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Beneath the waves: The geopolitical and strategic implications of undersea cable expansion by global powers

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Abstract
The rapid expansion of undersea cable systems by major powers, such as the USA, China, the EU, and Japan, constitutes a sea change for global telecommunications with extensive geopolitical, economic, technological, and security implications. These cables carry more than 95% of global data, forming the backbone of international trade, communications, and military operations, and hence their control is of paramount strategic importance. Powers resort to various initiatives to leverage influence over cable routes and landing points: from the U.S.'s telecom partnerships and China's Digital Silk Road to Europe's digital sovereignty efforts and Japan's Indo-Pacific projects. These initiatives reshape the global balance of power in key respects while forging new bonds of economic dependency.
While technological advances driven by major players in cable capacity and latency improve global internet infrastructure, they increasingly reflect the challenges of interoperability and run the risk of reinforcing geopolitical divides. National security concerns are growing over espionage, sabotage, and manipulation of the infrastructure, inviting investments in diversification and protective measures. In all, increasing competition for dominance of subsea cables reflects the greater struggle for geopolitical and technological control, with pressing need for coordinated global governance over the emerging challenges of stable and secure connectivity beneath the oceans. This dynamic is reshaping international relations and global digital connectivity in profound ways.

Keywords: Undersea cables, Geopolitics, Digital infrastructure, Submarine cable networks, Global powers, U.S.-China rivalry, Digital Silk Road

Introduction

Hypothesis Statement

The growing efforts of major global powers to expand their strategic footprint in the undersea cable industry are significantly reshaping global geopolitical dynamics by enhancing their economic influence, advancing technological capabilities, and raising critical national security concerns. This thesis examines how the submarine cable initiatives of dominant actors including the United States, China, the European Union, Japan, and other regional powers collectively impact international relations, global data flows, and digital connectivity, an area that remains insufficiently explored in existing literature.
This thesis statement incorporates elements of economic effect, technical progress, and security concerns, with a primary focus on the issue of geopolitical dynamics. It fills a vacuum in the literature by highlighting the importance and originality of investigating the complex effects of the expanding underwater cable projects and their wider implications for international relations and global connectivity.

Methodology

This is a mixed-method study that leverages a focused quantitative technique to complement qualitative analysis. Quantitatively, this study relies exclusively on a rolling mean trend analysis to assess long-term patterns in the growth of undersea cable projects supported by the major powers. The rolling means smoothing annual fluctuations and magnifies broader shifts in cable-laying activity that reflect changing geopolitical priorities. The qualitative component involves the analysis of policy documents, strategic reports, industry data, and

Scholarly literature to understand how major powers use undersea cables as tools of geopolitical influence. These will also help interpret the motives behind the trends observed and provide an assessment of their implications for international relations, digital sovereignty, and sustainable connectivity. By integrating the rolling mean trends with qualitative insights, the methodology allows for not only an observable pattern of cable expansion-what is happening-but also an explanation of the geopolitical drivers that constitute the why behind it. This mixed-methods design strengthens the credibility and depth of the research while remaining focused and analytically clear.

