



# Telecoms capex: worldwide trends and forecast 2017–2026



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## About this report

This report provides forecasts for capex for established and new communications service providers (CSPs) between 2017 and 2026. It provides a detailed breakdown of capex by region, network technology and category. It also analyses the spending patterns and priorities of 11 different operator profiles including converged, mobile-only, wholesale and over-the-top (OTT) in both developed and emerging markets.

The report is based on several sources, including:

- a detailed model based on many public and private sources
- a survey and interviews with CSPs worldwide.

### KEY QUESTIONS ANSWERED IN THIS REPORT

- What will the overall trends in telecoms capex be between 2017 and 2026 and what are the drivers for investment?
- For which technologies or architecture will CSP spending grow, and for which will spending decline?
- How will CSPs' different business models affect their approaches to investment, and will some shift budgets more heavily towards opex?
- How much capital spending will be made by non-traditional CSPs or by wholesale providers such as towercos?
- How will new digital architecture affect capex during the 2020s?

### GEOGRAPHICAL COVERAGE

- Worldwide
- Central and Eastern Europe (CEE)
- Developed Asia–Pacific (DVAP)
- Emerging Asia–Pacific (EMAP)
- Latin America (LATAM)
- Middle East and North Africa (MENA)
- North America (NA)
- Sub-Saharan Africa (SSA)
- Western Europe (WE)

### SUB-SEGMENT COVERAGE

- Passive infrastructure for wireline and wireless networks
- Physical and digital access
- Capitalised labour and non-network capex
- Digital infrastructure
- Mobile and converged core
- Digital and traditional switching and routing
- IT

### WHO SHOULD READ THIS REPORT

- Strategy, planning and finance executives within CSPs who wish to compare their own investment strategies with the overall market's.
- Strategy and product management teams within equipment vendors who wish to understand the key areas of investment growth and target their activities accordingly.
- Senior executives within CSP services organisations such as systems integrators, civil engineering providers and software developers who wish to understand where the best commercial opportunities lie.
- Strategy, planning and finance executives within other companies that are investing in networks such as towercos and webscalers.

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- 9. We have identified 16 capex categories across wireline and wireless networks

## 10. General capex trends

- 11. A long period of stable capex intensity is coming to an end with the completion of expensive but one-off FTTx build-outs, balanced somewhat by the launch of 5G
- 12. The accelerated pace of FTTx and 5G investment will drive a higher than expected capex peak around 2020, but this will be fall by 2025
- 13. Capex intensity will fall rapidly for wireline operators after 2019/2020, but will rise for mobile network operators until 2026, as they wait for the 5G revenue boost
- 14. Capex peaked in developed markets in 2019, and will peak in emerging markets in 2020; 5G investments will not fully offset the slowdown in FTTx deployment
- 15. Digitalisation accounts for most of the growth in telecoms capex, but physical networks and labour continue to account for a high percentage of the total spend
- 16. CSPs will reduce their investments in most areas except digital technologies, which will take the largest share of capex after 2025
- 17. Capex will only grow in 6 of the 16 categories included in this report; virtualised mobile networks and edge will drive investments in cloud infrastructure mid-decade
- 18. The increase in digital technology capex may be short-lived; growth will slow in developed markets after 2026 due to the cost efficiencies of virtualisation

- 19. Spending on the physical elements of the RAN will still outweigh that on the digital elements in 2026, but digitalisation of the core will be almost fully accomplished
- 20. Capex reduction will be balanced by increased opex in some cases, but the overall TCO will start to fall in emerging markets in 2023

## 21. Mobile and 5G

- 22. 5G is a significant driver of investment in digital platforms, but will not account for more than half of the total capex until 2023
- 23. After an initial 5G-driven leap in capex, the further phases of 5G investment will be spread over many years
- 24. Almost all of the capex growth will be driven by digitalisation and 5G, but the physical elements of the RAN will account for the most spending, even in 2026
- 25. The race for 5G licences will drive spending until 2023, but the greater availability of shared or regional spectrum should prevent prices from soaring

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## Wireless networks will dominate capex from 2020 as FTTx build-outs are completed, but the 5G investment profile will be very different from that for 4G

