NETWORK COVERAGE AND INFRASTRUCTURE

The State of Mobile Internet Connectivity 2025

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M4D

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NETWORK COVERAGE AND INFRASTRUCTURE

The vast majority (96%) of the world's population live within the footprint of a mobile broadband network. Around 300 million people, or 4% of the global population, live in areas without mobile broadband coverage (the coverage gap). The uncovered live in locations that are predominantly rural, poor and sparsely populated. They are typically in a least developed country (LDC), landlocked developing country (LLDC) or small island developing state (SIDS). This coverage gap has been shrinking but is persistent.

This report examines how network coverage and infrastructure are expanding, and investigates network quality. These factors affect people's ability to access the internet and their experience when doing so.

1. THE COVERAGE GAP

The coverage gap has reduced, primarily driven by Sub-Saharan Africa, but reaching the remaining populations will be challenging

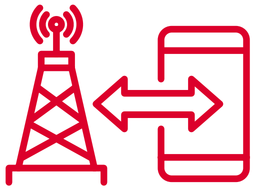
In 2024, the number of people living in areas without mobile broadband coverage reduced by around 40 million,[1] with 75% of the reduction from Sub-Saharan Africa. Encouragingly, most of the network expansion was in Central Africa – historically the sub-region with the lowest coverage. Here, the coverage gap reduced from 34% to 25%. The main contributor was the largest country, Democratic Republic of Congo, where the gap decreased from 46% to 32%. Despite this progress, Sub-Saharan Africa remains the region with the highest coverage gap, at 10%.

Twenty-nine countries have a coverage gap larger than 10% of the population (see Figure 1) – a reduction of two countries from 2023 (Tanzania and Zambia reduced their coverage gaps to 9% and 10% respectively). The majority of the 29 countries are in Sub-Saharan Africa. Elsewhere, there remain significant coverage gaps in parts of South Asia, particularly Afghanistan and Pakistan, which have coverage gaps of 25% and 19% respectively. Some countries in East Asia & Pacific also have large coverage gaps, especially in the Pacific Islands, which has a coverage gap of 19% (this is primarily because the largest country, Papua New Guinea, has a coverage gap of 22%).

Across the 29 countries with a coverage gap of more than 10%, the majority are LDCs, LLDCs and/or SIDS.[2] The coverage gaps in these groups are 9% for LLDCs, 11% for LDCs and 12% for SIDS.

Coverage gap

4%



of the **world's population** are still **not covered** by **mobile broadband**

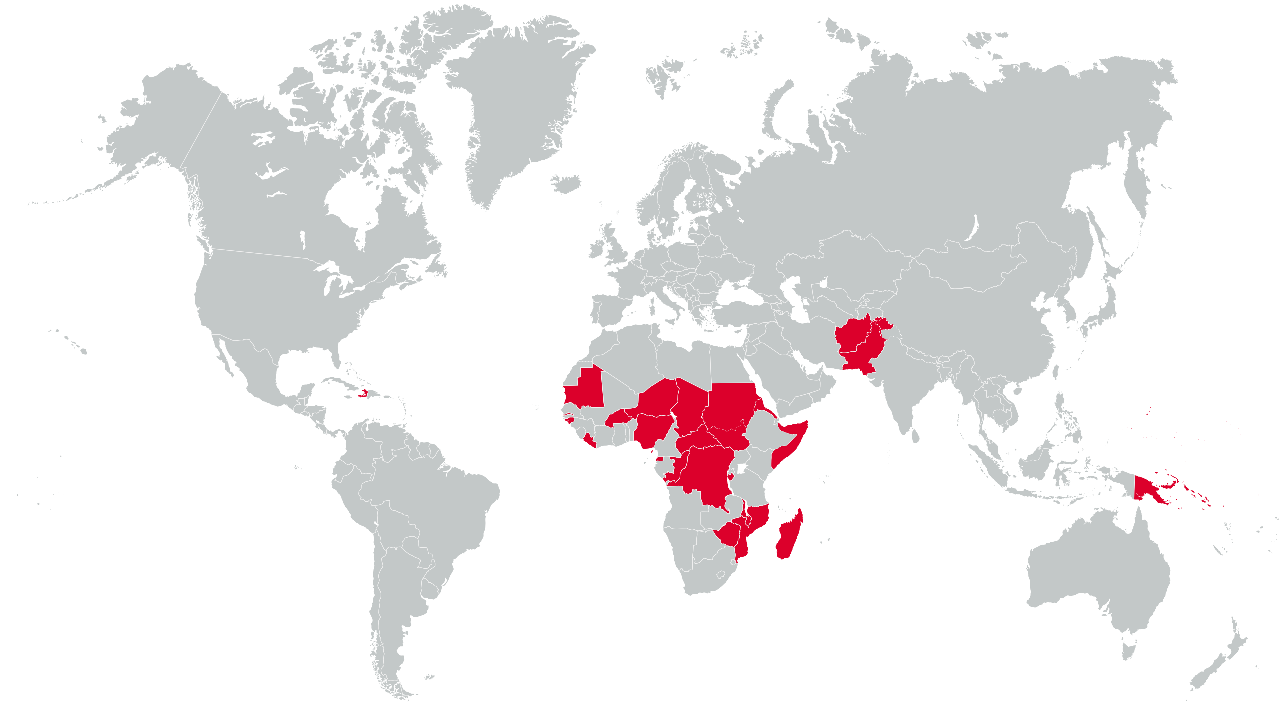
Around **300 MILLION PEOPLE**

(down **40m** compared to 2023)

1 This reduction was not large enough to drive a percentage-point change in the global population covered (4%).

2 Some countries fall under more than one category. For example, they can be an LDC and LLDC, or an LDC and SIDS.

Figure 1: Countries with a coverage gap above 10%



Source: GSMA Intelligence

The majority of gains in mobile broadband coverage across LMICs continue to be made by upgrading 2G sites. However, more than half (55%) of those not covered by a mobile broadband network (around 170 million people) live in areas with no pre-existing mobile infrastructure. Reaching these areas is challenging due to the high costs associated with deploying the necessary physical infrastructure. This is particularly pronounced in LDCs, LLDCs and SIDS, which have lower levels of human and economic development. Many of these are also vulnerable to economic shocks and natural hazards. It is therefore challenging to sustainably invest in expanding coverage, as the returns are insufficient to recover deployment costs, while existing infrastructure can be damaged or subject to prolonged outages. Nevertheless, in such contexts, connectivity is critical. For example, mobile can be a life-saving tool in providing early-warning systems.[3] Additionally, in many settings, crisis-affected groups – those often in need of humanitarian assistance – are disproportionately less likely to be covered by mobile broadband networks.[4]

The ITU and IMF have estimated that around $430 billion of investment is needed to provide the infrastructure required to enable universal access to broadband by 2030.[5] In recent years, the challenge of meeting this investment gap has been exacerbated by rising costs. The median inflation rates were more than 6% and 3% in 2023 and 2024 respectively – higher than the growth in mobile market revenues. There is also uncertainty from international trade tariffs. These financial pressures will hinder the ability of operators to close the coverage gap over the short to medium term. One particular challenge with expanding coverage in rural areas is the lack of affordable and sustainable energy access (see *Spotlight: The energy access and reliability challenge*).

The investment challenges are highlighted in a recent GSMA study of mobile investment gaps in the Pacific Islands, where a significant coverage gap persists as described above.[6] It shows that the private sector is expected to reach 96% 4G coverage in the region by 2030. However, under current market and regulatory conditions, reaching 99% by 2030 would require additional funding of $250 million. Providing universal access (100% population coverage) would require incremental investment of $800 million. Fully addressing this gap will therefore require a combination of alternative technologies (especially for the last 1–2% of population), alternative financing models, and policy reform to stimulate investment.

