

United Kingdom

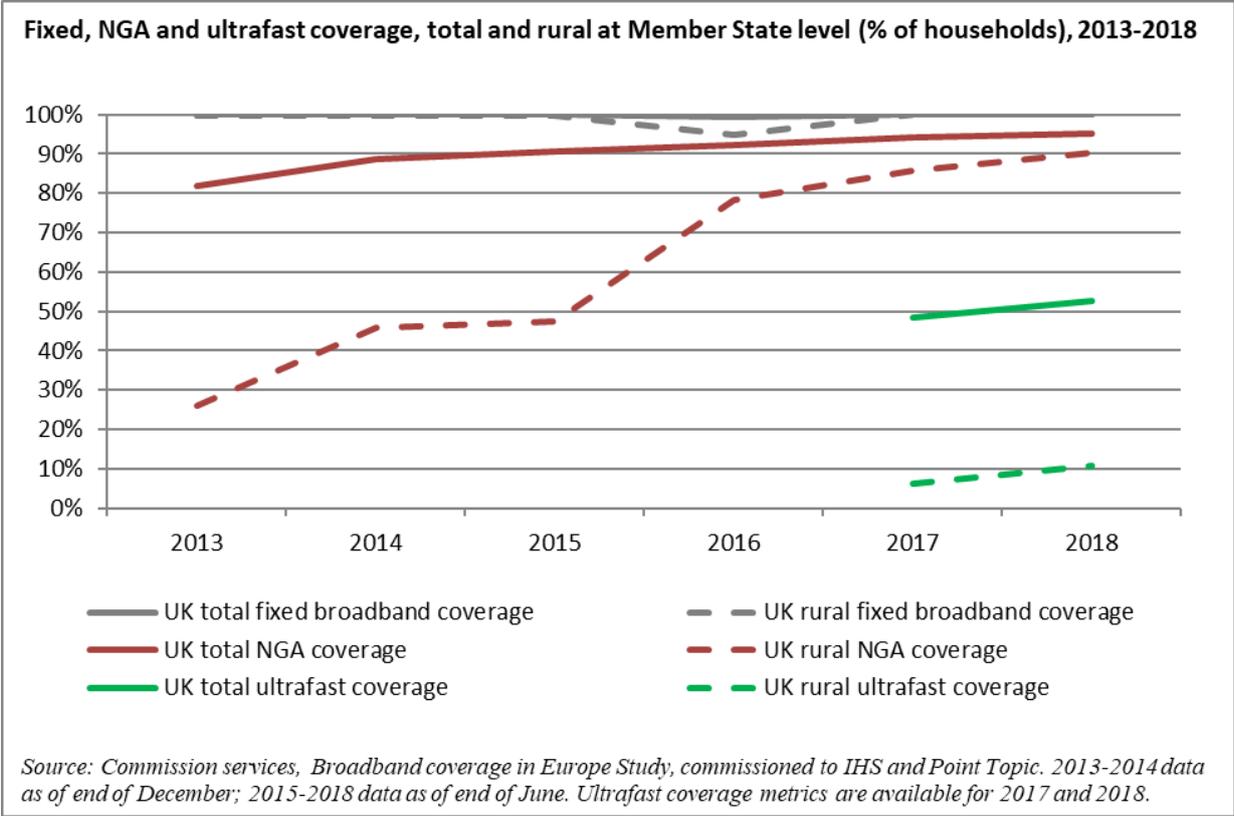
	United Kingdom				EU
	DESI 2017	DESI 2018	DESI 2019		DESI 2019
	value	value	value	rank	value
1a1 Fixed broadband coverage	>99.5%	100%	100%	1	97%
% households	2016	2017	2018		2018
1a2 Fixed broadband take-up	87%	88%	93%	2	77%
% households	2016	2017	2018		2018
1b1 4G coverage	93%	98%	98%	11	94%
% households (average of operators)	2016	2017	2018		2018
1b2 Mobile broadband take-up	91	89	99	10	96
Subscriptions per 100 people	2016	2017	2018		2018
1b3 5G readiness	NA	NA	0%	13	14%
Assigned spectrum as a % of total harmonised 5G spectrum			2018		2018
1c1 Fast broadband (NGA) coverage	92%	94%	95%	7	83%
% households	2016	2017	2018		2018
1c2 Fast broadband take-up	37%	47%	53%	12	41%
% households	2016	2017	2018		2018
1d1 Ultrafast broadband coverage	NA	48%	52%	24	60%
% households		2017	2018		2018
1d2 Ultrafast broadband take-up	10%	15%	16%	18	20%
% households	2016	2017	2018		2017
1e1 Broadband price index	85	87	86	17	87
Score (0 to 100)	2016	2017	2018		2017

1. Progress towards a gigabit society

The United Kingdom ranks first on standard fixed broadband coverage and is above the EU average on next generation access coverage. However, it lags behind on ultrafast coverage in both relative and absolute terms. While total ultrafast coverage is on average 8 percentage points below the EU average, ultrafast coverage in rural areas is almost 19 percentage points below the EU average. The underlying reason is geographical characteristics, with large areas of the UK being remote and rural. Furthermore, this figure reflects mainly the wide availability of upgraded legacy networks — the UK's fibre to the premises (FTTP) networks only cover 3.8 % of the population (EU 29.6 %). The deployment of gigabit networks in the UK relies, and most probably will continue to rely, on private investments in the main, supported by public investment in less commercially viable areas of the country.

As regards FTTP coverage, while it increased by almost 1 million premises compared to 2017, it continues to be almost 26 percentage points below the EU average. Its rural FTTP coverage is higher than the total, but still approximately 8 percentage points lower than the EU average. This growth is reportedly due to the increased investment activity of the incumbent, Openreach, as well as a number of alternative network operators. Openreach has committed to rolling FTTP out to 3 million premises by 2020 and is already at 1.2 million premises passed. Virgin Media, currently the UK's second largest broadband network, is also expanding its FTTP footprint through its Project Lightning programme. CityFiber raised over GBP 1 billion as a part of their proposed GBP 2.5 billion investment to bring full fibre to five million homes. It also reached an agreement with Vodafone to purchase services from its wholesale network. Vodafone announced its intention to make full fibre available to one million premises across 12 cities by 2021, possibly extending it to a further four million premises by 2025. Hyperoptic has brought forward its target of two million homes passed to 2021 (from 2022) and its target of five million homes passed to 2024 (from 2025), following a

successful debt raise of £250 million and Abu Dhabi’s sovereign investment fund acquiring a minority stake. TalkTalk is currently adding a further 40,000 premises in York and plans to complete this by the end of 2019. It also has an ambition to go further in the future and expand its FTTP network to three million premises with its FibreNation venture. There are also a number of other alternative networks active in this space, including Gigaclear which focuses on FTTP in rural areas.