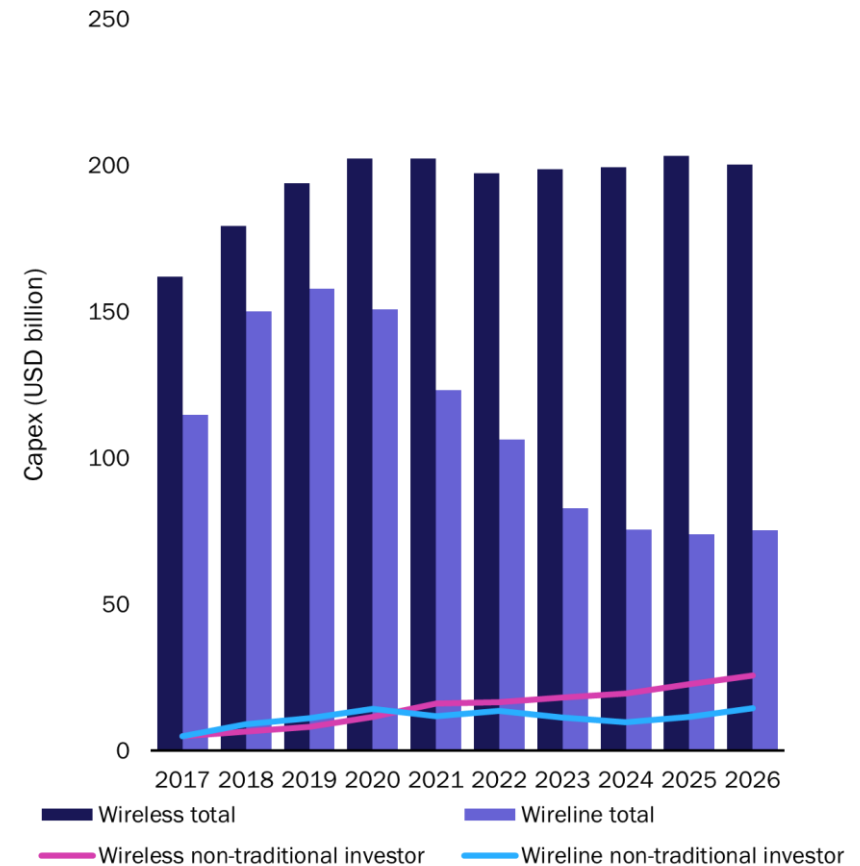
A long period of stable capex intensity is coming to an end due to the completion of large FTTx build-outs in many regions of the world, most notably China. The end of the largest FTTx projects and an accelerated start to 5G deployment in some regions will lead to a higher-than-expected capex peak in 2020. After that, capex intensity will fall rapidly for wireline operators. However, it will rise for mobile network operators until 2026; they are investing heavily in 4G expansion and 5G, but will often have to wait several years for a significant 5G-driven revenue increase.

The most striking aspect of the capex forecast for the period after 2020 (compared to the pattern of the previous decade) is the increased diversity, both in terms of the categories of capex spending and the entities that are making the investments.

Future 5G and converged networks will comprise a far greater variety of elements than their predecessors. Emerging digital network technologies such as virtualised core and RAN, and cloud platforms such as edge computing, will be the main areas where capex will grow during the forecast period. Operators that have completed their FTTx build-outs may also divert some spending to brand new areas of investment such as content or media assets.

There will also be a wider array of companies investing in networks, especially for 5G, including private network operators, utilities, greenfield operators and neutral host providers.

