own and control the necessary inputs of that submarine cable system in India (cable in Indian territorial waters/ EEZ of India), cable landing station and back haul facilities. As has been discussed previously, most submarine cables are laid as part of the consortium and therefore any individual player will have only

certain percentage as ownership in the system. For such ILDOs, that seek permission for terminating any submarine cable in India, should there be an insistence that they own a minimum of X% interest in the submarine cable system apart from owning the CLS in India.

2.8 DoT in its background note attached with the reference letter dated 12th August 2022 has stated that after issuing instruction to ILDOs over the ownership, ILDOs have submitted copies of agreements signed by them with consortium members and also ILDOs have given undertaking that they own the assets lying in Indian Territorial waters.

2.9 With regard to ownership/ stake in entities owning submarine cable, the practices being followed in different countries are as below: -

(i) The FCC in the USA grants incense for cable landing based on ownership of the cable. The following entities, at a minimum, must be included as Applicants for the license in USA:

a. any entity that owns or controls the U.S. cable landing station, and

b. all other entities owning or controlling a five per cent (5%) or greater interest in the cable system and using the U.S. points of the cable system.

(ii) In Singapore, the Facilities Based Operational (FBO) license for laying cables granted by the IMDA is based on the financial viability of the project and the value addition done by the cable to the communication industry and the economy. The authority in Singapore also looks for whether efficient use of land resources and sea corridors will be done while installing new cables.

(iii) In Canada, to be eligible for acquiring the terminal cable license, the person should have administrative and operational control of the international submarine cable, including its associated works or facilities.

2.10 Based on the above, following are the different conditions that can be made applicable to ILDOs who are laying/ planning to lay submarine cable and setting-up CLS in India: -

(i) ILDOs should have X% or greater interest in the submarine cable system for laying cable in the Indian territorial waters, terminating the international cable and should also own or control the Cable Landing Station in India.

(ii) ILDOs not having any stake in consortium but signing agreement of ownership of submarine cable in Indian waters and submitting undertaking that they are owning the asset in Indian territorial waters.

(iii) Any ILDOs without ownership agreement/ undertaking.

2.11 In view of the above, stakeholders are requested to give their comments on the following issues with justification: -

Q.1 What limitations are being posed by existing licensing and regulatory provisions for laying submarine cables and setting up of CLS in India? Please answer with the detailed justification for changes required, if any.

Q.2 Which of the conditions, as stated in Para 2.10 be made applicable on the ILD licensee for applying permission /security clearance for laying and maintaining the submarine cable and setting up CLS in India? Please answer with the detailed justification.

B- Indian Flagged Vessel for submarine cable operation and maintenance in Indian Territorial waters.

2.12 India is located in a strategically and geographically significant position, where every cable system that connects Europe and Southeast Asia inevitably needs to transit. Hence, the installation, maintenance, and repair of the cable network around the Indian mainland, both in Indian territorial waters and Exclusive Economic Zones (EEZ), is crucial for the global economy and Indian economic growth as they play a pivotal role in providing access to information and data around the world.

2.13 The planning, production, operation, and maintenance of undersea cables are almost entirely in the hands of the few suppliers such as, Alcatel Submarine Networks and Nexans (France), Prysmian Group (Italy), NKT A/S (Denmark), SubCom (United States), NEC (Japan), and Huawei Marine Networks (China). Looking at the fleet of 51 cable laying vessels[11], SubCom is the front runner in sheer numbers with eight vessels, Orange Marine and ASN in a tie for second place where they each own six vessels[12]. The overall distribution of cable ships dedicated to maintenance agreements versus those available for installation jobs is almost even. Of the global fleet, 21 are dedicated to club and private maintenance zones, 26 are dedicated towards installation work. The remaining four are not dedicated to a sole purpose. Cable ships are stationed around the world in strategic locations reflecting established fault profiles to be able to cover all parts of the world easily. As the Atlantic and Pacific Oceans are the busiest and highest traffic maritime regions in the world, most of the global cable ship fleet is stationed in these two regions. Many of the world's most important telecommunications routes cross these two oceans, requiring multiple maintenance vessels to be on hand and installation

[11] https://subtelforum.com/products/submarine-telecoms-industry-report/
[12] https://subtelforum.com/submarine-cable-map/

vessels available for new routes. The Indian Ocean and Mediterranean regions are slightly-less busy and have a smaller coverage footprint. Therefore, fewer ships are necessary to handle the workload required by these regions, resulting in a significantly smaller portion of the fleet stationed there.

