BROADBAND INDIA FORUM
"Think Tank for Digital Transformation"

KEY TAKEAWAYS FROM INDIA's 1st INTERNATIONAL SUBSEA CABLE SYSTEMS CONFERENCE

Organized by
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EXECUTIVE SUMMARY

As one of the world's largest data-consuming democracies and with ambitions of becoming a developed digital economy (Viksit Bharat), India must focus on strengthening its digital infrastructure to meet the surging demand for data and ensuring seamless global connectivity.

Not only is there a need to enhance intercontinental connectivity, but also an immense opportunity given its strategic geographic location in the world. India is ideally positioned to emerge as a Global Subsea Cable Transit Hub.

Timely and forward-looking policy interventions are essential for India to capitalize on this opportunity. The following actions are required:

- **Targeted policy initiatives** to achieve at least a **4-5X expansion** in subsea cable capacity and a **10X increase** in Cable Landing Stations (CLSs).
- Ensure uninterrupted internet connectivity by establishing **geographical diversity** in landing sites and routes and **de-concentrating CLS locations.**
- **Safeguard against disruptions** (both natural and manmade), given that any cut in high-lit capacity cables could severely impact **connectivity, financial services, and the overall economy.**
- **Develop indigenous infrastructure** and expertise in cable construction and repair.
- **Ensure regulatory certainty** by providing **predictability and transparency** in processes to **attract investments.**
- **Strengthen subsea connectivity** to enhance investments in **digital infrastructure** (data centers, cloud services, etc.).
- Create **infrastructure opportunities for local players and startups** to enter the market, hence, increase competition.

CONTEXT AND BACKGROUND

A. Drivers of Subsea Cable Systems

Internet penetration and the number of mobile users are rising globally. The global tele-density stands at approximately ~111%, while in India, it is around ~ 85%. In addition, there has been a significant surge in monthly data consumption both for mobile and fixed line. As per BSNL's annual report data consumption per FTTH per month is ~150 GB in March 2023 while during the same period the consumption in USA was ~560 GB. Presently, India's wireline data consumption is estimated to be between ~250-500 GB per month highlighting a growing appetite for high data consumption. Globally, fixed line data traffic constitutes ~82% of total traffic i.e., 5X of mobile traffic, thus, the weighted data consumption per user globally is much higher than in India. The proportion of fixed broadband in major economies is much higher (approx. 35-40%) as compared to a mere 3% in India.

Further, with increasing Government focus now on wired broadband, the average data consumption per user in India is expected to rise even more steeply in the future, thereby, necessitating the need for proliferation of subsea cables and associated CLS infrastructure to cater to this burgeoning demand and prevent capacity constraints.

B. Importance of Subsea Cables

Subsea cables are the foundation and bedrock of global connectivity, enabling:

- Trillions of dollars in financial transactions.
- Secure government operations.
- Transmission of voice and data across borders.
- Critical AI related advancements.

C. Challenges for Subsea Cable Systems

i. Global Issues

- **Geopolitical Disruptions:** Recent incidents in the Red Sea and South China Sea have caused major disruptions affecting 25% of data traffic between Asia and Europe.
- **Emerging threats:** Tools being created to sever deep-sea cables (up to 4km depth) pose new risks.
- **Inadequate ship resources for laying and repair:** To meet growing data demand, the number of subsea cable systems are being increased, however, there do not seem to be many plans for increase in the ships (presently 60 ships globally catering to more than 100 countries). Additionally, there are some fleets of ships which are aging, and repair time for a cable cut

currently averages 4-5 months—a duration that could increase due to enhanced geopolitical risks of international and coordinated sabotage.

- **Complex Monitoring and Administration:** Cables span across several maritime jurisdictions, and in the event of cable cuts and faults, administration and monitoring becomes a complex task.

ii. India-Specific Challenges

- **Capacity and Location Diversity Challenges:**

  - India has **17 subsea cables** (~3% of the global total of 559) and **14 Cable Landing Stations (CLSs)** on the main land (~ less than 1% of the 1,636 CLS locations worldwide).
  - CLS in India are concentrated in **five cities** (Mumbai, Chennai, Cochin, Tuticorin, Trivandrum) despite India's **long coastline** and strategic location.
  - **Current Lit capacity** of Indian subsea cables is 138 Tbps which is **less than 1% of global lit capacity (16000 Tbps).**
  - **Mumbai dominates cable landings,** with 15 out of 17 cables landing in a 6 km patch at Versova, where they frequently experience faults (monthly or every few months). This is because of the following vulnerabilities and unsuitable conditions:
    - **a)** **Shallow continental shelf**, making burial difficult and adding to costs for protection measures at the time of laying of cables.
    - **b)** **Congested landing site**, with multiple pipelines and cables, preventing effective cable burial. leading to frequent faults (**monthly or every few months**).
  - High landing costs **~ 20% of International Private Leased Circuit (IPLC) costs** make India a significantly **more expensive** landing location compared to international markets**.** **I**nternationally bandwidth is much cheaper than what is in India.
  - **No back-up plan to re-route traffic of high-capacity cables** landing in India posing **redundancy challenges**.
  - **Point of actual consumption of bandwidth are far from CLS sites,** disincentivizing operators from landing in those sites.

