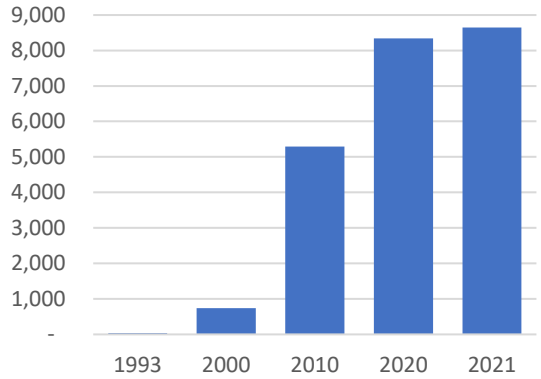
VERNY CAPITAL

# Global Telecommunications Market: “The Need for Speed”

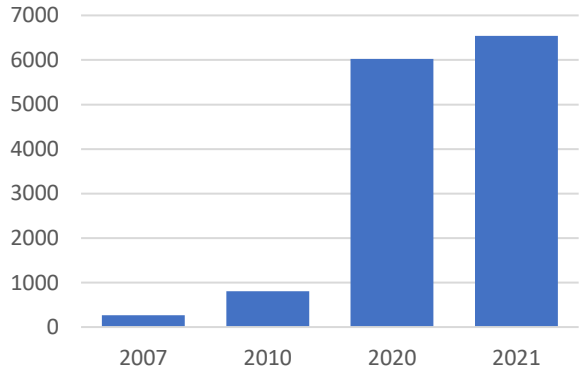
# Global telecom market is projected to grow at a CAGR of 6% to ~USD3.5tln in 2025

**Global Mobile Subscriptions, mln**



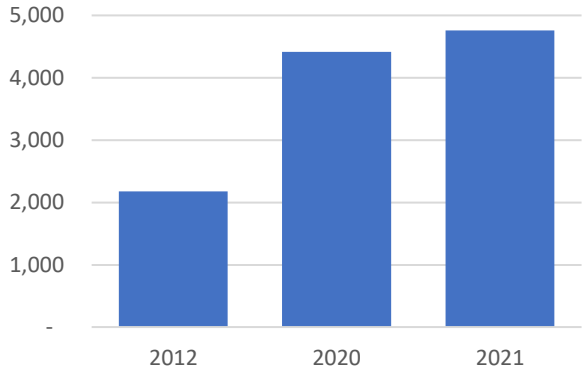

*The number of mobile subscribers globally exceeded 8bln for the first time in 2019, reached 8.6bln in 2021. Penetration rate exceeded 100% with global population of 7.8bln in 2021.*

**Global Active Mobile Broadband Subscriptions, mln**




*In 2021, there were ~6.5bln of active mobile broadband subscriptions globally, led by Asia Pacific (3.3bln), Americas (>1bln). Europe has highest penetration rate of 99.9% vs. world average 75%.*

**Global Internet Users, mln**



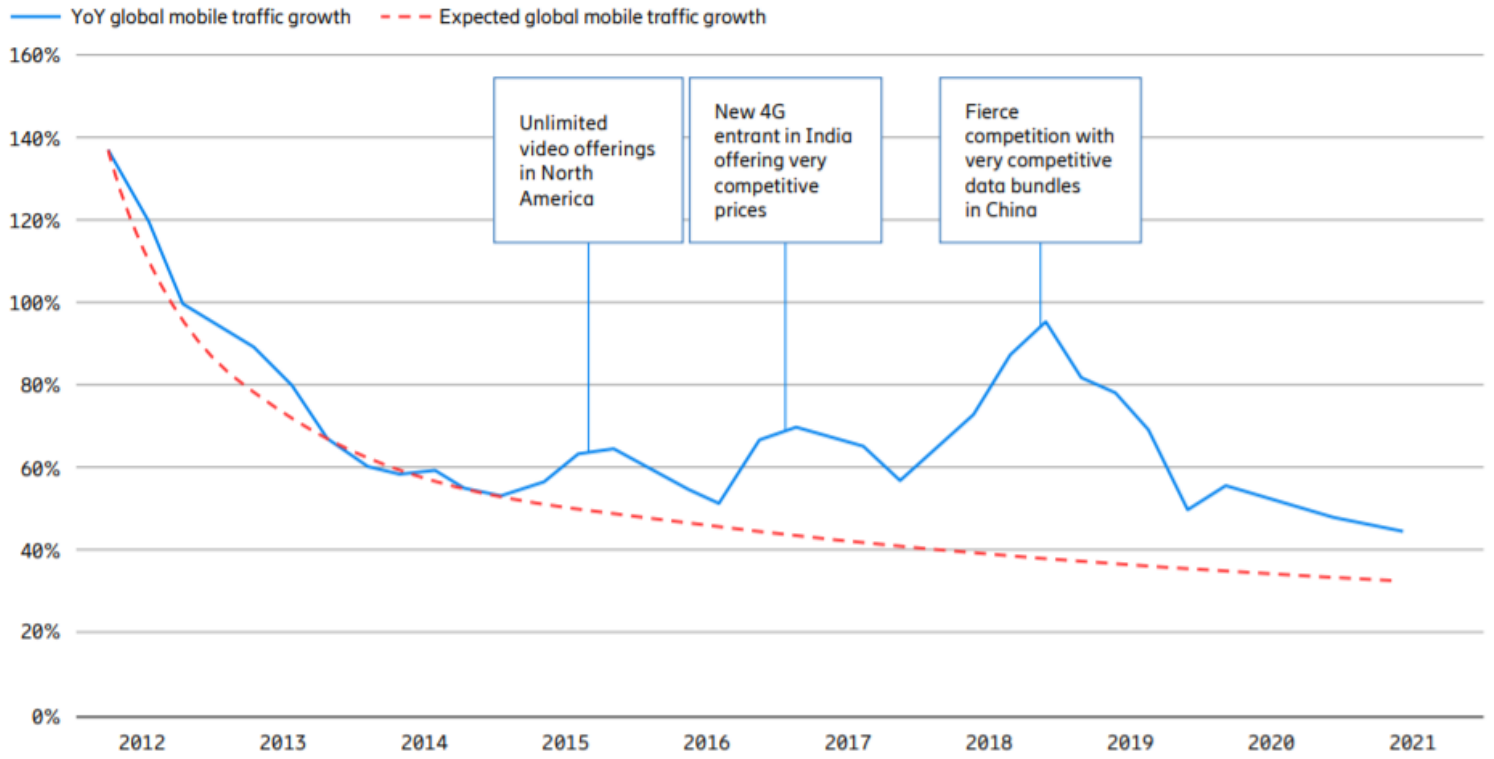

*In 2021, number of internet users globally reached 4.8bln, with average penetration rate of 62.5%.*

- ✓ **The global telecom market was estimated to have grown by 6.2% YoY to USD2,713.53bln in 2021** (2020: USD2,555.45bln). The market is expected to expand at a **CAGR of 6% to USD3,461.03bln in 2025**.
- ✓ Asia Pacific is the largest region in the global telecom market, at 34% of the market in 2020, followed by North America at 32%. Africa is the smallest region in the global telecom market.
- ✓ Increased spending on the deployment of 5G infrastructures in line with the shift in customer inclination toward smartphone devices and next-generation technologies is one of the key factors driving this industry.

*Source: ResearchandMarkets.com, Statista*

# Mobile networks carry almost 300x more mobile data traffic and around 2bln more people now have a mobile phone compared to a decade ago

**Global Mobile Traffic Growth, % YoY**



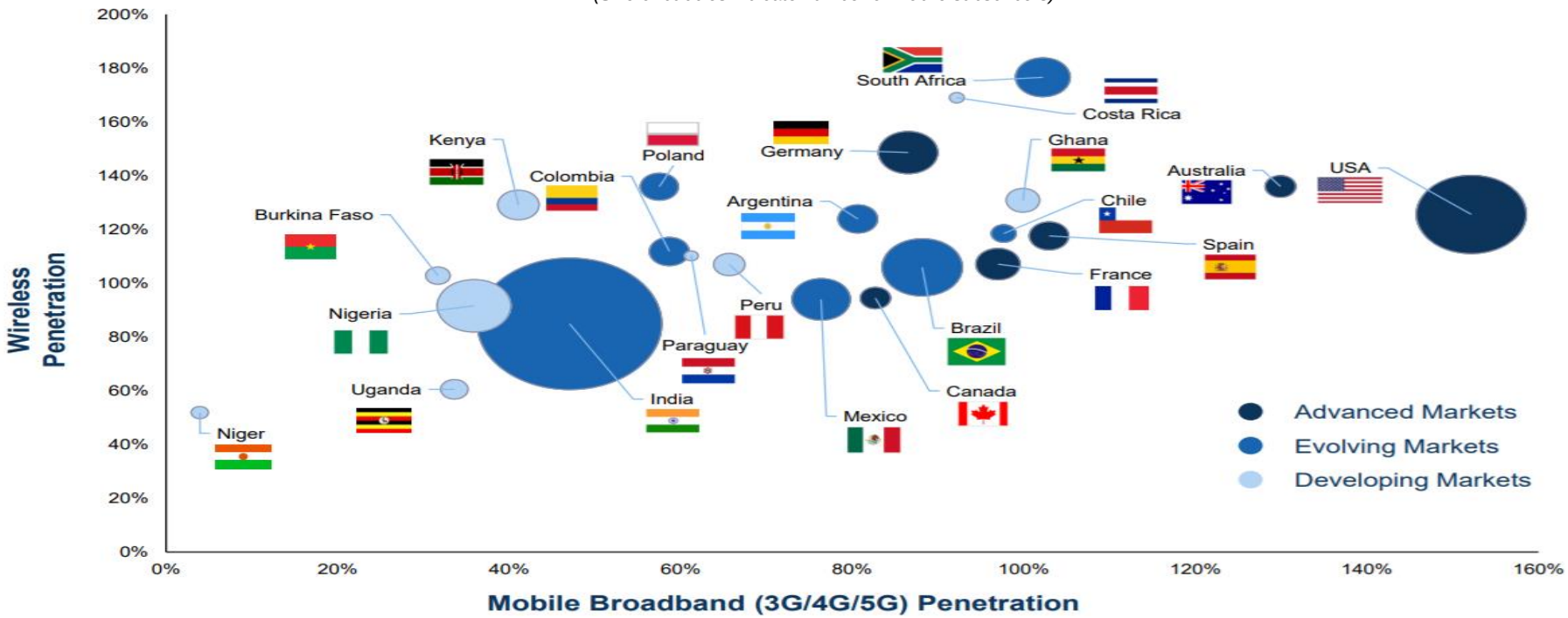

- ✓ Global mobile traffic growth characterized by disruptive events shaping overall growth.
- ✓ Mobile networks today carry almost 300x more traffic than in 2011, network speeds have increased hundreds of times and there are almost 20,000 different 4G device models on the market.
- ✓ As 5G population coverage increases, expect some new disruptive events that take advantage of 5G capabilities in totally new ways be it new devices, business models or applications.

