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Analyzing the Role of Non-State Space Actors in African Geopolitics: Economic and National Security Implications of Starlink's Influence

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Abstract

The expansion of powerful non-state actors into the space and digital domains—most notably SpaceX through its Starlink satellite internet system—has triggered a significant transformation in global power relations and patterns of information access. On the African continent, where persistent digital divides and entrenched structural economic inequalities remain prevalent, the rapid provision of broadband connectivity presents a dual dynamic: it can function as a catalyst for economic growth while simultaneously reinforcing technological dependence and security vulnerabilities. This study moves beyond conventional infrastructural evaluations by offering a comprehensive analysis of Starlink's implications for power configurations and economic structures across African states. To this end, a comparative qualitative–theoretical approach is employed, drawing on the analytical frameworks of neorealism and technological dependence theory. Data were gathered through documentary and library-based research, including institutional reports, economic indicators, and security assessments. The findings demonstrate that although Starlink possesses considerable capacity to expand internet access, enhance digital education, and intensify competition within national telecommunications markets, the prohibitive cost of its hardware and monthly subscription—when measured against average income levels—severely constrains equitable access for African households. Available statistics reveal that in many African countries, Starlink's monthly subscription fee accounts for approximately 22 to 37 percent of gross national income per capita, substantially exceeding the affordability threshold established by the International Telecommunication Union. From a neorealist standpoint, this pattern underscores the persistence of hierarchical structures within the international system, wherein advanced technologies serve as instruments for extending the geopolitical influence of dominant powers, particularly the United States. Simultaneously, technological dependence theory highlights how reliance on externally controlled communication infrastructures has generated a new form of structural dependency in data flows and connectivity, thereby undermining Africa's prospects for technological sovereignty. Beyond its economic dimensions, Starlink's deployment also introduces emerging cybersecurity and national security concerns, including risks related to cross-border data surveillance, potential military utilization in conflict zones, and the facilitation of transnational criminal networks. Ultimately, while Starlink may contribute to strengthening the foundations of digital development in Africa, its expansion at the macro level reflects the continuation of asymmetric power and technology relations within the global system. This reality underscores the urgent necessity of advancing technology indigenization policies, establishing coherent regional regulatory mechanisms, and investing strategically in domestic and regional communication infrastructures.

Keywords: economic implications; security implications; Starlink; Africa; technological dependence theory; neorealism.

1- Introduction

Satellites have been part of the international system for less than a century; nevertheless, over the past five decades, the transmission of signals from space to Earth has transformed satellite communications into a vast and highly integrated global network that facilitates efficient connectivity worldwide. Since April 13, 1974, when the United States launched its first domestic communications satellite, the number of active satellites orbiting the Earth has grown exponentially, surpassing 10,000 in recent years (Whalen, 2024). A particularly significant development occurred in 2019, when SpaceX initiated the deployment of its Starlink constellation. This project rapidly attracted global attention and has since expanded its satellite-based internet services to large portions of the world (McDowell, 2020). The emergence of advanced, high-capacity satellite communication systems such as Starlink thus constitutes a critical milestone in the ongoing process of digital globalization. By promising to deliver high-speed broadband connectivity to geographically remote and infrastructure-deficient regions, Starlink holds considerable potential to reduce the global digital divide and to accelerate progress toward the Sustainable Development Goals (SDGs), particularly in regions that lack reliable terrestrial communication networks. This potential is especially salient in the African continent, where disparities in digital access remain pronounced (Ecofin Agency, n.d.). Although Starlink has begun operations in several African countries, comprehensive coverage across the entire continent remains a long-term objective. Achieving this goal is far from straightforward, as the expansion process faces a range of complex non-market challenges that extend beyond conventional commercial considerations.

These challenges are primarily political, regulatory, and social in nature. In the African context, two critical obstacles stand out. First, several African governments have raised concerns regarding the security implications of foreign-owned satellite communication networks operating within their national jurisdictions. Such concerns are particularly acute in countries experiencing political instability, heightened cyber vulnerabilities, or sensitivities related to national sovereignty over critical communication infrastructure. Failure to adequately address these security considerations may result in regulatory delays or outright restrictions, thereby limiting Starlink's capacity to deliver universal and reliable internet access. Second, many less-developed African countries continue to face structural constraints, including insufficient digital infrastructure, limited financial resources, and gaps in education and digital literacy. These factors restrict the ability of large segments of the population to effectively utilize advanced communication technologies. As a result, the persistence of the digital divide remains a significant barrier to the widespread adoption of satellite-based internet services. If these underlying constraints are not addressed, the diffusion of Starlink may inadvertently reinforce existing inequalities by excluding vulnerable populations from meaningful participation in the digital economy.

Accordingly, this study seeks to provide a comprehensive analysis of the economic and security implications associated with the deployment of Starlink technology in African societies. The analytical framework of the research is grounded in two interrelated dimensions. First, it examines the economic consequences of Starlink's technical architecture and business model—largely driven by powerful non-state actors with strong backing from major geopolitical powers—through the lenses of the digital divide, technological dependence, and the restructuring of traditional telecommunications markets. This dimension focuses on changes in market structures, pricing mechanisms, and local production and service capabilities in relation to subscription costs and affordability. Second, the study explores the security implications of satellite-based internet systems, including issues of cyber sovereignty, information governance, content regulation, informational influence, and national-level space governance. By analyzing the interaction between these emerging satellite communication systems and existing governance frameworks in Africa, this research addresses a central question: does Starlink represent a transformative pathway toward digital inclusion, or does it instead introduce new forms of technological dependence and security challenges within the African context?

2- Theoretical Foundations of Dependency Theory

Dependency theory constitutes one of the most influential paradigms in contemporary social sciences, primarily concerned with explaining the phenomenon of underdevelopment, diagnosing its structural causes, and—albeit to a lesser extent—identifying potential pathways for overcoming it. Emerging in Latin America during the 1960s (Ahiakpor, 1985), the theory rapidly gained prominence within academic discourse and regional policy institutions. It subsequently diffused to North America, Europe, and Africa, where it continues to inform critical debates on development and global inequality (Ahumada, 2024). At its core, dependency theory argues that resources systematically flow from the "periphery"—comprising economically weaker and historically exploited nations—to the "core" of advanced industrial economies. This asymmetric exchange enriches core countries while constraining the development prospects of peripheral ones. A central proposition of the theory is that poverty and wealth are not independent or sequential conditions but are relationally produced within the global capitalist system: peripheral economies become progressively impoverished precisely because core economies accumulate wealth (Katz, 2022). This process is rooted in the manner by which developing countries are incorporated into the global system, often in subordinate and extractive roles.

