Connectivity 2

KEY MESSAGES

- Internet access gaps have narrowed, but affordability and quality gaps between richer and poorer countries have widened.
  - *Internet users*. Lower-middle-income countries (LMICs) drove global internet penetration (68 percent in 2024, up from 64 percent in 2022), but one-third of the global population remains offline. Urban-rural gaps widened across income groups, despite narrowing gender-age gaps.
  - *Affordability*. Broadband costs dropped significantly in low-income countries (LICs) between 2022 and 2023 (18 percent for fixed broadband; 8 percent for mobile broadband) but still remain prohibitive given the low income level in LICs.
  - *Speed inequality*. High-income countries (HICs) and upper-middle-income countries (UMICs) saw a 50-percent increase in internet speed between 2023 and 2024, reaching 143 megabits per second (mbps) and 74 mbps, respectively; the median speed in LICs and LMICs stagnated below 25 mbps.
  - *Data consumption*. The data consumption gap has widened, with HICs increasingly leaving others behind. In 2023, median data traffic per capita reached 1,400 gigabytes (GB) in HICs (up from 1,200 GB in 2022), 400 GB in UMICs, and 100 GB in LMICs, and it stalled at 5–6 GB in LICs.
- Information and communication technology (ICT) goods trade has slumped, whereas digital services trade continues to record strong growth.
  - ICT goods trade plunged by 13 percent in 2023 (US$2.5 trillion) compared with 2022 because of slowing demand and trade frictions. China, the Republic of Korea, and Mexico experienced the sharpest declines. As firms diversified sourcing locations to enhance resilience, India, a few Middle East countries, and Central and Eastern European countries saw rapid growth.
  - ICT services trade grew by 22 percent between 2022 and 2024 (US$1.2 trillion), led by South Asia (SAR; 22 percent, mainly India), the United States (17 percent), and Latin America and the Caribbean (LAC; 14 percent).
  - Digitally deliverable services continue to surge, with LAC (39 percent) and SAR (22 percent) leading growth from 2022 to 2024.

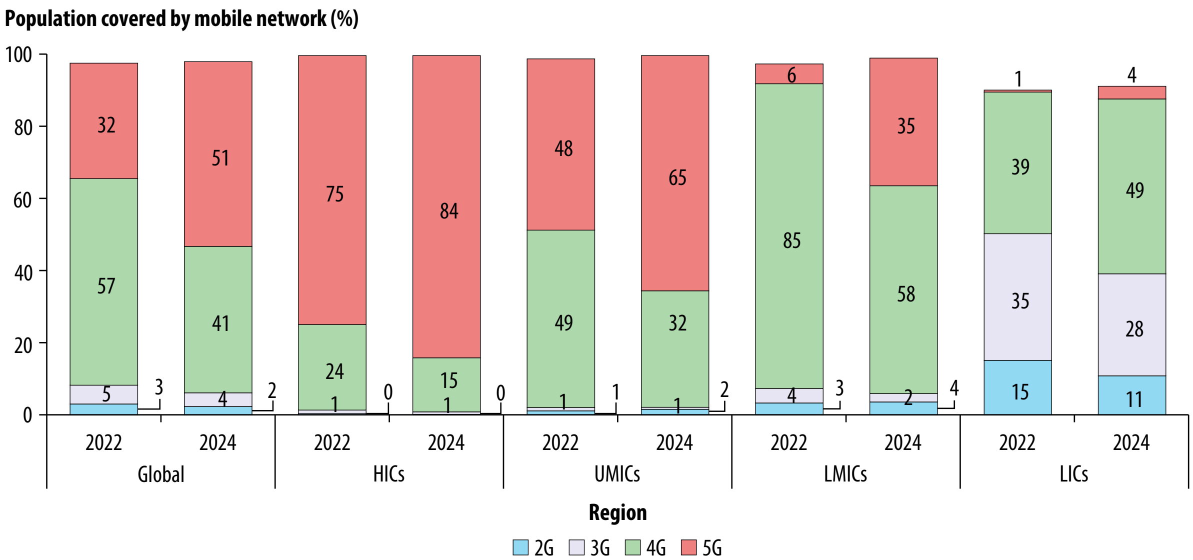
- The expansion of 5G accelerated and the rise of satellite connectivity offers new possibilities.
  - *5G expansion.* 5G expanded fastest in LMICs between 2022 and 2024 (30 percentage points of population coverage), but coverage remains minimal in LICs.
  - *Satellite connectivity.* Since 2015, the number of communications satellites in orbit deployed for commercial purposes has increased more than 14 times. Low Earth orbit satellites now make up 90 percent of all satellites in orbit providing communications and connectivity services. New business models and price points are increasing the adoption of satellite communications services globally.
- Governments need to create an enabling environment to promote private sector investment in expanding and upgrading digital infrastructure.
  - Governments can liberalize restrictions on foreign investment, ensure fair competition, and streamline permitting and rights-of-way processes to reduce delays and costs in network deployment. Clear and stable regulatory frameworks, including spectrum management policies, can reduce investor uncertainty. Promoting infrastructure sharing can improve service affordability.
  - Shared internet access points, targeted subsidies, reduced taxes on digital devices, and innovative financing mechanisms could make digital devices more accessible and affordable for low-income families.

Digital infrastructure

Global mobile network coverage has become nearly universal, reaching more than 98 percent of the global population across all regions. As of 2024, only 2 percent of the global population, approximately 170 million people, live without mobile coverage, with the majority residing in low-income countries (LICs). Across all income groups, 5G coverage has increased, with lower-middle-income countries (LMICs) experiencing the fastest expansion between 2022 and 2024, although coverage in LICs remains minimal. More than 90 percent of the population in high-income countries (HICs) and middle-income countries (MICs) were covered by 4G and 5G in 2024. In HICs and upper-middle-income countries (UMICs), 5G has become the predominant technology, reaching more than two-thirds of the population. In LMICs, 5G coverage increased from 5 percent in 2022 to 35 percent in 2024, whereas in LICs, 5G expansion has been minimal, reaching only 4 percent of the population and leaving most users dependent on 3G and 4G networks (refer to figure 2.1).