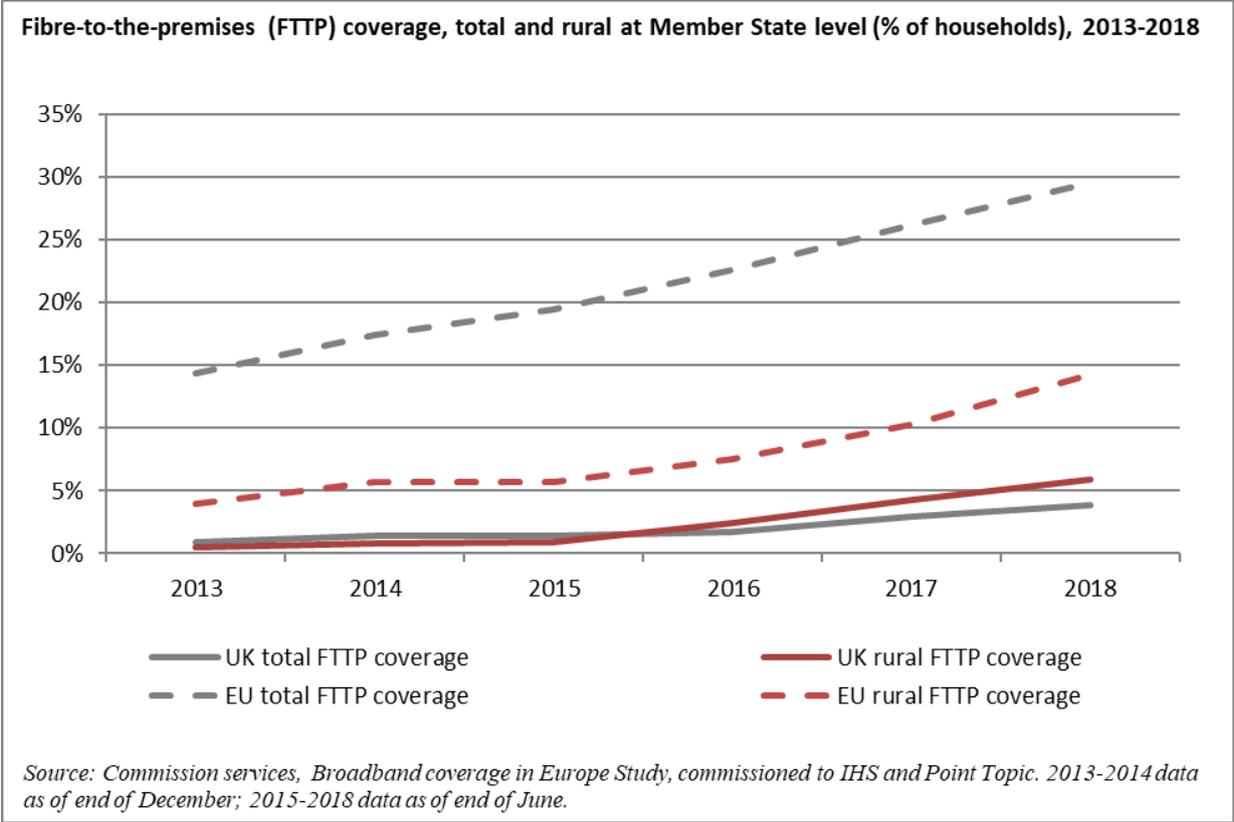


On 23 July 2018, the British Government published its future telecoms infrastructure review in which it set out its long-term strategy to support the development of gigabit capable, full fibre networks and 5G. On the issue of underinvestment in fibre deployment in rural and non-competitive areas¹, the government intends to apply the ‘outside-in’ approach. The first step of this approach will pilot a model to fund fibre connections for local hubs, starting with primary schools, alongside vouchers for gigabit-capable connections to homes and businesses. Within The Department for Digital, Culture, Media & Sport, the Barrier Busting Task Force was established to identify barriers to fixed and mobile network deployment and overcome them in cooperation with industry, local authorities and stakeholders. Some incentives for faster full fibre rollout were put in place, such as 100 % business rates relief for operators that install new fibre on their network during the first 5 years².

On 24 July 2018, the UK’s telecoms regulator Ofcom published its strategy ‘Regulatory certainty to support investment in full fibre broadband’³. It complements the future telecoms infrastructure review and outlines its strategic approach to facilitating fast full fibre rollout. Plans include regulating business and residential markets together. Regarding Openreach’s ducts and poles, Ofcom plans to implement unrestricted access, which would halve the upfront costs of building the full fibre network.

¹ The government estimated that 10 % of the UK (approximately 3 million premises) can be categorised as both rural and non-competitive areas.
² Telecommunications Infrastructure Act 2018.
³ https://www.ofcom.org.uk/data/assets/pdf_file/0025/116539/investment-full-fibre-broadband.pdf

As competition in full fibre develops, Ofcom plans to move to further geographic segmentation and published consultations on this in December 2018 and March 2019.



There are several funding programmes in place in the UK. The local full fibre networks programme has been allocated GBP 290 million of national funding from 2017 to 2021⁴. Thanks to the rural gigabit connectivity programme, GBP 200 million of national funding will be allocated from April 2020 to April 2022 for broadband in rural areas. Under the superfast broadband programme, GBP 85.5 million has been allocated for 2018-19 and 2019-20. The Department for Environment, Food and Rural Affairs announced a GBP 75 million investment through the rural broadband infrastructure scheme, with plans to utilise EU funding from the rural development programme for England 2014-2020 (funded by the European Agricultural Fund for Rural Development). In the WiFi4EU first call, only 15 eligible British entities won €15,000 vouchers.