*Source: Ericsson Mobility Report November 2021*

# International markets poised for smartphone growth

**Wireless Penetration vs. Mobile Broadband Penetration**

*(Size of bubbles indicate number of mobile subscribers)*

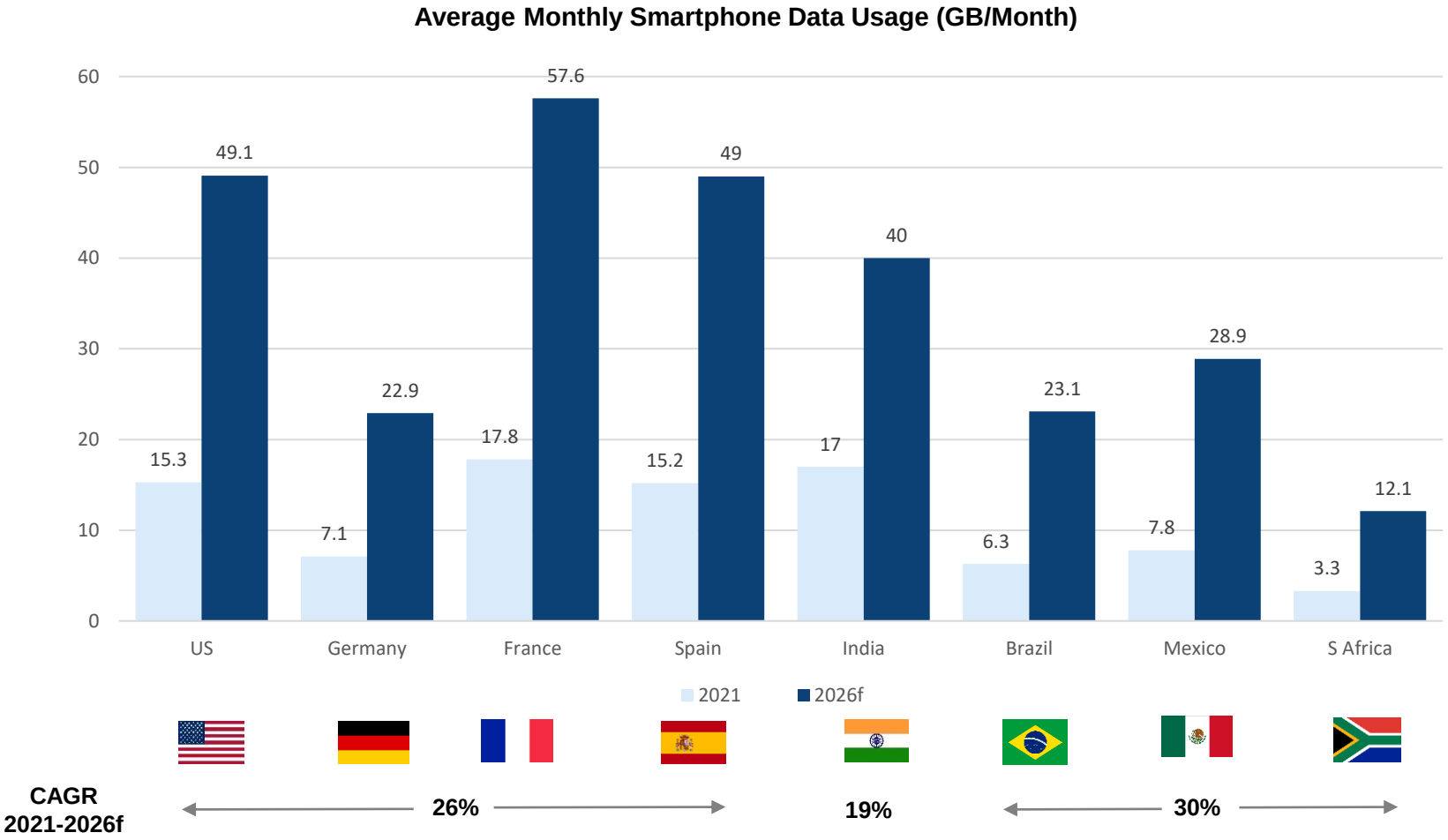



- ✓ Mobile data traffic has been increasing at more than 60% per year since 2007, with almost 5,000 petabytes of data transmitted and received over mobile networks during 2020. Significant mobile network investment is required to cope with the rising global data demand.

- ✓ **Global network investment is likely to accelerate by more than USD100bln per year to meet this demand, rising from USD1.03tln in 2019 to USD1.14tln in 2025, ~80% of this investment is likely to be in 5G networks** (GSMA Intelligence).

*Source: American Tower Corporation, Preqin, GSMA Intelligence*

# Mobile data growth - global smartphone data usage

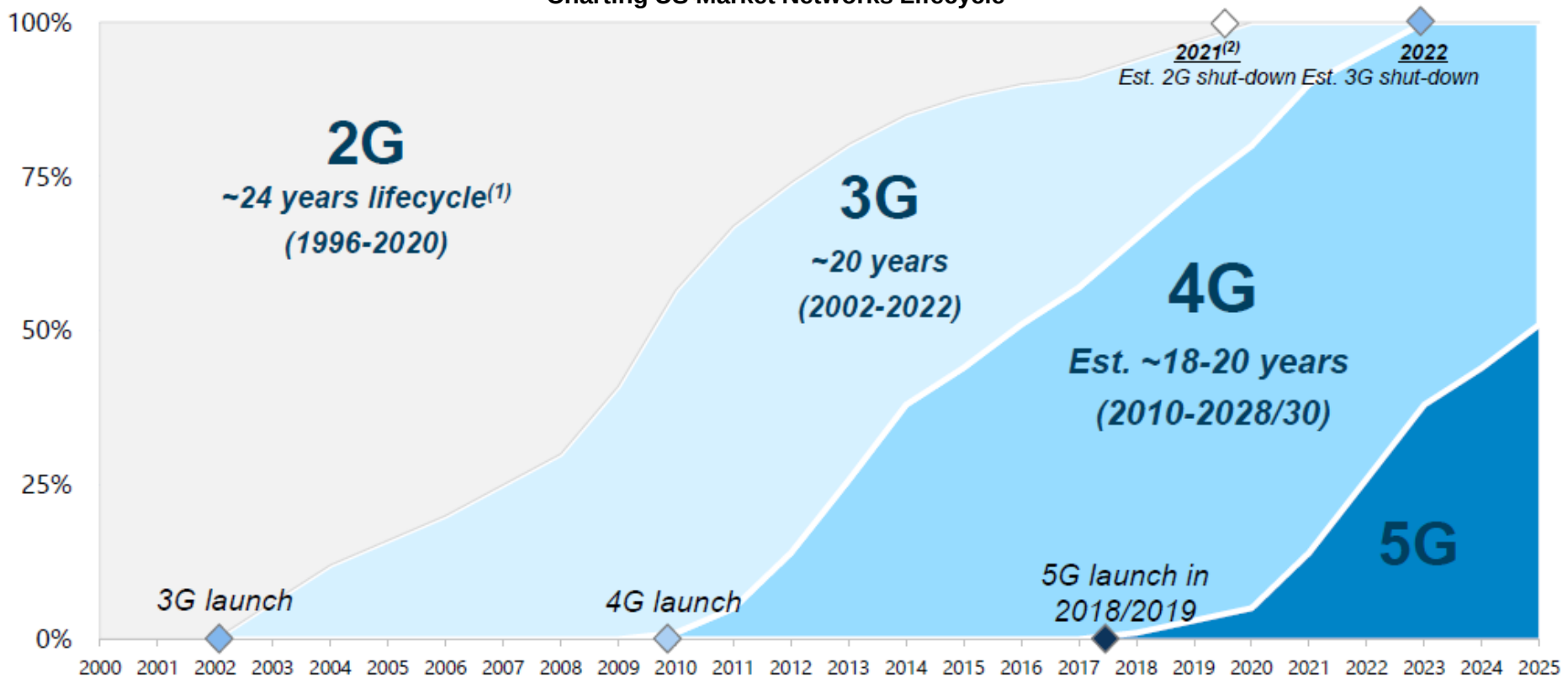



✓ **Smartphone data usage increases exponentially on a global basis**, initial 5G adoption expected to drive a portion of growth in mature markets.