Nonterrestrial networks (NTNs), especially satellites, play a vital role in filling the connectivity gaps left by traditional terrestrial communications infrastructure. NTNs are wireless communications technologies that broadcast signals, using equipment stationed in the air and in Earth's orbit. These platforms include satellites in low Earth orbit (LEO), medium Earth orbit, and geosynchronous orbit (GSO), as well as high-altitude platform stations and unmanned aerial vehicles. They enhance global communications coverage and services by providing internet connectivity to end users.

FIGURE 2.1 Mobile network coverage, by country income group, 2022 and 2024

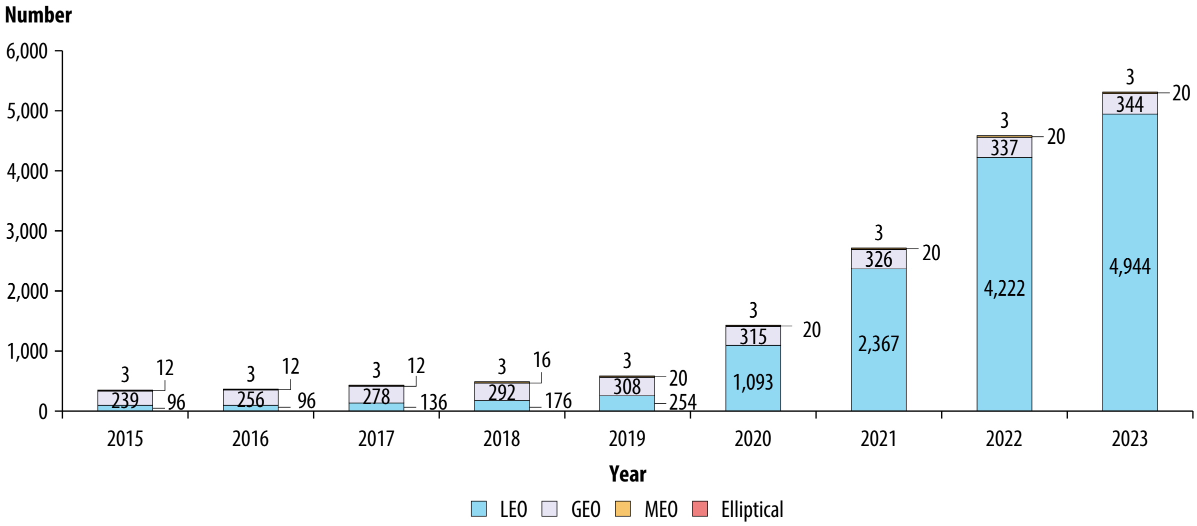


Source: Original figure for this publication using calculations from the International Telecommunication Union (https://datahub.itu.int/).
Note: HICs = high-income countries; LICs = low-income countries; LMICs = lower-middle-income countries; UMICs = upper-middle -income countries.

The recent rise in the availability of satellite internet worldwide has been driven by significant growth in satellite constellations. As of 2023, there were slightly more than 7,560 satellites in orbit, of which approximately 5,300 are commercial communications satellites providing connectivity services in addition to traditional fixed and mobile networks (Sebastian 2005). The presence of large constellations of nongeosynchronous-orbit (NGSO) satellites covering the earth's surface remains the main driver of increased availability of satellite connectivity. Since 2015, the number of communications satellites in orbit deployed for commercial purposes has increased more than 14 times, with LEO satellites constituting the bulk of launches (refer to figure 2.2). LEO satellites now make up 90 percent of all satellites in orbit providing communications and connectivity services.

New business models and price points are increasing the adoption of satellite communications services globally. Although GSO satellites stationed approximately 36,000 kilometers above the Earth's surface have historically provided effective communications services, primarily focused on business and government clients, and played a vital role in enhancing global navigation, backhauling for telecommunications providers, and emergency response capabilities, recent breakthroughs in technology (leading to a significant reduction in launch costs) and business models are changing the landscape of satellite connectivity. NGSO satellite constellations such as Starlink and OneWeb offer solutions with improved speeds, better prices, and reduced latency, making satellite connectivity attractive to end users seeking improved experiences in developing countries. A 2023 study by Ookla found that in Nigeria and Rwanda, SpaceX's Starlink recorded median download speeds almost two times faster than those of other fixed broadband providers.[1] NGSO satellites also provide a viable connectivity solution for rural and remote areas that are hard to reach with terrestrial fixed and mobile networks because of financial, demographic, or geographic constraints, democratizing broadband access to unserved populations. Countries also have their own regulatory processes to decide which providers are best for their own contexts (Stein and Natanson 2025).

FIGURE 2.2 Growth in commercial communications satellite constellations, by orbital positioning, 2015–23



Source: Original figure for this publication calculated using data from the Union of Concerned Scientists (https://www.ucs.org/resources/satellite-database).
Note: GEO = geosynchronous orbit; LEO = low Earth orbit; MEO = medium Earth orbit.

The unique coverage of NGSO satellite constellations makes them integral to a wide range of 4G and 5G use cases. These applications include precision agriculture and Internet of Things (IoT) connectivity.[2] Satellites are increasingly being integrated into development interventions to, for instance, improve infrastructure mapping and quickly restore communications services after a natural disaster. The recent development of a direct-to-cellular/device feature that enables satellites to connect to users' mobile devices, delivering voice, short message service, and data, will bring a wider range of services and use cases.