The UK aims to be a world leader in 5G and to ensure that most of the population has access to a 5G signal by 2027. The UK has had a 5G strategy since March 2017, which was updated in December 2017. The UK Government’s Future Telecoms Infrastructure Review builds on its 5G Strategy, and sets out the steps the UK will take to deliver its ambitions on 5G technology.

The Government’s 5G Testbeds and Trials Programme, working in partnership with industry and others, aims to stimulate the market for 5G services, including calls for 5G security and self-driving cars and improve the commercial case for investment. After running a competition as part of the 5G Testbeds and Trials Programme’s first phase of funding, in March 2018, the UK Government selected six proposals from across the UK⁵. As part of a second phase of investment, the 5G Programme is

⁴ It was announced in March 2018 that the first wave provided over GBP 95 million for 13 areas. <https://www.gov.uk/guidance/local-full-fibre-networks-programme>

⁵ 5G RuralFirst: Rural Coverage and Dynamic Spectrum Access Testbed and Trial, 5G Smart Tourism, Worcestershire 5G Consortium - Testbed and Trials, Liverpool 5G Testbed, AutoAir: 5G Testbed for Connected and Autonomous Vehicles, 5G

currently working on the creation of large-scale testbeds - the Connected Communities projects - in both rural and urban settings. In September 2018, the location for the Urban Connected Community (UCC) project was announced as the West Midlands, with up to GBP 50 million available to the project. The Government is currently working on the development of one or multiple large-scale rural projects, the Rural Connected Communities (RCC) project, which will launch in 2019 and is expected to run until 2021. The Government is also considering running 5G projects that will have a primary focus on specific vertical industry sectors. These projects are currently being explored, with activities expected to commence in the summer.

The 700 MHz clearance programme is a government-funded programme to clear some of the 700 MHz spectrum currently used by digital terrestrial television and programme making and special events licensees. Ofcom assigned 150 MHz of time division duplex' spectrum in the 3.4-3.6 GHz band in 2018. Moreover, spectrum auctions for 700 MHz and 3.6-3.8 GHz are planned only for early 2020. Ofcom's proposal for the 3.6–3.8 GHz band includes options on how to facilitate the rearrangement of fragmented holdings in the band to ensure large contiguous blocks suitable for 5G use. As a result, the UK, together with 17 other Member States, did not score on the 5G indicator⁶.

2. Market developments

here have been no significant new entrants or changes in market share in 2018. Contrary to service-based competition, the trend of increasing infrastructure competition started to develop in 2018. In its strategy 'Regulatory certainty to support investment in full fibre broadband', Ofcom also announced its intention to incentivise companies to build networks by opening up infrastructure to competing operators, e.g. Openreach's duct and pole network. The goal is to increase infrastructure competition involving alternative operators that would compete with Openreach.

The number of minutes originating on fixed networks has continued to fall both in absolute and relative terms compared to mobile calls. The volume of outgoing calls from mobile phones continued to decline throughout 2018 (falling from 2,586 million minutes to 2,167 million minutes)⁷.

The number of fixed lines decreased for the second successive year in 2017, declining from 32.2 m. at the end of 2017 to 32.0 m. at the end of 2018.⁸ The number of mobile connections has continued to grow and increased by 0.5 m. over the same period. Overall, 96 % of households has a mobile phone and 81 % had a landline in their home in Q1 2018⁹.

2.1. Fixed markets

With 78.6 %, DSL is the predominant technology for broadband in the UK. Cable remains stable at around 20 %. Fibre to the home/building is increasing, but lags behind the EU average.

Rural Integrated Testbed (5GRIT). More information available on: <https://www.gov.uk/government/collections/5g-testbeds-and-trials-programme>.

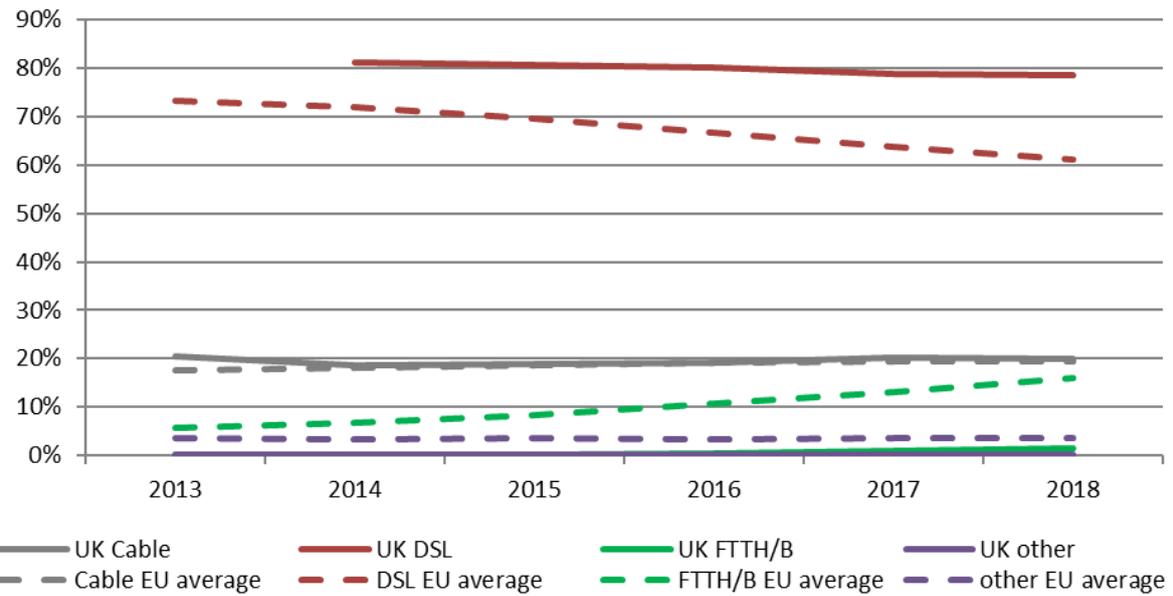
⁶ The 5G indicator draws exclusively from the amount of spectrum assigned in the 5G pioneer bands.

⁷ Table 10: Summary of residential call volumes by call type, Ofcom Telecommunications Market Data Q4 2018: <https://www.ofcom.org.uk/research-and-data/telecoms-research/data-updates/telecommunications-market-data-update-q4-2018>.