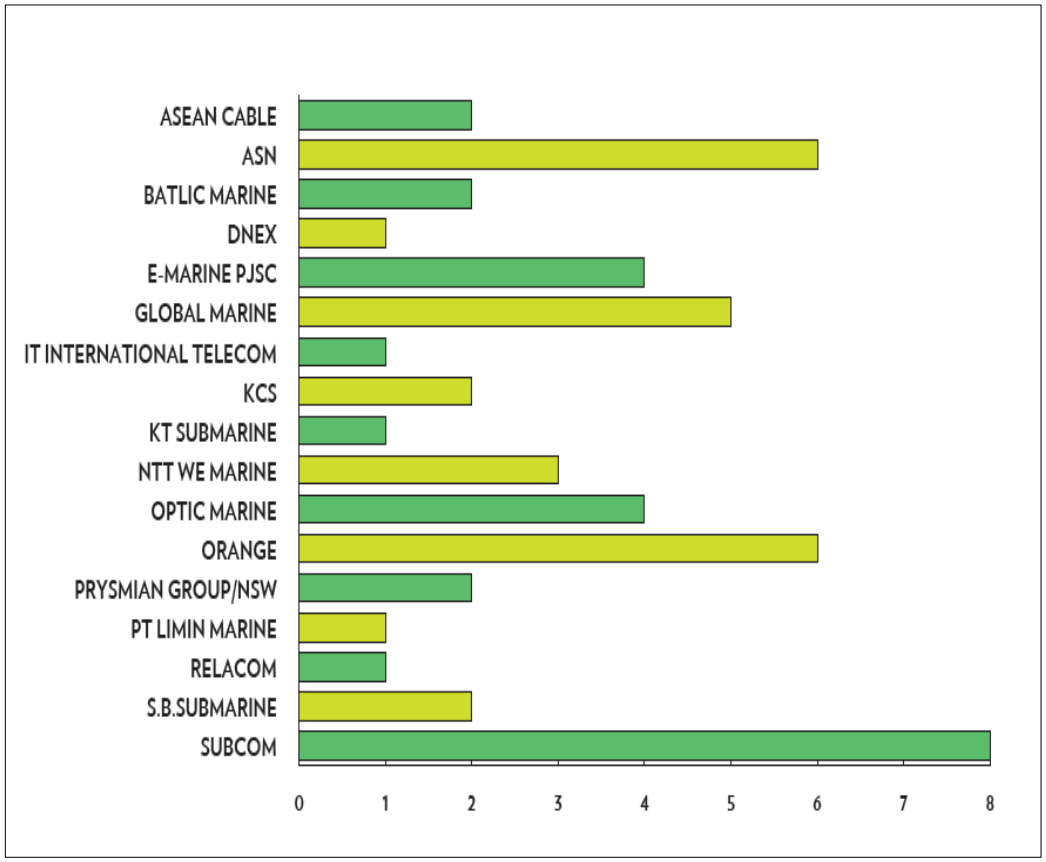


Figure 2.2- Cable Ship Fleet Distribution by Company

2.14 The live details of Submarine cable, Cable landing Station, Cable Vessels and its present location are available on the recently launched portal https://subtelforum.com/submarine-cable-map/#.

2.15 Cable repair is an expensive and complex marine operation requiring specially designed ships carrying highly trained crews and skilled engineers. Cable repairs are not directed by national governments, but by contracts. For efficiency and economy, the contracts are pool agreements among cable owners, who charter one or more ships dedicated to the repair of cable systems in a particular region. The ships are strategically based at regional

ports and maintained in a high state of readiness. Contractually, they are obligated to sail—with a trained crew and spares for repair—within 24 hours of a cable-fault notification. The "zone" agreements are contracts between consortiums of cable owners and cable-ship owners: The Atlantic Cable Maintenance Agreement (ACMA); the Mediterranean Cable Maintenance Agreement (MECMA); the North American Zone (NAZ); the Yokohama Zone Agreement (YOKOHAMA); and the South-East Asia Indian Ocean Cable Maintenance Agreement (SEAIOCMA). The "private" agreements are between individual cable owners and ship owners.

2.16 The concept of a submarine cable Maintenance Agreement is to ensure owners of submarine cables, a fast and dependable response to a potential cable fault to limit the downtime of cable system to a minimum. The South-East Asia and Indian Ocean Cable Maintenance Agreement (SEAIOCMA) zone agreement, a co-operative club managed by 45 cable owners, provides the repair of submarine cables that carry international telecommunications traffic. SEAIOCMA spans the area between Djibouti in the west, Perth in the south, Guam in the east and the northern tip of Taiwan (Figure below).[13] Global Marine, a leading provider of subsea fibre optic cable installation and maintenance solutions to the telecommunications sector, and part of the Global Marine Group, has been awarded a contract extension of SEAIOCMA for another five years, running until 31st December 2025.

[13] https://subtelforum.com/seaiocma-extends-global-marine-maintenance-agreement/

