techUK

TELECOMS MARKET EXPLAINER

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INTRODUCTION

The UK's telecoms industry is a critical enabler of economic growth, digital innovation and social inclusion across the country.

The UK's telecoms industry is at the heart of the nation's economic success, digital innovation, and social inclusion. As digital connectivity continues to underpin the way we live, work, and interact, its significance across all sectors of the economy and society as a whole cannot be overstated. From supporting critical infrastructure and public services to enabling businesses of all sizes to thrive, the telecoms sector has become a fundamental pillar of modern society.

Recent government figures show the telecoms sector contributing £32.7 billion to the UK economy in 2022, making up a total of 1.5% of total UK GVA.[1] Beyond these numbers, the sector has a multiplier effect, boosting productivity, enabling innovation, and driving growth across industries such as finance, healthcare, manufacturing, and retail.

As the UK looks ahead, the telecoms industry faces both opportunities and challenges. The sector must continue to invest in cutting-edge technologies while addressing issues such as digital inclusion, cybersecurity, and sustainability. By fostering collaboration between industry, government, and communities, the telecoms sector can build a more connected future for the UK.

This document aims to provide a comprehensive overview of the key areas of focus for the UK telecoms market, whilst showcasing the vital role of connectivity today.

We have also outlined recommendations on how parliamentarians can support the further development of the sector. This is because the telecoms sector is the cornerstone for our digital world, and prioritising this infrastructure will ensure that constituents as well as local businesses and public services have access to reliable connectivity. This is essential for the likes of education, healthcare and wider economic opportunities and social inclusion.

[1] Digital Sector Economic Estimates Gross Value Added 2022, DSIT, 2024

FIXED CONNECTIVITY

Fixed connectivity refers to broadband and network services delivered by physical infrastructure such as cables or fibre.

Common technologies include:

- Full fibre networks / Fibre to the Premises (FTTP), delivering ultra-reliable and high-speed internet directly to homes and businesses
- Leased lines, providing businesses with dedicated connections with guaranteed speeds and reliability through lower latency and symmetrical service
- Fibre to the Cabinet, where fibre connects to a local cabinet on the street, and the remaining distance is served by copper wires (now a legacy system that is being phased out)

Supporting fixed connectivity is a host of infrastructure solutions including underground ducts and telecoms exchanges, utility poles as well as data centres, which host servers and process traffic.

Fixed connectivity forms the backbone of global digital infrastructure, enabling high-bandwidth, low-latency services essential for communities, businesses and public institutions. It supports critical applications and the seamless delivery of digital services, while also serving as the foundation for wireless networks which use the backhaul and core network functions.

As demand for reliable and scalable connectivity grows, investment in fixed infrastructure like full-fibre networks is vital to drive innovation, economic development, and digital inclusion across urban and rural areas alike.

According to Ofcom's latest Connected Nations report, some 69% (20.7m) of UK homes are currently within reach of a FTTP network (up from 57% in 2023). The data also suggests that the UK's rollout is on course to cover 95-96% of all properties by May 2027 with FTTP.[2]

[2] Connected Nations 2024, Ofcom, 2024

THE IMPORTANCE OF STREET CABINETS:

In the ever-evolving landscape of telecoms, the role of cabinets on our streets cannot be overstated. These inconspicuous components found across the country are an essential part of the infrastructure to provide safe and secure connectivity.

Explaining the different broadband speeds:

Within the sector, there are different terms for the varying levels of speed on offer for broadband packages, which can become confusing. Below we have distilled the main marketing terms, based on internet download speeds (the speed to which data is downloaded to your relevant device via your internet connection):

- ADSL connection – typically offer download speeds of less than 24 Mbps
- Superfast connection – quicker speeds of between 24 – 300 Mbps
- Hyperfast connection – this describes full fibre and gigabit-capable broadband connections with speeds up to 1000 Mbps or 1 Gbps

To note, you may see people use the term full fibre and gigabit-capable broadband used interchangeably but there is a difference! Gigabit is a technology neutral term, and is used to distinguish speed, whereas full fibre refers to FTTP and is assumed to be gigabit capable.

This distinction is particular important for reporting and comparisons with other countries.

WIRELESS CONNECTIVITY

Wireless connectivity refers to network services delivered without a direct physical connection, relying instead on radio frequency technologies.