⁸ Figure 4.1 UK telecoms market: key statistics, Ofcom Communication Market report 2018, available: https://www.ofcom.org.uk/data/assets/pdf_file/0022/117256/CMR-2018-narrative-report.pdf.

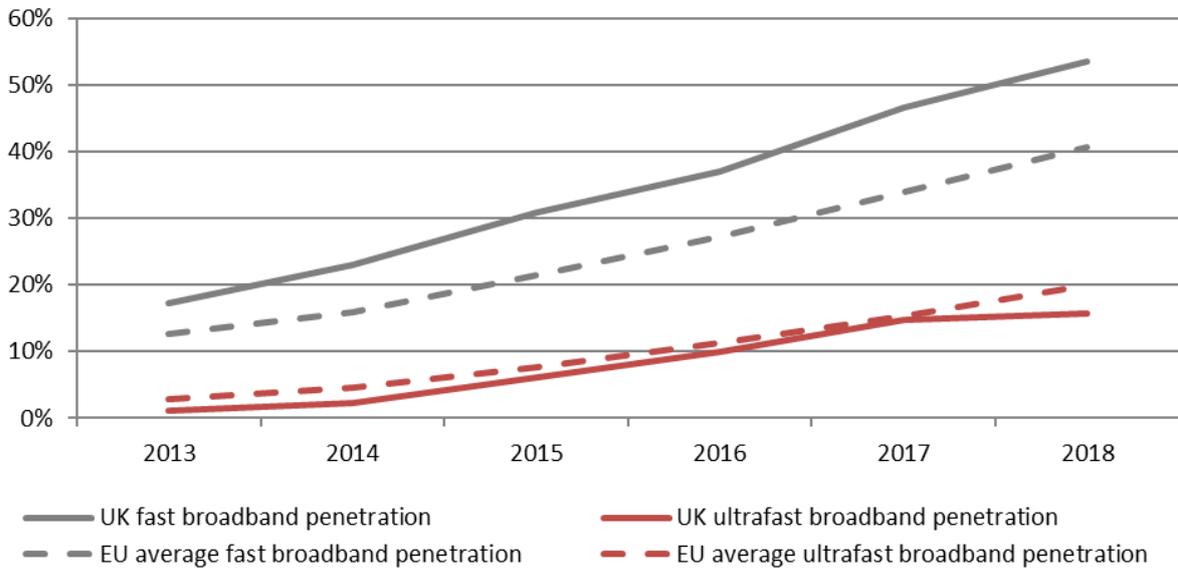
⁹ Ofcom Communication Market report 2018.

Broadband market shares at Member State level by technology, % of fixed broadband lines, 2013-2018



Source: Communications Committee (COCOM). Annual data as of 1st of July.

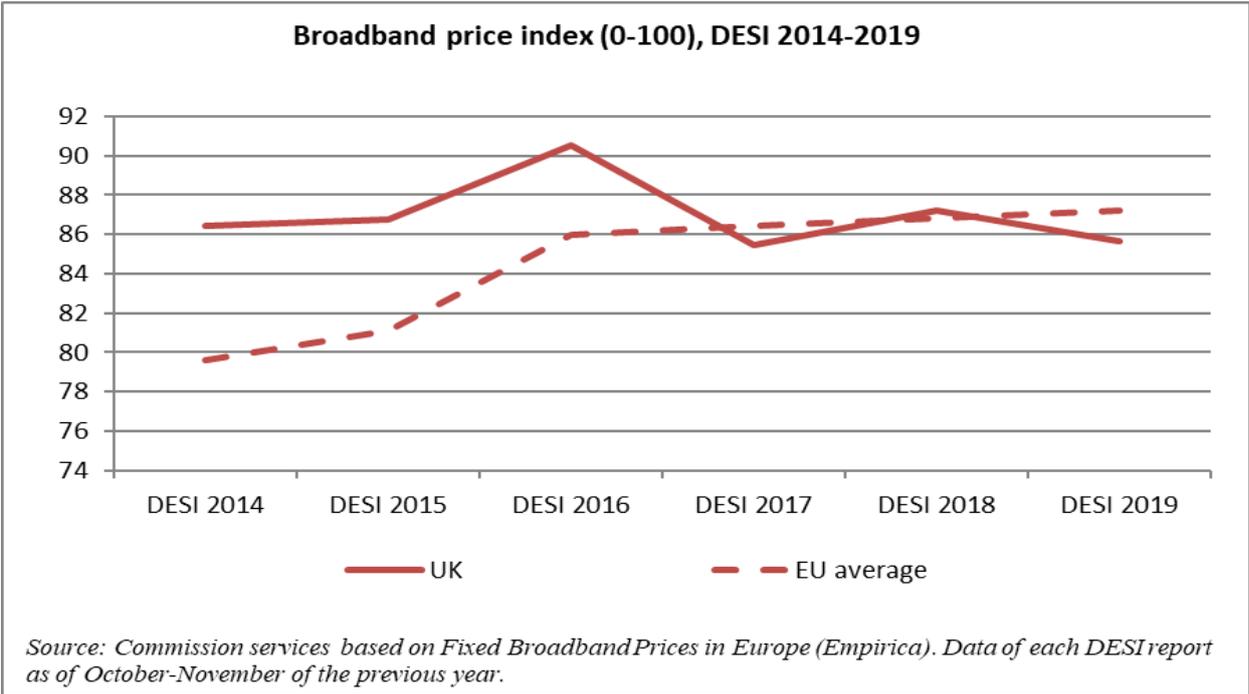
Fast and ultrafast penetration at Member State level, 2013-2018