Dependency theory emerged explicitly as a critique of modernization theory, which had posited a universal, linear path of development through which all societies would eventually pass. According to modernization theorists, underdeveloped countries merely represented earlier stages of development already traversed by advanced economies, and external assistance—through foreign investment, technology transfer, and deeper market integration—would accelerate this transition. Dependency theorists rejected this assumption, contending that underdevelopment is not a preliminary stage of development but a distinct historical condition produced by unequal global relations. From this perspective, peripheral countries possess unique structural characteristics shaped by their subordinate integration into the global market economy. Rather than functioning as autonomous agents of development, they occupy weakened positions within international production and trade networks (Kotsis, 2024). A key concept within this framework is technological dependence, which arises from structural imbalances in production systems and persistent deficiencies in advanced technological and industrial capabilities. Peripheral economies are frequently compelled to import technology, machinery, and technical expertise from core countries in order to implement industrial or developmental projects (Franco, 2024).

Such technological imports, often mediated by multinational corporations, tend to reinforce concentrated patterns of consumption and technological control. Instead of fostering endogenous innovation, they inhibit the formation of independent scientific and technical capacities within peripheral societies. As a result, domestic industries are transformed into mechanisms for reproducing foreign technological models, rather than serving as engines of locally grounded development (Zuyi, 2024). Technological dependence also entails profound socioeconomic consequences, particularly in relation to labor exploitation. Dependency theorists argue that, in order to compensate for productivity gaps and remain competitive in global markets while lacking access to advanced technologies, local capital in peripheral countries intensifies the exploitation of labor. This strategy deepens internal inequalities and ensures the alignment of dominant domestic classes with foreign capital interests. Any attempt to disrupt this dependent relationship risks economic instability and the erosion of power vis-à-vis external actors, thereby transforming dependence from a purely economic condition into a broader structure of power and domination (Antunes, 2023).

Within this theoretical framework, the deployment of Starlink technology in African societies is not interpreted as a developmental breakthrough but rather as a contemporary manifestation of historically unequal relations between the center—comprising developed states and their multinational corporations—and the periphery. From an economic standpoint, the high costs associated with hardware acquisition and monthly subscription fees significantly limit access, effectively converting connectivity into an elite resource. Consequently, the value generated through these services is extracted in the form of profits remitted to foreign firms, rather than being reinvested in domestic infrastructure or capacity-building, thereby reinforcing patterns of value extraction. From the perspective of sovereignty and security, reliance on externally controlled communication networks for governmental functions and critical

infrastructure generates substantial strategic vulnerabilities. Such dependence directly contradicts principles of national sovereignty, as it entails the delegation of control over one of the most vital resources of the twenty-first century. In times of political or economic crisis, this reliance may serve as a lever of external influence or coercion by core powers. Ultimately, dependency theory underscores that externally imposed technological solutions—particularly those that disregard existing socioeconomic structures and merely export standardized business models—are unlikely to produce sustainable development. Instead, they tend to reproduce peripheral dependence in increasingly sophisticated and less visible forms than those characteristics of classical colonialism, embedding inequality more deeply within an inherently unjust global system.

Neorealism Theory in International Security

Neorealists and neoclassical realists converge on the transhistorical significance of anarchy, systemic constraints, and the balance of power in shaping state behavior. They argue that the defining features of an international system structured by anarchy exert decisive influence over how states perceive their interests and conduct their foreign policies. In this framework, *structure* refers to the configuration of macro-social arrangements or, more precisely, the "rules of the international game" that condition state action. Realists maintain that this anarchic structure, in interaction with material capabilities, generates a relatively stable set of incentives, opportunities, threats, and constraints that delimit states' national interests. Within such a system, power and uncertainty—particularly regarding how other states might employ their capabilities—constitute the central determinants of international politics. As a result, states prioritize survival, security, and, where possible, prosperity as their primary objectives (Hobson, 2012). To this end, they continuously assess their position within the international system and evaluate their relative capabilities vis-à-vis other states in order to anticipate potential threats. States respond to shifts in power, perceived intentions, and observed behavior through strategies such as balancing, buck-passing, or bandwagoning (Vaughan, 2016).

These claims are often articulated in a "scientific" and ostensibly self-evident manner, reflecting neorealism's ontological and epistemological commitments and its affinity with a naturalistic conception of social science. In this view, structure and spatial relations are privileged over time, context, and historical contingency. History is thus treated as largely exogenous, valued primarily for illustrating the enduring laws of international politics or for extracting policy-relevant "lessons" for the present. By contrast, classical realism lacks a similarly systematic analytical framework and is more accurately understood as a philosophically informed reflection on human nature, power, and political prudence (Tabak, 2025). At the systemic level, neorealists posit that only three structural configurations are possible, depending on the distribution of capabilities among great powers. A unipolar system is characterized by the dominance of a single great power, a bipolar system by the presence of two, and a multipolar system by more than two. Neorealists generally conclude that bipolar systems are more stable and less prone to great-power war or systemic transformation than multipolar systems, primarily because balancing occurs internally rather than through shifting alliances. In this context, processes of emulation and competition are seen as the primary mechanisms driving states toward similar patterns of behavior (Meibauer, 2021).

Applying Neorealism to Analyze Starlink's Impact in Africa

Applying a neorealist lens to the expansion of Starlink in Africa redirects analytical attention away from purely economic considerations and toward fundamental concerns of power, survival, sovereignty, and the balance of power. From this perspective, states remain the central actors operating within an anarchic international system, and their overriding objective is the preservation of survival and the enhancement of relative power vis-à-vis other actors. Sovereignty, in particular, constitutes a core value of national existence within neorealist thought. When an African state delegates control over critical communications infrastructure to a transnational, privately owned satellite network, it effectively relinquishes a degree of strategic autonomy to an external actor. This delegation increases national vulnerability, as such technology may be leveraged for surveillance, informational influence, or—under more adverse geopolitical conditions—as a form of soft power or coercive instrument. Consequently, the host state becomes

structurally dependent on a foreign-controlled system for the functionality and security of a vital component of its national infrastructure. A second, closely related concern involves relative power and shifts in the balance of power. The rapid deployment of low-Earth orbit (LEO) satellite constellations by major powers—most notably the United States through Starlink—has the potential to reshape the balance of power in both the space and communications domains. African states seeking to preserve strategic autonomy thus confront a profound dilemma. Rejecting access to such technology's risks deepening the digital divide and perpetuating marginalization within the global political and economic order. Conversely, adopting these systems entails integration into the security, informational, and technological architecture of a more powerful actor. This dilemma forces states to choose between two structurally constraining outcomes: digital exclusion or strategic dependence. From a neorealist standpoint, both options pose significant risks to state autonomy and long-term survival, underscoring how emerging technologies can reproduce and intensify existing power asymmetries within the anarchic international system.