Research Findings and Discussion

Visual Representation of undersea network

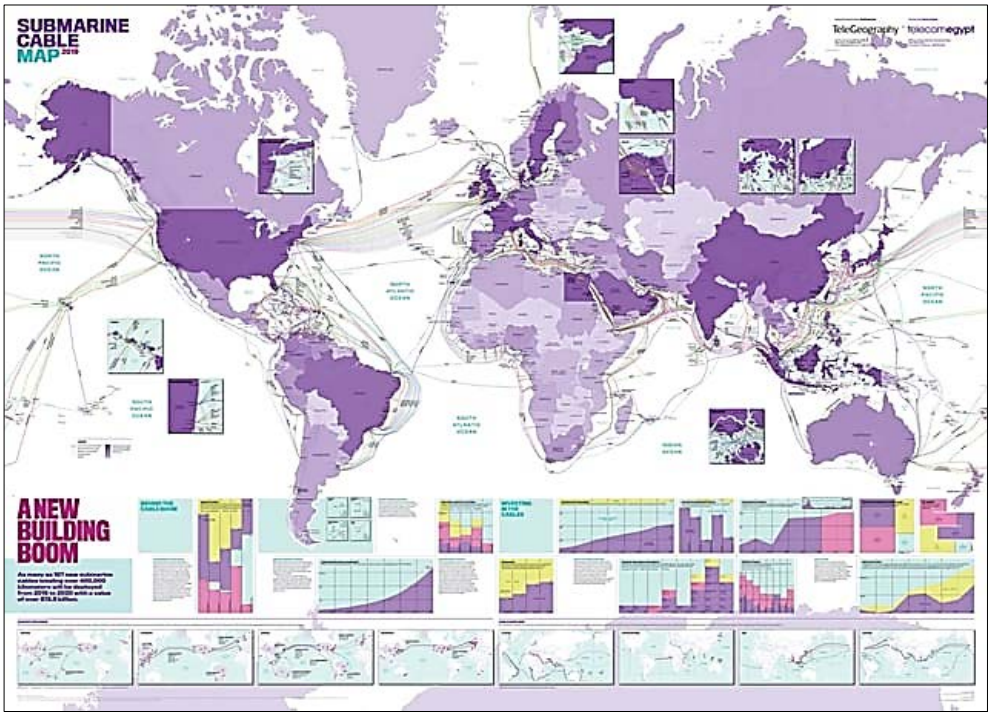

Fig 1: Miller J, 2025

This map by Miller J (2025) [15] about Submarine Cables visually details the global network of undersea cables connecting continents and regions, while dense clustering of cable routes around major economic hubs in North America, Europe, and East Asia gives further texture to the complexity. It highlights many landing points, indicating strategic gateways for international data flows and possible points of geopolitical vulnerability. Several insects show regions with high cable redundancy-such as the North Atlantic and Mediterranean-and newer routes circling Africa and Asia, reflecting recent investment patterns and the geographic broadening of global connectivity. This is further fleshed out by several summary charts and graphs integrated into the map, showing diverse metrics such as year-by-year cable add-ons, capacity growth, and emerging construction trends underpinning what the map terms a "new building boom," emphasizing both historical acceleration and future prospects for global digital infrastructure expansion. This visualization foregrounds the increasing strategic importance of submarine cables for economic, political, and security interests worldwide

Infrastructure Control via Geopolitical Reordering

The findings indicate that the development of submarine cable infrastructures has become one of the key tools within geopolitics strategies, put forward by the great global powers. Considering that through submarine fiber-optic cables more than 95 percent of international data traffic still flows, control over these systems increasingly translated into strategic leverage (Bueger & Liebetrau, 2021). The United States continues to dominate new deployments of cables mainly through its private technology giants, headed by Google, Meta, Amazon, and Microsoft, that collectively financed almost half of the world's new cable initiatives after 2018 (Google, 2023; Clark & Hakim, 2022). In contrast, China has expanded its presence via the Digital Silk Road, taking part in more than 70 overseas cable projects through state-supported firms like HMN Tech and China Telecom. Japan, through NEC Corporation in particular, continues to stay at the forefront of supply for advanced submarine cable systems and is involved with several key ultra-long-haul Indo-Pacific routes (NEC Corporation, 2023). At the same time, the EU has also pursued digital autonomy through projects like EllaLink, connecting Europe directly to Latin America and reducing dependence on U.S.-centric infrastructure paths (European Commission, 2021). These developments show that undersea cables have become instruments of geopolitical influence, enabling states to build digital spheres of influence and to reduce structural dependence on strategic competitors (McCarthy, 2022).

Evolving Dependencies and Economic Influences

This research also shows that financing and ownership of submarine cables are increasingly shaping global economic dependencies. States and private actors that fund cable projects often gain influence in the long term over recipient countries' digital ecosystems, routing patterns for data, and telecommunications markets (McCarthy, 2022). For instance, the countries participating in China's Digital Silk Road often become part of Chinese hardware, cloud, and telecom systems, which deepens asymmetric economic dependence (Pantucci, 2021). Similarly, the U.S.-backed cables in the Indo-Pacific region strengthen trade relations

and strategic alignment around American digital service providers (Barnes & Sanger, 2023). The investment patterns of the European Union in Africa and the Mediterranean region are similar in that partner countries tend to align with GDPR-based governance frameworks and European telecom standards (European Commission, 2021). Taken together, the evidence suggests that submarine cable infrastructure today serves as a tool of economic statecraft, influencing trade flows and engendering structural dependencies similar to earlier eras of maritime trade routes.