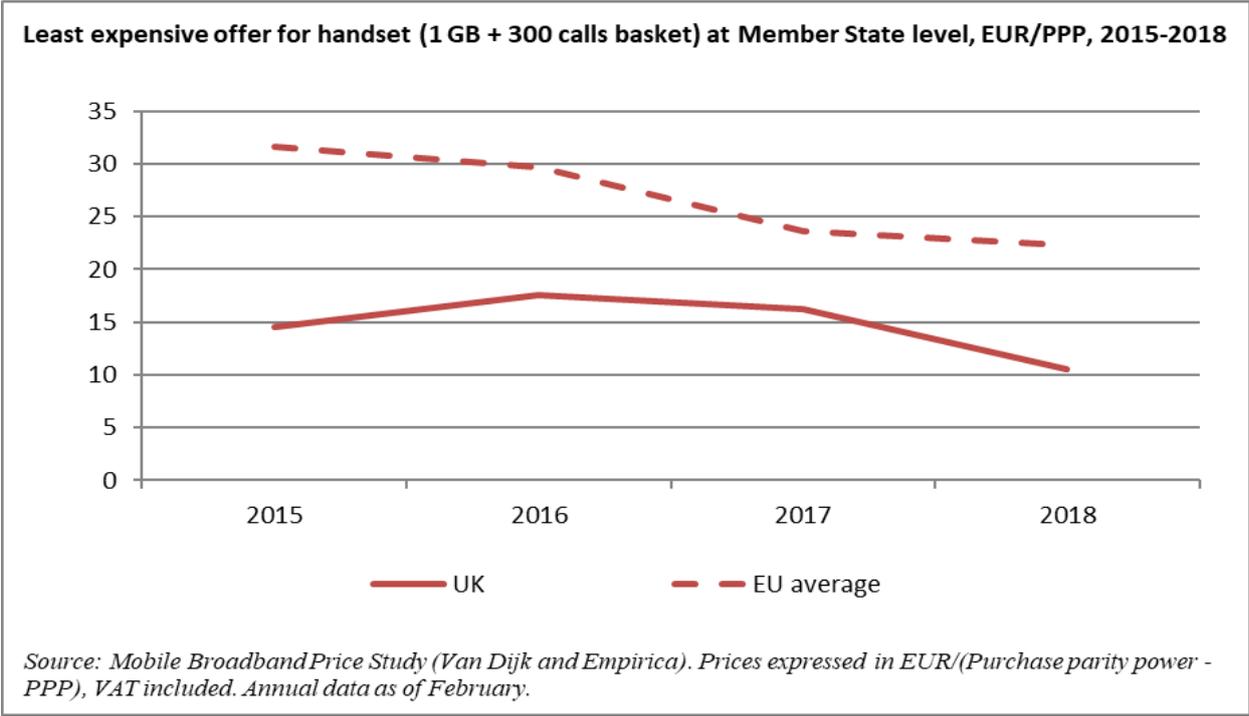
Source: Communications Committee (COCOM). Annual data as of 1st of July.

Both UK fast and ultrafast broadband penetration continued to grow in 2018. Fast broadband penetration is above the EU average, whereas ultrafast broadband penetration started to lag behind the EU average due to low availability of full fibre.

In 2018, fixed broadband prices started to increase in the UK and are currently above the EU average¹⁰.



2.2. Mobile markets



The mobile market is widely seen as competitive¹¹. Mobile operators compete on network quality (speed, data and coverage), price and brand.

¹⁰ The fixed broadband price index weighs the cheapest retail offers from: standalone, double play (BB + TV, BB + fixed telephony) and triple play (BB+TV+fixed telephony) and three speeds categories - 12-30 Mbps, 30-100 Mbps and +100 Mbps. This indicator presents values from 0 to 100 (which should not be read as prices) and the higher the values, the better the country performs in terms of affordability of prices relative to purchasing power.

This stiff competition in the mobile market is probably why mobile broadband prices continued to decrease in 2018 and are roughly half the EU average.

It is reported that good 4G services, i.e. providing a connection speed of at least 2 Mbit/s, are available from all four mobile operators to 66 % of the UK's landmass, up from 49 % last year¹². Indoor voice call coverage from all four operators is available to 92 % of UK premises. It is estimated that 97 % of premises can receive both decent fixed and good mobile broadband services, while 39,000 (0.1 %) are unable to access either¹³.

In January 2019, O2 and Vodafone announced that they will be extending their network-sharing deal to cover 5G, following the formation of their joint venture to share the cost of rolling out faster, e.g. 4G, networks in 2012.

While the average monthly outgoing mobile call minutes per subscription decreased in 2017, the average monthly mobile data consumption increased by 48 % in June 2017, reaching 1.9 GB per active connection (compared to 1.3 GB per active connection in June 2016)¹⁴.

In the UK, mobile network operators (MNOs) connect most of their radio base stations to their switching centres using leased lines from other fixed communications providers (mainly BT). As mobile consumers' mobile data requirements have increased, the trend is now towards the use of Ethernet to replace legacy services on the main mobile backhaul links. Access to leased lines (including Ethernet lines used for mobile backhaul) is regulated by Market 4 obligations¹⁵.

3. Regulatory developments

On 1 October 2018, BT transferred 31,000 of its staff to Openreach Limited. Openreach therefore became a legally separate company with its own brand, staff, management, purpose and strategy¹⁶. Ofcom established a dedicated Openreach Monitoring Unit¹⁷ to assess whether the new rules are being implemented successfully. A first report on the results of monitoring was published in June 2018¹⁸. Ofcom found that the steps taken are broadly satisfactory. However, work is needed to ensure more independent decision-making and better service for consumers. In an interim report¹⁹ published on 15 November 2018, further progress was noted. A further report from Ofcom is due in summer 2019.

Some operators noted that they are cautiously optimistic about the impact of legal separation and others that no real change in the market has been observed.

3.1. Spectrum

¹¹ Market share data are confidential and hence not reported.

¹² Data of September 2018 compared with data of June 2017.

¹³ See the mobile section of the Connected Nations Report 2018:

https://www.ofcom.org.uk/_data/assets/pdf_file/0020/130736/Connected-Nations-2018-main-report.pdf

¹⁴ Figure 4.1 UK telecoms market: key statistics, Ofcom Communication Market report 2018: https://www.ofcom.org.uk/_data/assets/pdf_file/0022/117256/CMR-2018-narrative-report.pdf.

¹⁵ Business Connectivity Market Review SMP obligations.

¹⁶ Ofcom had competition concerns that the former structure of Openreach gave BT the ability to discriminate against those retail competitors that rely on the Openreach network to provide broadband. In its Digital Communications Review, Ofcom therefore proposed legal separation of BT and its network division Openreach. On 10 March 2017, BT notified Ofcom of its voluntary commitments regarding the legal separation of Openreach.