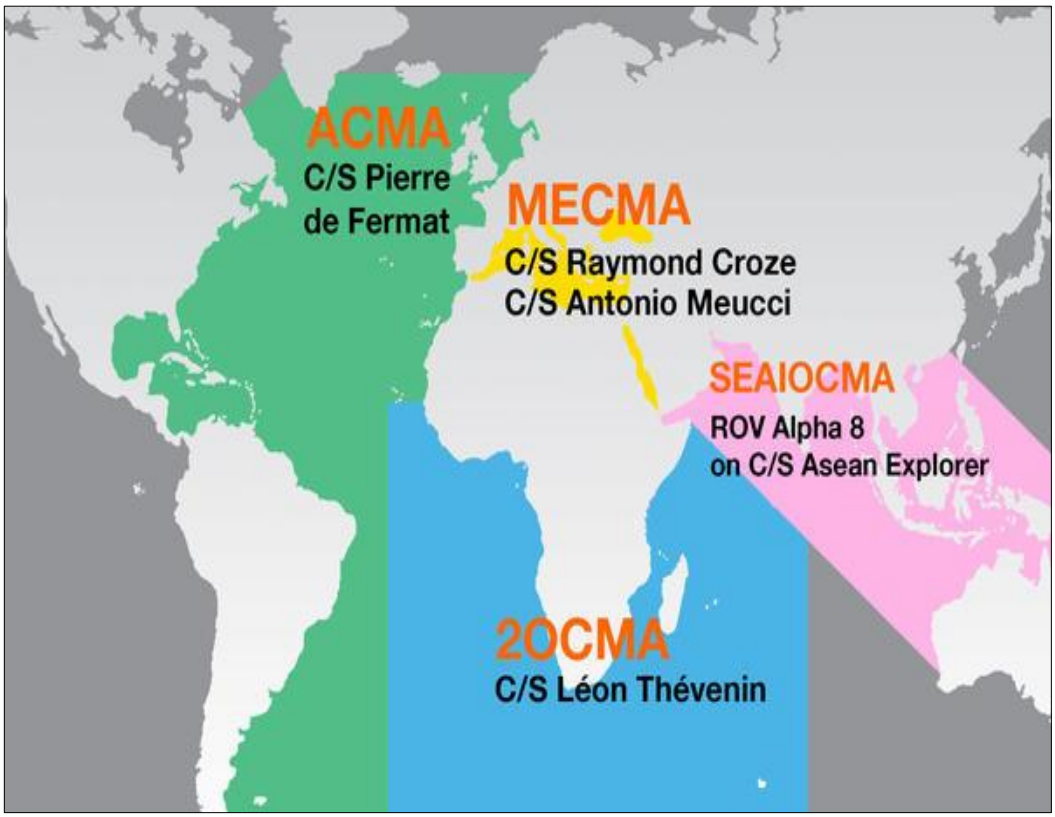


Figure 2.3: - Submarine Cable Maintenance Zone

2.17 One of ILDOs has submitted in their representation that presently there are only two main marine service providers who support all the marine maintenance activities in and around Indian waters. These marine service providers are mainly based out of Singapore and Dubai. There is high dependency on these service providers for the cable repair along the Indian coast lines. It also involves high mobilization time for the repair vessel to be mobilized from Dubai or Singapore. Presently, no Indian service provider is available.

2.18 As of now, 17 submarine cables are terminating in India and also number of new cables are under planning/ construction that will soon make a landfall at different coastal cities including some new locations. India has a 7,516.6-kilometer-long coastline and India's Exclusive Economic Zone (EEZ) covers roughly 2.01 million square kilometers. This long coastline with Exclusive Economic Zone and islands at both ends makes for a unique and strategic position on the world map. Hence, the installation, maintenance, and repair of

the submarine cable network around the Indian mainland are critical not only for the global digital economy and but also for India becoming a hub for Data Centre and CDN.

2.19 In order to strengthen the position of India in world submarine cable network, one possible forward step can be to have a provision of Indian submarine cable repair vessel to improve the current situation of cable repairs in or around Indian territorial waters. This will have two major requirements, procuring a specially designed repair vessel and setting up of a full-fledged cable depot for storing the spares of the cable systems. Such an indigenous arrangement can ease the requirement of some permits and customs duty implications. Indian Flagged vessel can be arranged in short notice and most of permits can be pre-arranged, being Indian operation. Further, no dependency on foreign operators, will improve the Ease of Doing Business. The Indian submarine cable repair ship operation will need an adequate Cable Depot arrangement to store various spares of the contracted cable systems. It requires space to store cable drums, so that the submarine spare cable can be stored in the seawater to avoid UV-ray exposure to the cables. It will also need necessary transport.

2.20 However, the viability of owning an undersea cable repairing vessel by a single entity remains an issue. One of the possibilities is that all entities who have undersea cable system in India participate and one of them takes the lead to form a consortium for owning such a vessel. Another possibility could be of a government backed consortium with ILDO, having a stake in the proportion to number of cables owned or their KMs length in the EEZ.

2.21 In view of the above, the stakeholders are requested to give their comments on the following issues with justification:

Q.3 Would an undersea cable repair vessel owned by an Indian entity help overcome the issues related to delays in undersea cable maintenance? Please provide justification for your answer.

Q.4 If the answer to the above question is yes, then please suggest possible mechanisms along with detailed justification and financial viability analysis for implementing this proposal.

CHAPTER 3
DOMESTIC SUBMARINE CABLE, STUB-CABLE, AND TERRESTRIAL LINK

A- Domestic Submarine Cables

3.1 It is evident that the growth of telecom infrastructure is closely linked with economic and social development. In this regard, the government envisioned the Chennai-Andaman and Nicobar Island Cable (CANI) project to boost e-governance, tourism and strengthen India's strategic maritime security. On 10th August 2020, Hon'ble Prime Minister of India inaugurated and dedicated to the nation the 2300 km (approx.) undersea high-speed submarine cable between Chennai and Port Blair. The CANI project connects Port Blair along with seven other Islands of Andaman & Nicobar viz. Little Andaman, Car Nicobar, Kamorta, Great Nicobar, Havelock, Long Island and Rangat. Further, in December 2020, the Government has approved KLI (Kochi-Lakshadweep Island) Cable Project for a direct communication link through a dedicated submarine Optical Fiber Cable between Kochi and 11 Islands of Lakshadweep viz. Kavaratti, Kalpeni, Agati, Amini, Androth, Minicoy, Bangaram, Bitra, Chetlat, Kiltan & Kadmat. Soon, it will vastly improve telecommunication facility in the Lakshadweep Islands by providing large bandwidth. The submarine connectivity project will have a vital role in the delivery of e-Governance services at the doorstep of citizens, potential development of fisheries, coconut-based industries and high-value tourism, educational development in terms of tele-education and in healthcare in terms of telemedicine facilities. It will help in establishment of numerous businesses, augment e-commerce activities and provide adequate support to educational institutes for knowledge sharing.

3.2 In consonance with abovementioned statements, submarine cables can also be envisaged to connect major/ important coastal cities of

India for high-speed reliable data connectivity. It can connect all major cities and Data Center hubs along the western and eastern coastal line that will provide robust network for Indian domestic traffic as well as the Data Center centric traffic. The reliability and stability of submarine cable networks is very high as compared to the terrestrial optical fibre cable network. It may also be cost effective, as it will require relatively lesser encumbrances to roll out this network and lower OPEX to maintain connectivity between cities using this proposed network.

Figure 3.1 - Indian Submarine Cable network for Domestic traffic

3.3 It may also be noted that cable may slightly go beyond the Indian territorial water/ EEZ of India, to improve Mean Time Between Failures (MTBF). Therefore, there may arise a need to lay under-sea cable through EEZ or International Waters for domestic / NLD nature traffic. However, the cable will connect stations on Indian coast only and the traffic flow will be of domestic/ NLD nature. Domestic submarine cable systems are widely deployed across the globe e.g., in USA, Europe and Australia are already using the submarine cable for domestic connectivity purpose.