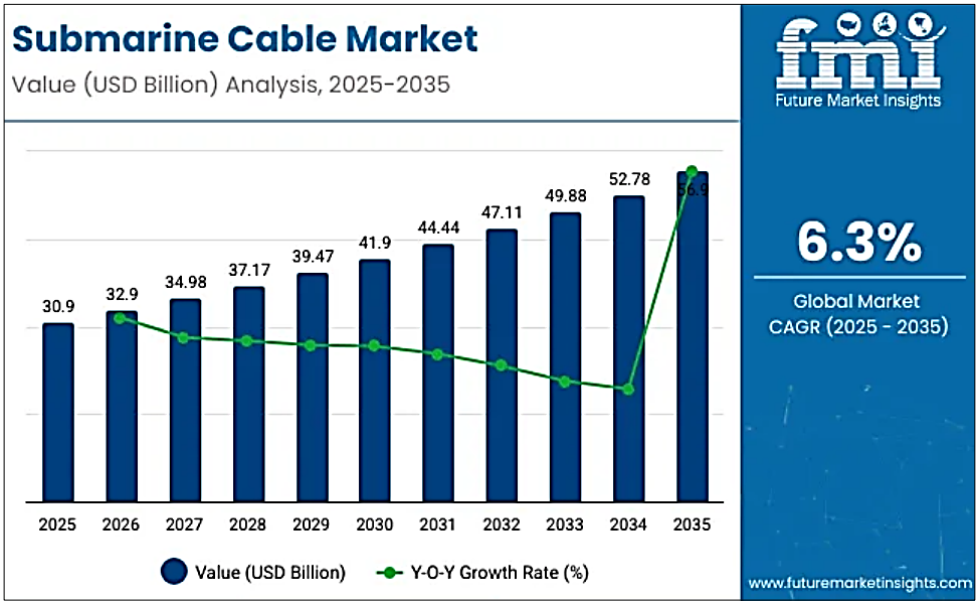

Fig 2: Future Markert Insights (2025)

The graph by Future Market Insights shows that the global submarine cable market is set to see significant growth between 2025 and 2035, with the market value rising from $30.9 billion USD in 2025 to $56.9 billion USD in 2035. This corresponds to a CAGR of 6.3% for the period, reflecting robust expansion driven by the increasing demand for data and international connectivity. Throughout most of the forecast period, year-over-year growth rates remain quite stable; however, there is a sharp acceleration in market value by 2035, suggesting expectations of intensified investment or a major technological shift in the latter years. These trends underpin the growing strategic relevance of the submarine cable industry in the context of global digitalization and competitive infrastructure.

Heightening National Security Concerns: These findings confirm that submarine cables have become crucial in national security planning. Undersea cables are increasingly being marked as important, yet fragile infrastructure because of the risk of sabotage, interception, or surreptitious manipulation by NATO and the U.S. military (Barnes & Sanger, 2023). Japan, Australia, and the United States have shown apprehension over cable routes passing via contested maritime zones, especially across the South China Sea, which is a strategic chokepoint. Kim (2020) Intelligence analyses also indicate a growing interest of major powers in mapping competing cable routes, keeping track of seabed activity, and expanding naval capabilities for the protection or disruption of digital infrastructure. These findings taken together suggest that submarine cables, conventionally considered a civilian infrastructure, are increasingly perceived as strategic assets in great-power rivalry.

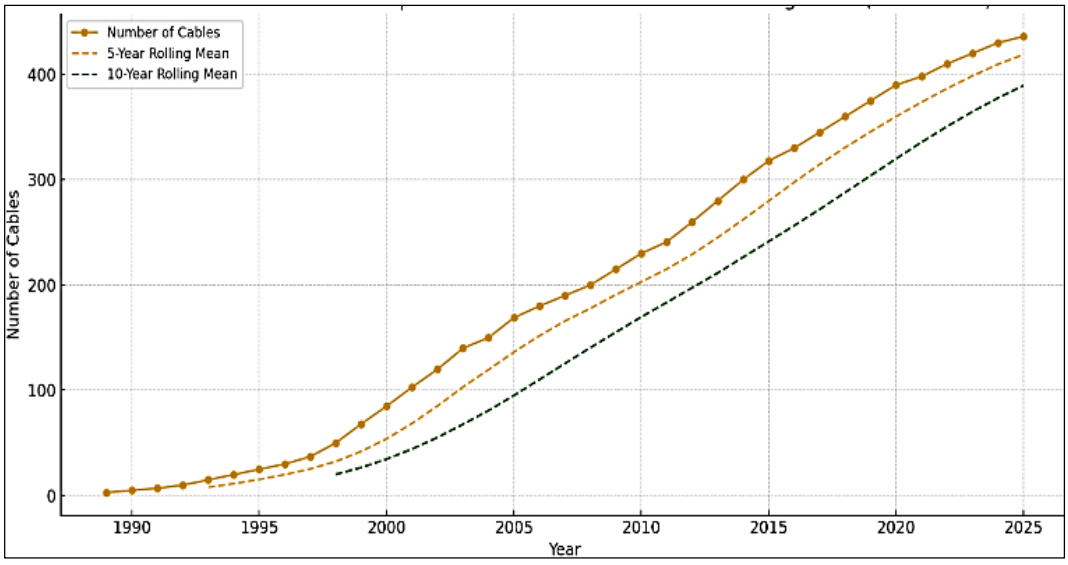

Fig 3: Global Subsea Cable Growth, 1989-2025

The rolling mean graph uses two smoothing windows-a 5-year and a 10-year mean-to bring out the underlying trajectory of cable deployment while filtering out short-term volatility. The 5-year rolling mean-the dashed yellow line-reacts more quickly to changes in annual cable counts and thus shows clearer inflection points: a sharp acceleration from the late 1990s to the mid-2000s, a slight easing in the late 2000s and early 2010s, and then a renewed steep climb from roughly 2013 onward. In contrast, the 10-year rolling mean (the green dashed line) adjusts much more slowly to produce a smoother curve that reveals the long-run structural trend-a near-continual acceleration from the early 2000s through the 2020s with only gentle bends rather than sharp kinks.