*Source: American Tower Corporation*

# The Evolution Towards 5G, but expect significant 4G investments to continue through 2025

**Market Share of Connectivity Standards (2000-2025):**
**Charting US Market Networks Lifecycle**

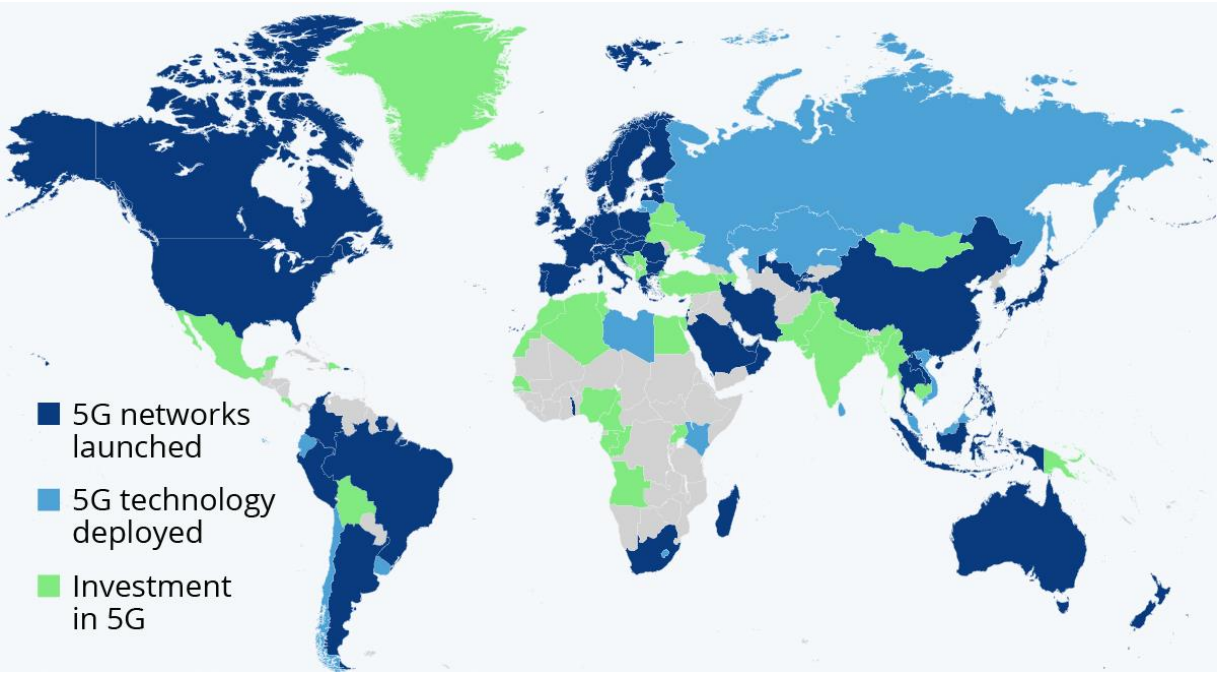



✓ Commercial 5G mobile networks currently available globally on limited basis but significant 4G investments are expected to continue, with >50% estimated 4G market share through 2025.

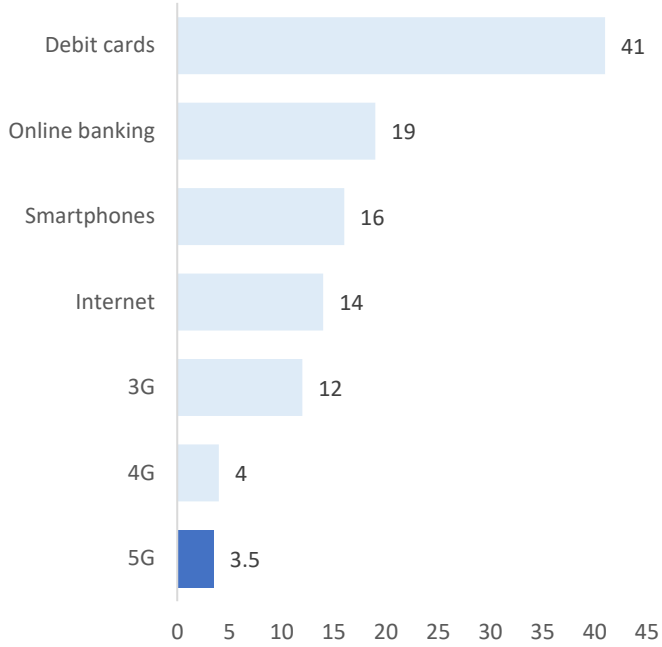
*Source: American Tower Corporation*

# Countries where 5G technology has been deployed and where 5G investments have been made

**5G Global Map: Networks Launched, Technology Deployed & Investments**




**No. of years it took for selected technologies to reach 1bln users**

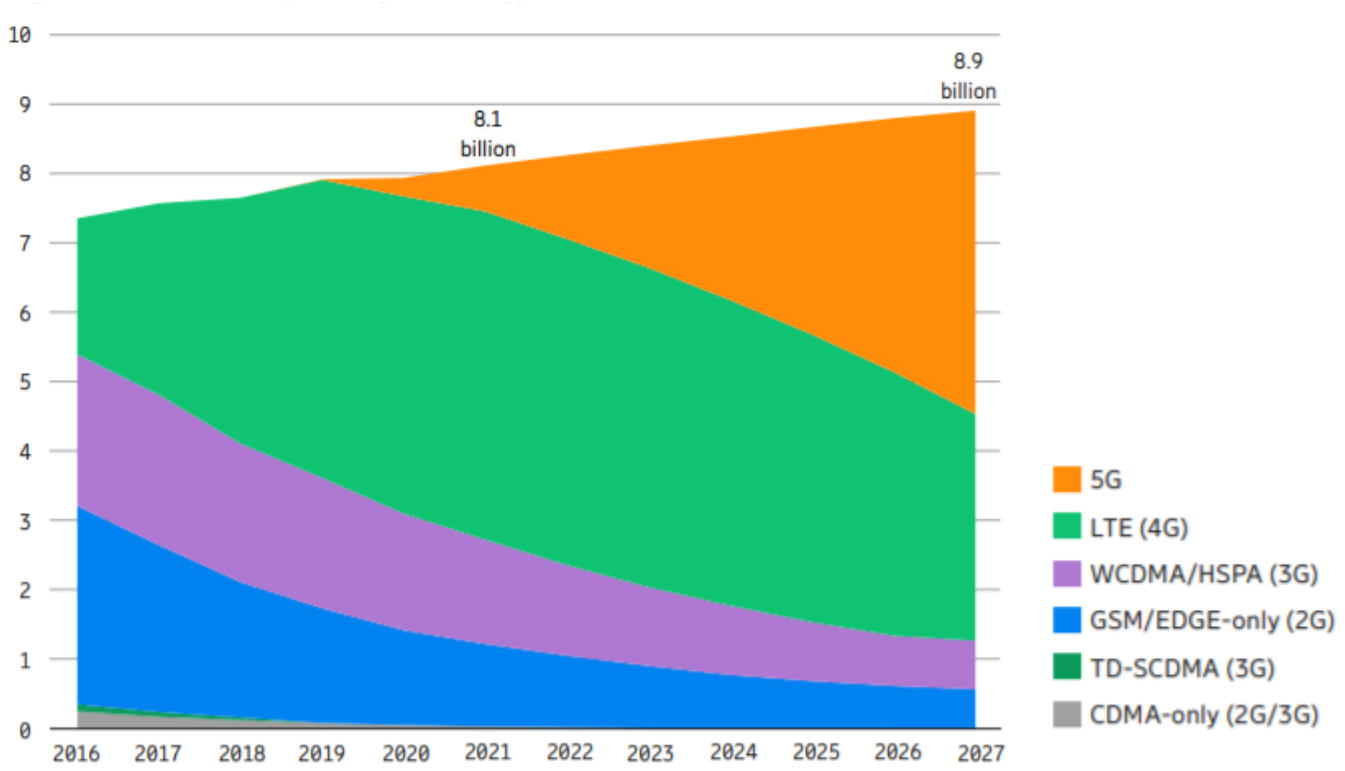



- ✓ According to Statista, **58 countries had 5G networks as of June 2021**, up from 38 a year ago. More than 12 have had 5G mobile technology deployed in part. **5G is expected to reach 1bln users in 3.5 years**, compared with 4 years for 4G and 12 years for 3G.
- ✓ The Americas and Europe are at the forefront of 5G implementation, but investments in the technology have also been made in almost every country in Asia.
- ✓ South Korea is the country which deployed the first 5G network and is expected to stay in the lead in terms of 5G penetration. By 2025, almost 60% of mobile subscriptions in South Korea are expected to be for 5G networks.

*Source: GSA 5G Snapshot, A Mobile Connected World (2020) by Statista*

# 5G mobile subscriptions are projected to exceed 4.4bln globally by 2027, overtaking 4G and to account for 49% of all mobile subscriptions