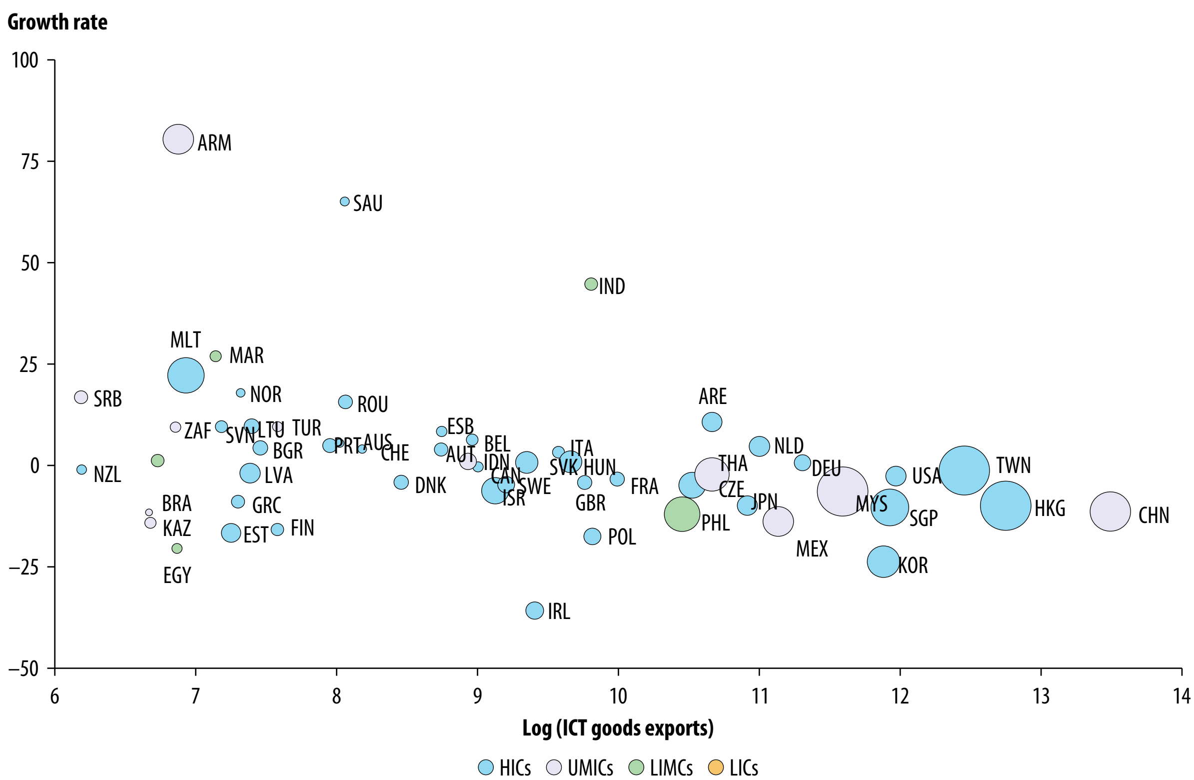
As communications satellites advance, governments are developing their regulatory responses. Various countries are reforming telecommunications licensing, opening their skies and collaborating for better connectivity to ensure rural access and achieve developmental goals in health education and social services delivery. These policy responses address key satellite challenges such as licensing and coordination (including spectrum and ground stations), high costs that limit affordability, and technical limits such as congestion and bandwidth caps affecting service quality, ensuring integration with terrestrial networks for lower costs and mitigating environmental impacts from launches and deorbiting. The growth of satellite connectivity is also shaped by regulations aiming to create fair competition with the mobile industry, which operates under different rules.

Digital sector development

Global exports of information and communications technology (ICT) goods, which account for 12 percent of global merchandise exports (US$2.5 trillion), declined by 13 percent in 2023 compared with 2022, more than the overall global merchandise trade contraction of 4 percent. The downturn was consistent across all income groups, with HICs maintaining their share of global ICT goods exports at 57 percent. Exports of all ICT subcomponents contracted. This decline was driven by weakening global demand, supply chain imbalances, and trade restrictions.

Among the world's largest ICT goods exporters, China; the Republic of Korea; Hong Kong SAR, China; and Mexico experienced the sharpest declines during 2022–23. Korea experienced the steepest decline, with ICT goods exports falling by 24 percent because of falling semiconductor prices, a delayed recovery in the demand for ICT devices, and an inventory overhang caused by double ordering during the pandemic (Ackerman 2024). Mexico followed with a 14 percent drop, and China and Hong Kong SAR, China, experienced reductions of 10 percent over the same period (refer to figure 2.3). Nevertheless, China remained the world's largest exporter, accounting for nearly 30 percent of global ICT goods exports in 2023. In terms of export destinations, China's ICT goods exports to the United States saw the largest decline because of evolving trade policies and export controls.

FIGURE 2.3 ICT goods exports, 2022–23



Source: Original figure for this publication calculated using data from the United Nations Trade and Development Stats (https://unctadstat.unctad.org/datacentre/).

Note: Bubble size represents the share of ICT goods exports in a country's total merchandise exports. Countries with shares in total ICT exports more than 0.01 percent are displayed. For a list of country codes, refer to https://www.iso.org/obp/ui/#search. HICs = high-income countries; ICT = information and communication technology; LMICs = lower-middle-income countries; LICs = low-income countries; UMICs = upper-middle-income countries.

As firms diversified sourcing locations to enhance resilience, India, Morocco, Saudi Arabia, the United Arab Emirates, and several Central and Eastern European countries saw surging ICT goods exports in 2022–23. India recorded an exceptional growth of 45 percent. Targeted industrial policies such as the “Make in India” initiative and production-linked incentives bolstered domestic production, with Apple’s growing manufacturing presence boosting smartphone exports (“Apple Expands India Manufacturing,” 2025). Saudi Arabia’s ICT goods exports soared by more than 60 percent. Morocco’s ICT goods exports rose by 27 percent as the “Digital Morocco 2030” strategy fostered ICT sector development, driving export gains. Exports also boomed in several Central and Eastern European economies, including Armenia, Bulgaria, Malta, Serbia, Slovenia, and Türkiye, albeit from a low base.

Although exports of ICT goods have declined in recent years, exports of ICT services have continued to grow steadily, increasing by 22 percent between 2022 and 2024. Global ICT services exports reached US$1.2 trillion in 2024, representing 15 percent of global commercial services exports. ICT services exports have largely been driven by IT services, which account for 90 percent of global ICT services exports. From 2022 to 2023, IT services grew by 12 percent, driven by rising demand for cloud computing, software development, and digital services. Within IT services, computer services—which make up 93 percent of IT services exports—grew by 14 percent, whereas information services declined by 9 percent.