➢ **Maintenance and Repair Challenges:**

- **Due to lack of recognition as critical information infrastructure** – fishing trawlers cause the majority of cable cuts; beach manholes at CLS sites remain unattended.
- India is dependent upon **two service providers**, namely E-marine and SEAICOMA with **repair times averaging between 3-5 months**.
- **No indigenous (Indian flagged) cable repair vessels/depots** available in India**.**
- **High repair costs** due to cumbersome customs clearance and multiple permits/clearances for repair ships.
- **Reliance on foreign vessels is risky, especially during conflicts** when no commercial agreements are guaranteed.

➢ **Regulatory and Operational Hurdles:**

- **Time consuming approvals** required for laying and repairing cables (involving different ministries from telecom, defence, fisheries, environment, local municipalities, etc.)
- **High License Fees** for CLS in comparison to counterparts in South Asia.

KEY RECOMMENDATIONS

Policy Direction

- ✓ Subsea cable expansion in India cannot be regarded solely as a business endeavor and Government oversight is crucial to ensure this critical infrastructure continues to remain robust, resilient and sustainable.
- ✓ Geographical redundancies are necessary for uninterrupted internet services, particularly against manmade cable disruptions and geopolitical threats.

Specific Interventions

1. *Recognize Subsea Cables as Critical Infrastructure*

- ➢ Declare subsea cables as **critical telecom infrastructure**.
- ➢ **Raise awareness** among stakeholders, including **shipping and fishing communities, the Coast Guard, and coastal development agencies in coastal areas,** particularly major landing sites.

2. *Regulations for Ease of Doing Business*

There is urgent need to incentivize businesses to prompt them for investing and expanding subsea cables by reducing operational hurdles and regulatory costs (both time and money).

- ➢ **Implement TRAI's Recommendations on 'Licensing Framework and Regulatory Mechanism for Submarine Cable Landing in India' (June 2023)**.
- ➢ **Single-window clearance** for streamlined approval for deployment, repair and maintenance of subsea cables.
- ➢ **Create cable corridors** across major landing cities (especially, Mumbai and Chennai hosting majority of the cables) which function as **pre-approved zones** for laying of subsea cables. This would ensure cable security as well as prevent cable cuts.
- ➢ **Reduce license fees for ILD operators** and introduce a **separate authorization** for **captive users.**
- ➢ **Permit domestic traffic on international subsea cables** for better utilization of cable capacity.
- ➢ **Provide tax exemptions** for cable importations.
- ➢ **Implement open access policy in strict sense to increase competition in the subsea cable space.**
- ➢ Implement **stub cable system** in India.

3. *Improve Diversity; Build Redundancy & Repair facilities*

- **Identify and incentivize new CLS sites** to create alternative routes, and geographical diversity. Further, **ensure pre-approval for all required statutory and regulatory compliances to facilitate industry participation.**
- **Set up indigenous subsea cable repair ship** (Indian flagged vessel) and facilities. There should not be any mandate on utilizing only indigenous vessels for cable repair and construction in Indian Terrestrial Waters.
- **Remove or Ease the Flag Change Requirement** for the repair vessels and mandatory onboarding of a government official on the repair vessels.
- **Provide regulatory incentives to foreign repair vessels** to be stationed in India.

4. *Other Complementary Measures*

- **Enhance terrestrial networks** in cities hosting newly identified CLS sites to **seamlessly integrate with subsea infrastructur**e, thereby incentivizing operators to land in these new locations.
- **Initiate collaboration with NHAI** and other authorities to **lease utility fiber at scale** for connecting CLSs with data centers.
- Offer incentives to set up CLSs even in cities lacking demand, i.e., where there are not many data centres or other digital infrastructure.
- **Encourage industry collaboration with fishing communities** to increase awareness and prevent accidental damage. Further, facilitate compensation agreements between industry operators and fishing communities.
  ******** *Such initiatives are being undertaken in Mumbai and need to be taken up in other cities namely, Chennai, Cochin, Tuticorin, Trivandrum.*
- **Address cost disparity to enhance India's competitiveness as a global transit hub:** Government may make reference to TRAI to initiate consultation on assessing the reasons for high landing costs (~20% of the IPLC cost) and make recommendations on reducing the same.

5. *Adopt International Best Practices*

- Adopt and implement best practices laid out by International Cable Protection Committee and Global Digital Inclusion Partnership.
  Some notable examples include:
  - **Singapore (Strategic Positioning & Open Access)**: Hosts 26 submarine cables despite small size due to cost-based open access landing stations with clear cost-based regulations.
  - **Italy (Open Access Model)**: Offers flexible environment for private networks and regulatory frameworks.
  - **EU (Regulatory Certainty & Ease)**: Ensures smooth private sector participation.
  - **Australia (Cable Protection Zones)**: Declared three submarine cable protection zones on east & west coasts with limited activities (e.g., no trawling, dredging) to protect cables.