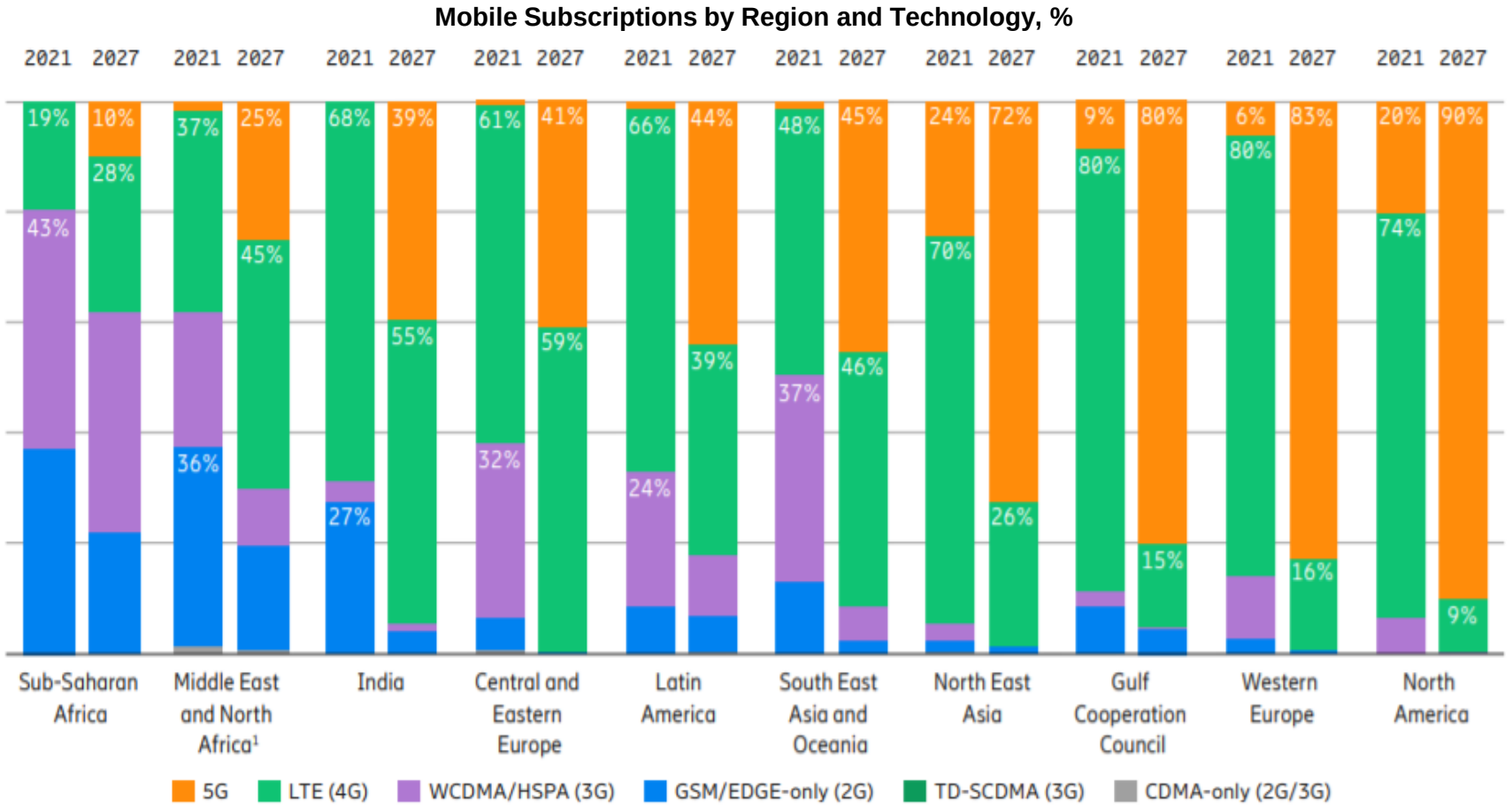
**Mobile Subscriptions by Technology, bln, 2021-2027f**




- ✓ Service providers continue to switch on 5G and more than 180 have launched commercial 5G services globally, with **5G subscriptions estimated at 660mln in 2021**, driven by China and North America as well as decreasing prices of 5G devices.
- ✓ **Currently, North East Asia has the highest 5G subscription penetration**, followed by North America, GCC and Western Europe.
- ✓ **In 2027, it is projected that North America will have the highest 5G penetration at 90%**.

*Source: Ericsson Mobility Report November 2021*

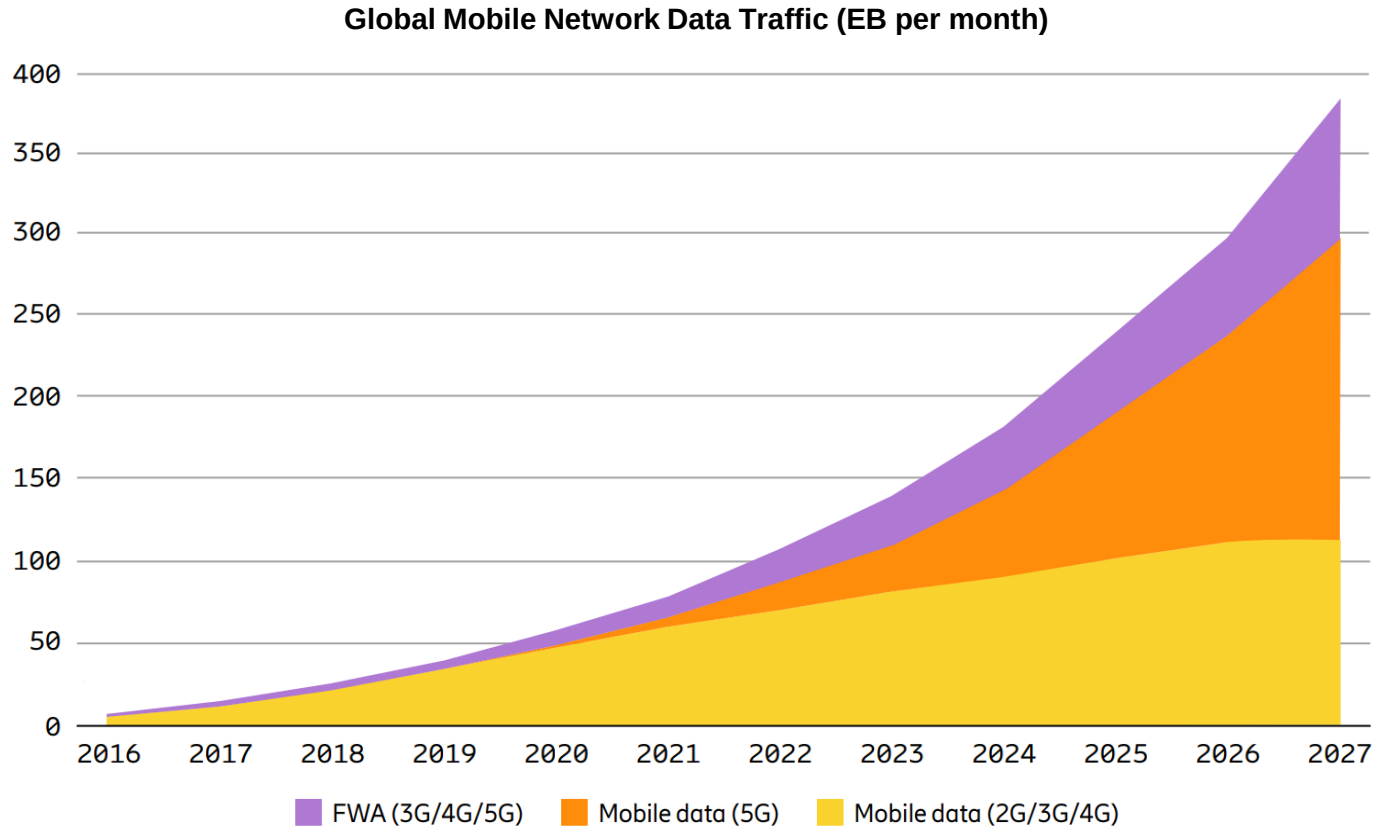
# 5G subscriptions to be mainstream in every region by 2027




✓ 5G penetration by 2027: North America 90%, Western Europe 83%, GCC 80%, North East Asia 72%, South East Asia & Oceania 45%, Latin America 44%, Central & Eastern Europe 41%, India 39%, MENA 25%, Sub-Saharan Africa 10%.

*Source: Ericsson Mobility Report November 2021*

# Smartphones and video drive up mobile data traffic, 5G will carry 62% of world's smartphone traffic in 2027




✓ Smartphones generate ~97% of the global mobile data traffic today. The **monthly global average usage per smartphone is forecast at 41GB by end-2027** (2021e: 11.4GB).

✓ **Video traffic is projected at 79% of all mobile data traffic in 2027** (2021e: 69%).

✓ **In 2027, 5G networks will carry 62% of the world's smartphone traffic**.

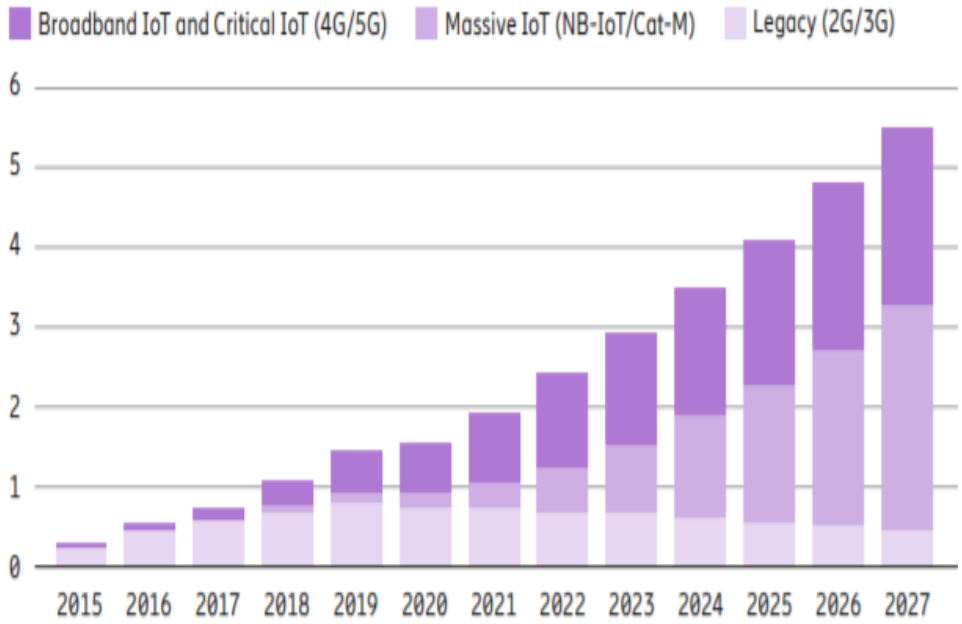
*Source: Ericsson Mobility Report November 2021*

# IoT technology adoption by economic sectors will further drive the global telecom market and 5G deployment

**IoT: Estimated Economic Value by Use Case, USD bln**

| Use cases | 2020 value estimate | 2025 range estimate | 2030 range estimate |
|---|---|---|---|
| Factories | 360 | 690 - 1 750 | 1 430 – 3 320 |
| Human Health | 280 | 350 - 780 | 550 – 1 760 |
| Work Sites | 130 | 220 - 790 | 400 – 1 730 |
| City | 290 | 470 - 840 | 970 – 1 700 |
| Retail Environment | 110 | 310 - 610 | 650 – 1 150 |
| Outdoor | 100 | 200 - 430 | 400 – 930 |
| Home | 160 | 280 - 520 | 440 - 830 |
| Vehicles | 120 | 210 - 340 | 430 – 620 |
| Offices | 40 | 90 - 230 | 240 – 500 |
| **Total** | **1 590** | **2 820 – 6 290** | **5 500 – 12 600** |