**Figure 1: Wireline and wireless capex (including that from non-traditional investors), worldwide, 2017–2026**



Source: Analysys Mason

# We have identified 16 capex categories across wireline and wireless networks

Figure 2: Capex categories

Category	Type of network	Description
Capitalised labour	Both	Labour costs for build-out or capitalised maintenance/upgrades of active and passive networks.
Passive infrastructure wireline	Wireline	New deployment of CSP-owned ducts and poles.
Passive infrastructure wireless	Wireless	Cell sites (towers, poles and roofs) and power, where these are purchased and not rented.
Access network	Wireline	Active wireline network including FTTx, DOCSIS and legacy technologies.
RAN (physical)	Wireless	Physical elements of the RAN (including within a vRAN), such as radio units, antennas, RF front ends, physical baseband units (BBUs) and radio network controllers (RNCs).
RAN (digital)	Wireless	Virtualised BBUs and RNCs, other RAN-related VNFs, software and integration services (not servers).
Core (physical)	Wireless	Physical evolved packet core (EPC) appliances.
Core (digital, mobile or converged)	Both	Software and services (not servers) for converged or 5G cloud-native core, vEPC and other virtualised core.
Switching and routing (traditional)	Both	Physical switches and routers including core, edge and DPI.
Switching and routing (digital and white boxes)	Both	White boxes and associated software; SDN control for all core and transport networks.
Transport and backhaul	Both	Backhaul, midhaul and fronthaul (fibre, copper, microwave), long-line transmission and subsea transport where deployed by CSPs rather than rented.
Conventional IT	Both	Legacy data centre hardware, capitalised skills and BSS/OSS.
Digital IT	Both	Cloud infrastructure and servers for digital BSS/OSS and evolution, orchestration and containers.
Digital infrastructure	Both	NFVi to support networks, specialised accelerators (e.g. for vRAN servers), edge computing and CDN.
CPE and success-based capex	Wireline plus FWA	On-premises equipment that is bought and provisioned by the CSP and enterprise or home connections that are installed to order (though handsets are accounted as opex).
Non-network	Both	Examples include content assets, intellectual property, applications and adjacent systems (e.g. banking).





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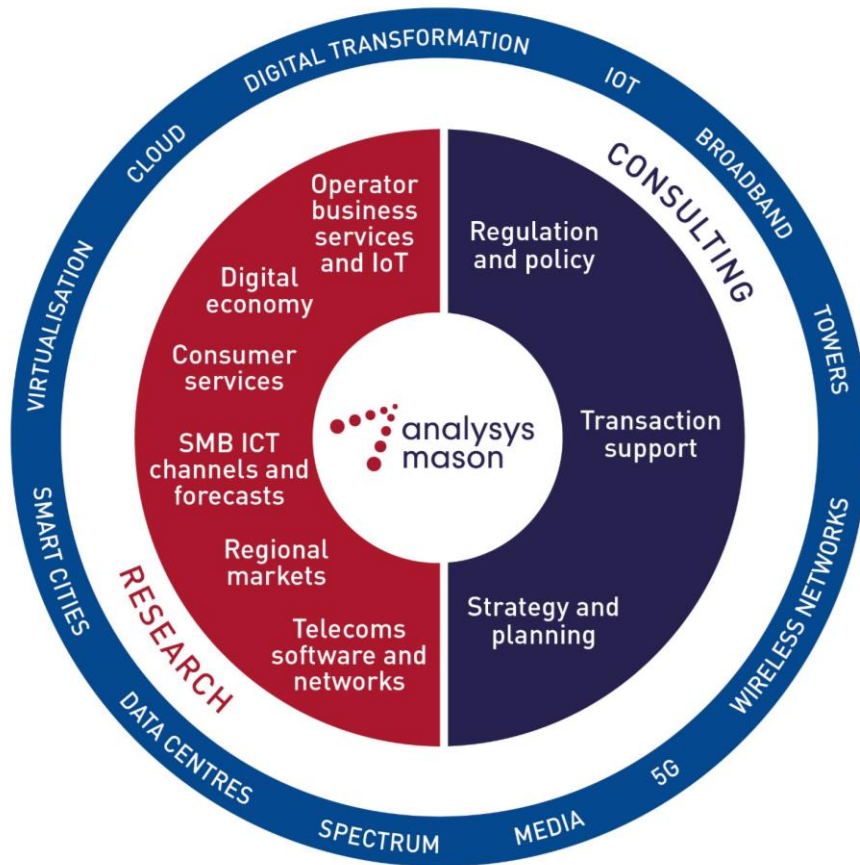
## About the author



**Caroline Gabriel** (Principal Analyst) leads Analysys Mason's wireless research. She contributes to our *Next-Generation Wireless Networks*, *Operator Investment Strategies* and *Spectrum* research programmes and works directly with our research clients to advise them on wireless network trends and market developments. She has been engaged in technology analysis, research and consulting for 30 years, and has focused entirely on mobile and wireless since 2002. She has led research and consulting projects with a wide range of clients, including mobile infrastructure vendors, large and start-up operators, regulators, trade bodies, government agencies and financial institutions. Prior to setting up Rethink, Caroline held various executive positions at VNU Business Publishing, then Europe's largest producer of technology-related B2B reports and publications. She holds an MA from the University of Oxford.

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**PUBLISHED BY ANALYSYS MASON LIMITED IN MARCH 2020**

Bush House • North West Wing • Aldwych • London • WC2B 4PJ • UK

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