Starlink

Starlink is a global satellite network developed by SpaceX and operates within the satellite communications (SATCOM) industry. As a critical segment of the global communications ecosystem, the SATCOM industry provides a wide range of services spanning telecommunications, commercial and economic applications, and governmental and military defense. In recent years, non-terrestrial networks—particularly satellite-based internet connectivity—have experienced substantial expansion. This growth has been driven by the rapid intensification of digital activities, large-scale capital investments, and increased satellite manufacturing capacity, all of which have contributed to a significant decline in the global cost of non-terrestrial internet services. Furthermore, the widespread adoption of mobile devices has accelerated the emergence of satellite constellations capable of delivering internet connectivity directly to smartphones and other communication technologies (Wooden, 2024). According to Mark Giles, a senior industry analyst, the rapid expansion of the SATCOM sector is primarily driven by two interrelated factors: declining satellite costs and the growing integration of satellite services with fifth-generation (5G) mobile networks. Reductions in satellite manufacturing and launch expenses have enhanced the feasibility of non-terrestrial networking solutions for private enterprises. Simultaneously, as 5G networks continue to expand, the marginal returns from further terrestrial network development diminish, increasing demand for innovative, cost-efficient alternatives to conventional telecommunications infrastructure. Satellite communication systems, unlike terrestrial networks, offer near-universal accessibility, making them an increasingly attractive solution for global connectivity challenges (Wooden, 2024).

John Canali, a lead industry analyst, further explains that the declining cost of SATCOM technology is largely attributable to advances in satellite miniaturization and reliability. Modern satellites are increasingly smaller, more efficient, and less expensive to produce. In parallel, launch operations have become both cheaper and more frequent, particularly through companies such as SpaceX, Blue Origin, and United Launch Alliance. CitiGroup reports that contemporary satellite launch costs are approximately 40 times lower than those observed in the 1980s. Additionally, Katie Dowd, senior director of government and corporate affairs, highlights that recent years have witnessed substantial technological innovation within the SATCOM industry, particularly in the development of low Earth orbit (LEO) satellite constellations. Due to their proximity to Earth, LEO systems provide high-speed, low-latency global connectivity at comparatively low costs, offering an effective alternative to terrestrial infrastructure and improving network access in remote and rural regions.

Andy Sutton, a principal network architect, emphasizes that major investments in reusable launch vehicles—particularly by SpaceX and Blue Origin—have played a decisive role in reducing satellite deployment costs. Complementing these advancements, companies such as Surrey Satellite Technology Ltd. have pioneered compact satellite and CubeSat designs that enable cost-effective production and rapid deployment. Collectively, these technological developments have made global satellite coverage increasingly feasible (Wooden, 2024). As a result, the global satellite communications market was valued at approximately USD 83.29 billion in 2023 and is projected to grow at a compound annual growth rate (CAGR) of 10% between 2024 and 2030. Moreover, the integration of artificial intelligence into satellite

manufacturers' operational algorithms has enhanced real-time tracking capabilities and information exchange among users (Satellite Communication Market Trends, 2024).

In January 2024, SpaceX launched its first six direct-to-cell Starlink satellites aboard a Falcon 9 rocket, marking the company's inaugural launch of the year. These satellites are equipped with direct-to-cell technology, enabling seamless global network connectivity without reliance on terrestrial infrastructure. Throughout 2023, Starlink's deployment strategy concentrated on expanding its megaconstellation, resulting in more than 5,100 active satellites by early 2024. During a webinar held on May 9, 2024, Starlink projected its annual revenue for 2024 to reach USD 6.6 billion. Reflecting on the industry's evolution, Chris Quilty, founder of Quilty Space, noted that in 2015, the scale and speed of such growth were largely unforeseen, and SpaceX's ambitions for megaconstellations were met with widespread skepticism. The company's subsequent success, however, has exceeded industry expectations (Ochuba, 2024). By late 2024 and into 2025, Starlink had launched nearly 10,000 satellites, with more than 9,000 in orbit and the majority fully operational, serving millions of subscribers across numerous countries. Starlink's financial performance over the past three years has been particularly notable, with revenue increasing from USD 1.4 billion in 2022 to an estimated USD 6.6 billion in 2024, and projections indicating continued growth through 2025. For comparison, the combined revenue of the two major geostationary orbit (GEO) satellite operators, SES and Intelsat—following their merger—was approximately USD 4.1 billion. Moreover, while these GEO providers required over two decades to reach a peak subscriber base of approximately 2.2 million in 2020, Starlink surpassed this milestone within only a few years. This contrast underscores the disruptive capacity of SpaceX's business and technological model. According to Quilty Space, Starlink's adjusted operating profit is projected to reach at least USD 3.8 billion by the end of 2025, representing a substantial improvement from a USD 128 million loss reported in 2022. Notably, Starlink now serves approximately 50,000 users across mobility, enterprise, and government segments, indicating that its direct-to-consumer sales strategy has been a critical driver of its accelerated growth (Erwin, 2024).

3- Research Methodology

This study adopts a comparative qualitative–theoretical approach to analyze the implications of Starlink's deployment in Africa through the analytical frameworks of neorealism and technological dependency theory. The research is grounded in documentary and library-based methods, drawing on a wide range of secondary sources, including institutional and policy reports, macroeconomic indicators (such as gross domestic product and broadband subscription costs), and security-related assessments.

Data analysis is conducted through theoretical interpretation rather than statistical modeling, with particular emphasis on comparing the ratio of technology costs to national economic capacity and examining the expanding role of private space enterprises in potentially eroding states' technological sovereignty. By integrating economic, political, and security dimensions, this methodological approach facilitates a nuanced examination of the complex interactions between global technological infrastructures and regional power structures across selected African countries.