3 Cell Broadcast for Early Warning Systems: A review of the technology and how to implement it, GSMA, 2023
4 Connectivity in Crisis – The Humanitarian Mobile Coverage Gap, GSMA, 2024
5 Connecting humanity Assessing investment needs of connecting humanity to the Internet by 2030, ITU, 2020; Estimating Digital Infrastructure Investment Needs to Achieve Universal Broadband, IMF, 2023
6 Mobile Investment Gaps: Pacific Islands, GSMA Intelligence, 2025

SPOTLIGHT: THE ENERGY ACCESS AND RELIABILITY CHALLENGE

When deploying mobile networks in remote and rural areas in LMICs, infrastructure costs can be prohibitive for operators in three main areas: the mobile base station, the backhaul technology that connects users to the core mobile network, and the supply and storage of energy. Together, these account for more than 90% of the annualised cost of each rural network deployment.[7] In LMICs with poor grid access and reliability, reliance on diesel generators means energy can account for a third of operating costs, with remote areas facing even higher energy costs than urban areas.[8] This imposes a significant strain on investment returns, particularly as the average revenue for a rural site can be 10 times lower than an urban site.[9]

Higher energy costs largely come from having to use diesel where grid access is often patchy or non-existent. This is true in all regions but more pronounced in Sub-Saharan Africa, South Asia and parts of East Asia & Pacific. Diesel generators are expensive to install, operate and maintain – an issue exacerbated by diesel being a target for theft and the high price volatility of imported fuels. In many African countries, for example, generating electricity with diesel generators typically costs three to four times more than grid-based electricity.[10] It is also important to note that the energy challenge is often prevalent in urban as well as rural areas, particularly in Africa. For example, several countries such as the Democratic Republic of Congo (DRC), Chad, Liberia and Madagascar have urban energy access rates of less than 25%.[11]

In Sub-Saharan Africa (the region with the largest coverage gap), electricity access rates stood at just over 50% in 2023.[12] In rural areas, only a quarter of mobile sites are powered directly by grid electricity, with the rest either being off-grid, bad-grid[13] or on a mini-grid.[14] Beyond the costs facing operators, using diesel generators has environmental implications, given their impact on local air quality and climate change.[15]

The impact of energy costs on closing the coverage gap is demonstrated in DRC. Despite the significant progress made expanding broadband coverage in 2024, the country has the second largest coverage gap globally in terms of total population, at 35 million people.[16] Currently, 68% of the country's population is

7 Closing the Coverage Gap, GSMA, 2019
8 Rural renewal: telcos and sustainable energy in Africa, GSMA Intelligence, 2024
Also see Energy Challenges for Mobile Networks in Sub-Saharan Africa, GSMA, 2023; Why and how mobile operators are looking to renewables to power networks across Africa, GSMA, 2024.
9 Closing the Coverage Gap, GSMA, 2019
10 Rural renewal: telcos and sustainable energy in Africa, GSMA Intelligence, 2024
11 See for example "Urban electrification: A geospatial lens on Africa's challenge", ESI Africa, July 2025
12 Source: World Bank
13 Bad grid sites are on the national grid but have poor or intermittent access. This may mean sites only have a limited power supply each day, often requiring diesel backup in the event of an outage.
14 Mini-grid sites are powered by a localised grid that covers a specific and limited area, which could range from a few square kilometres to hundreds of kilometres. Mini-grids are often powered by solar or other renewables and may or may not be interconnected with the national grid.
15 For further details, see Mobile Net Zero 2025: State of the Industry on Climate Action, GSMA, 2025
16 Pakistan has the largest absolute coverage gap with almost 50 million people not covered.

covered by 3G networks, while 57% is covered by 4G. This drops to only 24% and 16% of rural populations having 3G and 4G coverage respectively. While 63% of existing mobile sites are within 1 kilometre of the national grid,[17] 87% of new sites that are needed to achieve near-universal coverage are beyond 1 kilometre of the grid and almost a third are 100 kilometres or more from the grid. The country requires an additional $650 million of investment to expand mobile broadband coverage to 95% of the population. However, if electricity transmission and distribution were extended to reach all new sites, the investment in new sites would be almost half ($350 million) the cost of developing the new sites with off-grid solutions.[18] Expanding electricity access to rural areas, including through solar mini-grids and grid extensions, could therefore cost-effectively boost electricity access as well as mobile broadband coverage.

SPOTLIGHT: THE ENERGY ACCESS AND RELIABILITY CHALLENGE

While the challenge of introducing lower-cost renewable energy in many African countries remains significant, operators have developed several models for financing renewable energy in rural areas. This includes the energy service company (ESCO) model, where power at tower sites is outsourced to an ESCO through a power purchasing agreement and the operator can offload some of the challenges associated with running towers in off-grid or bad-grid areas. The number of ESCO-operated mobile towers increased from 8,600 in 2015 to almost 110,000 in 2024. Another approach is the anchor business customer (ABC) model, with a telecoms operator or tower company as the anchor client, providing stability through long-term contracts, predictable use of electricity and a steady revenue stream for the mini-grid operator. This model has gained traction within the mini-grid sector, drawing interest from international investors.[19] As operators continue to explore innovative solutions to increase renewable deployments, governments can also help to enable this – for example, by zero-rating import duties on green energy equipment, encouraging net metering and speeding up permissions for renewables and grid projects.[20] Governments, regulators and development finance institutions should also pay close attention to the intersections and synergies between the energy and digital sectors. They should promote cross-governmental action plans and strategies that recognise that energy is central to achieving digital objectives, and that digital is central to achieving energy objectives.

17 This does not mean that 63% of sites are powered by the grid, as there is not always an accessible connection. In practice, just less than 40% of sites are connected to the grid in the DRC. Furthermore, even sites that have access to the grid will be impacted by poor grid reliability (see for example Increasing access to electricity in the Democratic Republic of Congo, World Bank, 2020).

18 GSMA Intelligence analysis of mobile operator site data and World Bank electricity grid data.

19 Further examples of the ABC model can be found in Why and how mobile operators are looking to renewables to power networks across Africa, GSMA, 2024.

20 For further details, see Rural renewal: telcos and sustainable energy in Africa, GSMA Intelligence, 2024.

2. NETWORK COVERAGE BY TECHNOLOGY

4G deployments slow, while 5G now covers more than half the world's population

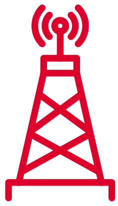
While almost 150 million additional people were covered by 4G networks for the first time in 2024, the rate of deployment has been slowing over recent years as operators face diminishing returns on investment. Almost 7.6 billion people worldwide now have 4G coverage, equivalent to 93% of the global population (see Figure 2). This represents a difference of 3 percentage points (pp) compared to mobile broadband more generally.[21] Almost half the gains were driven by Sub-Saharan Africa, where three quarters of the population now live in an area with 4G coverage.

The majority of network investment continues to be in deployments of 5G, which has now reached more than half the world's population (54% or 4.4 billion people), with more than 700 million additional people covered in 2024. More than half of that growth was driven by India, which has achieved just over 80% population coverage for 5G. As a result, almost half the population (47%) in LMICs are now covered by 5G, compared to 90% in high-income countries.