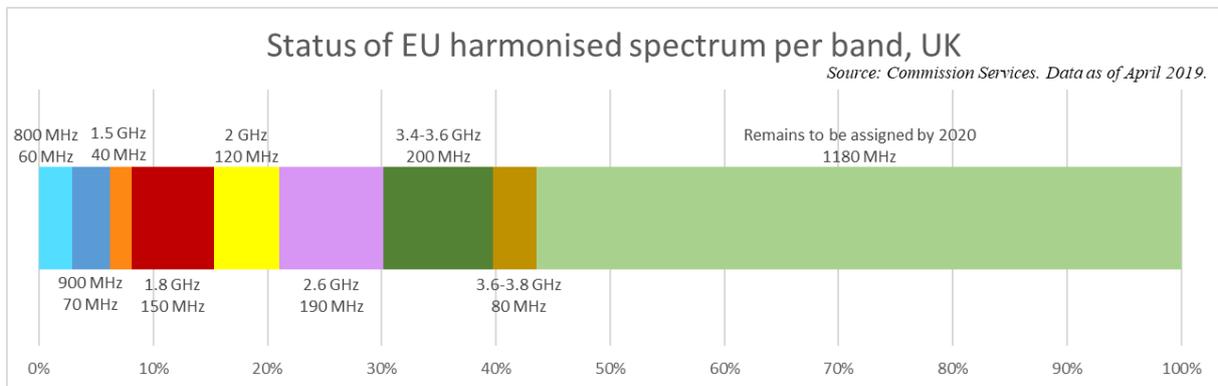
¹⁷ <https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/telecoms-competition-regulation/the-openreach-monitoring-unit>.

¹⁸ Full compliance monitoring reports will subsequently be published on an annual basis. First report is available here: https://www.ofcom.org.uk/_data/assets/pdf_file/0019/114814/openreach-implementation-report-2018.pdf

¹⁹ https://www.ofcom.org.uk/_data/assets/pdf_file/0034/126799/Delivering-a-more-independent-Openreach-Interim-monitoring-update.pdf.

The United Kingdom has assigned 910 MHz, which is 443.5 % of the spectrum harmonised at EU level for wireless broadband²⁰. This percentage is mainly due to the lack of assignment procedure for the 700 MHz and 26 GHz band.

In April 2018, Ofcom auctioned the available spectrum in the 2.3 GHz and 3.4-3.6 GHz bands²¹. In the 3.4-3.6 GHz band, EE and Telefónica each acquired rights of use for a block of 40 MHz, Hutchison 3G for a block of 20 MHz and Vodafone for a block of 50 MHz.



Ofcom published a consultation on its plans to award the 700 MHz and the 3.6 GHz -3.8 GHz bands, in December 2018, which included proposals on coverage obligations²². The proposed coverage obligations consist of geographic coverage requirements (good quality mobile service outdoors in at least 90 % of the UK landmass, including at least 90 % of England, 90 % of Northern Ireland, 74 % of Scotland and 83 % of Wales), premises requirement (good quality service outdoors for at least 140 000 premises to which the obligated operator currently does not provide good coverage) and at least 500 new wide area mobile sites. The obligated operator would have to fulfil these obligations within four years of the award. Both spectrum bands are planned to be awarded by spring 2020. The consultation also sought views on potential ways to facilitate defragmentation of spectrum allocations in the 3.4-3.8 GHz band, with Ofcom noting that there are potential means for MNOs to achieve greater contiguity without regulatory intervention, for example through spectrum trading between licensees.

In April 2019, Ofcom consulted on proposals to amend the licence conditions for four spectrum access 3.4 GHz licences, one spectrum access 3.5 GHz licence and one spectrum access 3.6 GHz in order to align the licences with European Commission Decision 2019/235²³.

The UK Government has identified “meeting and going beyond the EECC requirement to release 1 GHz of spectrum in the 26 GHz band in a timely manner” as one way to achieve its strategic priorities in its ‘Statement of Strategic Priorities for telecommunications, the management of radio spectrum and postal services’²⁴. The Radio Spectrum Policy Group (RSPG) has identified the 24.25-27.5 GHz range as the pioneer Millimetre Wave band for Europe. Ofcom is currently undertaking work to understand

²⁰ The 5G spectrum readiness indicator is based on the amount of spectrum already assigned and available for use for 5G by 2020 within the so-called 5G pioneer bands in each EU Member State. For the 3.4-3.8 band this means that only licences aligned with the technical conditions annexed to Commission Decision (EU)2019/235, are considered 5G-ready. On the contrary, the percentage of harmonised spectrum takes into account all assignments in all harmonised bands for electronic communications services (including 5G pioneer bands), even if this does not meet the conditions of the 5G readiness indicator.

²¹ <https://www.ofcom.org.uk/spectrum/spectrum-management/spectrum-awards/awards-archive/2-3-and-3-4-ghz-auction>.

²² <https://www.ofcom.org.uk/consultations-and-statements/category-1/award-700mhz-3.6-3.8ghz-spectrum>.

²³ https://www.ofcom.org.uk/data/assets/pdf_file/0025/144880/notice-proposal-vary-3.4-ghz-radio-spectrum-licences.pdf

²⁴

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/779226/SSP_Consultation_-_Publication_Version_2_.pdf

demand for this spectrum from all potential users and has indicated that it could make the top 1 GHz available in a relatively short time frame, in line with demand. The top 1 GHz is clear except for limited use by the Ministry of Defence.

3.2. Regulated access

In the UK, all markets included in the 2014 Recommendation on relevant markets²⁵ are subject to *ex ante* regulation, either in full or in part. The UK also continues to regulate the markets related to access to the public telephone network at a fixed location for residential and non-residential customers and related to call origination on the public telephone network provided at a fixed location (Markets 1 and 2 under the 2007 Recommendation respectively). On 23 February 2018, Ofcom notified its intention to impose the obligations of access and price control on the market for voice call termination on individual mobile networks (Market 2)²⁶. It found that all (68) operators have significant market power (SMP). The Commission had no comments.

On 23 and 26 February 2018, the Commission received notification concerning the wholesale markets for local access provided at a fixed location (Market 3a) and for access to fixed analogue exchange lines (Market 1). The Commission had no comments.

On 15 August 2018, Ofcom notified its intention to the Commission to impose a charge control on all 070 providers, which will cap the wholesale termination rate they can charge. It found that the market for 070 numbers is negatively impacted by high wholesale charges, which has led to its reputation being undermined and has caused harm to consumers. The Commission had no comments. On 1 October 2018, a final statement was published on the review of the 070 number range.