In this context, the 5-year mean is useful for identifying medium-term investment cycles in undersea infrastructure, such as build-out waves tied to specific technological generations or funding booms, which may have distinct geopolitical drivers-for example, a surge of state-backed projects or content-provider consortia. By contrast, the 10-year mean, averaging over a longer horizon, is better suited to showing how each successive decade has involved a higher baseline of construction than the last, underscoring the structural intensification of global dependence on submarine cables rather than temporary spikes. Taken together, the two rolling means enable a research paper to distinguish between those cyclical surges in cable building-where the 5-year curve bends sharply-and deeper secular shifts in the political economy of connectivity-visible in the steadily rising 10-year curve.

The rolling-mean graph reinforces the thesis by showing that, since the late 1990s, undersea cable deployment has grown not just rapidly but in sustained, multi-year waves that reflect the strategic push by major powers to entrench themselves in this infrastructure. The 5-year rolling mean captures successive “bursts” of construction associated with distinct investment cycles-such as the early 2000s dot-com era, the post-2010 cloud and content-provider boom, and the sharp acceleration through the 2020s-each one corresponding to moments when states and their firms used new cable projects to extend economic reach, secure faster data routes, and lock in technological advantages. The smoother 10-year rolling mean shows that, despite such short-term slowdowns, the underlying baseline for cable building keeps rising-a fact underscoring how the strategic importance of submarine networks has become structural rather than episodic: over each decade, more routes, landing points, and redundancies get added, deepening the capacity of actors such as the United States, China, the European Union, and Japan to shape global data flows, exercise geoeconomic leverage, and weaponize or defend these systems as sites of national security concern. In combination, the two rolling means visually substantiate the claim that undersea cable expansion is systematically reshaping geopolitical dynamics, not just through isolated flagship projects but via an enduring, upward trajectory of infrastructure that reconfigures connectivity, dependency, and vulnerability across the international system.

India's Role and Strategic Implications in the Undersea Cable Network

India holds an increasingly central place in the global undersea cable ecosystem, playing a vital role in the connectivity hub connecting the Middle East, Africa, Europe, and Southeast Asia. About 95% of India's international data traffic passes via submarine fibre-optic cables landing on its coasts; thus, India's digital economy relies basically on resilient cable infrastructure (TeleGeography, 2024) [25]. Major systems such as SEA-ME-WE-5, IAX, and IEX not only place India as a landing point but also position it well as an emerging cable-system developer to shape regional routing and reduce dependence on foreign-owned networks (Submarine Networks, 2023) [23].

Undersea cables link up directly with India's geopolitical interests in the Indian Ocean Region. The ICPC reports 150-200 cable faults annually worldwide, which evidences the vulnerability of global networks and calls for enhanced maritime surveillance and redundancy. India sees the Chinese-backed expansion of undersea cable projects down the Digital Silk Road, especially in Sri Lanka, Maldives, and East Africa, as raising concerns over surveillance, data interception, and strategic influence. It has strengthened cooperation with its partners, namely Japan, the United States, and Australia, in advancing "trusted" and secure digital corridors across the Indo-Pacific.

The implication for India is twofold: economic resilience for its rapidly expanding digital-service economy and the security of critical maritime infrastructure in a contested strategic space. The need for diversified landing points, robust cyber-maritime monitoring, and transparent regulatory frameworks is central to India’s long-term cable security strategy.

Conclusion

The evidence gathered in this research makes clear that what happens beneath the waves is now central to the contest for power above them. The expansion of undersea cables is no longer a neutral story of technological progress but a deliberate strategy through which major powers seek to lock in economic advantage, write the rules of digital connectivity, and insulate themselves from rival influence. As the United States, China, the European Union, Japan, and other actors race to finance, route, and secure new systems, they are redrawing old hierarchies of dependence and vulnerability: some states become indispensable hubs, others peripheral nodes, and many find their digital futures tied to the standards, platforms, and security assumptions of the powers that build their cables. At the same time, the very networks that promise redundancy and resilience also open new avenues for espionage, coercion, and disruption, pushing militaries, regulators, and alliances to treat fiber on the seabed much like traditional strategic chokepoints. Beneath the oceans, a dense web of glass threads is quietly hard-wiring the geopolitics of the twenty-first century shaping who can speak, trade, and innovate with whom and this research shows that understanding those cables is indispensable to understanding the emerging global order itself.

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