**Cellular IoT Connections by Segment and Technology, bln**

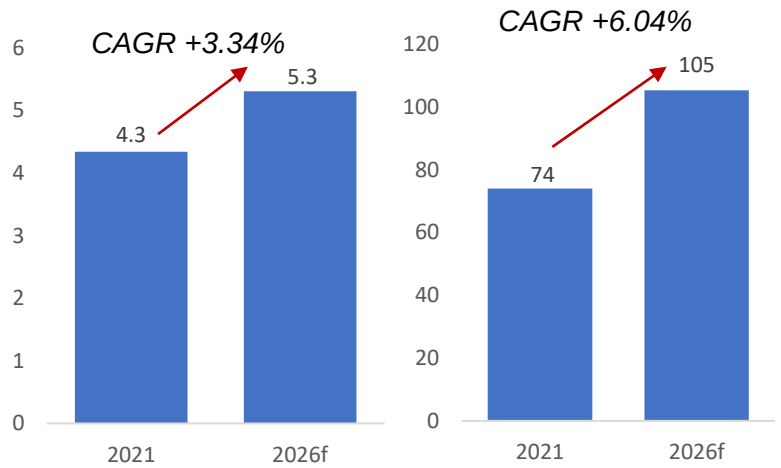



- ✓ The newer mobile tech will connect machines and devices with higher data speeds, ultra low latency and increased availability. **By end-2027, 40% of cellular IoT connections will be broadband IoT, with 4G/5G connecting the majority**.
- ✓ IoT devices connected via 2G and 3G have been in slow decline since 2019.
- ✓ **As the newer mobile tech services are rolled out to cope with rising global data demand, significant network investment is required - benefitting telecom operators (and tower owners) around the world.**

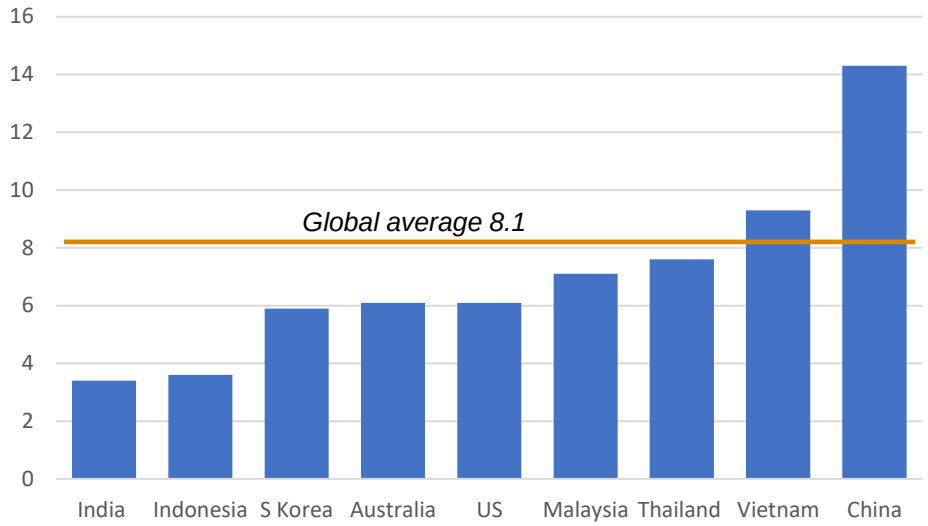
*Source: McKinsey IoT Report November 2021, Ericsson Mobility Report November 2021*

# Global telecom towers market projected to grow by a CAGR of 3.3% in units and 6.0% in value up to 2026

**Global Telecom Towers Market Growth, in units, in USD bln**




**Number of Towers Per 10,000 Populations**

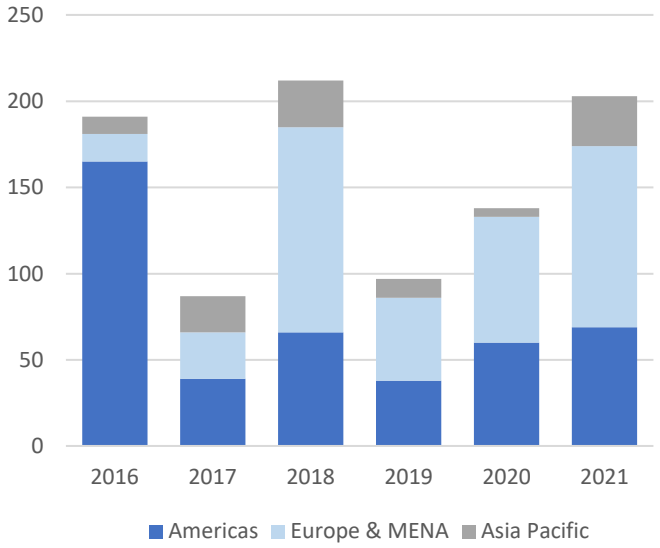



- ✓ **The global telecom towers market was valued at 4,342,520 units in 2020, and it is projected to reach 5,308,088 units by 2026, a CAGR of 3.34%** (TowerXchange).
- ✓ **By value, the global telecom towers market is expected to grow at a CAGR of 6.04% from USD74.038bln in 2020 to reach a market size of USD105.262bln in 2026** (ResearchandMarkets.com).
- ✓ Over 250,000 towers were erected globally in 2020 alone, with operators from China and India contributing the highest to the new tower installations.
- ✓ Operator-led towercos now own 55.6% of the world's towers, up from 52.7% the same time the previous year. Excluding China Tower from the consideration, operator-led towercos own 24.6% of the towers globally and independent towercos 22.2%.

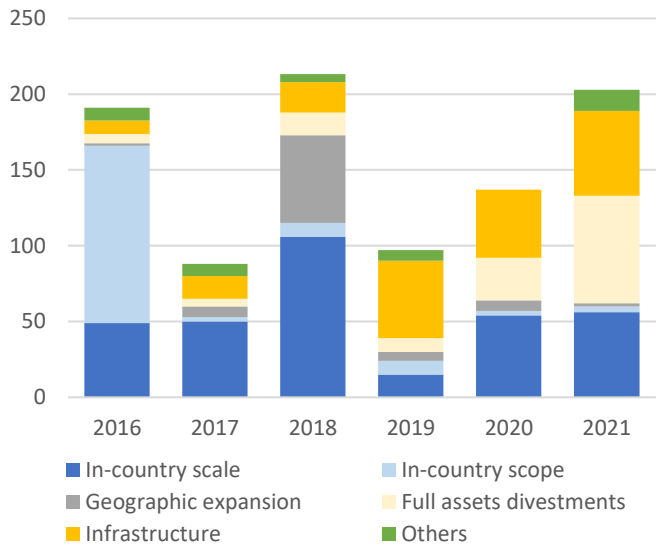
*Source: TowerXchange, ResearchandMarkets.com*

# Global telecom M&As valued at USD203bln in 2021, a 48% YoY jump. Telco infrastructure deals accounted for ~28% of total deals value

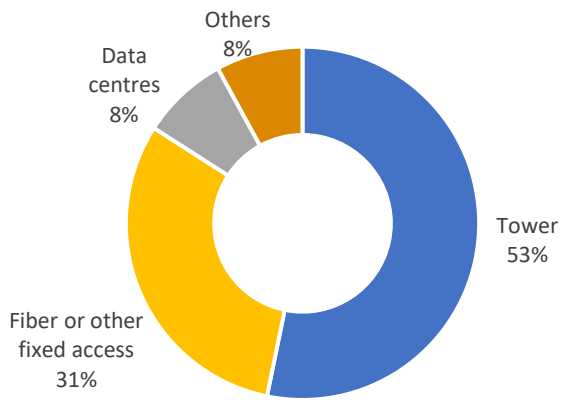
**Global Telco M&As by Region, 2021, USD bln**