54%

of the **world's population** are now covered by **5G**

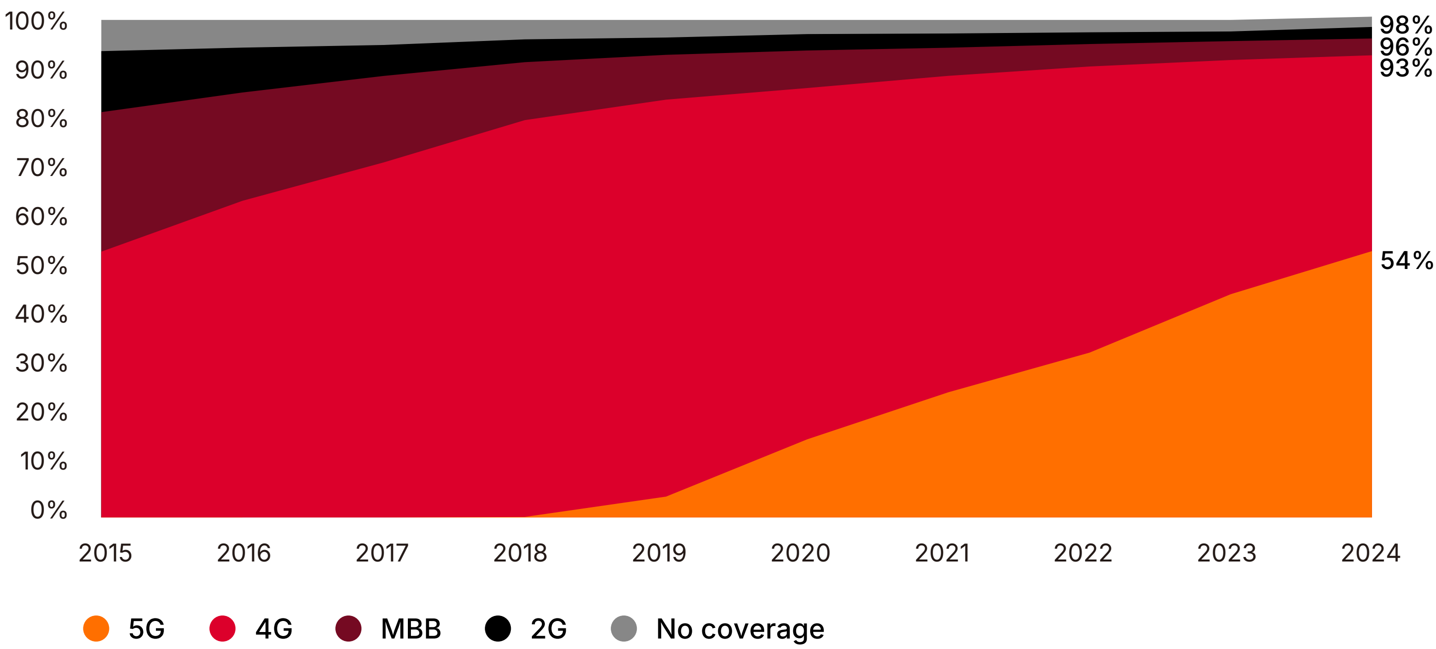
With



93%

of the **world's population** covered by **4G**, further deployments have **slowed down**

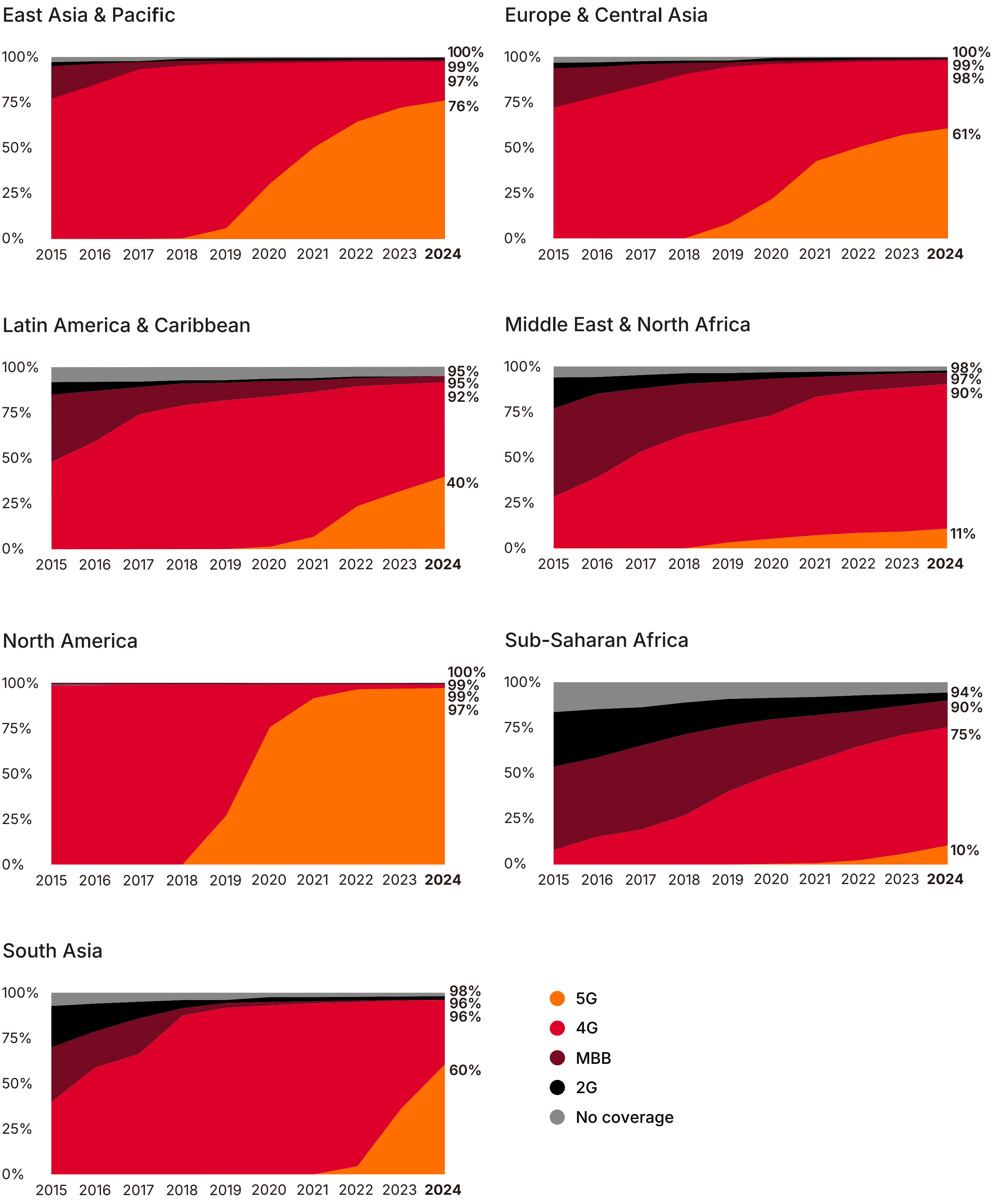
Figure 2: **Global population coverage by technology, 2015–2024**



Source: GSMA Intelligence

21 In countries that have shut down their 3G networks or are in the process of sunsetting 3G, 4G coverage is evidently greater, so mobile broadband coverage (the maximum of 3G, 4G or 5G coverage) is used as the reference when considering the gap with 4G.