4- Research Findings

Current Status of Starlink in Africa

Empirical evidence indicates that Starlink significantly outperforms terrestrial internet service providers (ISPs) in most Sub-Saharan African countries in terms of download speeds, despite exhibiting relatively higher latency. Although performance varies across the continent, Starlink recorded a median download speed exceeding 40 Mbps in the first quarter of 2025 in the majority of countries where the service is operational, substantially surpassing the performance of terrestrial ISPs. Latency levels, while generally elevated, have shown notable improvement following the deployment of local Points of Presence (PoPs). In several East African countries—most notably Kenya—latency has been reduced to below 60 milliseconds. Countries such as Botswana, Eswatini (formerly Swaziland), Rwanda, Burundi, Sierra Leone, Mozambique, and Ghana have emerged as continental leaders in median download speeds, with Starlink users experiencing average speeds of approximately 75 Mbps or higher during the first quarter of 2025. In

contrast, median speeds in Nigeria, Zimbabwe, South Sudan, Kenya, and Madagascar—widely regarded as among Starlink's largest African markets—remained below 50 Mbps. This decline is likely attributable to capacity constraints faced by the provider, which have prompted temporary suspensions of new user registrations in these markets. Nevertheless, even under such constraints, Starlink's speeds remained more than twice those of terrestrial broadband networks in most African countries during the same period.

The entry of Starlink into the African broadband market has substantially expanded access to fixed internet services, particularly in countries such as Nigeria and Kenya, where competitive pressures within the telecommunications sector have intensified. However, regulatory heterogeneity and significant cross-country cost differentials highlight the persistent challenges associated with scaling satellite-based internet services across the continent. In this context, strategic collaboration with domestic telecommunications operators appears essential for market expansion and for improving the affordability of services in underserved and remote areas.

Starlink has rapidly consolidated its position as a major global ISP capable of competing directly with terrestrial providers. Evidence of strong demand in Africa is reflected in the company's availability map, which shows that residential user kits have been fully sold out in major urban centers across Nigeria, Zimbabwe, Kenya, Zambia, and Madagascar (Starlink, 2024). Moreover, in April 2024, Starlink entered into a partnership with Jumia—Africa's largest e-commerce platform—to distribute its residential kits through Jumia's online marketplace (Awowede, 2024). This partnership illustrates Starlink's strategic willingness to collaborate with regional market actors to enhance service accessibility. From a performance perspective, Starlink's download speeds—ranging between 25 and 220 Mbps—far exceed average fixed broadband speeds in both North Africa (12.52 Mbps) and Sub-Saharan Africa (14.99 Mbps) (Howdle, 2024). Collectively, Starlink's superior speed, extensive coverage, and rapid deployment capacity underscore its potential to satisfy several core enablers of meaningful connectivity as defined by United Nations infrastructure standards.

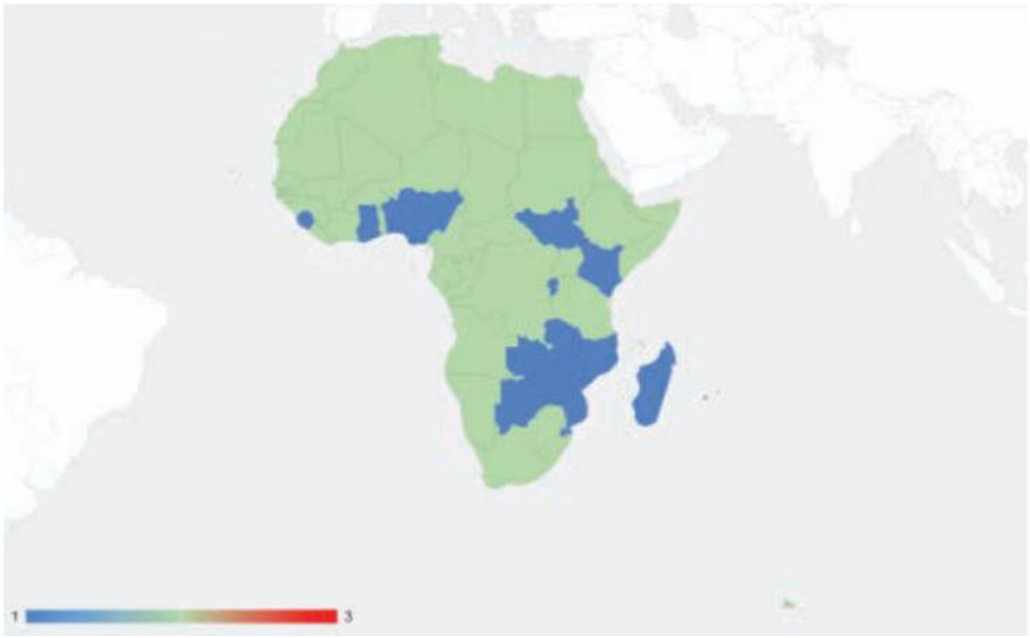

Figure 1. Starlink coverage in Africa

Source: https://www.starlink.com/map

The Starlink coverage map shows that out of 57 African countries and territories, Starlink covers 15 countries and will soon reach 43 more. Currently, the status of Starlink presence in various African countries is as follows:

Table 1: Starlink presence in various African countries

Country	Status	Start/Planned Date	Monthly Cost (USD)	Equipment Cost (USD)
Nigeria	Active	January 2023	120–250	570
Rwanda	Active	2023	~100	~400
Kenya	Active	July 2023	~100	347
Mozambique	Active	2023	~100	~500
Zambia	Active	2023	~100	~500
Malawi	Active	2023	~100	~500
Benin	Active	November 2023	~100	~500
Zimbabwe	License Obtained	2024	Unknown	Unknown
South Africa	Pending License	-	~99	685
Ivory Coast	Prohibited	-	-	-
Chad	Negotiating	2024	Unknown	Unknown
Burkina Faso	Prohibited	-	-	-
Central African Republic	Negotiating	2024	Unknown	Unknown
Congo-Brazzaville	Under Review	-	Unknown	Unknown
Senegal	Prohibited	-	-	-
Mali	Prohibited	-	-	-
Cameroon	Prohibited	-	-	-
Democratic Republic of the Congo	Prohibited	-	-	-
Madagascar	Planned	2024	40	230
Niger	Recently Authorized	2024	Unknown	Unknown

Economic Implications of Starlink's Presence in Africa

Africa bears the most profound impacts of the global digital divide, grappling with severe connectivity challenges. According to the International Telecommunication Union (ITU), only 23% of individuals in rural Africa had internet access as of 2024, representing the lowest rate among all global regions. In contrast, 57% of the urban population in Africa was connected. As reported by the ITU, the urban-rural internet access ratio in Africa (approximately 2.49) reflects the greatest disparity compared to any other region (International Telecommunication Union, 2024). The GSM Association (GSMA), a non-profit organization collaborating with mobile network operators to promote innovation and enhance connectivity, found that

in sub-Saharan Africa, the cost of an entry-level device equated to 95% of the average monthly income for the poorest 20% of the population. Another GSMA study indicated that, in 2022, more than half of sub-Saharan African countries failed to meet affordability benchmarks when averaging total population income. However, when averaging income for the bottom 40% of society, GSMA findings revealed that over 60% of sub-Saharan African countries achieved this target (Shanahan, 2024). Any initiative aimed at connecting the global population to the internet must prioritize Africa. More specifically, such efforts should emphasize affordability and access in African regions.