3.4 Presently in India, under licensing/ regulatory framework, there is no specific provision to connect two or more cities on the coastal line through domestic submarine cable and setting up of cable landing station for handling purely NLD traffic. In order to improve the OFC connectivity, NLD licensee can be explicitly allowed to establish, own, maintain and operate domestic submarine cable connecting two or more cities on the coastal line and CLS solely to cater NLD traffic. Domestic submarine cable shall not be interconnected with international submarine cables at CLS handing ILD traffic. The nature of the traffic handled by domestic cables will be of NLD and will not cater ILD traffic, hence the cable needs to be regulated under domestic cable/ NLD category only. The requirement of LIM (Lawful Interception Monitoring) and other clearance/ compliance as needed for international submarine cable and CLS catering ILD traffic may not be applicable to domestic submarine cable and CLS handling purely NLD traffic.

3.5 Permits and clearances are required mainly from DoT and different units under MoD and MHA for laying submarine cables in Indian Territorial water/ EEZ. Also, EIA (Environment Impact Assessment) and CRZ (Coastal Region Zone) clearances from Ministry of Environment and Forest are mandatory. After obtaining EIA and CRZ clearances, permission is required from Maritime Board of the respective State. Maritime board levies charges depending upon the project and its end use. There are types of charges/ fee levied by Maritime Board – (a) One-time charges based on the value of the project laying in Indian Territorial water i.e, upto 12 nautical miles only. (b) Annual license fee for coastal land (*based on the area of the Beach Manhole (BMH)*) and marine structure. In addition to above, NOC / agreement is required for crossing over / near the existing submarine cable/ pipelines from the respective owners/ consortium.

3.6 In view of the above, stakeholders are requested to give their comments on the following issues with justification: -

Q.5 **What measures should be undertaken for promoting Domestic submarine cables for connecting coastal cities in India? What limitations are being posed by existing licensing and regulatory provisions for laying domestic submarine cables in India? What are the changes required in the existing licensing and regulatory framework? Please answer in detail with the supporting document, if any.**

Q.6 **Are any limitations being envisaged in respect of getting permissions and/or associated charges/ fee for laying domestic submarine cable and its Cable Landing Station? What are the suggested measures to overcome limitations, if any?**

B- Stub- cables

3.7 The stub cable is a new concept and innovative concept of placing pre-laid "dark fiber" from the CLS through Beach Manhole (BMH) into the territorial waters as an ab-initio infra-arrangement for future submarine projects. The stub cable is short length of submarine cable (mostly single armored cable) joined to the land cable in the BMH (Beach Manhole) and further extended using Land cable till the CLS (Cable Landing Station). Please see the diagram below. This stub-cable shall be installed along with another project execution to bring efficiency. In the sub-seaside, the cable will be available for connecting to future submarine cable projects with proper joint closures.

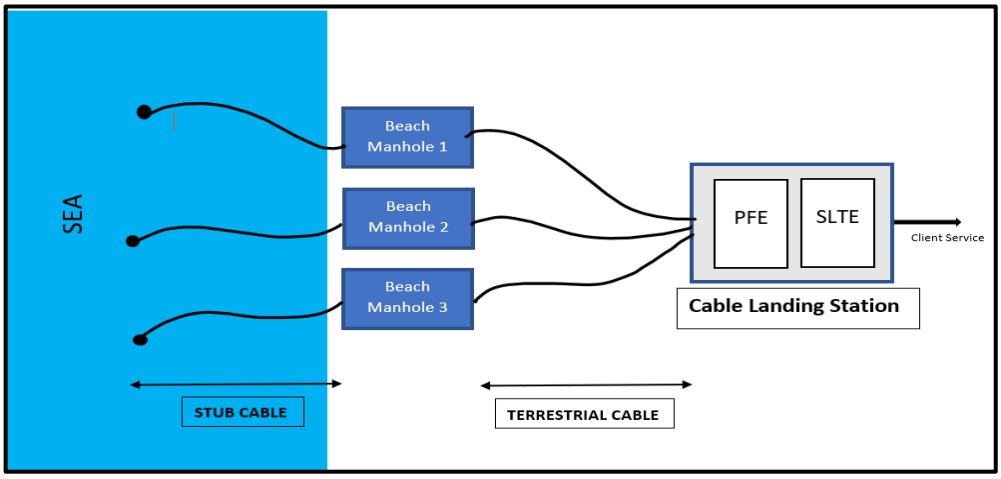


Figure 3.2 – Schematic diagram of Stub-Cable

3.8 In the CLS side, the cable will be kept open and will not be connected to any "PFE (Power Feed Equipment)" and shall remain dark till it is connected to a future cable project. The stub-cable will have higher fiber count, so that multiple future projects can make use of this stub-cable. This also will bring cost efficiency in the plan.

3.9 Stub-cable installation based pre-laid infra creation will reduce the actual time required for the overall project implementation and will be cost effective for the projects. Being a readymade infrastructure, it will attract cable investments for submarine cable landing, thus the overall submarine cable capacity will increase.

3.10 The implementation of Stub-cable arrangement will involve distinct activities under two phases. In Phase-1 - Deployment of "Stub-cable" as dark fiber and in Phase-2 – Allocation of Fiber pairs of stub-cable for the new submarine cable system. Both the activities under two phases may require different necessary permit and clearance from the concerned government bodies.

3.11 Stub-cable installation will ease country's Landing requirements. Few countries insist installation of such stub-cable along with

any other ongoing project to keep the infra ready for future projects and to limit their approval requirements.

3.12 In Singapore, assessment for the new submarine cable deployment is also based on the consideration about the efficient usage of land resources and sea corridors in the submarine cable deployment. IMDA, Singapore encourages the applicant to plan to deploy spare cable fibres together with the new submarine cable system to cater for the future expansion of new submarine cable routes. The Authority looks favourably to new methods of cable deployment that can result in more efficient use of land resources and sea corridors.