Figure 3: **Population coverage by technology and region, 2015–2024**



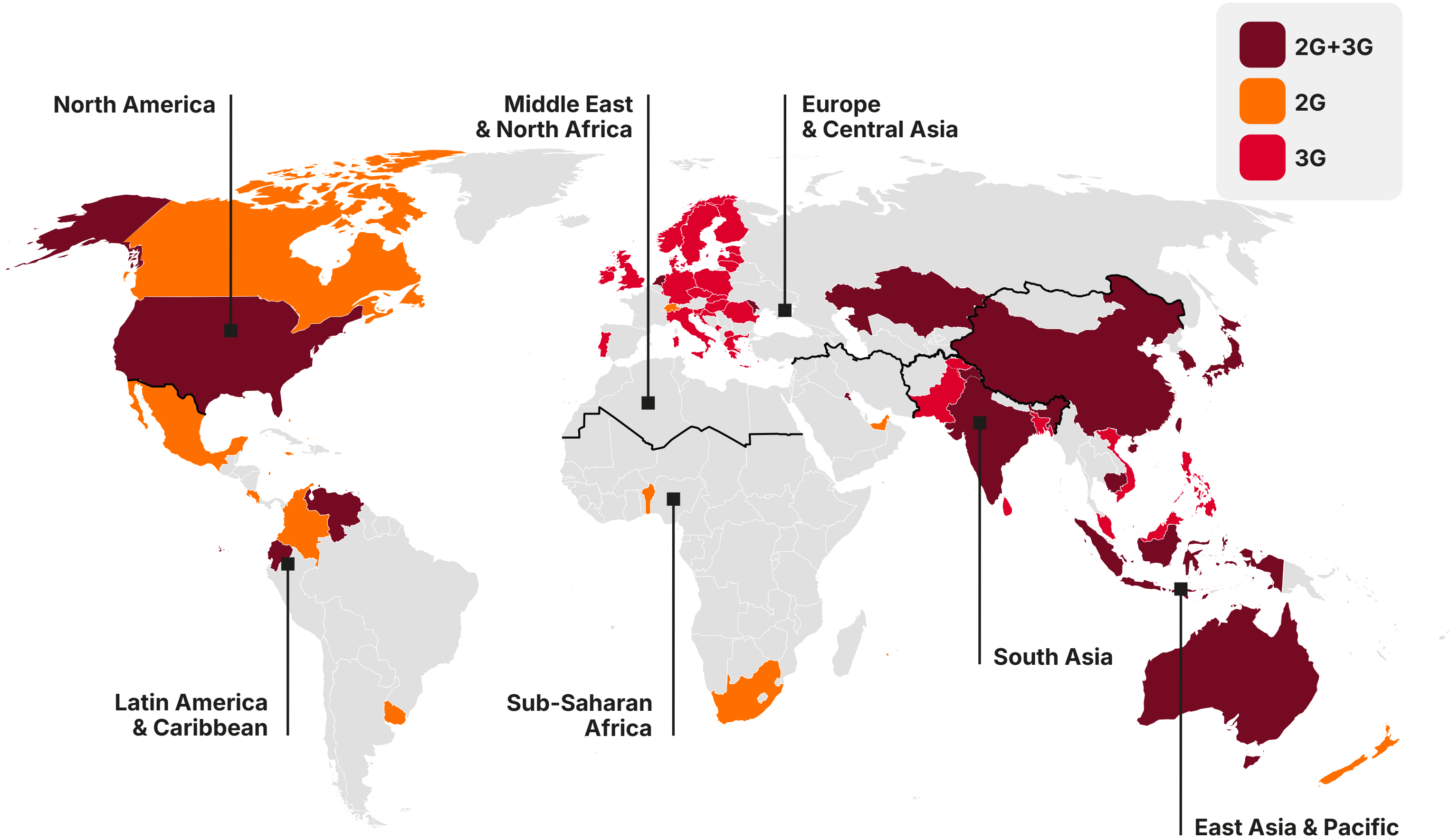
Source: GSMA Intelligence

Note: Coverage numbers in 2024 are rounded to the nearest percentage point.

Despite this growth, device affordability will be a key challenge to adoption. LMICs that have launched 5G have been able to achieve much lower 5G device prices than high-income countries.[22] However, 5G devices remain much more costly than the cheapest 3G and 4G handsets. For example, the median cost of the cheapest 3G/4G device in LMICs in 2024 was around $54, which remains unaffordable to a large proportion of LMIC populations. This compares to $100–200 for the cheapest 5G device.[23]

At the same time, many operators have either shut down or begun the process of sunsetting legacy 2G and/or 3G networks. This is driven by declining traffic on legacy generation networks, the financial burden of maintaining legacy infrastructure, the ongoing shift to open, cloud-native, AI-native networks, and the need to use spectrum resources efficiently by migrating to newer technologies. By the end of 2024, there had been 169 2G and 3G sunsets in 75 countries, nearly three quarters of which were shut down following the launch of 5G (see Figure 4). As a result, at the end of 2024, 3G network coverage stood at 75% globally, compared to 93% for 4G. Based on announced plans, an additional 124 networks will be shut down by 2030. However, the rate of sunsetting differs by region. For example, in Sub-Saharan Africa, 3G is still the dominant technology, with only one country (South Africa) currently planning to sunset both its 2G and 3G networks.[24] While it may therefore be desirable for operators to continue to accelerate network sunsets and increase the use of more efficient technologies, it is conditional on enabling spectrum policies (particularly the assignment of technology-neutral spectrum) and the ability of operators to migrate consumers and businesses to 4G or 5G devices.

Figure 4: Network sunsets completed



Note: A country is assigned completed status when at least one operator in the country has shut down the respective network generation. Data correct to 31 March 2025.
Source: GSMA Intelligence

22 Source: GSMA Intelligence analysis of data provided by Counterpoint Research for the period Q4 2022 – Q3 2023
23 For more information, see 'Spotlight: Is a digital divide emerging for 5G' in The State of Mobile Internet Connectivity Report 2024, GSMA, 2024.
24 Network Sunsets, Q1 2025, GSMA Intelligence, 2025

SPOTLIGHT: WHAT IS THE POTENTIAL ROLE OF SATELLITE IN BRIDGING THE DIGITAL DIVIDE?

The State of Mobile Internet Connectivity Report 2023 highlighted the potential role of satellite technology to close the coverage gap in remote areas, particularly with the latest generation of low Earth orbit (LEO) satellites.[25] Since then, there have been a number of developments in the sector. At the start of 2025, the largest satellite operator Starlink had just over 7,000 satellites in orbit. It plans to have 12,000 in its constellation. New deployments are also expected to be launched by Amazon as well as the China Satellite Network Group, which could eventually exceed Starlink.[26]

Satellite connectivity can help close the coverage gap (i.e. the 4% of the global population without mobile broadband coverage) and expand coverage in uninhabited areas. It can do so in three ways highlighted below.

Providing fixed satellite broadband connectivity to consumers

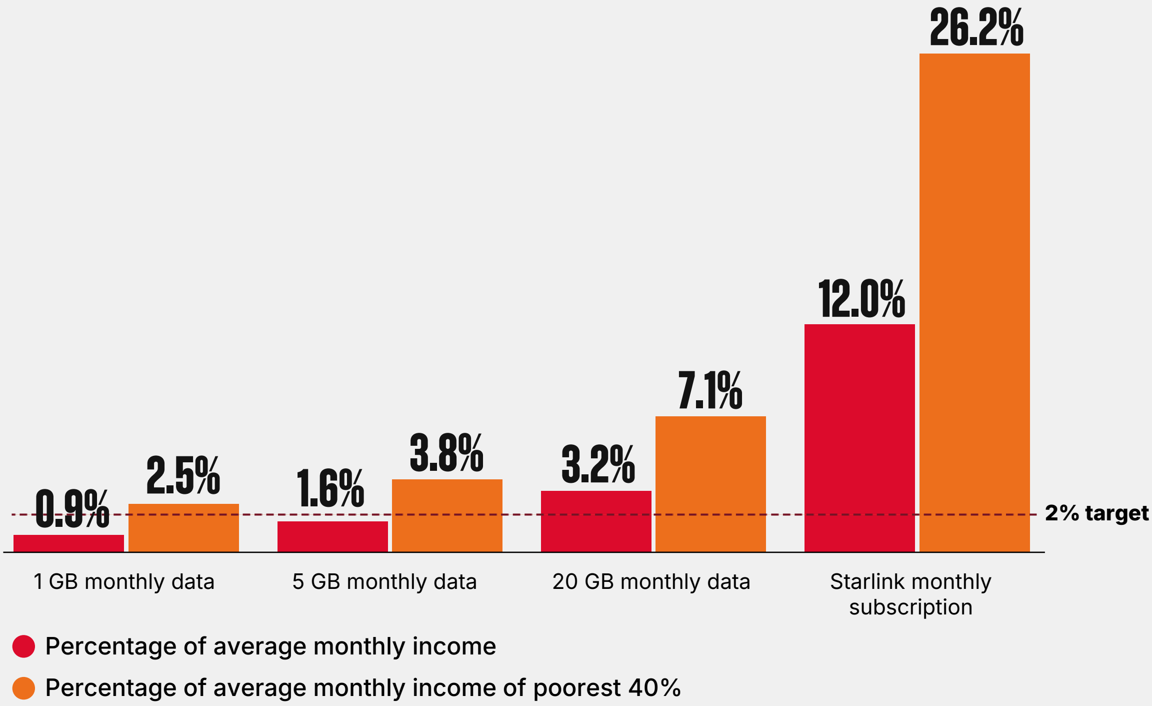
The largest global provider of fixed satellite broadband, Starlink, is available in more than 100 countries and territories.[27] It has continued to grow its customer base, reaching more than 5 million subscribers as of Q1 2025 (double from the year before). Around half its customers are in North America, with most of the rest in Asia, Europe and South America.[28] Although its subscriber base is increasing, the network quality experienced by consumers continues to improve.[29] The service is primarily targeted at households in high-income countries that live in areas with limited fixed broadband alternatives (particularly a lack of fibre broadband access), along with higher income households in LMICs. This is evident from the cost of access, which ranges from $20 to $220 for the monthly residential subscription price and from $190 to $700 for the hardware.