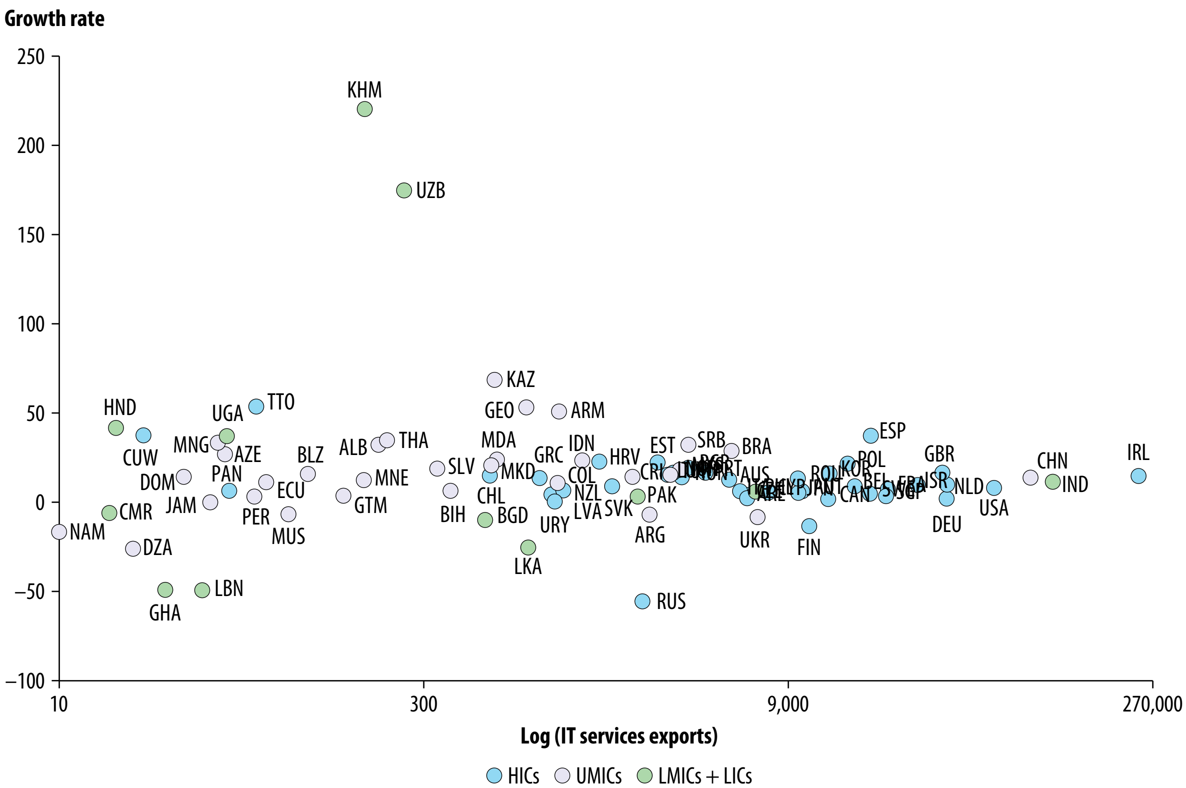
Armenia, Cambodia, Georgia, Kazakhstan, and Uzbekistan experienced sizzling growth in IT services exports in 2023. In 2023, Ireland remained the world’s largest IT services exporter, accounting for 24 percent of global exports, primarily because of big tech’s tax optimization strategies. India followed at 11 percent, with China at 9 percent and the United States at 6 percent. China, India, and Ireland continued to achieve double-digit growth in 2023. Cambodia and Uzbekistan experienced the highest growth in IT services exports, although their global market shares remain below 1 percent (refer to figure 2.4).

Cambodia’s IT services market is expanding as demand for software development and outsourcing services rises (Loma Technology 2024), and Uzbekistan has implemented policies requiring that IT firms generating US$8.7 million annually derive at least 10 percent of their revenue from exports, with targets increasing to 50 percent by 2028 (Daryo 2024). Many other MICs in Europe and Central Asia (ECA), Latin America and the Caribbean (LAC), and East Asia and Pacific (EAP) also experienced brisk growth, including Armenia, Brazil, Georgia, Kazakhstan, and Serbia, where growth rates exceeded 30 percent.

More broadly, digital transformation continues to drive the export of digitally deliverable services, which reached US$4.8 trillion in 2024. In 2024, ICT services composed 25 percent of digitally deliverable services, up 1.2 percentage points (p.p.) from 2022. Other categories also posted significant gains. Notably, insurance and pension services surged by 31 percent, and financial services and other business services—which together represent nearly 60 percent of digitally deliverable services exports—expanded by 19 percent and 16 percent, respectively.

The highest growth in digitally deliverable services exports was recorded in ECA and SAR, where exports increased by 39 percent and 22 percent, respectively. HICs remain dominant, accounting for 84 percent of digitally deliverable services exports in 2024, following a 17 percent increase between 2022 and 2024. Digitally deliverable services exports are highly concentrated in some countries, with the United States (15 percent), Ireland (10 percent), the United Kingdom (10 percent), India (6 percent), Germany (6 percent), and China (5 percent) collectively accounting for half of global digital services exports.

FIGURE 2.4 Growth of IT services exports, by country income group, 2022–23



Source: Original figure for this publication calculated using data from the World Trade Organization (https://stats.wto.org/).
Note: Bubble size represents the share of IT services exports in a country's total commercial services exports. Countries with export shares in total IT services exports of more than 0.01 percent are displayed. For a list of country codes, refer to https://www.iso.org/obp/ui/#search. HICs = high-income countries; IT = information technology; LICs = low-income countries; LMICs = lower-middle-income countries; UMICs = upper-middle-income countries.

Among developing countries, all regions saw strong growth. In ECA, Türkiye drove much of the increase, with exports soaring by 65 percent, now accounting for 30 percent of the region's exports. Türkiye's growing prominence in digital services exports can be attributed to its robust technology system, skilled workforce, strategic geographic position, and supportive government policies ("Information Technology Sector Sets Higher Targets for 2025"). In SAR, India contributed 96 percent of the region's exports and achieved 22 percent growth between 2022 and 2024. LAC recorded a 17 percent growth rate, with Brazil, Costa Rica, and Mexico each exceeding 15 percent. The Arab Republic of Egypt (15 percent) in the Middle East and North Africa (MENA), Indonesia (48 percent) in EAP, and South Africa (23 percent) in Sub-Saharan Africa (SSA) also saw their exports surge between 2022 and 2024. In contrast, LICs continue to lag, with exports remaining below US$1 billion.