3.13 In view of the above, stakeholders are requested to give their comments on the following issues with justification: -

Q.7 Will it be beneficial to lay Stub-Cables in India? If yes, what should be the policy, licensing, and regulatory framework for laying, operationalizing, and maintaining the stub cable in India? Please answer in detail with the supporting documents, if any.

C- Terrestrial Link between the CLS

3.14 In landing stations, undersea network traffic terminates and connects to the terrestrial network of that country. Landing stations tend to be close to the shore and are often in near vicinity of submarine electricity networks or other critical infrastructures. Landing stations host telecom transmissions equipment, servers, routing and switching technologies that provide the bridge to the terrestrial network.

3.15 The location of cable landing stations is vital to the resilience of the submarine cable network. If multiple cable landings are constructed in mutual proximity, there is an enhanced risk of failure due to the same disruption event. Reconsidering this,

recently planned cable projects diversify the location of cable landing stations. Implementing geographical distances between cable landing stations reduces the risks of simultaneous failures. Detaching the locations of cable landing stations from large settlements or port facilities further reduces the risk of damages.

3.16 Demand for route diversity, redundancy, and more direct control over critical infrastructure is driving the need for more submarine cables. Specifically, having bandwidth available on multiple subsea cable systems is important, in order to provide a high level of network availability and reliability. Submarine cables are also required to respond to unexpected spikes in demand, such as carrying traffic that is rerouted from other submarine cable following a cable fault. Hence, the connectivity between the CLS of different submarine cable is important for the reliability and route diversity of international capacity. The direct connectivity between the CLS will reduce the network latency and will provide the route diversity and better management of international capacity. Some of the stakeholders have raised doubt on clarity in the existing licensing / regulatory framework as to whether it permits establishing direct connectivity through terrestrial link between two or more CLS located at different location on the Indian coastline.

3.17 In view of the above, stakeholders are requested to give their comments on the following issues with justification: -

Q.8 What challenges are being posed by existing telecom licensing and /or any other framework for establishing terrestrial connectivity between different CLSs in India? What are possible solutions to such challenges? Please support your answer with detailed justification.

Q.9 In comparison with other leading countries, what further measures must be undertaken in India for promoting investment to bring submarine cable in India? Please answer in detail with the supporting documents, if any.

CHAPTER 4

INTERNATIONAL PRACTICES RELATED TO SUBMARINE CABLES AND CLS

4.1 Department of Telecommunication (DoT) in its reference letter dated 12th August 2022 also requested to examine global practices adopted by other counties for regulating submarine cable landing in their countries/territorial waters. The chapter analyses the cable landing regulations of USA, Singapore, Australia, UAE, and Canada. These are fast-growing nations and have vast coastlines like India.

AUSTRALIA:

4.2 All international submarine cables that are connected to a place in Australia require an installation permit from The Australian Commission and Media Authority (ACMA). The ACMA has declared three submarine cable protection zones: Northern Sydney, Southern Sydney and Perth protection zone. A domestic submarine cable requires a permit if it is to be installed within a declared submarine cable protection zone. The ACMA issues a permit to the telecom service providers (TSP) to install[14]:-

(i) an international submarine cable inside or outside a protection zone. If the installation has to be done in the protection zone, then a "protection zone permit" is required else a "non-protection zone permit" is required.

(ii) a domestic submarine cable in a protection zone. A permit is not needed to install a domestic cable outside a protection zone. A permit is needed for domestic cable only when the installation is done in the protection zone.

[14] https://www.acma.gov.au/rules-operating-around-submarine-cables

4.3 An application for a permit must be accompanied by payment of the appropriate charge per cable and the consultancy deposit (if applicable) as shown below in the **Table 4.1**. Once a permit is issued, it is valid for a period of 18 months. The permit can be extended for 180 days. There is no limit on the number of times the permit can be extended. Each time a non-refundable fee of $1414 should be submitted for the request. The decision for the extension will be taken by the authority.

	Application Charge Per Cable	Consultancy Deposit
Protection zone permit	$4040	n/a
Non-protection zone permit	$5959	$25,000

Table 4.1: Application Charges in Australia

4.4 The ACMA is required to either grant or refuse an application for a permit within the following timeframes:

- Protection zone permit – 25 business days after the day the application for the permit was received. The ACMA may extend this period up to, but not exceeding, 35 business days.
- Non-protection zone permit – 60 business days after the day the application for the permit was received. The ACMA may extend this period up to, but not exceeding, 90 business days.

Hence, Australia has the concept of a protection zone and a non-protection zone. For laying an international cable, a permit is required irrespective of the zone the cable will be laid in. While laying a domestic cable, a permit is required only when the cable is being laid in the protection zone.

SINGAPORE:

4.5 The Info-communications Media Development Authority (IMDA) (the "Authority") is the lead agency for facilitating the deployment of submarine cable systems in Singapore. The Authority provides guidance to interested parties and facilitates the process of applying for the necessary permits from various authorities.

4.6 All new submarine cable systems can only be deployed to designated landing sites, and each is available on a first-come-first-served basis. A set of guidelines is issued to provide an overview of the process for obtaining the necessary approvals and permits for the deployment of the submarine cable. There are five key steps that an interested party has to go through in order to land a submarine cable system in Singapore.

S. No.	Steps to be followed	Time Required
1	Facilities-Based Operations (FBO) licence	Four weeks
2	Consultation with the Maritime Port Authority (MPA)	-
3	Application to the Urban Redevelopment Authority (URA)	Two to Three months
4	Application to MPA (Committee for Marine Projects)	Three weeks
5	Application to Singapore Land Authority (SLA) for Wayleave and Temporary Occupational licences	Eight weeks

Table 4.2: Time required for obtaining clearances from the respective body in Singapore

4.7 For acquiring the FBO license, the applicant is required to submit a cable landing proposal to the Authority that includes a detailed description of the new cable system, the business plans and details of the proposed deployment route and choice of the landing site. The applicants who already hold an FBO license from the Authority will have to seek the Authority's approval to amend the FBO license

to include details of the proposed submarine cable system and the associated services.