25 The State of Mobile Internet Connectivity Report 2023, GSMA, 2023
26 Satellite and NTN tracker, Q1 2025, GSMA Intelligence, 2025
27 See Starlink maps. Numbers correct as of Q2 2025
28 Source: Idem Est Research
29 See "Starlink's U.S. Performance is on the Rise, Making it a Viable Broadband Option in Some States", Ookla, June 2025, and "Starlink Shines in Europe as Constellation Investments Boost Performance", Ookla, February 2025

SPOTLIGHT: WHAT IS THE POTENTIAL ROLE OF SATELLITE IN BRIDGING THE DIGITAL DIVIDE?

Figure 5 shows that when comparing the monthly affordability of mobile data plans (based on 1, 5 and 20 GB of monthly data) to the monthly Starlink subscription in 50 LMICs where information is available, the latter is 4–14× less affordable in terms of average monthly income. The affordability of a Starlink service (at 12% of monthly income) is also six times higher than the ITU affordability target for entry-level broadband (2% of monthly income).[30] Considering the poorest 40% of the population in these LMICs, the affordability of Starlink, at 26% of average monthly income, is 13× the ITU target.

Figure 5: Comparison of affordability of three mobile data baskets and a monthly Starlink subscription



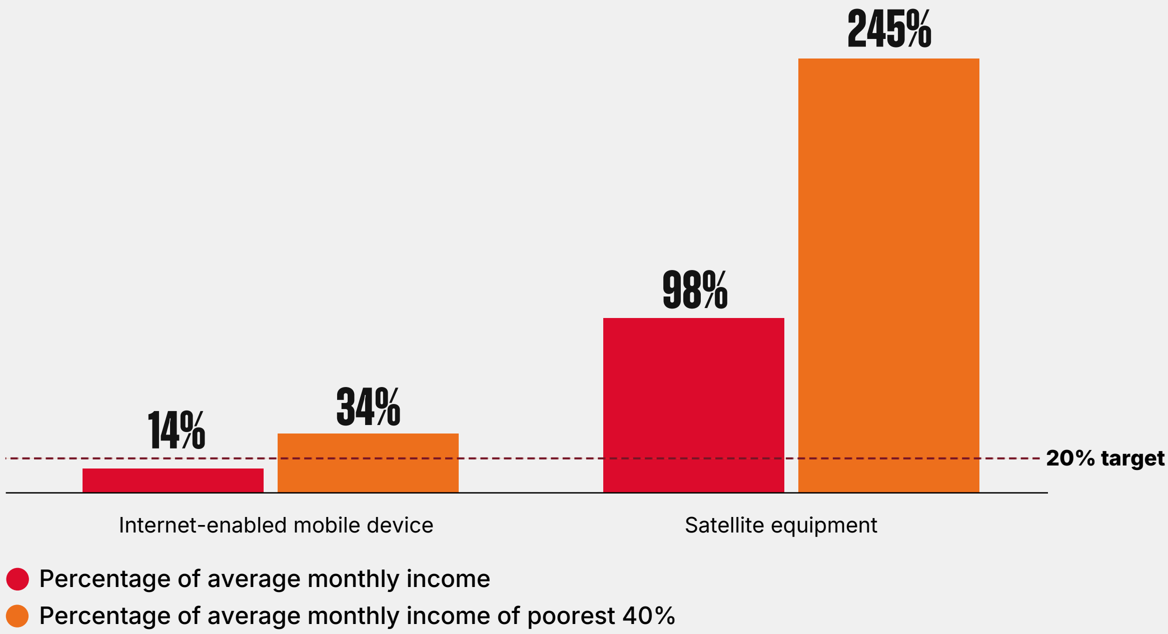
Source: GSMA Intelligence analysis of 50 LMICs[31] using data sourced from Tarifica, https://www.starlink-prices.com/ and https://starlinkinsider.com/starlink-price/

According to GSMA Consumer Survey data, the main affordability barrier stopping people adopting mobile internet is related to the device.[32] Figure 6 shows a comparison of the upfront cost of an internet-enabled mobile device and the necessary Starlink equipment in 50 LMICs where information is available. The latter is around seven times less affordable at 100% of average monthly income. It is also significantly higher than the 20% affordability threshold considered to represent an affordable device.[33] Taking the poorest 40% of the population in these LMICs, the upfront cost of accessing the internet via a fixed satellite broadband service is more than double average monthly income and more than 12× higher than the 20% affordability threshold.

30 See ITU's Universal Meaningful Digital Connectivity Targets.
31 These 50 countries were included in the analysis as data was available on both mobile and Starlink prices.
32 For further details, see the Barriers to Mobile Internet Adoption and Use report.
33 For further details on the affordability threshold for devices, see Analysis to improve handset affordability, GSMA, 2024.

SPOTLIGHT: WHAT IS THE POTENTIAL ROLE OF SATELLITE IN BRIDGING THE DIGITAL DIVIDE?

Figure 6: Comparison of affordability of entry-level, internet-enabled mobile device and upfront Starlink equipment



Source: GSMA Intelligence analysis of 50 LMICs using data sourced from Tarifica, https://www.starlink-prices.com/ and https://starlinkinsider.com/starlink-price/. Affordability of satellite equipment includes the Starlink kit (which enables the internet connection) and the entry-level, internet-enabled mobile device (required to access the internet).

While satellite broadband can achieve widespread coverage, it does not address the main barriers preventing people from using the internet, including device affordability. Its recent growth is driven by providing an alternative to fibre broadband and/or fixed wireless access (FWA) rather than mobile broadband.

Supporting mobile connectivity with satellite backhaul solutions

The cost of mobile backhaul[34] in rural sites can be more than double the cost in urban areas.[35] Most backhaul in rural areas uses microwave links due to the lack of fibre. However, in many locations, there is no viable microwave backhaul link due, for example, to there being no line of sight to a nearby site or network node. In such cases, the only viable backhaul solution is via satellite. However, the cost of satellite backhaul has been prohibitive to date, at up to 10× higher than microwave, which is why it only accounts for around 2% of all macro and small cell backhaul links.[36]

The importance of satellite backhaul is highlighted in two of Africa's largest markets, Nigeria and DRC. The two countries account for almost half the coverage gap in Sub-Saharan Africa. In DRC, 68% of the population is covered by mobile broadband networks, though only 24% of the rural population have mobile broadband coverage. Analysis by GSMA Intelligence shows that when looking at the new sites that need to be deployed to close the coverage gap, satellite backhaul would be required for almost 20% of the uncovered population.[37] The sites do not have a viable microwave backhaul link. In Nigeria, which has a coverage gap of 11% overall (and 36% in rural areas), satellite backhaul would be needed for 9% of the uncovered population. If the new LEO constellations can reduce the cost of satellite backhaul, it could go some way to helping to close the coverage gap. However, other site costs are currently prohibitive in remote areas and need to be addressed, particularly base station and energy costs. This is especially important in remote sites with few users, as potential revenues are more limited. Furthermore, while more affordable satellite backhaul can help close the coverage gap, it does not address the usage gap.

SPOTLIGHT: WHAT IS THE POTENTIAL ROLE OF SATELLITE IN BRIDGING THE DIGITAL DIVIDE?

34 Mobile backhaul refers to the network infrastructure that connects the core network and the radio access network of the mobile network.
35 Rural renewal: telcos and sustainable energy in Africa, GSMA Intelligence, 2024
36 Wireless Backhaul Evolution: Delivering next-generation connectivity, GSMA and ABI Research, 2021; Using Geospatial Analysis to Overhaul Connectivity Policies: How to Expand Mobile Internet Coverage and Adoption in Sub-Saharan Africa, World Bank, 2022
37 When considering the DRC's total population, 6% would need to be covered by mobile sites with satellite backhaul. It is important to note that this metric looks at the new sites needed to close the coverage gap and calculates what proportion require satellite backhaul (based on the population covered). It does not reflect the proportion of backhaul links that are currently using satellite technology, which is much smaller, at around 2%.