Digital adoption

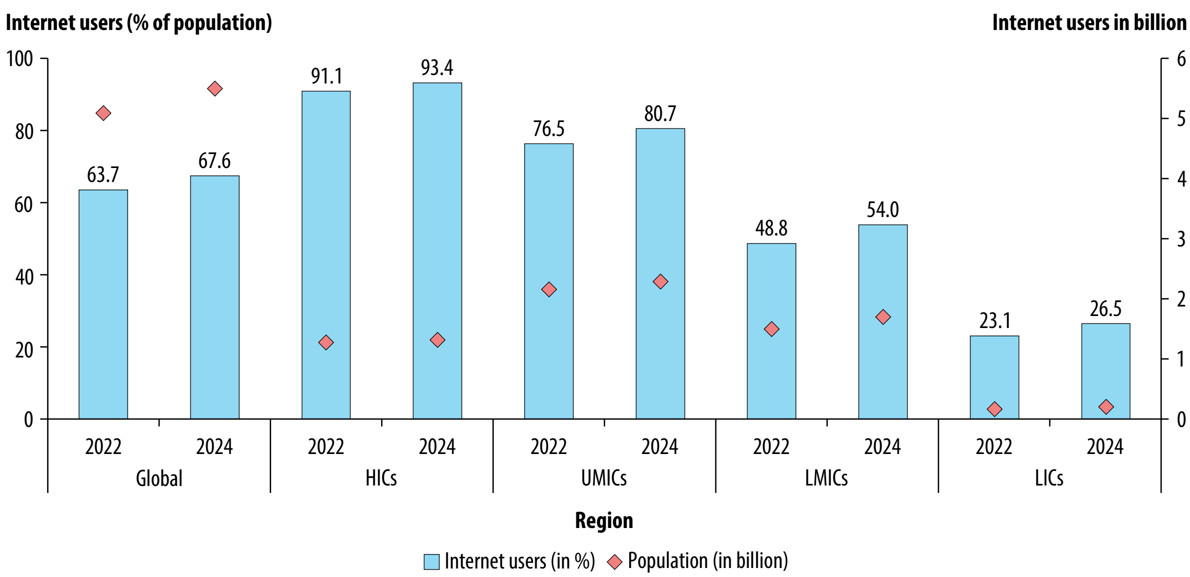
Internet penetration expanded steadily during 2022–24, reaching 68 percent of the global population, largely driven by LMICs. Among the 400 million newly connected users, nearly half originated from LMICs. UMICs accounted for approximately 129 million new users, with internet penetration exceeding 80 percent (refer to figure 2.5). LICs experienced a modest increase of 3.4 p.p. since 2022, which raised internet penetration to just over one-quarter of their populations. Internet penetration neared saturation in HICs at 93 percent, contributing only 35 million new users between 2022 and 2024.

UMICs led the growth in fixed broadband penetration (subscriptions per 100 people), whereas LMICs and LICs saw minimal growth. Fixed broadband penetration increased by 4 p.p. in UMICs, reaching 32 percent in 2024. Fixed broadband penetration reached only 4.8 percent in LMICs and less than 1 percent of population in LICs.

Growth in mobile broadband penetration in LMICs and LICs in 2022–24 also lagged their richer peers. In HICs and UMICs, mobile broadband penetration rose by 8 and 5 p.p., respectively, during 2022–24 (refer to figure 2.6). Penetration increased only 4 p.p. in LMICs and LICs, indicating persistent constraints in expanding mobile broadband usage, potentially because of the affordability of mobile internet services and smartphones.

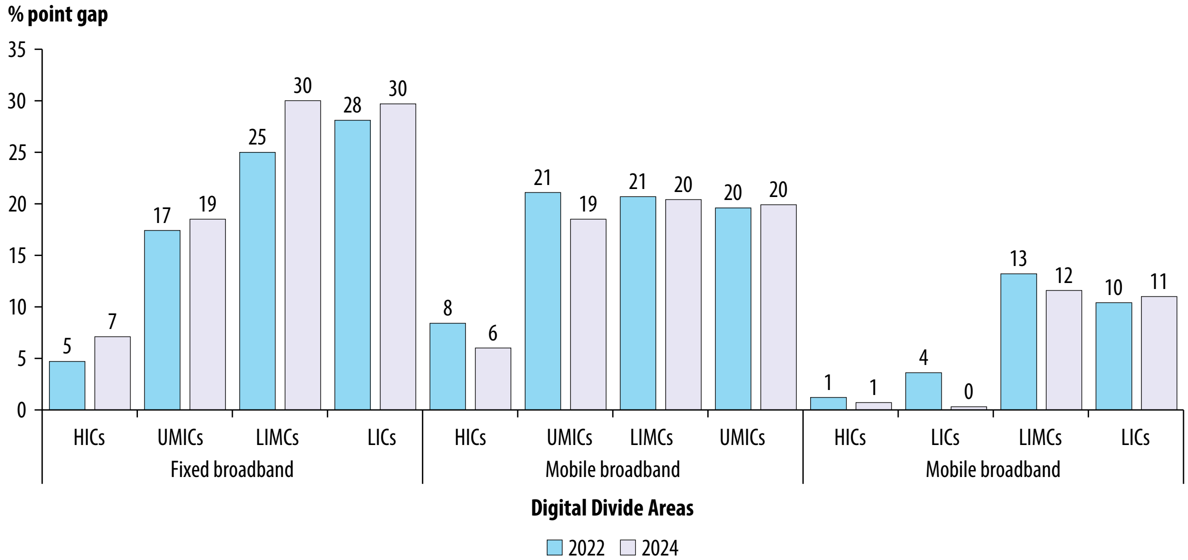
It is important to note that broadband subscription data do not directly reflect the number of internet users. In wealthier countries, higher penetration may reflect multiple subscriptions per user, increased business and IoT subscriptions, or temporary use by tourists—factors less common in LMICs and LICs. In contrast, in poorer countries, a single mobile subscription often supports multiple users through shared access within households or communities.

FIGURE 2.5 Internet penetration, globally and by income group, 2022 versus 2024



Source: Original figure for this publication using calculations from the International Telecommunication Union (https://datahub.itu.int/).
Note: HICs = high-income countries; LICs = low-income countries; LMICs = lower-middle-income countries; UMICs = upper-middle-income countries.