**Global Telco M&As by Deal Type, 2021, USD bln**




**Global Telco Infrastructure Deals, 2016-2021, USD bln**

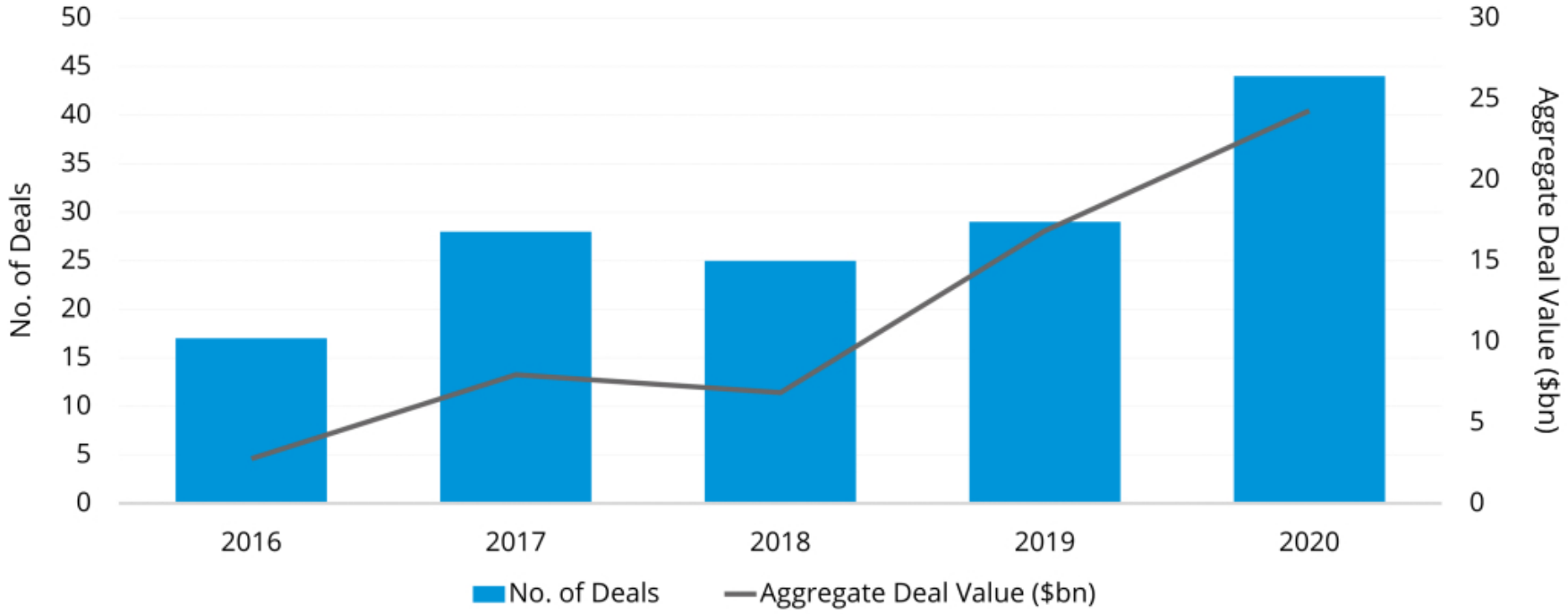



- ✓ Global telco M&A deal value in 2021 was driven by Europe & MENA and Asia Pacific. Americas' share of the global telco M&A value fell by 9% as Asia Pacific surged.
- ✓ By deal types, **infrastructure deals and full assets divestment combined for 63% of global telco M&A deal value in 2021**. **The majority of this activity comes from private equity investors** rather than telecom operators.
- ✓ **Infrastructure M&A, particularly in towers and fiber assets, is skyrocketing. Telco tower deals aggregated at USD107bln and accounted for 53% of total infrastructure M&A deal value during 2016-2021.**

*Source: Bain & Co Global M&A 2021*

# With increasing demands in place on communications infrastructure, investment opportunities are there for the taking

**Global Telecom Tower Deals 2016-2020**

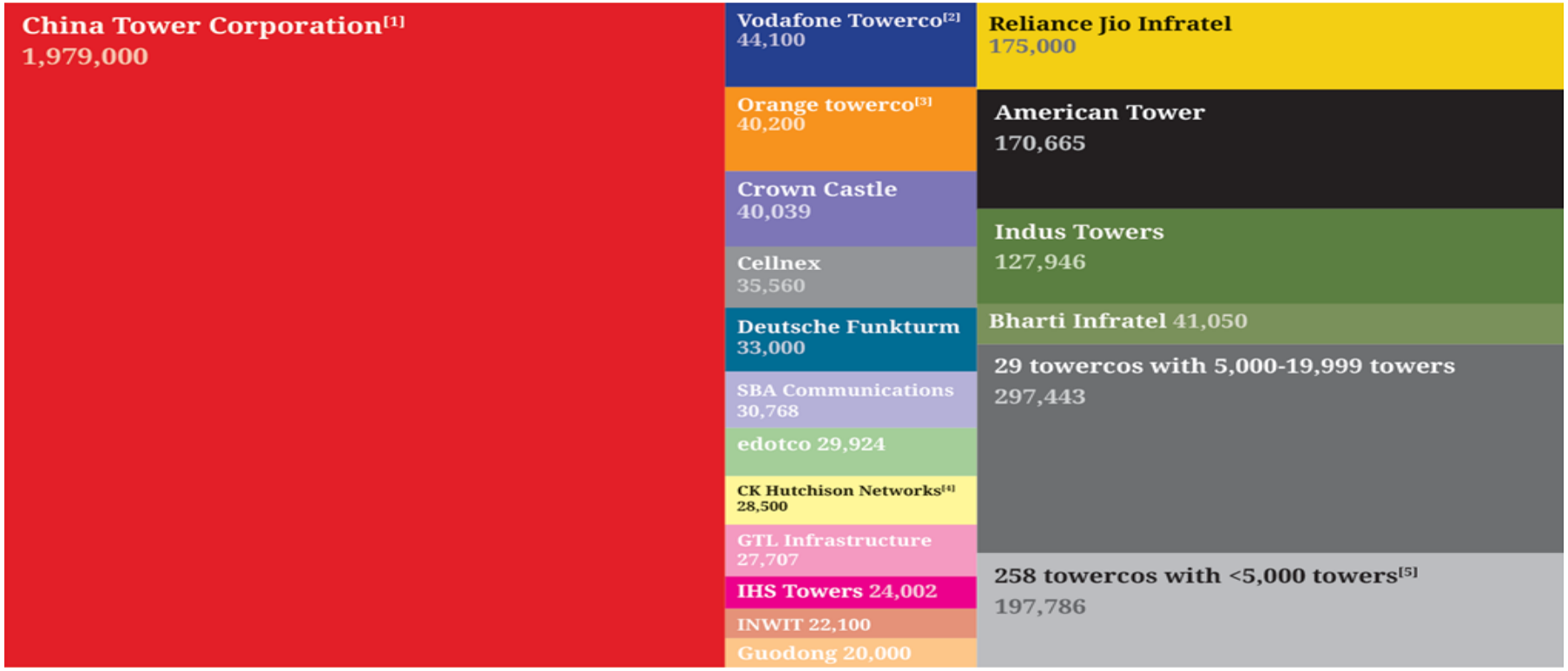



- ✓ **In 2020, there were 44 telecom tower deals with an aggregate transaction value of USD24bln**.
- ✓ According to Bain & Co, **multiples for infrastructure transactions reached 18x in 2021, up from an average of 14x in 2020**. By comparison, multiples for integrated operator acquisitions averaged 9x.
- ✓ Investors are attracted by the tower sector potential for solid and relatively low-risk returns. Tenants are typically high-quality creditors, and fixed costs tend to be low – with incremental operating margins often at 90%+. Contract terminations are generally very low, at around 1-2% per year (RBC research).

*Source: Preqin, Bain & Co, RBC Research*

# The telecom tower industry has a top heavy structure, limiting accessibility to potential new entrants

**Structure of the Telecom Tower Industry**



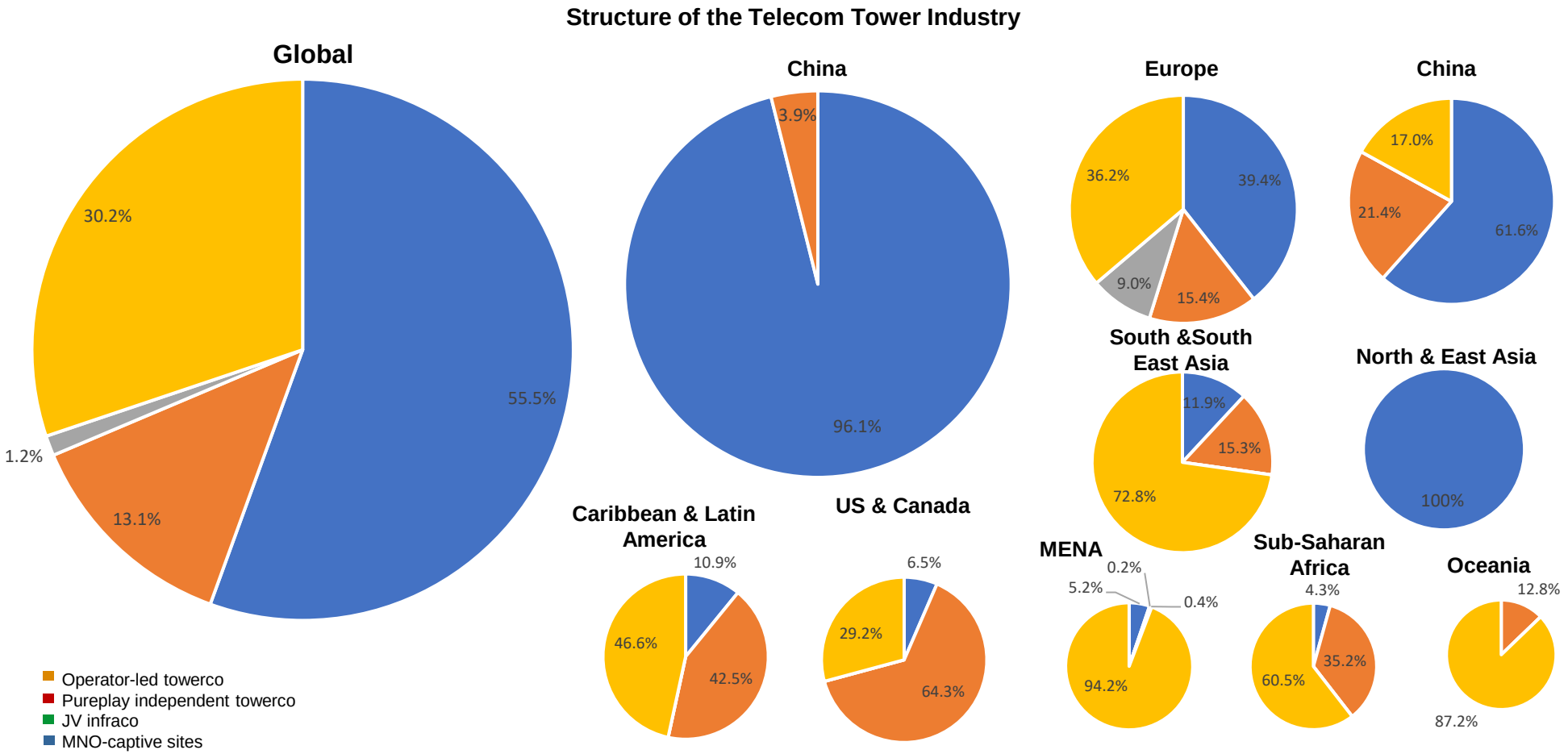

*TowerXchange track 304 towercos that own 3.37mln of the world's 4.821mln investible towers and rooftops, representing 69.9% penetration into the industry's addressable market.*

✓ China Tower Corporation represents nearly two-thirds of the global tower industry's total towers.