Offering direct-to-device connectivity, with satellites acting as 'base stations in space'

SPOTLIGHT: WHAT IS THE POTENTIAL ROLE OF SATELLITE IN BRIDGING THE DIGITAL DIVIDE?

The technology that has arguably garnered most interest in recent years is direct-to-device (D2D). Connectivity to a mobile device is provided directly from a satellite, without the need for a terrestrial base station or dish/large receiving equipment. While the technology is not new, the integration of non-terrestrial networks (NTNs) into 3GPP[38] has been critical, as standard mobile devices will be able to connect seamlessly with both traditional base stations and satellite systems when out of range of terrestrial connectivity. D2D technology still requires a mobile device and does not address the usage gap. However, it could help close the coverage gap (the 4% of the world's population living outside of a mobile broadband network). Furthermore, for those that are already connected, it could provide connectivity in uninhabited areas where people may need it (for example, tourist areas, national parks, transport corridors and maritime areas).

As of Q2 2025, 11 operators worldwide had a D2D service, including T-Mobile US and Telstra in Australia (both partnering with Starlink). All of these are currently limited to text message services, but many operators and satellite partners plan to launch voice services and data capabilities.[39] While this will not provide the same level of connectivity as a 4G/5G mobile broadband service, it will be important in certain contexts (to enable emergency communication, for example). The timeframe for achieving D2D capabilities beyond text messaging and limited data is currently unclear, in part due to the technical advancements needed and spectrum considerations. Some D2D systems intend to use mobile operator spectrum frequencies, while others intend to use mobile satellite spectrum. The first approach raises the question of how terrestrial frequencies can be used safely from space without interfering with existing services, including across borders. While some countries such as the US and Australia have published regulatory frameworks to enable mobile coverage from space, they are continent-sized countries that do not have the level of cross-border interference that most other countries will face. The second approach of using mobile satellite spectrum raises the questions of whether the regulatory conditions for satellite and mobile spectrum should be re-evaluated and more closely aligned, and whether mobile handsets that can access the right spectrum will become affordable.[40] It is also important to consider that the majority of existing mobile usage is indoor,[41] where satellite signals are blocked or degraded. D2D is therefore not well-placed to serve this segment; rather, its main use case will likely be outdoors and in remote areas.

From a digital inclusion perspective, satellite technology can help close the coverage gap both in populated and uninhabited areas by providing backhaul solutions to remote mobile sites and/or by eventually providing D2D services that go beyond messaging. However, it cannot close the usage gap as it does not address the main barriers preventing people who live within mobile broadband coverage from using the internet, including device affordability, digital skills and literacy, online safety and security, and availability of relevant content.

38 3GPP is the standards body responsible for developing technical specifications that are developed into global standards for 2G, 3G, 4G and 5G.
39 Global Mobile Trends 2025, GSMA Intelligence, 2025. At the time of writing, T-Mobile US was expected to expand its satellite-to-cell network to include data services from October 2025.
40 For further details, see Spectrum Policy Trends 2025, GSMA, 2025.
41 For further details on indoor and outdoor usage, see Mobile Evolution in 6 GHz, GSMA, 2024.

3. DATA CONSUMPTION AND NETWORK QUALITY

LMICs continue to see increased data usage and improvements in network quality, but the gap versus HICs persists

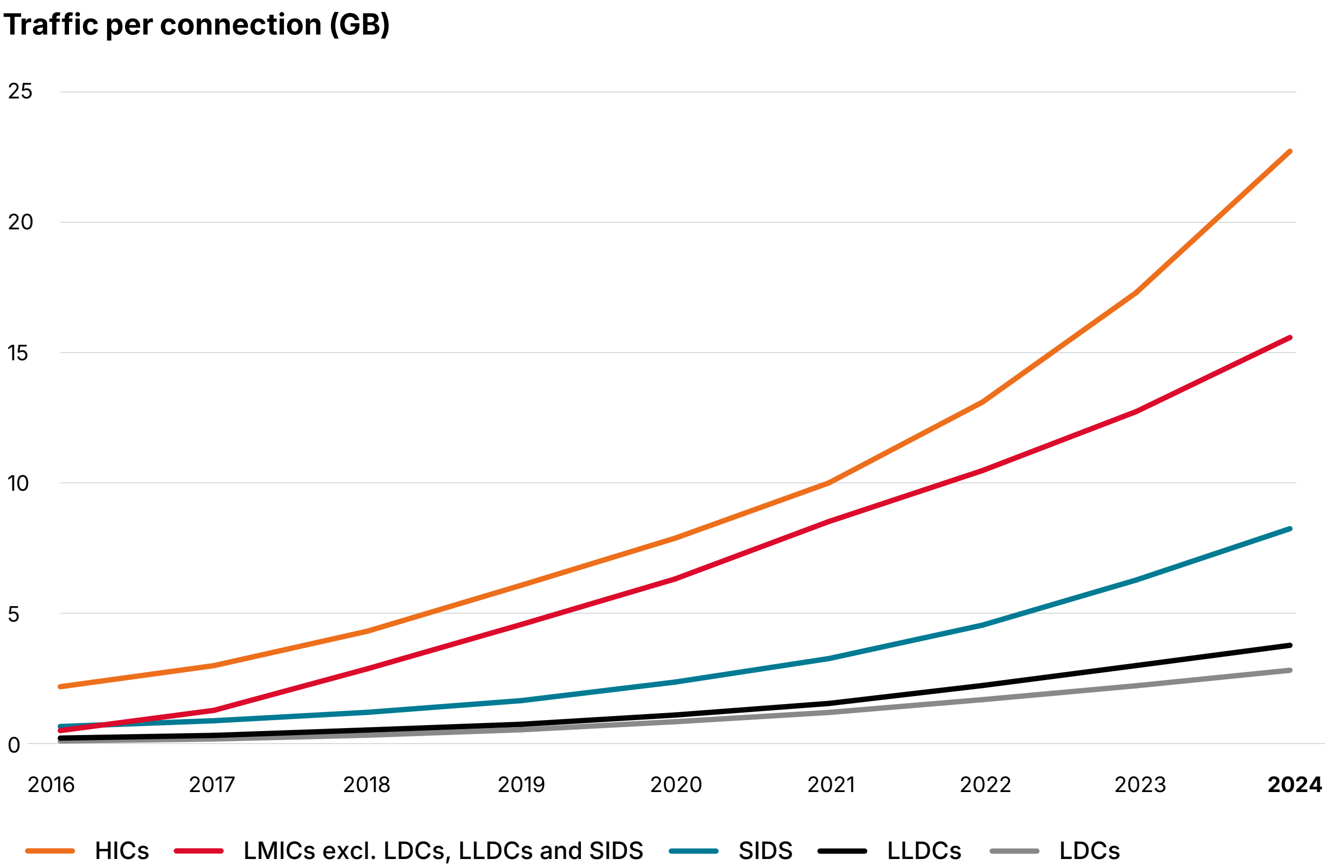
With more consumers migrating to 4G and especially 5G, average data traffic per connection continues to increase, reaching almost 16 GB per connection in 2024. This represents an increase of around 3 GB per connection compared to 2023 – the largest annual increase since data has been available from 2016. The growth in usage was highest in North America, driven by the US, while within LMICs growth was highest in South Asia. The latter is primarily driven by India, which has seen significant growth in part due to the deployment and adoption of 5G. During 2024, monthly 5G traffic in the country increased threefold and now accounts for 36% of India's total mobile traffic, compared to 15% in 2023.[42]