Key solutions include:

- Mobile networks, such as 4G and 5G, providing coverage for devices on the move and supporting innovations like IoT and autonomous systems.
- Wi-Fi, enabling local area network (LAN) access in homes, offices, and public spaces via routers connected to fixed-line broadband

- Satellite internet, delivering connectivity to remote or underserved areas where terrestrial infrastructure is unavailable
- Fixed wireless access (FWA), using radio signals to deliver high-speed internet to fixed locations, an alternative to traditional wired connections

Supporting infrastructure for wireless connectivity includes cell towers and small cell sites for transmitting mobile signals, relay stations as well as satellites and their associated ground stations.

Currently, most of the UK's 5G networks are non-standalone, meaning that while they use a 5G Radio Access Network (RAN) including 5G masts and 5G frequencies, the core of the network is largely the same as it was during the days of 4G.

We are now seeing greater investment into 5G standalone (5G SA), the cellular infrastructure built specifically for 5G services by implementing 5G standards and protocols in the radio network and controller core. 5G SA will bring about further improvements in speed and reach, supporting more advanced use cases and ensuring greater security.

Wireless connectivity plays a critical role in enhancing mobility, flexibility, and accessibility for users and devices worldwide, complementing fixed networks in delivering comprehensive digital services. Wireless technologies are particularly useful for remote areas, as showcased by the Government's recent Alpha Trial sites, which trialled satellite broadband technology across the country.[3] According to further data from Ofcom, between 90-95% of premises can receive a 5G signal outdoors from at least one mobile network operator. [4]

While coverage ensures that a mobile signal is available across wide areas, capacity determines how many users and devices can effectively connect to the network at any given time. Capacity limitations often become noticeable during peak times, such as in densely populated urban areas or during large-scale events, where high demand can lead to congestion and reduced service quality.

Further, private networks enable tailored connectivity solutions for businesses and industries, offering enhanced security, reliability, and control over network performance. These networks are increasingly pivotal in environments like manufacturing, logistics, healthcare, and agriculture, where specific connectivity requirements demand bespoke solutions beyond the capabilities of public networks.

[3] Very Hard to Reach premises: alpha trial case studies, DSIT, 2024
4] Connected Nations 2024, Ofcom, 2024

TOWER MASTS AND WHY WE NEED THEM

Cell towers play a crucial role in enabling seamless connectivity in today's digital world. Their height and location across the UK are chosen to maximise coverage and capacity, ensuring that networks can meet the demands of growing digital reliance.

The role of neutral host providers is also particularly important, as they provide infrastructure such as cell towers and small cell networks, which are made available to multiple network operators on a shared basis, thereby increasing efficiencies and accelerated deployment.

As we become ever more digital and expect better coverage, the importance of these towers becomes more evident.

KEY DIFFERENCES AND COMPLEMENTARY ROLES

Fixed and wireless connectivity, and the underpinning infrastructures, serve different purposes and have their own strengths and weaknesses.

For instance, fixed connections excel in providing high-capacity, stable connections to specific locations, making it ideal for homes and businesses.

Wireless technologies on the other hand, including 5G and satellite, help to add flexibility and mobility, allowing consumers for instance to be connected on the go or bridging connectivity gaps where fixed infrastructure is not possible or is too cost prohibitive.

A well-balanced approach that considers fixed and wireless solutions will support a resilient, inclusive digital ecosystem aligned with the UK's long-term connectivity goals.

As already noted as well, services provided by MNOs require the backhaul provided by fixed connectivity, further highlighting the interlinked nature of the market.

Some key differences include:

Capacity and Reliability

Fixed connections generally provide higher, more consistent speeds, making them ideal for businesses, smart cities and high-density urban areas where stable service is essential. Wireless connections, by contrast, despite improvements from 5G, can face challenges in capacity and reliability in high-demand areas, although satellite connectivity can be used to enhance resilience by providing reliable communications during emergencies or events that disrupt existing fixed or mobile networks.

Mobility and Accessibility

Wireless connectivity, such as 4G and 5G, allows users to stay connected whilst on the move, extending network access to public spaces, transportation networks and remote locations. This flexibility supports mobile applications and serves as an alternative or supplement for rural and remote areas where fixed infrastructure can be expensive to deploy.

Coverage and Reach

Fixed networks are widely available across urban, suburban and rural areas, but the speed and quality of network within the latter can be significantly lower in comparison.