4.8 In general, the Authority's assessment for the new submarine cable deployment is based on the following considerations:

- Financial viability of the project and benefits that the new submarine cable system will bring to its information & communications industry, consumers, and the economy in Singapore, and
- Efficient usage of land resources and sea corridors in the submarine cable deployment. Applicants are encouraged to plan to deploy spare cable fibres together with the new submarine cable system to cater for the future expansion of new submarine cable routes. The Authority looks favourably to new methods of cable deployment that can result in more efficient use of land resources and sea corridors.

To summarise, the Facilities Based Operational (FBO) license for laying cables granted by IMDA is based on the financial viability of the project and the value addition done by the cable to the communication industry and the economy. IMDA also ensures efficient use of land resources and sea corridors while installing new cables.

CANADA:

4.9 There are two types of international submarine cable licences issued by the Government of Canada.

- Terminating cable license: The licence is for cables that connect to or are planned to connect to telecommunications facilities in Canada and extend between any location inside and outside of the country.

- Through cable licence: The license is for the cables that extend through Canada between places outside Canada and does not connect to telecommunications facilities in Canada.

4.10 For the purpose of building or operating an international submarine cable landing in Canada, including any related works or facilities, the international submarine cable licences are issued, amended, or renewed. The person should have administrative and operational control of the international submarine cable, including its associated works or facilities, in order to be eligible for acquiring the terminal cable license. An applicant has to pay, at the time of filing the application, a fee of $100 for the first year of the term of the licence. The fee for each subsequent year of the term of the licence is $100.

The submarine cable licenses in Canada are bifurcated based on whether the cable traffic will get connected to telecommunication facilities in the country or will simply pass through.

UNITED STATES:

4.11 The Federal Communications Commission, FCC's International Bureau, Telecommunications and Analysis Division (TAD)[15] grants licenses authorizing cable landing license applicants to own and operate submarine cables and associated landing stations in the United States[16]. The applicants applying for the license must be any particular entity that owns or controls a cable landing station in the U.S., and all the other entities must own a five per cent or greater interest in the cable system. Applicants should be mindful of the technical and ownership information required by the rules, as well as the requirement to state in the application whether the proposed cable will be operated on a common carrier or non-

[15]https://www.fcc.gov/submarine-cable-landing-licenses-granted
[16]https://www.fcc.gov/research-reports/guides/submarine-cable-landing-licenses

common carrier basis. Proposed non-common carrier operation must be accompanied by information showing that the proposed operation satisfies the requirements set forth in the National Association of Regulatory Utility Commissioners.

4.12 A cable landing license must be obtained prior to landing a submarine cable to connect:

(i) The continental United States with any foreign country.

(ii) Alaska, Hawaii or the U.S. territories or possessions with a foreign country, the continental United States, or with each other; and

(iii) Points within the continental United States, Alaska, Hawaii or a territory or possession in which the cable is laid within international waters.

4.13 The Cable Landing License Act[17] in the US prohibits operating or landing any submarine cable that directly or indirectly connects the United States to any foreign nation or that connects one part of the United States to another unless the President of the United States has issued a written licence authorizing the landing or operation of such a cable. The cables having both terminals entirely within the continental United States are exempted from the Act's restrictions.

4.14 Applications for cable landing licenses are subject to initial review for completeness of the information and, upon acceptance for filing, public notice inviting comment. The Commission's rules provide for streamlined processing with the action within 45 days of the release of the public notice where the applicant can demonstrate eligibility for streamlining under the Commission's rules. The Commission will undertake to act on applications that are ineligible for streamlining within 90 days of issuance of a public notice

[17]https://www.fcc.gov/cable-landing-license-act

unless the application raises questions of extraordinary complexity.

4.15 All licensees of international submarine cables (those submarine cables that connect the United States with international points) are required to pay annual regulatory fees for the submarine cable system. The Commission conducts a rule-making proceeding each year to determine the amount of the regulatory fee for that year.[18] [19]

Hence, the FCC in the USA while granting incense for cable landing also considers the ownership of the cable. The applicants applying for the license must be any particular entity that owns or control a cable landing station in the U.S., and all the other entities must own a five per cent or greater interest in the cable system.

UAE (United Arab Emirates):

4.16 The Board of the Telecommunications and Digital Government Regulatory Authority (TDRA) has recently issued "The TDRA's International Telecommunications Cable Regulations" or the "ITC Regulations" in the UAE. These regulations clarify the rules regarding installing, laying, maintaining, and removing International Telecommunications Cables in the UAE (including the Territorial Waters of the UAE) and to qualify, by way of Permits, persons other than Qualified Licensees involved in installing, landing, connecting, adjusting, maintaining, and the like, International Telecommunications Cables in the UAE. There are two different types of permits issued by the TRDA:

(i) **Permit to Install:** The Permit is valid for the lifetime of the concerned cable, and which authorizes the Permit Holder to install and maintain:

[18] https://www.fcc.gov/submarine-cables
[19] http://www.fcc.gov/fees/regfees.html.

- a Terrestrial Telecommunications Cable in the UAE, and if appropriate to seek Interconnection at a Terrestrial International Cable Gateway; or
- a Submarine Telecommunications Cable in the Territorial Waters of the UAE, and if appropriate to land the STC and to seek Interconnection at a Licensed Cable Landing Station.

(ii) **Permit to Remove:** A Permit which authorizes the Permit Holder to remove or decommission permanently or temporarily – as specified in the Permit:

- a Terrestrial Telecommunications Cable; or
- a Submarine Telecommunications Cable.

Hence, UAE issues permits to install or remove the cable. The same type of permit is issued for installing the terrestrial cable in the UAE and the submarine cable in the Territorial Waters. The installation permit is valid for the lifetime of the cable.