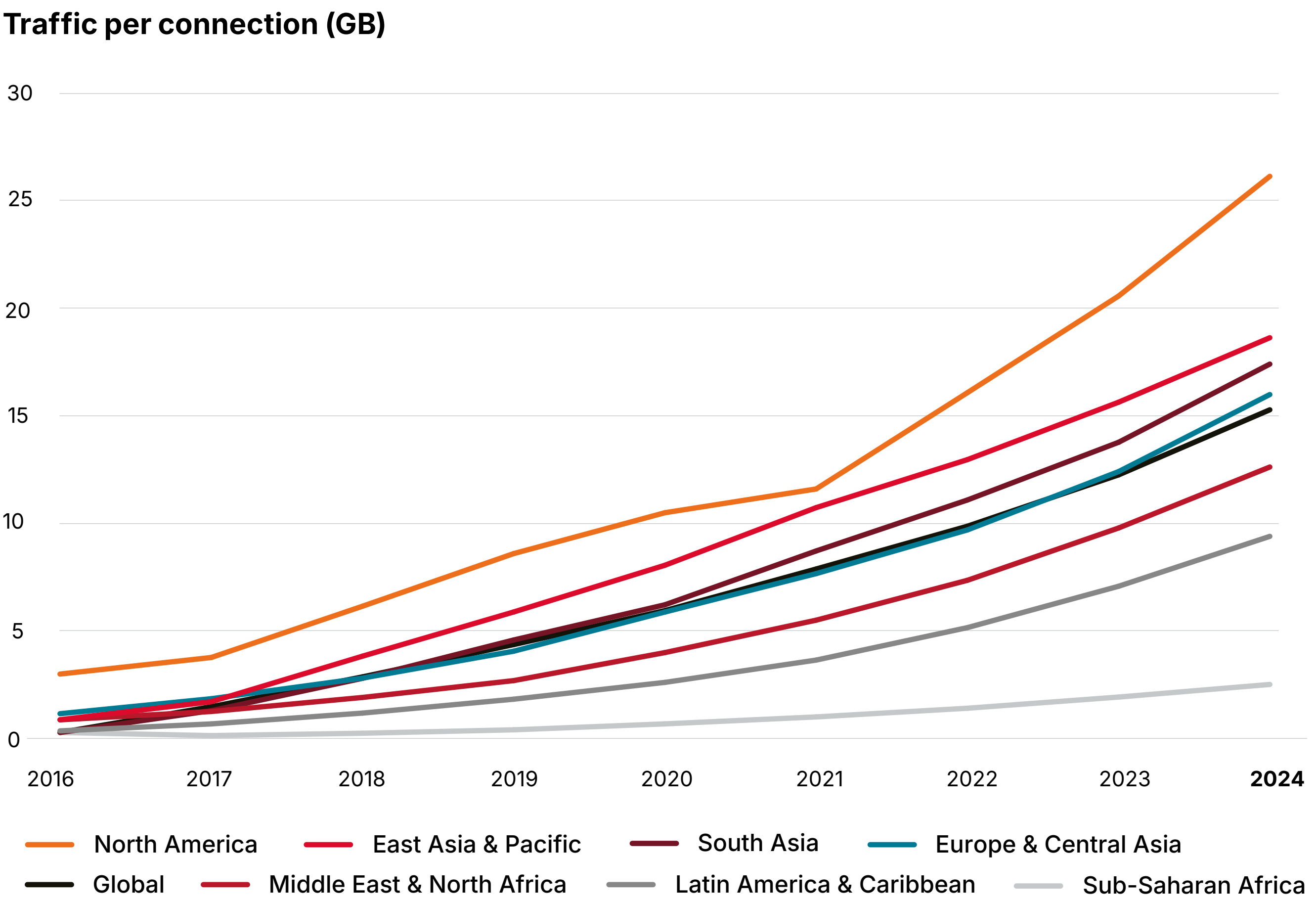
Figure 7 highlights significant differences in mobile usage between regions, national income levels and other geographic factors. Traffic per connection reached more than 20 GB in high-income countries, compared to 14 GB in LMICs. Within LMICs, there is a significant difference in data usage between LDCs/LLDCs, which record average monthly usage of 3 and 4 GB respectively, and other LMICs excluding LDCs, LLDCs and SIDS, which have average usage of 15 GB. Within the latter group, usage is higher in East Asia & Pacific and South Asia than in Latin America & the Caribbean, MENA and especially Sub-Saharan Africa, where average data usage is nine times lower than in high-income countries.

As noted in previous editions of The State of Mobile Internet Connectivity Report,[43] the average amount of data used significantly overstates the level of usage for most consumers, since the average is skewed by a minority of very intense data users. The majority of mobile users will therefore have actually consumed much less than the 16 GB global average.

42 India Mobile Broadband Index 2025, Nokia, 2025
43 See The State of Mobile Internet Connectivity Report 2022, GSMA, 2022; The State of Mobile Internet Connectivity Report 2023, GSMA, 2023.

