Digital Backbone Beneath the Seas

Posted at: 05/04/2025

Digital Backbone Beneath the Seas: India's Cable Revolution

India is expanding its undersea internet infrastructure to meet rising data demands and strengthen its position in global digital communication. A recent development is **Airtel's "2Africa Pearls" subsea cable**, supported by **Meta**, aiming to boost **international bandwidth** and connect India with Africa and Europe more efficiently.

How Do Undersea Cables Connect the Internet Globally?

- **Subsea cables** are **fiber optic cables laid on the ocean floor**, transmitting data at high speed across continents.
- They connect to **landing stations** on shore, where data is routed through terrestrial networks.
- Originated in the **1850s** with the first cable across the **English Channel**; now nearly **600 cables** exist globally.
- These cables:
    - Carry **90% of global internet traffic**
    - Enable **$10 trillion** in daily financial transactions
    - Are vital for communication, economy, and security

India's Submarine Cable Landscape

- India is connected by **17 international cable systems**, including:

- **SEA-ME-WE**, **BBG**, and **IMEWE**

- New additions (2024):
  - **India-Asia-Express (IAX)**
  - **India-Europe-Express (IEX)**

- **Main landing stations**: **Mumbai**, **Chennai**, with others in **Kochi**, **Vizag**, and **Thiruvananthapuram**

- **95%** of India's cable landings are concentrated in **Versova, Mumbai**

- **Domestic links**:
  - **CANI cable** (to Andaman-Nicobar)
  - **Kochi–Lakshadweep project**

- India's global share:
  - **~1%** in cable systems
  - **~3%** in landing stations

Challenges in India's Subsea Cable Infrastructure

- **Limited infrastructure**: Overdependence on Mumbai and Chennai causes risk

- **Regulatory hurdles**: Multiple clearances (DoT, Home, Environment Ministries) delay projects

- **High repair time**: Foreign repair ships need prior permission; India lacks marine repair facilities

- **Geopolitical risks**: Disruptions in strategic zones (e.g., Red Sea) affect up to **25% of India's internet**

- **High costs**: Cable laying and maintenance are capital-intensive

---

What Can Be Done to Strengthen the Network?

- **Expand landing stations** across other coastal cities to reduce load
- **Simplify regulations** via single-window approvals for faster implementation
- **Invest in domestic repair capabilities** to reduce dependence on foreign vessels
- **Enhance cybersecurity** and physical protection for critical infrastructure
- **Encourage public-private partnerships** with global tech firms for funding and innovation