Access remedies are in place for local loop unbundling (wholesale local access market review), virtual unbundled local access (WLA market review), WFAEL (narrowband market review), physical infrastructure access (wholesale local access review) and leased lines (business connectivity market review).

In its strategy ‘Regulatory certainty to support investment in full fibre broadband’, Ofcom envisages moving to a single fixed telecoms market review in 2021. It considers that in the past business users demanded a high-speed, dedicated ‘leased line’, whereas copper and fibre to the cabinet networks were sufficient to meet the needs of most households and small business. However, in the gigabit society these lines are blurred as the fibre network will be used for a wider range of services for both business and residential customers.

Most of the provisions of Directive 2014/61/EU²⁷ (the Broadband Cost Reduction Directive or ‘BBCRD’) were transposed in the Access to Infrastructure Regulations²⁸ that came into force on 31 July 2016. Article 8 was transposed separately in England, Wales, Scotland and Northern Ireland by amendments to the building regulations. The future telecoms infrastructure review envisages reviewing the UK’s implementation of these regulations in 2019.

²⁵ These include Market 1 (Wholesale call termination on individual public telephone networks provided at a fixed location), Market 2 (Wholesale voice call termination on individual mobile networks) Market 3a (Wholesale local access provided at a fixed location), Market 3b (Wholesale central access provided at a fixed location for mass-market products), and Market 4 (Wholesale high-quality access provided at a fixed location).

²⁶ Commission Recommendation 2014/710/EU of 9 October 2014 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services Text with EEA relevance, OJ L 295, 11.10.2014, p. 79-84.

²⁷ Directive 2014/61/EU of the European Parliament and of the Council of 15 May 2014 on measures to reduce the cost of deploying high-speed electronic communications networks, Text with EEA relevance, OJ L 155, 23.5.2014, p. 1–14.

²⁸ https://www.legislation.gov.uk/ukxi/2016/700/pdfs/ukxi_20160700_en.pdf

Ofcom has a dispute settlement function for the Access to Infrastructure Regulation but the dispute resolution process has not been tested yet.

The UK has not established a centralised single information point (SIP) as it considers that planning decision-making bodies already carry out the functions required by the BBCRD²⁹.

The operators noted that there is little interest in using the BBCRD. First, the UK has no tradition of infrastructure sharing. Second, there is different regulation in place for different industries (for instance water delivery, sewage) that is more rigorous in terms of safety standards and higher penalties. The issue of liability might therefore be contentious. Third, incentives in terms of profitability are very small and override the potential benefits. There is already SMP remedy imposed on Openreach that allows operators to access ducts and poles so they can deploy new fibre and, as noted above, Ofcom are proposing to expand this remedy to allow the use of Openreach's ducts and poles on an unrestricted basis.

4. End-user matters

Ofcom's Consumer Contact Team received some 60,000 complaints about electronic communications services in 2018 (1 January–31 October). While Ofcom does not investigate and resolve individual complaints, its Consumer Contact Team provides advice to consumers about how to resolve their complaints, including details of the applicable alternative dispute resolution schemes where relevant. Silent and abandoned calls, quality of service (in particular fault repair, line installations and mobile coverage), issues with billing/prices and customer service were the main sources of consumer complaints in 2018.

In May 2018, Ofcom published its second annual Comparing Service Quality report³⁰ on the quality of service experienced by customers of the UK's largest landline, broadband and mobile providers in 2017. There has been a rise in the proportion of broadband customers with a reason to complain. Broadband customers were also less satisfied with the services than mobile customers were.

Ofcom accredited three new price comparison websites,³¹ and intends to review its accreditation scheme in 2019-20 to ensure it continues to work for consumers in the modern market, and to ensure alignment with the objectives of the European Electronic Communications Code.

In September 2018, the consumer body Citizens Advice submitted a complaint to the Competition and Markets Authority about the 'loyalty penalties', i.e. the practice of overcharging longstanding end-users much more than new customers for the same services. It is estimated that around 20 %-25 % of UK consumers can be classified as long-standing end-users. Ofcom is finalising plans to require providers to send end-of-contract notifications to motivate inert end-users, as well as other solutions more specific to the broadband and mobile markets.

On 16 November 2018, Ofcom announced its final decisions on the early termination charge (ETC) investigations into Virgin Media and EE. It found that both Virgin Media and EE had overcharged customers; Virgin Media had set and charged ETCs that were higher than customers had contractually agreed to pay, and EE had not accounted for discounts that consumers had on their monthly charges

²⁹ For further information, see the government response document - page 25 - following consultation on the Directive: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/534619/2016_07_04_Government_Response_FINAL.pdf

³⁰ Full report is available here:

https://www.ofcom.org.uk/data/assets/pdf_file/0023/113639/full-report.pdf

³¹ In 2006, Ofcom established an accreditation scheme for PCWs that aims to provide assurance that the price comparison calculations offered by accredited companies on fixed-line, mobile, broadband and television services are accessible, accurate, up to date, transparent and comprehensive. Companies can apply to Ofcom for accreditation of their price comparison service.

when setting ETCs. Both providers failed to make it sufficiently clear to customers about the level of ETCs they would have to pay if they terminated their contract early. Virgin was fined GBP 7 million and EE was fined GBP 6.3 million.

All of the UK's largest internet service providers serving residential consumers are signatories to a voluntary Code of Practice that commits them to give clear information on broadband speeds to consumers when they consider or buy a home broadband service. On 1 March 2019, Ofcom updated the Code of Practice to ensure ISPs present more realistic peak-time speed information upfront, always provide a minimum guaranteed speed at the point of sale, and allow customers the right to exit their landline and TV packages penalty-free if bought together with broadband. Mobile operators are preparing for implementation of the new mobile switching rules to make switching quicker and easier. These rules were decided in late 2017³² and need to be implemented by 1 July 2019.

In October 2018, Ofcom strengthened its rules against nuisance calls to better protect customers from the harm that they can cause. They outlined these measures, such as prohibiting operators to charge end-users for caller display in an update of their joint action plan with the Information Commissioner's Office (ICO) in March 2019³³. The update also outlined further action by Ofcom to tackle nuisance calls via intelligence-sharing and engagement with the ICO, network operators, and international partners in order to encourage them to work collectively to find solutions to tackle consumer harm.