Figure 7: **Mobile data traffic per connection, 2016–2024**



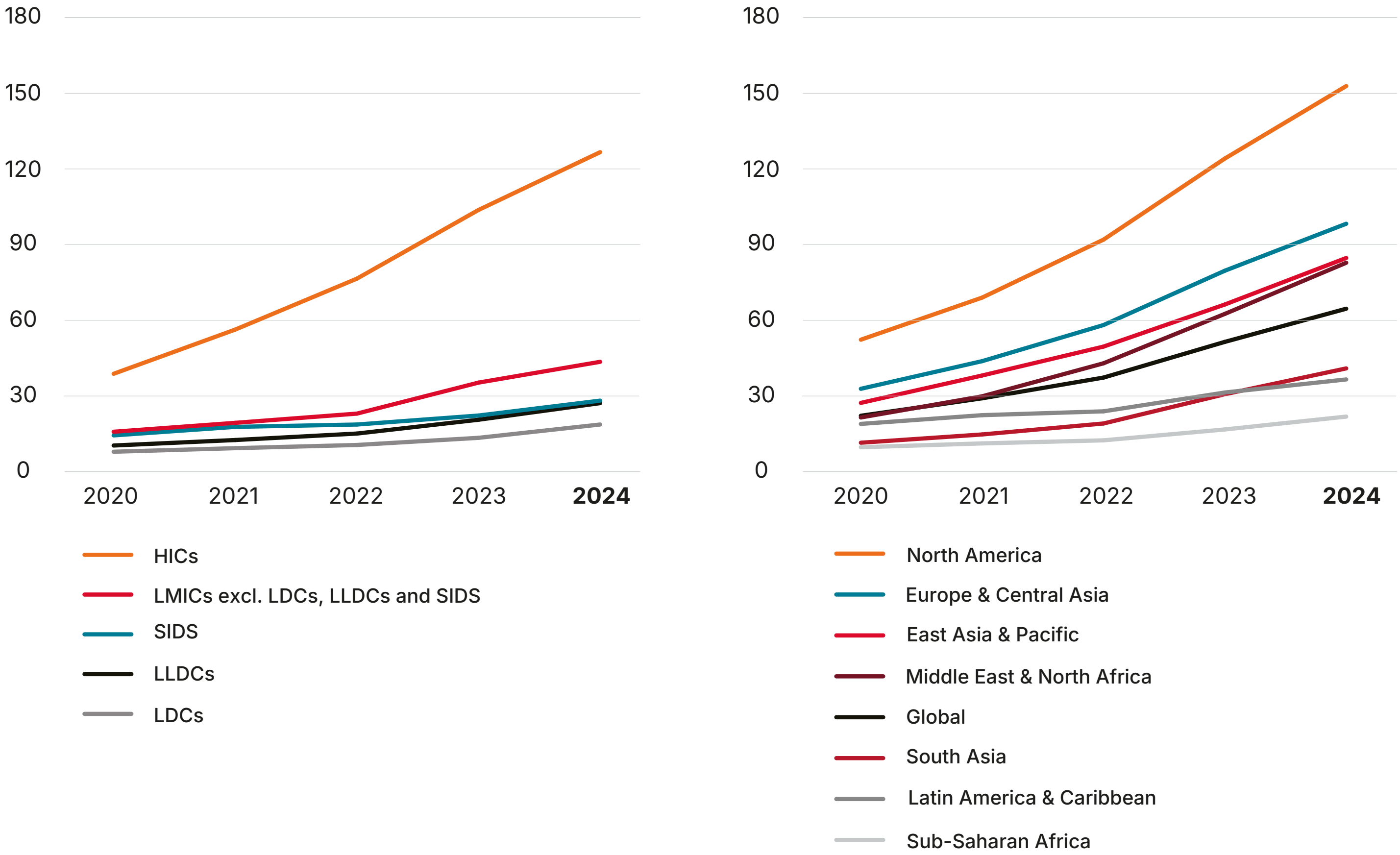


Source: GSMA Intelligence

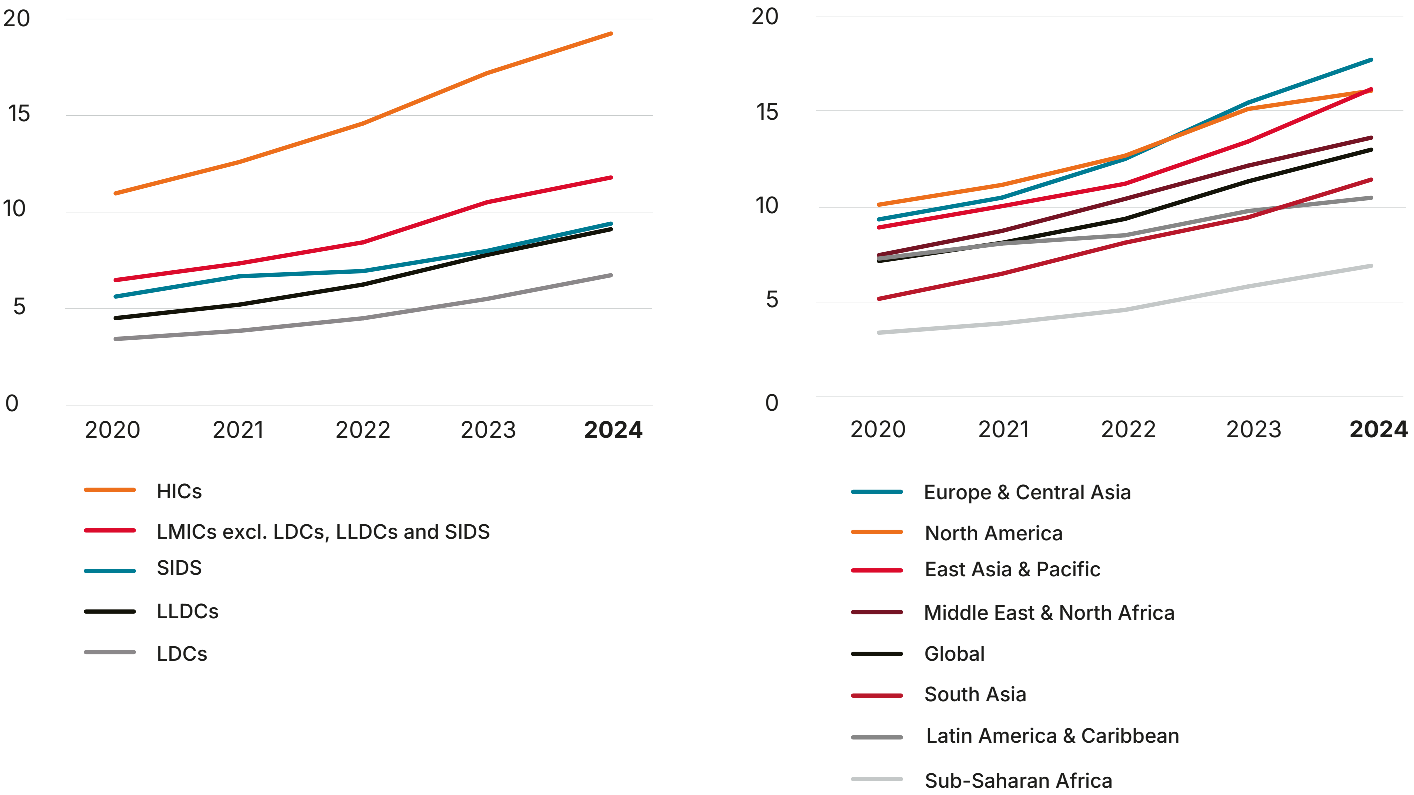
The consumer experience on mobile networks continued to see a significant improvement in 2024, with global average download speeds increasing from 51 to 64 Mbps. At a regional level, the biggest increases in speeds were in North America and MENA, with the latter primarily driven by Gulf Cooperation Council countries (for example, Qatar, UAE and Saudi Arabia achieved some of the biggest improvements in download and upload speeds in 2024 globally). Meanwhile, average download speeds in high-income countries reached more than 120 Mbps while remaining less than 30 Mbps in LDCs, LLDCs and SIDS (compared to 44 Mbps in other LMICs). See Figure 8.

Before 2022, there was a growing gap in download speeds between HICs and LMICs, driven by the deployment and adoption of 5G in HICs, as well as persistently better 4G speeds. However, the gap in overall network quality closed slightly in 2023. This has continued in 2024, with both average download and upload speeds improving at a faster rate in LMICs. This was driven by greater 5G take-up, and improved quality on 4G networks. Nevertheless, as highlighted in Figure 8, there remains a significant gap in network quality between high-income and low- and middle-income countries.

Figure 8: **Average download speeds (Mbps) in HICs and LMICs, 2020–2024**



Average upload speeds (Mbps) in HICs and LMICs, 2020–2024

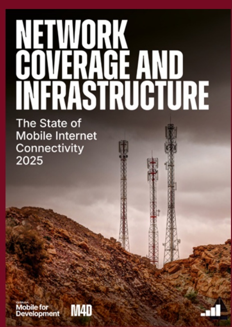


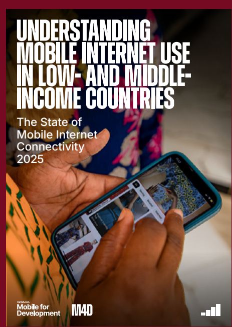
Source: GSMA Intelligence analysis, based on Speedtest Intelligence® data provided by Ookla®

CLOSING THE COVERAGE GAP AND EXPANDING 4G AND 5G

While closing the coverage gap for the 4% of the population that do not live within a mobile broadband network remains a priority, operators, governments and other stakeholders are also focused on extending 4G, and eventually 5G, to areas that still only have 3G networks, as well as improving the quality of service and user experience on those networks. This will require an enabling policy framework that incentivises investment, fosters innovation and collaboration, promotes dynamic competition and supports the timely access to an adequate amount of affordable spectrum in low, mid- and high bands. Governments should also consider approaches that can reduce the upfront and operating costs of expanding infrastructure, such as providing non-discriminatory and timely access to public infrastructure and allowing infrastructure sharing on a voluntary basis.

This report is part of The State of Mobile Internet Connectivity 2025 report series. The other reports can be accessed below:





GLOSSARY

GLOSSARY

Connected	'The connected' or 'connected population' refers to people who use mobile internet.
Coverage	'Population coverage' is the share of the population that lives in an area where the signal provided by a mobile network is strong enough to use telecoms services (voice, SMS, data).[44] The coverage levels provided by 2G, 3G or 4G networks are independent from each other.
Coverage gap	Populations who do not live within the footprint of a mobile broadband network.
Landlocked developing country (LLDC)	A country classified as landlocked and developing by the UN.[45]
Least developed country (LDC)	A country classified as low-income that is facing severe structural impediments to sustainable development. It is highly vulnerable to economic and environmental shocks and has low levels of human assets.
Low- and middle-income country (LMIC)	A country classified as low income, lower-middle income and upper-middle income by the World Bank Country and Lending Groups.
Mobile broadband	3G, 4G or 5G technologies.
Mobile connection	A unique SIM card (or phone number, where SIM cards are not used) that has been registered on a mobile network. Connections differ from subscribers in that a unique subscriber can have multiple connections.
Small island developing state (SIDS)	A country classified as a small island and developing state by the UN.[46]
Usage gap	Populations who live within the footprint of a mobile broadband network but do not use mobile internet.s

44 For further details on different technologies, see ITU-R FAQ on International Telecommunications (IMT), ITU, 2022.
45 https://www.un.org/ohrlls/content/list-lldcs
46 https://www.un.org/ohrlls/content/list-sids

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