While businesses are eager to adopt Starlink due to its superior speeds compared to fixed broadband, internet service providers (ISPs) express concerns about competition from Starlink, given their substantial investments in local network infrastructure. Although some regions have embraced the service, others have imposed stringent regulations on foreign ownership and ISP licensing, delaying Starlink's deployment. Starlink has navigated these challenges by partnering with local equipment distributors (such as the Paratus Group) and ISPs to leverage existing licenses. As Starlink continues to expand and optimize its network, the company holds potential to become a more competitive broadband access solution in African countries. Currently, users must weigh the benefits of higher speeds against potentially elevated costs and increased latency when choosing between Starlink and terrestrial broadband services. Collaborations between low-Earth orbit (LEO) satellite operators like Starlink and local telecommunications providers could pave the way for delivering more cost-effective internet services to underserved areas. For instance, satellite technology can provide direct-to-mobile internet services without requiring specialized equipment. Satellites can also interconnect shared hotspots to deliver much-needed connectivity in remote regions or serve as backhaul for rural base stations. This trend is emerging, as Airtel Africa signed a contract with Starlink in May 2025 to integrate satellite services across nine of its fourteen operational countries, with regulatory processes ongoing for the remaining five. The following section examines the economic implications of Starlink in Africa:

Affordability and Economic Viability of Starlink in Africa:Comparing the average monthly cost of Starlink services in Africa with typical fixed broadband plans suggests that Starlink is addressing the unaffordability of internet services on the continent. For example, Mozambique has one of the world's highest average monthly broadband costs, at $118.26 (Howdle, 2024). In contrast, Starlink offers its monthly service for approximately $46.96 (Starlink, 2024). At face value, this makes the choice clear for a user in Mozambique. However, a subscriber opting for Starlink as their ISP must also cover the hardware costs. Figure 8 combines the monthly internet service price with hardware expenses for each African country where Starlink provides coverage. Additionally, the useful lifespan of Starlink hardware—all purchased equipment essential for establishing customer internet connectivity—must be considered. According to Starlink specifications, customers can expect the hardware to remain operational and maintain connectivity for at least 12 to 24 months (Starlink, 2024). This introduces a new reality for satellite broadband users: they inherently assume responsibility for maintaining a significant portion of the infrastructure on which their internet connection depends. By comparison, terrestrial ISP users have the majority of their network connections maintained by the provider, with associated costs incorporated into monthly subscriptions.

Table 2: Comparison of Internet Costs Across Various African Countries

Country	Monthly fixed internet fee	Starlink Monthly Cost	Relative to per capita income
Sudan	$2.40	Unknown	**2%**
Kenya	$35	$100	**15%**
Nigeria	$30	$120-250	**25%**
South Africa	$40	$99	**8%**

Egypt	$20	Unknown	**5%**

Therefore, users who observe the apparent difference in advertised monthly bandwidth prices should take into account two critical considerations associated with this type of service coverage. First, subscribers are required to assume responsibility for infrastructure maintenance, a cost that is typically embedded within the monthly fees of conventional Internet Service Providers (ISPs) offering fiber-optic connections. Second, Starlink entails an upfront investment in proprietary hardware which, according to the company, has an expected operational lifespan of approximately one year before replacement may be necessary, even under appropriate maintenance conditions.

To clarify the economic feasibility of Starlink for users in African countries, it is essential to compare the per capita gross domestic product (GDP) of each Starlink-covered country with the lowest available Starlink service package. Per capita GDP serves as a proxy for average annual income; accordingly, Figure 2 illustrates the relative level of financial investment required for households across different national contexts. This comparative analysis indicates that Starlink's pricing structure is not aligned with the prevailing income levels of populations in the regions where the service is offered. More critically, the findings reveal that, for individuals in several African countries, the initial cost of Starlink hardware alone is nearly equivalent to their total annual income. These results suggest that, despite comparatively moderate monthly subscription fees, the inclusion of hardware costs substantially undermines the economic viability of Starlink for users in certain African markets.

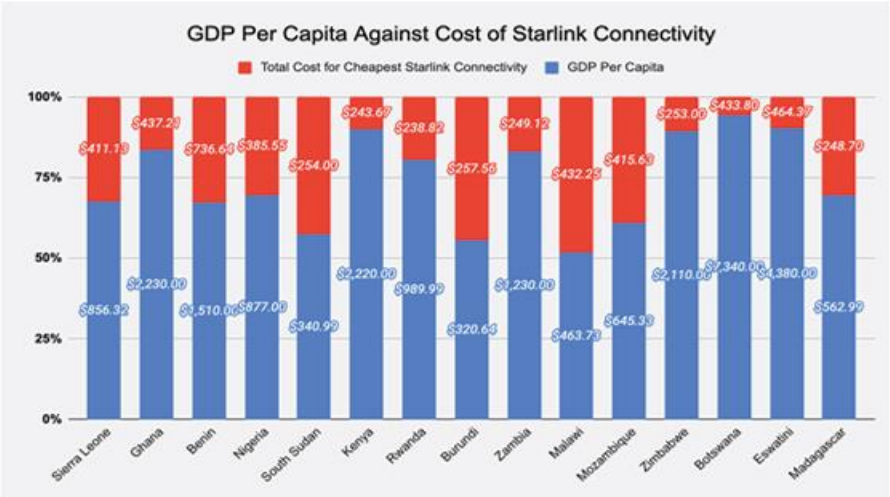

Figure 2. GDP per capita versus Starlink connection cost

Sources: Starlink, Availability Map. Available at: https://www.starlink.com/map (accessed: 27/10/2024)

Limited Accessibility Resulting from Income Disparities: Significant income disparities across African countries substantially constrain the affordability and accessibility of Starlink's satellite internet services. According to World Bank estimates, in 2023 Starlink's standard monthly subscription fee of USD 50 represented approximately 37% of the average monthly gross national income (GNI) per capita in sub-Saharan Africa. Even the lowest available subscription rate of USD 30 accounted for 22.2% of monthly GNI per capita. In several countries, the cost of the service exceeded average monthly income levels altogether. For example, in Niger, where monthly GNI per capita was USD 51.6 in 2023, the Starlink subscription cost USD 54.9. In Liberia, the most affordable plan, priced at USD 40, amounted to 67.6% of monthly GNI per capita, while in Zimbabwe, a USD 30 subscription represented 17.5% of the estimated monthly GNI per capita of USD 171.67.