In these areas of the country, wireless solutions, satellite technologies and government initiatives play a critical role in enhancing and deepening coverage. Wireless technologies, in particular, offer significant potential to address these gaps in performance, thereby supporting wider economic growth and greater digital inclusivity.

REMINDER

Despite these differences, it's important to note that both fixed and wireless networks play complementary roles in enabling our connected future. Used together, the UK can benefit from robust support for both high-demand services and industries whilst enhancing mobility and flexibility across the entire country. Together, they build a resilient, inclusive ecosystem.

POLICY AND REGULATORY LANDSCAPE

Ensuring reliable and inclusive digital connectivity for communities and businesses across the UK requires coordinated efforts between the government, regulatory authorities and industry.

This section outlines the roles of key entities, as well as some of the major government projects currently underway that support the expansion of digital infrastructure and the move away from legacy systems.

Department for Science, Innovation and Technology (DSIT): DSIT guides policy and funding to drive digital innovation and connectivity across the UK, working to support nationwide digital transformation. DSIT also oversees government-led infrastructure projects and collaborates with Ofcom on regulatory reforms to align with industry advancements, ensuring that the regulatory framework supports long-term growth in digital infrastructure. It is also responsible for coordinating UK satellite policy as lead government department on space.

Ofcom: As the UK's independent communications regulator, Ofcom plays a central role in setting standards for quality, accessibility, and fair competition in the telecoms market. It monitors market conditions, ensures fair access to essential resources like spectrum, and enforces regulatory requirements, for example on broadband speeds and network performance. Ofcom also publishes critical data, such as the Connected Nations report, which provides MPs and stakeholders with insights into national and regional coverage, usage, and progress. Further, Ofcom is also responsible for representing the UK at international fora as well as informing global standards for communications.

Building Digital UK (BDUK): An executive agency within DSIT, BDUK's primary function is to manage and deliver projects that increase high-speed broadband and mobile connectivity, especially in underserved and rural areas. BDUK oversees several major initiatives that aim to improve nationwide digital access and bridge the digital divide, such as Project Gigabit and the Shared Rural Network.

Key projects include:

- **Project Gigabit:** Announced in 2020, Project Gigabit is a £5 billion project that focuses on reaching underserved and rural areas, aiming to provide 1 Gigabit per second service to 85% of UK homes and businesses by 2025 and to nearly all areas by 2030.

- **Shared Rural Network (SRN):** This is a collaborative initiative between government and mobile network operators, aiming to improve mobile coverage in rural areas, targeting 95 percent of UK geographic coverage by the end of 2025.

- **5G Testbeds and Trials Programme:** A DSIT-led programme that funded research and pilot projects across industries to explore 5G's potential applications. Research areas, spread across the UK, included healthcare, agriculture and smart city projects.

- **5G Innovation Regions:** This trial allocated £40 million to build on the successes of the 5G Testbeds and Trials programme and drive innovative applications powered by 5G and other advanced wireless connectivity from proof of concept to widespread adoption across the country.

ARTIFICIAL INTELLIGENCE AND TELECOMS

AI has the potential to improve the operational efficiency and overall performance of telecoms networks, as well as enhance customer experiences of network services because of AI innovations. Policymakers and regulators will need to consider how their role in AI enables, rather than quashes, this potential.

UNDERSTANDING THE PSTN SWITCHOVER

The aging Public Switched Telephone Network (PSTN) is being replaced with digital Voice over Internet Protocol (VoIP) technology, enabling a future-proofed, digital-first UK. You might also see this referred to as 'digital phone' or 'digital voice'.

This transition affects not just landlines but also healthcare devices, alarms, ATMs, and critical infrastructure. Proper planning and engagement are essential to ensure continuity and support the UK Government's Gigabit ambitions for nationwide lightning-fast connectivity.

MORE INFORMATION ON THE PSTN CAN BE FOUND HERE.

CONCLUSION

Digital connectivity is vital to the UK's economic resilience and is a feature of our day-to-day lives. MPs have a critical role in supporting policies that drive robust, inclusive digital infrastructure across the entirety of the UK.

By advocating for a range of solutions across fixed and wireless technologies, MPs can help close the digital divide, promote economic growth and ensure all constituents benefit from high-speed internet access.

Ways in which you can support this include:

- **Advocating for increased funding and policy flexibility** that enables the rapid deployment of digital infrastructure, unlocking investments in hard-to-reach areas and future-proofing our networks.