FIGURE 2.6 Fixed and mobile broadband penetration, globally and by income group, 2022 and 2024



Source: Original figure for this publication based on calculations from the International Telecommunication Union (https://datahub .itu.int/).

Note: HICs = high-income countries; LICs = low-income countries; LMICs = lower-middle-income countries; UMICs = upper-middle -income countries.

Despite these gains in internet connectivity, 2.6 billion people, representing one-third of the global population, remained offline in 2024, primarily in rural areas in LICs and LMICs. Among this offline population, 1.8 billion lived in rural areas, and 800 million resided in urban areas. The urban-rural digital divide widened across all income groups between 2022 and 2024, as urban internet adoption outpaced rural expansion. Disparities in internet access persist across gender and age groups, although they generally continue to narrow, except in LICs where the gender gap widened slightly. Gender parity has nearly been achieved in HICs and UMICs, whereas in LMICs and LICs internet access rates among male users exceed those among female users by more than 10 p.p., largely reflecting preexisting gender divides. Age-related disparities also diminished, especially in HICs and UMICs.

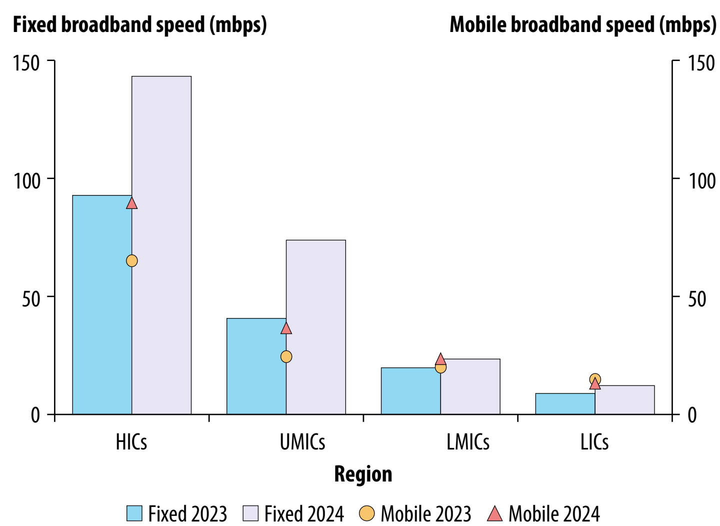
Affordability of both fixed and mobile broadband has improved significantly among LMICs and LICs in recent years, but it remains a major obstacle in LICs. In LICs, median fixed broadband costs fell by 18 percent and mobile broadband costs declined by 8 percent in purchasing power parity terms between 2022 and 2023, yet fixed broadband remains nearly 5 times as expensive as mobile broadband. A 5-gigabyte fixed broadband subscription consumed 29 percent of average monthly income in LICs in 2024—a figure that is 5 times higher than in LMICs and 30 times higher than in HICs. Broadband services in HICs and UMICs are generally affordable, with costs below 3 percent of monthly income and affordability improving marginally. In LMICs, mobile broadband costs are similarly low, falling below 3 percent of income. This is close to the affordability threshold of 2 percent of monthly income established by the International Telecommunication Union.

Internet speed increased significantly in HICs and UMICs between 2023 and 2024, whereas speed in LMICs and LICs stagnated. Median fixed internet speeds in HICs and UMICs increased by more than 50 percent. In LMICs and LICs, marginal improvements kept median download speeds below 25 megabits per second for both mobile and fixed broadband in 2023 and 2024 (refer to figure 2.7). The disparity in internet speed translates into substantial differences in download times.

Within-country disparities in broadband speeds generally narrowed from 2019 to 2024 but remain pronounced, especially in SSA. The authors created a coefficient of variation (CV) of the logarithm of download speeds as a measure of within-country internet speed inequality.[3] Within-country speed inequality tends to be higher in LICs (refer to figure 2.8). In 2024, fixed broadband inequality was most pronounced in MENA, SAR, and SSA, with median CV values exceeding 0.15. Mobile speed inequality was highest in LAC and SSA. Although median inequality has generally declined, mobile broadband speed inequality rose in LAC and MENA. This reflects ongoing infrastructure projects that initially benefit certain areas, as seen in Cuba, where the introduction of the Arimao cable in early 2023 coincides with an inequality exceeding 0.5.