4.17 The Kingdom of Saudi Arabia and India may soon be connected by submarine cables, creating a renewable energy grid as both countries explore a cross-country project being undertaken to extend a new era of energy diplomacy. The submarine cable project will be connected from the coast of Gujarat to Saudi Arabia and the distance from Mundra Port in Gujarat to the coastal city of Fujairah in Saudi Arabia is 1,600 km. United Arab Emirates (UAE) may also join this project in the near future[20].

[20] https://www.oilandgasmiddleeast.com/partnership-0/saudi-arabia-india-to-lay-1600-km-long-underwater-cable#:~:text=In%20the%20coming%20days,%20UAE,deepest%20point%20being%203.5%20km

S. No.	Country	Commissioned Authority for issuing submarine cable landing permits	No. of Submarine cable systems (operating or under planning)	Equity condition for the submarine cable laying in the country	Entry / Application / license fee	Special provision for domestic cables	Provision for stub-cable	Provision of special corridor or protection zone
1.	Australia	Australian Commission and Media Authority (ACMA)	19	No	$4040 (Protection zone) and $5959 (non-protection) as an application fee permit valid for 1.5 years ($1414 for extension of the permit for 6 months)	Yes	No	Yes
2.	Singapore	Info-communications Media Development Authority	25	No	Processing fee, security deposit, etc.	No	Yes	Yes
3.	Canada	Government of Canada	16	No	Fee of $100 for the first year of the term and $100 for each subsequent year	No	No	-
4.	USA	Federal Communications Commission (FCC)	83	Yes (5% or more in the cable ownership)	Regulatory fee as applicable for each subsequent year of the license	Yes	No	-
5.	UAE	Telecommunications and Digital Government Regulatory Authority (TDRA)	2	No	Fees applicable and the permit is valid for lifetime	No	No	-

Table 4.3: - Summarized international practices related to submarine cable landing in the aforementioned countries

CHAPTER 5

ISSUES FOR CONSULTATION

Q.1 **What limitations are being posed by existing licensing and regulatory provisions for laying submarine cables and setting up of CLS in India? Please answer with the detailed justification for changes required, if any.**

Q.2 **Which of the conditions, as stated in Para 2.10 be made applicable on the ILD licensee for applying permission /security clearance for laying and maintaining the submarine cable and setting up CLS in India? Please answer with the detailed justification.**

Q.3 **Would an undersea cable repair vessel owned by an Indian entity help overcome the issues related to delays in undersea cable maintenance? Please provide justification for your answer.**

Q.4 **If the answer to the above question is yes, then please suggest possible mechanisms along with detailed justification and financial viability analysis for implementing this proposal.**

Q.5 **What measures should be undertaken for promoting Domestic submarine cables for connecting coastal cities in India? What limitations are being posed by existing licensing and regulatory provisions for laying domestic submarine cables in India? What are the changes required in the existing licensing and regulatory framework? Please answer in detail with the supporting document, if any.**

Q.6 **Are any limitations being envisaged in respect of getting permissions and/or associated charges/ fee for laying domestic submarine cable and its Cable Landing Station? What are the suggested measures to overcome limitations, if any?**

Q.7 **Will it be beneficial to lay Stub-Cables in India? If yes, what should be the policy, licensing, and regulatory framework for laying, operationalizing, and maintaining the stub cable in India? Please answer in detail with the supporting documents, if any.**

Q.8 **What challenges are being posed by existing telecom licensing and /or any other framework for establishing terrestrial connectivity between different CLSs in India? What are possible solutions to such challenges? Please support your answer with detailed justification.**

Q.9 **In comparison with other leading countries, what further measures must be undertaken in India for promoting investment to bring submarine cable in India? Please answer in detail with the supporting documents, if any.**

Annexure-I

Government of India
Ministry of Communications
Department of Telecommunications
Sanchar Bhawan, 20 Ashoka Road New Delhi – 110001
(Carrier Services Cell)

No. 10-54/2010-CS-III (Pt.) **Dated:** 12.08.2022

To,

The Secretary
Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan, (Old Minto Road)
New Delhi -110002

Subject: Issues related to laying and maintenance of Submarine cables - Seeking Recommendations as per TRAI Act under Section 11(1)(a).

Department have been issuing ILD Licenses from 2002 onwards. These Licenses are authorised to set up their Cable Landing Stations (**CLS**) and to lay submarine cables in India for providing international connectivity. Recently, it has been noticed that in some cases the Indian ILDOs do not have any stake in the submarine cable, however, they are acting as landing party in India for these cables.

2. In response to the directions of DoT regarding stake in submarine cables, concerns have been raised by the ILDOs that enforcing condition of equity/ stake in submarine cables can put the country on disadvantageous position for international connectivity. A Background Note on issues related to laying and maintenance of Submarine Cables is attached as **Annexure.**

3. It is requested to give recommendations on licensing framework and regulatory mechanism for submarine cables landing in India within existing UL-ILD/ Standalone ILD License under section 11(1)(a) of TRAI Act 1997. TRAI is also requested to examine global practices adopted by other countries for regulating submarine cables landing in their countries/territorial water while giving these recommendations.

This issues with the approval of Hon'ble MoC.