- **Promoting collaboration between local authorities and industry** by encouraging partnerships that leverage existing public programmes and private investment to accelerate infrastructure deployment, aligning with national and local connectivity objectives.

- **Advancing digital inclusion and social value** by recognising the societial benefits of digital infrastructure and promoting initiatives that address digital inclusion.

- **Promoting the sector and a skilled workforce** by encouraging more young people to take up a career which drives innovation and the UK's digital future.

- **Staying informed and advocating for inclusive policy** using resources such as Ofcom's Connected Nations report, as well as techUK reports and insights.

- **Supporting digital infrastructure growth** by recognising the overall positive environmental impact through the decarbonisation of the UK's infrastructure systems including energy and transport.

About techUK

techUK is the trade association which brings together people, companies and organisations to realise the positive outcomes of what digital technology can achieve. We create a network for innovation and collaboration across business, government and stakeholders to provide a better future for people, society, the economy and the planet.

With the right infrastructure, policy, and frameworks in place, there continues to be an opportunity for the telecoms sector to drive further connectivity and therefore productivity for the UK economy and society.

GLOSSARY OF TECHNICAL TERMINOLOGY

Term	Definition
3G	Third generation of mobile systems. Provides high-speed data transmission and supporting multimedia applications such as full-motion video, video-conferencing and Internet access.
4G	Fourth generation mobile phone standards and technology. Provides faster mobile data speeds than the 3G standards that it succeeds.
5G	The term used to describe the next generation of wireless networks beyond 4G. 5G delivers faster data rates and better user experience.
Asymmetrical Digital Subscriber Line (ADSL)	ADSL is a type of broadband connection used to connect to the internet, using copper wire connections between the telephone exchange and telephone socket to allow broadband access.
Convergence	Refers to the convergence between wireless and fixed networks through advanced connectivity.
Dark Fibre	Optical fibre already deployed but not in use.
Duct and Pole Access (DPA)	Access to underground ducts and telegraph poles, used to assist in network deployment.
Fibre Backhaul	The part of the communications network which connects a local exchange or base station to the providers core network.

Term	Definition
Fibre to the Cabinet (FTTC)	Access network consisting of optical fibre extending from the exchange to the street cabinet, with the remaining segment to the customer usually made by copper phone lines.
Fibre to the Premises (FTTP)	An access network using optical fibre network to provide the connection between the local exchange and the end users' houses or business premises.
Fixed Wireless Access (FWA)	Internet access provided over the airwaves using cellular network technology, rather than a physical connection
Gigabit Broadband Voucher Scheme (GBVS)	The GBVS is being delivered by the Local Full Fibre Networks programme. The scheme offers vouchers worth up to £3,000 for small businesses and £500 for residents in a group project to offset the installation cost of a gigabit-capable broadband connection.
Internet Services Providers	A retail service provider who provides access to internet services.
Macro Cell	A macro cell provides wide-area radio coverage infrastructure for a mobile network. The antennas for macro cells are mounted on ground-based masts, rooftops and other existing structures
Mobile Backhaul	In a mobile network, backhaul is the connection between a given mobile site (e.g. a base station) and the core network.
Mobile Network Operator (MNO)	A provider of wireless communications services that owns or controls all the elements necessary to provide services to an end user including radio spectrum, wireless core network infrastructure and backhaul infrastructure.

Term	Definition
Network Slicing	Network slicing is a form of virtual network architecture which allows for parts of a network – with predefined specifications and quality of service – to be available for different purposes and/or users. Network operators can thereby provide dedicated virtual networks to different customers over a common network.
Physical Infrastructure Access	Openreach's regulated duct and pole access product.
Small Cell	An overarching term for low-powered radio access nodes that help provide service to both indoor and outdoor areas.
Spectrum	The descriptor of the range of electromagnetic frequencies which can be modulated to carry information.
Universal Service Obligation (USO)	A legal right established by UK Government for everyone to access high speed fixed broadband (10 Mbps download, 1 Mbps upload) if they do not have it, subject to a cost threshold.
Wayleave	An agreement between a landowner and utility provider landowner allowing access to land for the installation of infrastructure or equipment.

Definitions and terms derived from the Future Telecoms Infrastructure Review [5] and techUK member feedback.

[5] Future Telecoms Infrastructure Review, Department for Digital, Culture, Media and Sport, 2018

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FOR WHAT COMES NEXT

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