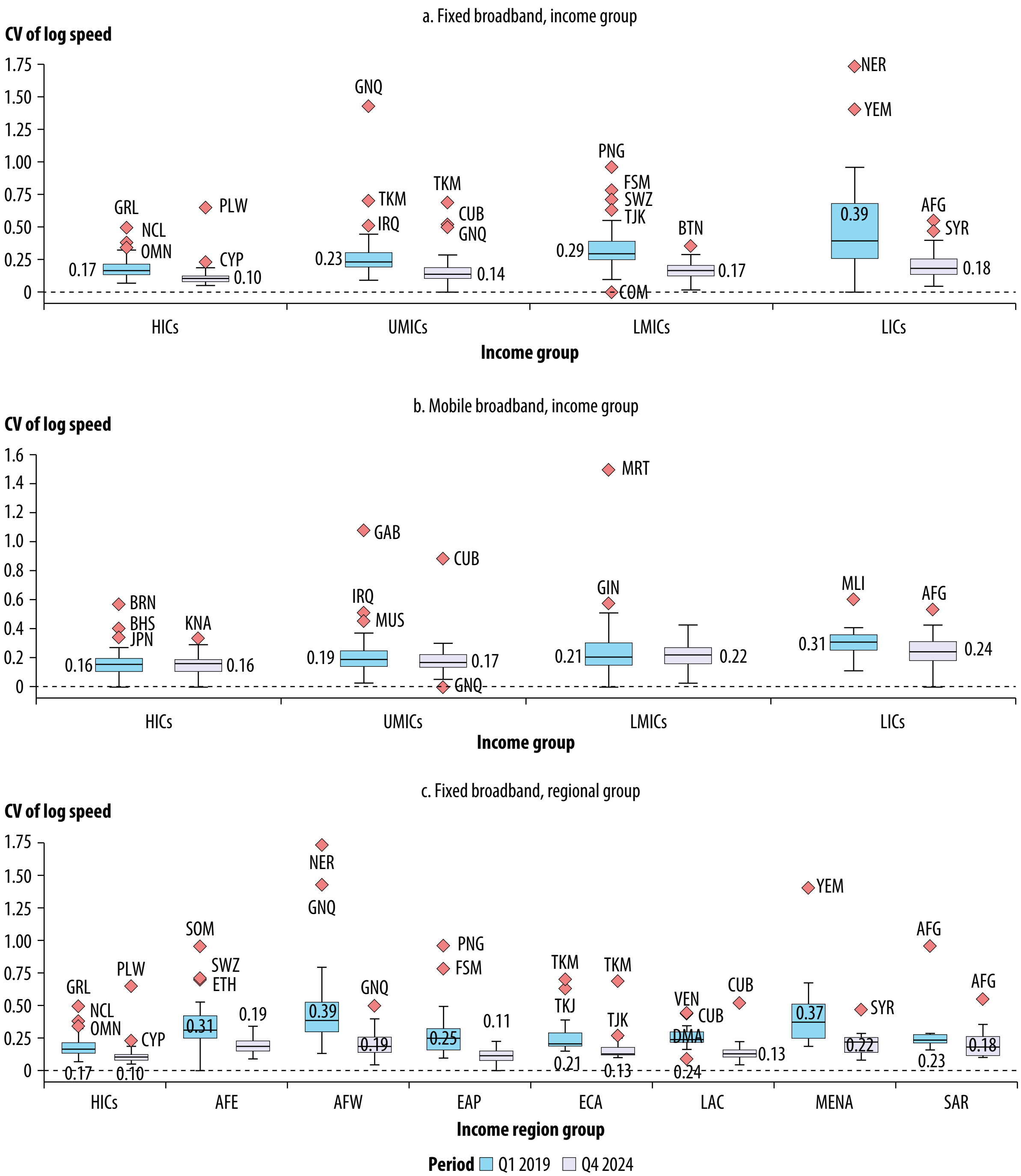
Gaps in data consumption across country income groups continue to widen, with HICs increasingly leaving others behind. In HICs and UMICs, annual fixed broadband traffic per capita is nearly 10 times the mobile traffic per capita (refer to figure 2.9). Total data traffic per capita in HICs reached nearly 1,400 gigabytes (GB) in 2023, around 400 GB in UMICs, 100 GB in LMICs, and only 5 GB in LICs.

FIGURE 2.7 Median fixed and mobile download speed, by country income group, 2023 and 2024



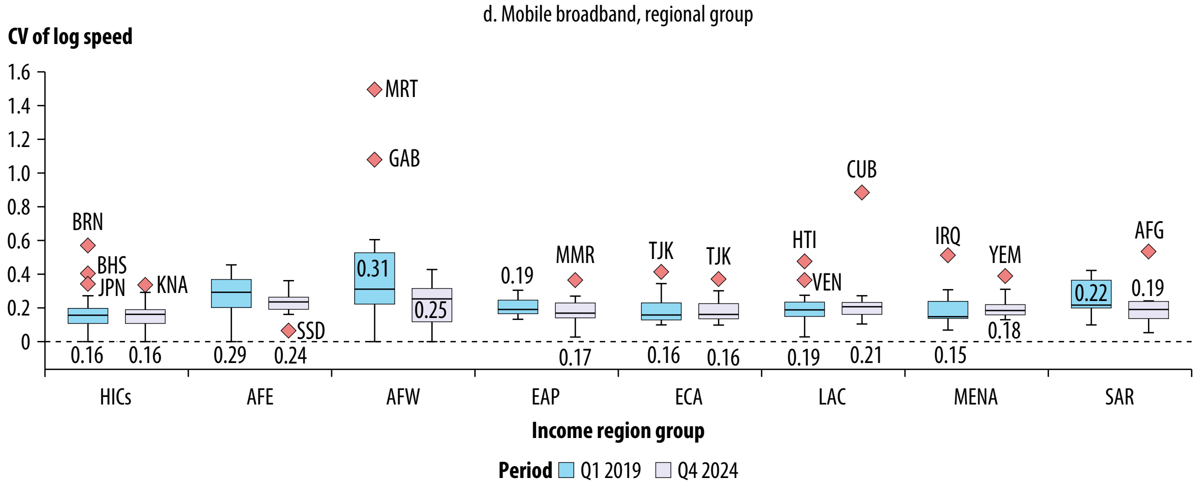
Sources: Original figure for this publication calculated using data from Ookla (https://www.speedtest.net/global-index).
Note: HICs = high-income countries; LICs = low-income countries; LMICs = lower-middle-income countries; mbps = megabits per second; UMICs = upper-middle-income countries.

FIGURE 2.8 Within-country internet speed inequality, 2019 Q1 and 2024 Q4



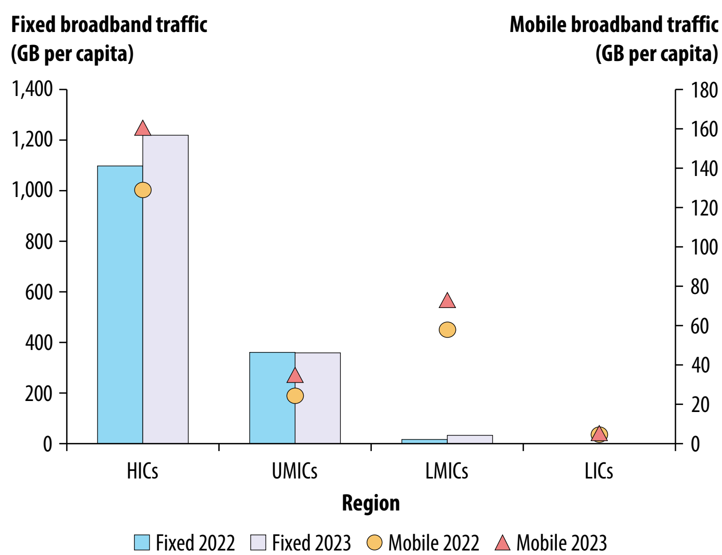
(Continued)

FIGURE 2.8 Within-country internet speed inequality, 2019 Q1 and 2024 Q4 (*Continued*)



Source: Original figures for this publication calculated using data from the Ookla Open Data Initiative (https://www.ookla.com/ookla-for-good/open-data).
Note: Within-country inequality is measured as the CV of the log of download speeds. The analysis includes areas of 610.8 meters × 610.8 meters with at least 20 speed tests. For a list of country codes, refer to https://www.iso.org/obp/ui/#search. AFE = Eastern and Southern Africa; AFW = Western and Central Africa; CV = coefficient of variation; EAP = East Asia and Pacific; ECA = Europe and Central Asia; HICs = high-income countries; LAC = Latin America and the Caribbean; LICs = low-income countries; LMICs = lower-middle-income countries; MENA = Middle East and North Africa; UMICs = upper-middle-income countries; Q1 = first quarter; Q4 = fourth quarter; SAR = South Asia.