By comparison, the International Telecommunication Union (ITU) reports that fixed broadband services in Africa cost, on average, 14.8% of monthly GNI per capita. However, the ITU defines broadband affordability as a service costing no more than 2% of monthly GNI per capita. Based on this benchmark, Starlink remains largely unaffordable for the majority of households in the region, raising concerns about its capacity to meaningfully bridge the digital divide in low-income economies.

Deployment Strategy and Prospective Economic Implications: Excluding South Africa, Starlink publicly disclosed its African deployment strategy for 2023 and 2024, prioritizing Zimbabwe, Mozambique, and Eswatini for rollout in the fourth quarter of 2023. Mozambique has since approved Starlink's operations, with local communities beginning to access the service, while Zambia has also granted the company an operational license. In Zimbabwe, the former Minister of Information and Communication Technology confirmed that the Postal and Telecommunications Regulatory Authority of Zimbabwe (POTRAZ) received Starlink's application in September 2023 and was in the process of reviewing it. Should the Zimbabwean government grant Starlink an operational license, the service could generate a range of economic effects. Nevertheless, the magnitude and nature of these impacts would depend on evolving regulatory frameworks, infrastructure readiness, pricing strategies, and broader market dynamics. Consequently, any assessment of Starlink's economic implications must be interpreted with caution and contextualized within the country's shifting policy and institutional environment.

Enhancing Education and Skills Development: Reliable and high-speed internet connectivity has the potential to significantly enhance educational outcomes by providing students and educators with access to online learning platforms, digital resources, and remote courses. Such access can contribute to the development of a more educated and skilled labor force, which is widely recognized as a key driver of long-term economic growth. African governments have demonstrated increasing interest in expanding e-learning initiatives and promoting science, technology, engineering, and mathematics (STEM) education. In this context, Starlink could play a supportive role by extending connectivity to underserved and remote areas where traditional broadband infrastructure remains limited.

Promoting E-Commerce and Business Development: Improved internet access can also stimulate the growth of e-commerce and digital business activities, thereby accelerating commercial development. Enhanced connectivity enables entrepreneurs and small and medium-sized enterprises (SMEs) to access international markets, expand trade opportunities, and improve operational efficiency. These developments may contribute to job creation and broader economic diversification. In Zimbabwe, for instance, the government has signaled its commitment to promoting digital commerce through initiatives such as the introduction of gold-backed digital tokens known as ZiG (Zimbabwe Gold Investment), which aim to support digital transactions and financial innovation.

Implications for Local Internet Service Providers and Market Competition: The introduction of Starlink into African markets has intensified competition among internet service providers (ISPs), prompting established firms to adjust pricing and service offerings. A prominent example is Safaricom, a leading telecommunications provider in Kenya. In April 2023, following Elon Musk's announcement of Starlink's intention to enter the Kenyan market, Safaricom reduced the prices of certain Wi-Fi routers by half. After Starlink's market entry, the company offered a 50 GB monthly data plan for 1,300 Kenyan shillings (approximately USD 10.16), providing more data at a significantly lower price than Safaricom's 45 GB plan, which cost 2,500 shillings (USD 19.53). In September 2024, Safaricom responded by increasing internet speeds across all lower-tier packages, introducing a new 1 Gbps plan, and doubling the speed of its 40 Mbps package to 80 Mbps (Safaricom, 2024).

This case illustrates two important dynamics. First, heightened competition among ISPs tends to benefit consumers through lower prices and improved service quality. Second, Starlink's entry into African markets has acted as a catalyst for competitive pressure, reshaping pricing strategies and service standards. At the same time, this competition has generated resistance from incumbent providers, many of whom have lobbied for new regulatory measures targeting Starlink. ISPs in countries such as Kenya, Zimbabwe, Nigeria, and Cameroon have argued that Starlink is not subject to equivalent regulatory obligations and that its

pricing structure creates unfair competitive conditions. In Kenya, Safaricom formally proposed new regulatory requirements in a letter to the Director-General of the Communications Authority, emphasizing that satellite coverage spans multiple countries and may facilitate unauthorized use or signal interference. Safaricom argued that satellite providers should operate as infrastructure providers for licensed operators rather than competing directly with them (Ross, 2024). Such regulatory proposals, if implemented, would significantly constrain Starlink's ability to compete in the Kenyan market. Nonetheless, Kenyan President William Ruto has publicly emphasized that increased competition in the telecommunications sector benefits all stakeholders and has encouraged incumbent firms to welcome new market entrants (Yieke, 2024). This case underscores Starlink's role in enhancing affordability through competitive pressure, while also highlighting the institutional resistance it faces from established market players.

Public–Private Partnerships and Alternative Market Approaches: Beyond Starlink, several private companies have pursued partnerships with low-Earth orbit (LEO) satellite broadband providers to expand connectivity across Africa. Bayobab, a major African digital infrastructure provider, has partnered with OneWeb to deliver fixed connectivity services and extend coverage across the continent (Bayobab, 2023). Similarly, OneWeb signed an agreement with Airtel Africa to achieve full satellite coverage in all 14 of Airtel's African markets. In August 2024, Airtel Nigeria announced the successful installation of a OneWeb satellite dish in Lagos, noting that the service would support governments and businesses in connecting rural and underserved areas (Nyangi, 2024).

OneWeb's market strategy differs markedly from that of Starlink, as it places greater emphasis on partnerships with telecommunications operators and enterprise clients rather than direct-to-consumer services. Starlink, however, has also begun expanding its collaborative offerings. Notably, the company recently introduced its "Community Gateways" package, designed for local providers and capable of delivering up to 10 Gbps download and upload speeds with latency below 99 milliseconds. By leveraging existing fiber infrastructure operated by fixed and mobile wireless providers, this solution can support thousands of new users in remote regions (Lipscomb, 2024). Despite its technical potential, the package entails a monthly cost of USD 75,000 per Gbps and an upfront fee of USD 1.25 million, which may be prohibitively expensive for many African telecommunications firms, thereby limiting its near-term adoption.