✓ 1.45mln towers are still sitting on mobile network operator (MNO) balance sheets globally, where it is typically recognized as a cost centre i.e. a depreciating asset, built to serve the needs of a single tenant only and seldom shared with third parties. **The average tenancy ratio of an MNO captive tower is less than 1.1 worldwide vs. the average tenancy ratio of towerco owned and operated towers of 2.0**.

*Source: TowerXchange*

# Towerco penetration by business models and by region

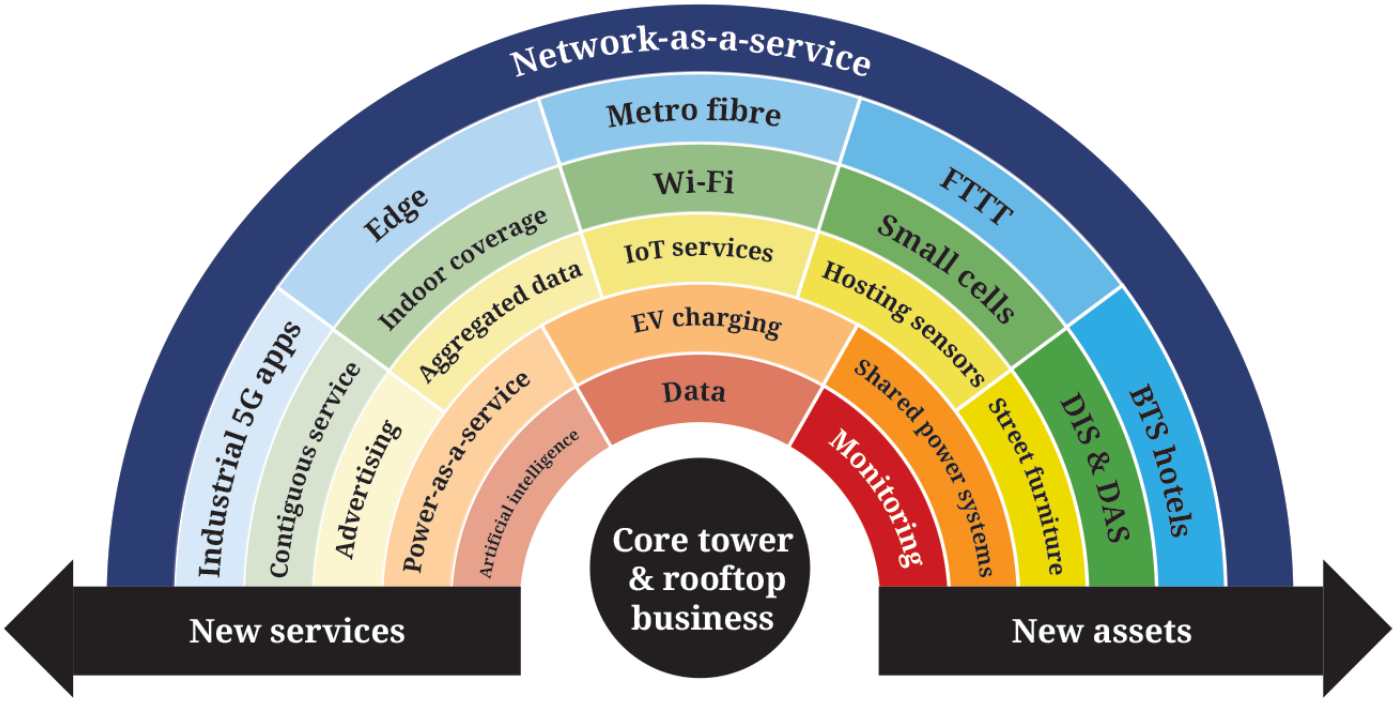



✓ The capital markets recognize the fundamental differences in the value of tower assets when managed by independent towercos, creating a **relative valuation arbitrage between MNO with enterprise valuations of 4-9x EBITDA and towercos valuation of 9-30x**, which **drives the continuing transfer of assets from MNOs to towercos**.

*Source: TowerXchange*

# The evolution of towercos' business models and growth strategies in 5G era

**From Core Towers & Rooftop Business to New Assets & New Services**



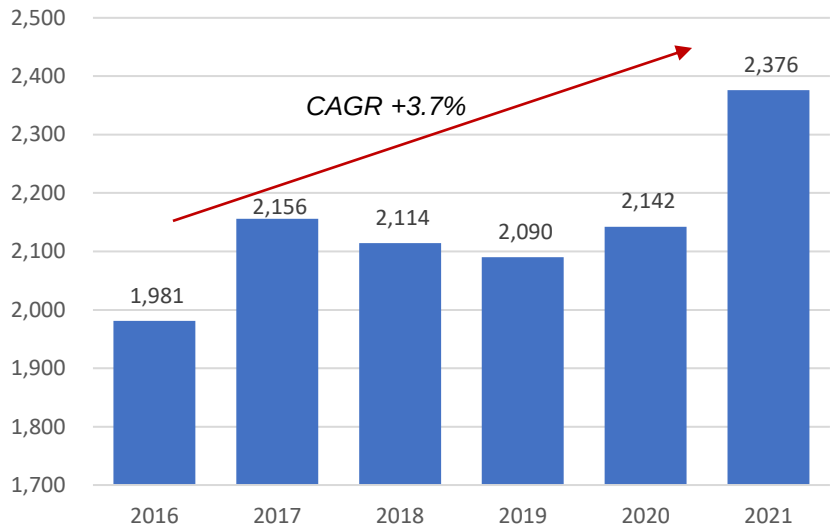

- ✓ According to TowerXchange, **towercos are looking beyond their core business of building, buying and leasing "vertical real estate" to consider new assets and new services,** amidst saturation of addressable markets and investible portfolios worldwide, as well as increasing tendency of MNOs to carve out and keep operator-led towercos.

- ✓ Feedback from towerco leaders show more than **50% of organic growth is now in lamp posts and in-building solutions** vs. macro towers and rooftops.

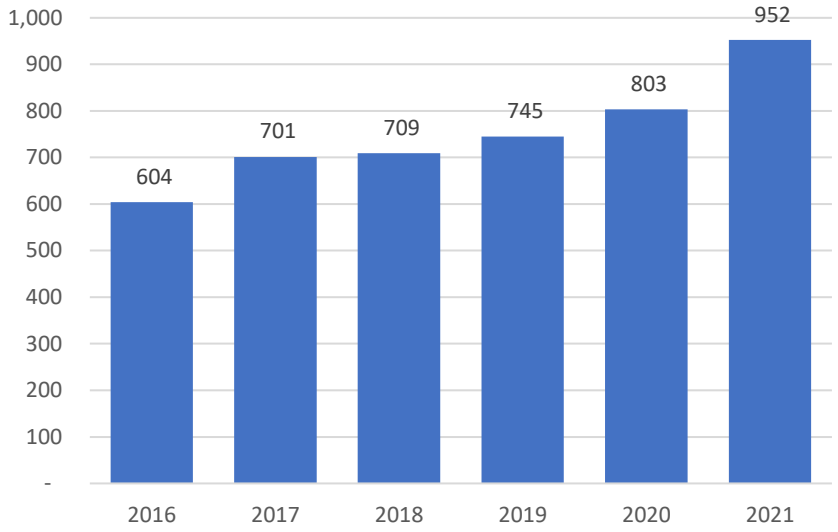
*Source: TowerXchange*

# Kazakhstan's telecom sector grew at a CAGR of 3.7% during 2016-2021

**Kazakhstan's Total Telecom Services, USD mln**




**Kazakhstan's Internet Services (Wired & Wireless), USD mln**

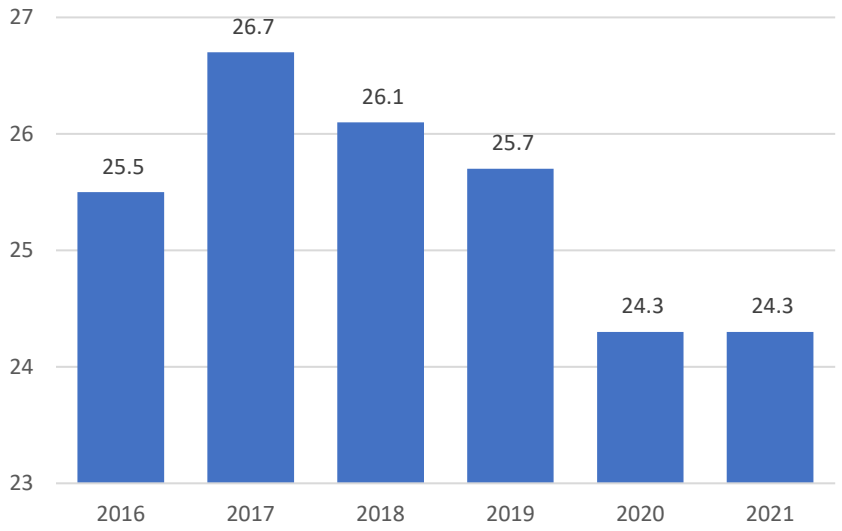



- ✓ Kazakhstan telecom sector grew at a **5-year CAGR of 3.7% to reach USD2.4bln equivalent in 2021**.
- ✓ In local currency, the telecom sector has demonstrated a continuous growth over the last 5 years with a CAGR of 8.4%. The decrease in services provided in 2017-2019 is explained by 15% devaluation of the tenge during this period.
- ✓ Kazakhstan **internet services** over wired and wireless telecommunication networks **reached almost USD1bln in 2021**, **increased by 58% from 2016 to 2021**.