FIGURE 2.9 Median fixed and mobile broadband traffic, by country income group, 2022 and 2023



Source: Original figure for this publication based on calculations from the International Telecommunication Union (https://www.itu.int/en/ITU-D/Statistics/pages/facts/default.aspx).
Note: GB = gigabytes; HICs = high-income countries; LICs = low-income countries; LMICs = lower-middle-income countries; UMICs = upper-middle-income countries.

How to ensure digital connectivity and adoption

Governments in countries that are less ready for artificial intelligence (AI) should prioritize creating an enabling environment for the private sector to expand and upgrade broadband infrastructure. Facilitating device access and ownership is also key to increasing AI adoption. An enabling environment remains key to attracting, retaining, and expanding private sector investment in telecommunications infrastructure. Governments can liberalize restrictions on foreign investment, ensure fair competition, and streamline permitting and rights-of-way processes to reduce delays and costs in network deployment.

Clear and stable regulatory frameworks, including spectrum management policies, can reduce investor uncertainty. Promoting infrastructure sharing can improve service affordability. Public policy can promote coinvestment in fiber optic networks by requiring all operators to share deployment plans with competitors and facilitate the use of rights of way. Regulators can also use financial incentives to support infrastructure sharing by reducing universal service requirements when voluntary sharing is undertaken with market competitors.

Finally, policies can also support cross-sector infrastructure sharing, although governance risks need to be carefully managed (Strusani and Houngbonon 2020). Opening the market for foreign and nontraditional satellite providers and simplifying and fast-tracking licensing for satellite operators and ground station installations can unlock the potential of satellite technology to close the digital divide—especially in hard-to-reach places. Shared internet access points, targeted subsidies, reduced taxes on digital devices, and innovative financing mechanisms could make digital devices more accessible and affordable for low-income families.

For countries with higher AI readiness, governments need to promote local digital sector development to ensure widespread digital adoption, paving the way for AI adaptation and innovation. Governments play a vital role in fostering local digital ecosystems by facilitating access to funding, information, markets, and skills. They can attract foreign venture capital (VC), offer grants and loan guarantees, and establish incubators to help entrepreneurs while also developing a robust domestic VC market. To combat information asymmetry, governments can connect start-ups with buyers and investors, both domestically and internationally, and enhance digital skills through training and by attracting foreign talent via streamlined visa processes.

Furthermore, market harmonization through trade agreements and international coordination is essential to remove cross-border barriers such as data localization and inconsistent technical standards, promoting holistic market openness and interoperability. As the digital sector matures, governments must also address intellectual property protection, competition, taxation, and innovation policies to counteract winner-takes-most dynamics and ensure a fair, dynamic, and competitive digital market.

Notes

1. Although satellite internet performs better than fixed-line internet in developing countries, fiber typically outperforms satellite internet on speed because fiber delivers higher bandwidth to users, especially in HICs and UMICs that have a more-developed fixed broadband infrastructure.
2. These applications enable real-time data collection and analysis from various sensors deployed in the field for precision agriculture and asset tracking, remote monitoring, and environmental sensing for IoT connectivity.

3. The CV for log download speeds is computed for each country using the data recorded at a spatial resolution of 610.8 meters × 610.8 meters (called *tiles*), considering only tiles with at least 20 speed tests. It is calculated as the ratio of the standard deviation to the mean of the natural logarithm of download speeds. It standardizes dispersion relative to the mean, making relevant comparisons across countries with different average download speeds.

References

Ackerman, K. 2024. "Excess Electronic Component Inventory to Remain a Challenge in the First Half of 2024." *Sourceability,* January 25, 2024. https://sourceability.com/post/excess-electronic-component-inventory-to-remain-a-challenge-in-the-first-half-of-2024.

"Apple Expands India Manufacturing." *Financial Times,* February 20, 2025. https://www.ft.com/content/35266a4f-e296-45c5-a578-df1fccda318e.

Daryo. 2024. "Uzbekistan's IT Industry Adopts New Export Requirements." May 31, 2024. https://daryo.uz/en/2024/05/31/uzbekistans-it-industry-adopts-new-export-requirements.

"Information Technology Sector Sets Higher Targets for 2025." 2025. *Daily News*, June 30, 2025. https://www.hurriyetdailynews.com/information-technology-sector-sets-higher-targets-for-2025-210907.

Loma Technology. 2024. "IT Outsourcing in Cambodia Southeast Asia Digital Potential." https://lomatechnology.com/blog/it-outsourcing-cambodia/4276.

Ookla. 2023. "New Speedtest Data Shows Starlink Performance Is Mixed—But That's a Good Thing." https://www.ookla.com/articles/starlink-hughesnet-viasat-performance-q2-2023.

Sebastian, K. A. 2005. "USC Satellite Database." Union of Concerned Scientists. December 8, 2005, updated May 1, 2023. https://www.ucs.org/resources/satellite-database.

Stein, J., and H. Natanson. 2025. "U.S. Pushes Nations Facing Tariffs to Approve Musk's Starlink, Cables Show." *Washington Post,* May 7, 2025. https://www.washingtonpost.com/business/2025/05/07/elon-musk-starlink-trump-tariffs/?utm_campaign=wp_main&utm_source=facebook,twitter&utm_medium=social.

Strusani, D., and G. V. Houngbonon. 2020. *Accelerating Digital Connectivity through Infrastructure Sharing*. Note 79. Washington, DC: International Finance Corporation. https://www.ifc.org/content/dam/ifc/doc/mgrt/emcompass-note-79-digital-infrastructure-sharing.pdf.