Economic Challenges of Starlink in Africa

Policy and Regulatory Constraints: Satellite systems deliver internet connectivity primarily through the use of radio-frequency spectrum, a finite and highly regulated resource. Any entity seeking to operate within this spectrum—including internet service providers, television networks, and radio broadcasters—must obtain authorization from each sovereign state in which it intends to provide services. Because radio spectrum underpins the operations of numerous established industries, incumbent firms and sectoral stakeholders often resist the market entry of Starlink and other low Earth orbit (LEO) satellite broadband providers. At the international level, regulatory oversight and dispute resolution are coordinated by the Radiocommunication Sector of the International Telecommunication Union (ITU-R). While the ITU-R facilitates spectrum coordination among states to prevent harmful interference, individual governments retain authority over licensing and spectrum allocation within their national jurisdictions. Consequently, Starlink is required to secure approval from each country in which it seeks to utilize radio frequencies.

Spectrum Allocation and Licensing Challenges: At the 2023 World Radiocommunication Conference (WRC-23) in Dubai, terrestrial telecommunications operators, geostationary orbit (GEO) and geosynchronous orbit (GSO) satellite companies, and LEO broadband providers contested international rules governing spectrum use. GEO and GSO operators argued that LEO constellations generate unacceptable levels of interference, whereas LEO providers called for regulatory reforms that would permit non-geostationary satellite orbit (NGSO) systems to operate with higher equivalent power flux-density (EPFD) limits. EPFD refers to the power of a radio signal as it reaches the Earth's surface. NGSO operators maintain that existing thresholds are outdated and constrain the affordability and scalability of satellite-

based internet services. These debates highlight the increasing pressure on international and national regulators to balance competing industrial interests (Rainbow, 2024).

Beyond technical considerations, spectrum governance is closely linked to geopolitics and state sovereignty. The United States National Spectrum Strategy, for example, emphasizes that national security, public safety, technological leadership, and economic growth are fundamentally dependent on adequate spectrum access (Dalledonne, 2024). The reported unauthorized use of Starlink in Iran illustrates the capacity of private firms to circumvent sovereign spectrum controls and, more critically, to shape information flows across national borders. This issue is further complicated by the growing prevalence of internet shutdowns. According to Access Now, 283 internet shutdowns occurred across 39 countries in 2023—the highest number recorded since monitoring began in 2016—with a significant proportion affecting African states (Rosson, 2023). These shutdowns demonstrate how connectivity disruptions have become an increasingly common policy instrument for governments seeking to regulate domestic and transnational information flows.

Escalating and Potentially Unfair Competition: In the absence of strategic collaboration or regulatory safeguards, the expansion of Starlink may exert severe competitive pressure on local and regional internet service providers. Fixed-line operators such as Liquid Telecom, TelOne, and ZOL, as well as mobile and SIM-based providers including Econet and NetOne, risk marginalization or displacement from the market. Although the entry of Starlink could lead to a substantial reduction in consumer internet costs, local providers may find it increasingly difficult to compete with a global satellite operator benefiting from scale, capital intensity, and technological advantages.

Fiscal Implications and Government Revenue Losses: In many African countries, fees and taxes associated with internet services constitute a significant source of public revenue. If Starlink enables widespread connectivity without reliance on domestic service providers, governments may experience a decline in these revenue streams. To mitigate such losses, regulatory authorities may condition operating licenses on the payment of fees or other fiscal contributions designed to compensate for forgone taxation and to preserve national budgetary stability.

Security Implications of Starlink's Presence in Africa: Low-Earth orbit (LEO) satellite technologies, most notably Starlink, undeniably offer significantly higher connection speeds and lower latency compared to traditional geostationary satellite systems. These technological advantages have expanded access to global digital opportunities, particularly for young populations in rural and digitally marginalized communities across Africa. Through public libraries, schools, and community access points, individuals who were previously disconnected can now benefit from affordable—and in some cases free—internet connectivity. Beyond socioeconomic inclusion, LEO technologies also extend broadband access to remote regions worldwide and provide critical communication infrastructure during emergencies and humanitarian crises. As Elon Musk, the CEO of Starlink, has emphasized, the principal advantage of this technology lies in its capacity to eliminate mobile communication dead zones anywhere on Earth, including situations in which individuals—such as lost hikers—are unable to call for assistance. Furthermore, Starlink's deployment across African countries is widely perceived as a confidence-building factor for entrepreneurs, startup founders, and geographically dispersed businesses that have historically lacked reliable high-speed internet infrastructure. Despite these benefits, the rapid diffusion of Starlink across the continent raises a number of significant security concerns. The following sections critically examine the cybersecurity, national security, and conflict-related implications of Starlink's presence in Africa.

Cybersecurity Implications: While the positive developmental outcomes associated with Starlink and other LEO-based technologies are considerable, the known—and as yet unforeseen—digital and cybersecurity risks linked to their deployment in African countries constitute a major challenge requiring sustained oversight. These concerns are particularly salient given that companies such as Starlink receive substantial financial and strategic support from the United States government, whose geopolitical interests may not always align transparently with those of African states. Accordingly, African governments must ensure that Starlink's operations strictly comply with international law and with the legal and regulatory

frameworks governing outer space activities and telecommunications. Regional and national space regulatory bodies, telecommunications authorities, and human rights organizations should actively monitor and hold Starlink accountable for adherence to both international and domestic norms. This includes ensuring compliance with International Telecommunication Union (ITU) coordination and registration procedures, refraining from unjustified content restrictions, and avoiding the collection or processing of user data in ways that contravene international human rights treaties. Moreover, although Starlink's advanced connectivity, automation, autonomy, and enhanced data collection capabilities are highly attractive to African firms and startups, these technological gains simultaneously introduce heightened cybersecurity vulnerabilities. Malicious cyber actors may also benefit from improved connectivity through LEO constellations, thereby expanding the overall cyber-attack surface. Consequently, organizations adopting Starlink services must strengthen their cybersecurity architectures and risk management frameworks in parallel with any expansion or modification of their network usage.

National Security Considerations: From a national security perspective, LEO satellite companies such as Starlink—given their close ties to global powers and reliance on state-backed funding—may pose strategic risks to less powerful states, particularly in Africa. These risks become especially acute if satellite infrastructure or services are repurposed, directly or indirectly, for military or intelligence operations during armed conflicts involving third-party states. Looking ahead, it is therefore imperative that African governments invest in and support domestically based technology firms capable of developing indigenous LEO satellite infrastructure tailored to African needs and governed by African institutions. Building sovereign space and digital capabilities would substantially reduce dependence on Western companies backed by patron governments with historical records of political, military, and economic intervention in the internal affairs of weaker states, thereby mitigating both digital vulnerabilities and broader national security risks.