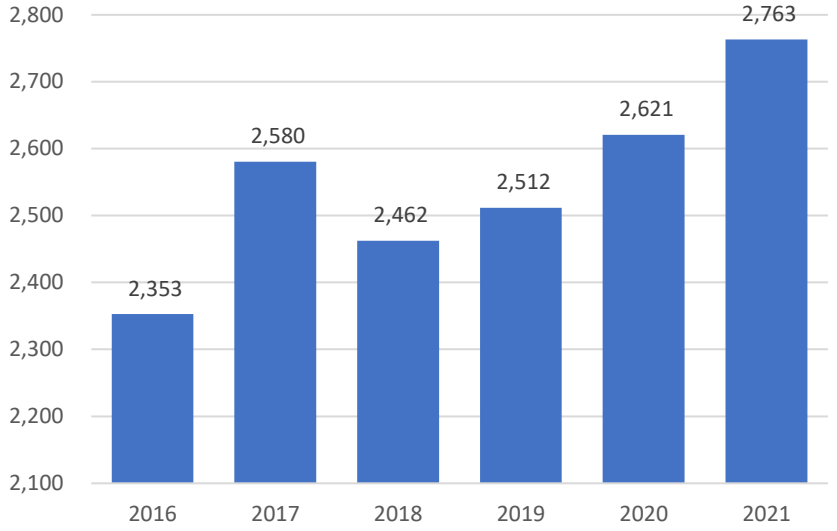
*Source: Kazakhstan Bureau of National Statistics*

# Kazakhstan’s mobile cellular penetration is above 100% and corresponds to that of developed markets

**Kazakhstan’s Mobile Cellular Subscribers, mln**




**Kazakhstan’s Fixed Broadband Internet Users, ‘000**

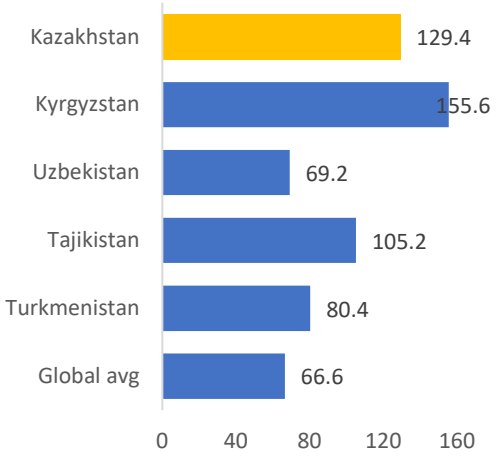



- ✓ **Kazakhstan’s mobile cellular penetration is more than 100%** which corresponds to that of developed markets.
- ✓ The decrease in mobile cellular subscribers since 2017 is due to a new regulation not allowing cellular operators from providing services to unregistered customers.
- ✓ Further growth is expected due to increase in customers’ cellular devices and the growth of the IoT market.
- ✓ Kazakhstan’s number of fixed broadband internet subscribers demonstrated a moderate growth at a CAGR of 3.3% over 2016-2021, the penetration of fixed broadband internet subscribers was 13.9% in 2021.

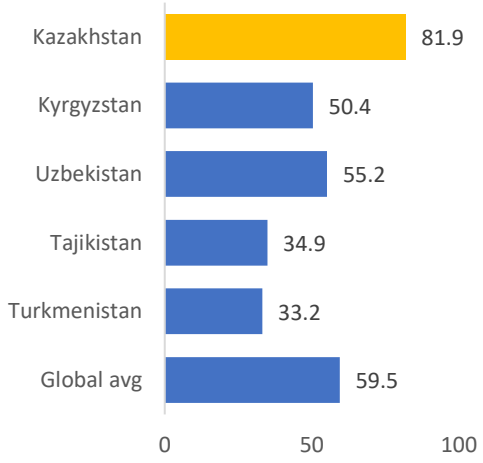
*Source: Kazakhstan Bureau of National Statistics*

# Key statistics of telecommunications sectors - Kazakhstan vs. Central Asia peers

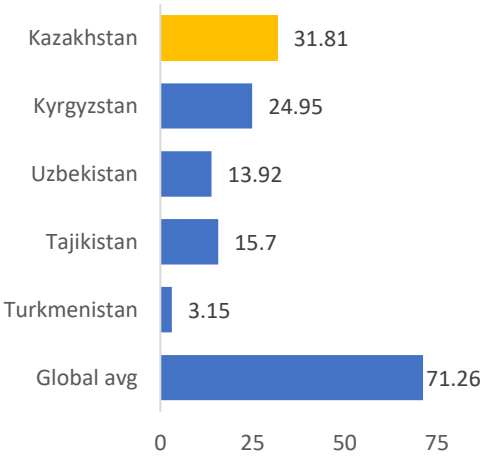
**Mobile Cellular Penetration, %**



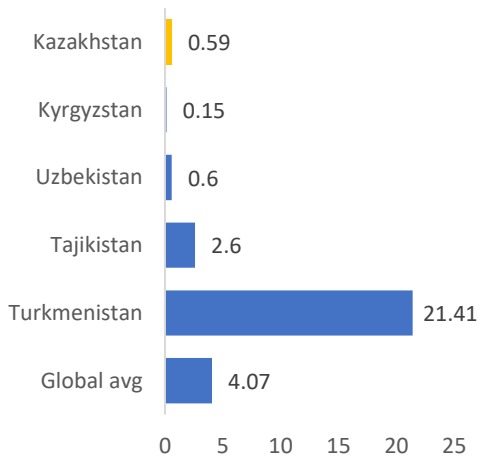

**Internet Penetration, %**



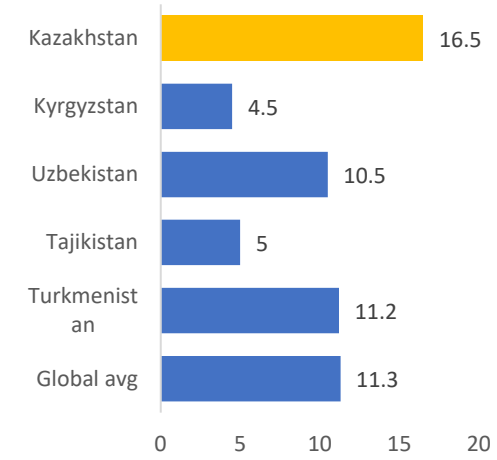

**Mobile internet download speed (Mbps)**



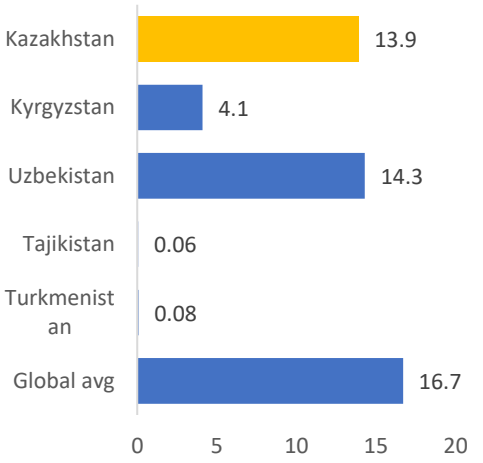

**Price for 1GB Mobile Internet (USD)**




**Fixed Telephone Penetration, %**




**Fixed Broadband Penetration, %**




- ✓ Kazakhstan has one of the most developed telecom sector in Central Asia, especially in the mobile segment where widespread network coverage has enabled high penetration rates.
- ✓ Kazakhstan's telecom market is expected to resume growth from 2022 onwards. The extensive deployment of LTE networks across the country (along with the prospect of 5G services being added to the mix in 2023) points towards an even greater uptake of lucrative mobile services.
- ✓ New 5G trials are taking place in different parts of the country since 2H21. Market expectations are that by 2029 the majority of mobile connections will be on 5G.

*Source: datareportal.com as at January 2021, Speedtest.net, cable.co.uk*

# In summary

- ✓ **The global telecom market** is expected to expand at a **CAGR of 6% during 2021-2025 to reach USD3,461.03bln in 2025**.
- ✓ **Mobile networks carry almost 300x more mobile data traffic** and **2bln more people now have a mobile phone** compared to a decade ago. **Smartphones generate ~97% of the global mobile data traffic today**.
- ✓ **By 2027, 5G mobile subscriptions are projected to exceed 4.4bln globally** and to account for **49% of all mobile subscriptions**. 5G networks are expected to carry **62% of the world's smartphone traffic by 2027**.
- ✓ **Global network investment is likely to accelerate by more than USD100bln per year** to meet rising global data demand, **to reach USD1.14tln in 2025 (2019: USD1.03tln), ~80% of this investment is likely to be in 5G networks – benefitting tower operators globally.**
- ✓ By value, **the global telecom towers market is expected to grow at a CAGR of 6.04% during 2020-2026 to reach USD105.262bln in 2026.**
- ✓ **Telco tower deals aggregated at USD107bln and accounted for 53% of total infrastructure M&A deal value during 2016-2021. Multiples for infrastructure transactions reached 18x in 2021** (vs. average of 14x in 2020 and average of 9x for integrated operator acquisitions).
- ✓ **Key trends in towerco business**: (i) continuing transfer of assets from MNOs to towercos to achieve operational efficiency and higher valuations, (ii) telco leaders view that 50% of organic growth is now in lamp posts and in-building solutions vs. macro towers and rooftops.
- ✓ Towercos already embark on large-scale rollout of the alternate site typologies and business model innovations. Some examples:
  - Edotco deploying more lamp post sites than macro sites in Malaysia.
  - Russian Towers providing contiguous outdoor to indoor network as a service.
  - China Tower making a business out of gas pipeline monitoring. China Tower anticipates 33% of its revenue growth being derived from non-traditional NO tenancy revenue.
  - Digital Colony seeking to add fibre leader Zayo Group to a portfolio that already includes towers, small cells and both co-location and edge data centres.
  - Crown Castle spending USD37bln to acquire and deploy 75,000 route miles of fibre and 70,000 small cells.

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