12/08/22

(Pradeep Kumar)
Dir(CS-III)
Tel: 011-23036348

Enclosed: Background Note

Annexure

Background Note on issues related to laying and maintenance of Submarine Cables

As per the current Telecom licensing regime, the International Long Distance Operators (**ILDOs**) licensees are allowed to set up Cable Landing Station (**CLS**) for landing of Submarine cables. Relevant clauses of ILD license are as below:

> Clause 2.6, chapter XI of the Unified License (**UL**),
> *"2.6 The Licensee may establish Cable Landing Station (CLS) for submarine cable with prior permission of Licensor for which a separate application is to be submitted in the prescribed proforma."*
>
> Clause 2.7, chapter XI of the UL,
> *"2.7 Equal access to bottleneck facilities at the Cable Landing Stations (CLS) including landing facilities for submarine cables* ***for licensed operators*** *on the basis of non-discriminatory shall be mandatory."*

2. Since provisions to set up CLS are not available in any other chapter of UL, the department is granting permission to set up CLS only to ILDOs in consultation with LEAs. Further, as per clause 2.7 submarine cables of **only licensed operators** can land on such CLSs, thus the entity laying any submarine cable shall either be an ILD licensee in India or have an Indian ILDO as its member.

3. TRAI in its recommendations *"Measures to promote competition in International Private Leased Circuits (IPLC) in India"* dated 16.12.2005, deliberated this issue also in detail and inter-alia concluded at para 5.4.1:

> *".....As the international cable system comprises of wires and appliances and is capable of use for transmission of signal, it is covered as a telegraph system within the meaning of Section 3 (1). Therefore, a license under the ITA, 1885 would be required to bring an international cable through the territorial waters and to land on the shore of our country...."*

4. Vide these recommendations, TRAI had recommended that any international cable carrier who does not hold an ILDO license in the country, should be licensed under the Indian Telegraph Act, 1885 under a new category of infrastructure providers named as 'International Infrastructure Provider' (**IIP**) with the sole objective to provide international connectivity only to ILDOs licensed in India. These recommendations were examined in the Department at that time but this point of recommendations could not be agreed to.

5. Recently, it was noticed that in some cases the Indian ILDOs do not have any stake in the consortium owning submarine cable but they are seeking MHA/ MoD clearances on behalf of the cable consortiums for laying/ maintaining such cables. Further, they are also applying for setting up of CLS for such submarine cables. Clarifications were sought from ILDOs regarding ownership and some ILDOs have reported that they do not have any stake in the consortium who owns the submarine cable.

6. In view of above, following directions were issued to ILDOs:

i. The company laying submarine cables have to ensure that it holds a valid ILD licence issued by Department of Telecommunications, Government of India while entering into the Indian territorial waters. In case a consortium is laying submarine cables, they shall ensure that any member of their consortium holds a valid ILD licence issued by Department of Telecommunications, Government of India while entering into the Indian territorial waters.

ii. The ILD licensees, licensed in India, while applying for Security clearances (i.e. MHA/ MoD clearance) on behalf on any entity for laying/ maintaining the submarine cables, shall make sure that they have significant stake in such entities on behalf of whom they are applying for security clearances else they don't have any locus standi in the case.

7. After issuance of these instructions, some of the ILDOs have started claiming that the portion of submarine cable lying in Indian territorial waters is being owned by them. On further enquiry by CS wing, they submitted copies of agreements signed by them with consortium members (signed at later dates in some cases). For further examination copies of asset registers were also sought from ILDOs. However, no clear conclusion could be drawn and since the MHA/ MoD clearances were getting delayed, clearances were issued to ILDOs by CS wing due to the urgent maintenance requirements and based on the statements of ILDOs that they own these assets in Indian territorial waters.

8. Though the ILDOs have undertaken that they own the assets lying in Indian territorial waters, however, concerns are being raised by the industry that enforcing stake condition in submarine cables can put the country on disadvantageous position for international connectivity and have urged DoT not to mandate this condition. It is felt that a wider consultation is required on the issue so that a decision best suited to the sector can be taken.

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LIST OF ACRONYMS

S. No.	Acronym	Description
1.	5G	Fifth Generation technology
2.	ACMA	The Australian Commission and Media Authority
3.	BMH	Beach Manhole
4.	CAGR	Compounded Annual Growth Rate
5.	CANI	Chennai-Andaman and Nicobar Island Cable
6.	CDN	Content Delivery Network
7.	CLS	Cable Landing Station
8.	CP	Consultation Paper
9.	DoT	Department of Telecommunication
10.	EEZ	Exclusive Economic Zone
11.	EMEA	Europe, the Middle East and Africa
12.	FBO	Facilities-Based Operations
13.	FCC	Federal Communications Commission
14.	IIP	International Infrastructure Provider
15.	ILD	International Long Distance
16.	ILDO	International Long-Distance Operator
17.	IMDA	Info-communications Media Development Authority
18.	IPLC	international private leased circuit
19.	ISP	Internet Service Provider
20.	ITA	Indian Telegraph Act
21.	ITC	International Telecommunications Cable
22.	KLI	Kochi-Lakshadweep Island

23.	Mbps	Megabit per second
24.	MECMA	Mediterranean Cable Maintenance Agreement
25.	MHA	Ministry of Home Affairs
26.	MoD	Ministry of Defence
27.	MTBF	Mean Time Between Failure
28.	NAZ	North American Zone
29.	NEC	Nippon Electric Company, Limited (Japan)
30.	NKT	Nordisk Elektrisk Ledningstraad og Kabel-Fabrik (Denmark)
31.	NLD	National Long Distance
32.	OPEX	Operational Expenditure
33.	PFE	Power Feeding Equipment
34.	Q2	Second Quarter
35.	RFS	Ready for Service
36.	SEAIOCMA	South-East Asia and Indian Ocean Cable Maintenance Agreement
37.	SLTE	Submarine Line Terminal Equipment
38.	STC	Submarine Telecommunication Cable
39.	TAD	Telecommunications and Analysis Division
40.	Tbps	Terabits per second
41.	TDRA	Telecommunications and Digital Government Regulatory Authority
42.	TSP	Telecom Service Provider
43.	UAE	United Arab Emirates
44.	UL	Unified License
45.	UL-ILD	Unified License- International Long Distance
46.	USA	United State of America
47.	USD /US$	US Dollar

48.	UV	Ultraviolet
49.	YOKOHAMA	Yokohama Zone Agreement