Use by Extremists and Criminal Networks: Starlink has also demonstrably enhanced the operational capabilities of criminal networks across the continent. Paradoxically, smugglers and traffickers are often empowered by the very Starlink kits they distribute. A smuggler operating in the Agadez region described the technology's appeal as follows: "Starlink has simplified communications. It is far more practical and cost-effective than satellite phones. In the past, contacting someone in the city using Thuraya was difficult, but now it is easy to call or message anyone via WhatsApp." Similarly, a gendarme stationed in Agadez noted that Starlink enables smugglers to evade detection more effectively: "They know the desert better than we do, and they are always connected via Starlink. It's like they're playing a game in which they can see all the moves, while we are left guessing" (Tanner, 2025).

Escalation and Transformation of Armed Conflicts: Starlink has also significantly altered the dynamics of armed conflict across parts of Africa. Since 2023, northern Mali has witnessed renewed and intensified clashes between the Malian Armed Forces (FAMa)—supported by Russia's Wagner Group, now reorganized under the Russia Africa Corps—and the Permanent Strategic Framework (*Cadre stratégique permanent pour la défense du peuple de l'Azawad*), which has since dissolved. Elements of this framework have reconstituted themselves as the Azawad Liberation Front (Front de Libération de l'Azawad, FLA), a coalition of separatist armed groups. These confrontations have resulted in escalating civilian casualties and widespread displacement. Both FAMa and the FLA have reportedly made extensive use of Starlink for operational purposes. According to an FLA leader based in the Tinzaouaten region, the coalition relies on Starlink for command-and-control coordination, intelligence sharing, and narrative dissemination. During the three-day battle in Tinzaouaten in late July 2024, intense fighting between FLA units, FAMa forces, and Wagner mercenaries was accompanied by the use of Starlink to maintain secure communications among dispersed combat units and to post real-time updates on social media platforms, thereby reinforcing external messaging and propaganda efforts.

The militarization of Starlink is not limited to separatist movements. Numerous videos circulated on social media platforms depict violent extremist organizations employing Starlink kits. In June 2024, for example, Jama'at Nusrat al-Islam wal-Muslimin (JNIM) released a video claiming responsibility for an operation in Fitili, Gao, against Abdul Aziz Maza, a commander affiliated with Islamic State–Sahel. The footage

prominently displayed a Starlink device among seized equipment. Likewise, Nigerien security forces have reported confiscating Starlink terminals during counterterrorism operations against JNIM and Islamic State–Sahel in regions such as Tillabéri and Tahoua.

The use of Starlink by armed actors extends beyond the central Sahel. The Islamic State West Africa Province (ISWAP), active primarily in northeastern Nigeria, northern Cameroon, and the Diffa region of Niger, has long relied on satellite-based communications. While ISWAP previously depended on Thuraya plug-and-play Wi-Fi routers, recent evidence indicates a growing shift toward Starlink systems (Gaetano, 2024).

According to a source close to the Multinational Joint Task Force—established in 2014 to combat ISWAP and other violent extremist organizations in the Lake Chad Basin—multiple Starlink devices were seized during military operations against ISWAP in both 2024 and 2025. It is widely believed that many armed groups operating across the Sahel and West Africa now depend on Starlink for communication and logistical coordination. A leader of the "Union of Nigeriens for Vigilance and Patriotism" (UNVP), a civilian support group for the National Council for the Safeguard of the Homeland (*Conseil National pour la Sauvegarde de la Patrie*), composed largely of residents and former rebels from the Agadez region, observed: "Today, almost every suspicious vehicle seems to carry a Starlink device. Armed groups near Ami Loulou and former Haftar militias now hiding along the Niger border all rely on them to coordinate movement and communication" (Joscha, 2024).

Table 3. *Starlink's Impact on Conflicts in the Great Lakes Region*

Impact Aspect	Threats	Opportunities
Conflict Monitoring	Possibility of armed groups using the Internet	Better documentation of human rights violations
Peace Operations	Risk of communications being hacked	Facilitating peacekeeping communications
Aid	Refugee information security	Improving humanitarian coordination
Diplomacy	Possibility of sensitive information being leaked	Facilitating remote negotiations

Conclusion

The analysis of economic and security dimensions suggests that the deployment of advanced space technologies—particularly the Starlink satellite project—across the African continent extends beyond mere technological innovation and reflects broader power dynamics within the international system. From a neorealist perspective, advanced communication technologies such as Starlink function as instruments of "power augmentation." Key actors in this domain, notably the United States and its affiliated corporations, leverage these technologies to secure strategic advantages on the global stage. In this context, Starlink's introduction into Africa should not be interpreted solely as a developmental initiative; rather, it constitutes part of a broader process aimed at deepening Western geo-economic influence in regions that have yet to establish technological autonomy. Control over communications infrastructure and data—particularly when substantial funding and technology originate from American entities—places African states in a position of dependence and vulnerability regarding national security policy and data sovereignty.

From the perspective of technological dependency theory, Starlink exemplifies a clear instance of structural reliance of the Global South on the Global North. African economies, constrained by limited digital infrastructure and domestic investment, are compelled to depend on externally developed systems for connectivity and technological skill development. The findings indicate that the subscription fees and hardware requirements associated with Starlink represent a significant proportion of the annual income

for average households across much of the continent. Consequently, this technological advancement is unlikely to function as an inclusive developmental tool; instead, it risks reinforcing digital inequalities. While Starlink may reduce spatial gaps in internet access, it simultaneously exacerbates economic disparities and technological dependence.

At the security level, Starlink's presence introduces heightened geopolitical risks and digital vulnerabilities. Neorealist theory predicts that great powers will exploit technological advantages to maintain global power balances, framing data, communications, and satellite capabilities as strategic assets. Simultaneously, the potential utilization of such technology by armed groups or separatist movements for operational coordination and information warfare underscores the unintended consequences of this dependency. In this scenario, African governments may function less as autonomous actors and more as consumers of a network whose ultimate control lies beyond their territorial and regulatory reach.

Overall, while Starlink's presence in Africa has, in the short term, expanded digital access and introduced competitive pressures to local telecommunications markets, the long-term implications align with neorealist and technological dependency frameworks. The project reproduces processes of technological concentration and economic-security dependence, limiting equitable access to technological benefits and potentially undermining the digital sovereignty and communicative independence of African states. A sustainable solution, as suggested by these theoretical perspectives, requires the development of local technological capacities and the promotion of regional collaboration to achieve communicative self-sufficiency. Only through such initiatives can the transition from "technological dependency" to "technological empowerment" be realized across the continent.

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