According to the 2018 Consumer Markets Scoreboard, the UK's markets for mobile telephone services and internet provision deteriorated in their market performance indicator score between 2015-2017 and stand 2.2 and 4.1 points below the markets' respective EU average scores³⁴.

a. Net neutrality

In 2017, Ofcom completed initial, informal reviews of zero-rating offerings in the UK by Three ("GoBinge") and Vodafone ("VOXI" and "Passes"). Ofcom found that the zero-rating practices at issue did not appear to materially reduce or affect end-users' choice in practice. However, Ofcom was concerned about the traffic management measures employed by Three, Vodafone and other mobile internet providers.

On 6 December 2017 Ofcom opened an enforcement programme into fixed and mobile internet service providers with the aim of gathering more information about the traffic management measures they employ.³⁵ As a result of the information gathered during the enforcement programme, Ofcom opened formal investigations into Three and Vodafone. The traffic management concerns included Three's practice of prohibiting tethering on some tariffs and slowing down certain kinds of traffic for customers while they are roaming³⁶ and Vodafone's practice of restricting the resolution of video traffic³⁷. Ofcom also wrote to O2 to outline concerns it had with its use of traffic management

³² In December 2017, Ofcom issued the Decision on reforming the switching of mobile communication services. According to the new rules, mobile end-users will be able to switch provider by simply requesting and automatically receiving a unique code by text, online or phone which they can give to the provider of their choice to switch and port their number. In addition, mobile providers will no longer be allowed to charge end-users for notice periods running after the switch date. The new rules come into effect on 1 July 2019. Decision is available on the following link: https://www.ofcom.org.uk/data/assets/pdf_file/0023/108941/Consumer-switching-statement.pdf.

³³ <https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/policy/tackling-nuisance-calls-messages>.

³⁴ Consumer Markets Scoreboard 2018 Edition, p. 126.

³⁵ https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/open-cases/cw_01210.

³⁶ Decision on Three's investigation: https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/all-closed-cases/cw_01218.

³⁷ Decision on Vodafone's investigation: https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/all-closed-cases/cw_01219.

measures including the use of rate control for video content and compression techniques applied at all times to web content and images³⁸.

Ofcom received assurances from Three,³⁹ Vodafone⁴⁰ and O2⁴¹ that by 30 April 2019, the majority of the measures concerning Ofcom would have ceased. Following these assurances Ofcom decided that no further enforcement action was required.

b. Roaming

TUK end-users consumed 1.1 times more roaming minutes (calls made) in Q1-2018 (RLAH) than in Q4-2016 (before RLAH)⁴². The UK is a net outbinder⁴³ of data roaming traffic⁴⁴.

On 8 March 2019, Ofcom closed its formal investigation into Lycamobile's compliance with roaming rules⁴⁵. It concluded that Lycamobile was levying a surcharge and/or general charge in addition to the domestic retail price for regulated roaming services to enable the service to be used abroad. **It applied data roaming limits that were lower than the minimum levels permitted by the regulations and applied surcharges for regulated data roaming services that were higher than the maximum surcharge permitted.** Lycamobile has been required to align its practice with the rules as well as to identify and refund end-users that were unjustly charged within 3 months of the decision.

c. Emergency communications — 112

According to the Communications Committee 112 implementation report for 2018, 112 calls are answered within 0.5 seconds: 97 % of calls are answered within 10 seconds⁴⁶.

d. Universal service

In March 2018, the Communications Act 2003 was amended to include broadband in the universal service obligation⁴⁷. The obligation provides UK consumers with a right to request a broadband connection which can provide download speeds of 10 Mbit/s and upload speeds of 1 Mbit/s. In June 2018, Ofcom asked operators to put themselves forward as potential universal service providers. On 5 December 2018, it proposed BT for the whole of the UK, excluding the Hull area, and KCOM for the Hull area as the designated providers of the broadband universal service. Designated operators will be legally required to provide high-speed broadband to customers upon request, subject to a reasonable cost threshold of GBP 3,400. For universal service financing, neither industry, cost sharing or public funds are currently used. If the cost of supplying the universal service amounts to an unfair financial

³⁸ https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/open-cases/cw_01210

³⁹ https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/all-closed-cases/cw_01218.

⁴⁰ https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/all-closed-cases/cw_01219.

⁴¹ https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/open-cases/cw_01210.

⁴² Report from the Commission on the implementation of Regulation (EU) 531/2012 of the European Parliament of the Council of 13 June 2012 on roaming and public mobile communications networks within the Union, published on 12 December 2018.

⁴³ An outbinder operator has a customer base which consumes more mobile services abroad (i.e. on the networks of partner operators in other EU countries), than those consumed by the partner operators' customer base on its own network.

⁴⁴ 21st International Roaming BEREC Benchmark Report.

⁴⁵ Further details are available here: https://www.ofcom.org.uk/about-ofcom/latest/bulletins/competition-bulletins/all-closed-cases/cw_01207

⁴⁶ Implementation report is available here: <https://ec.europa.eu/digital-single-market/en/news/2018-report-implementation-european-emergency-number-112>

⁴⁷ In July 2017, BT put forward an offer to voluntarily provide 10 Mbps broadband to 99 % of UK premises by 2022, delivered by Openreach, and to provide the remaining 1 % of premises either with a service using a fixed wireless solution (delivered by EE) or act as a service provider for satellite broadband. In August 2017, Ofcom consulted on including the costs of network expansion (incurred by Openreach in delivering this voluntary commitment) within the proposed charge control for wholesale local access (WLA) services. It proposed including the costs of Openreach's network expansion in the WLA charge control, which would come into effect in April 2018. The Department for Digital, Culture, Media and Sport consulted on the design of a regulatory universal service obligation in the summer of 2017 and decided in December 2017 not to accept BT's offer.

burden on the universal service providers, they can be retrospectively compensated from an industry fund. Ofcom is currently considering how an industry fund would operate⁴⁸. It expects that the first consumers will be able to make requests for connections by early 2020.

5. Conclusion

In the light of the currently modest level of fibre networks that have been rolled out, the UK has set out a clear strategy to improve the current situation, including significantly increasing its public funded support, to ensure that everyone in the UK benefits from a future-proof and innovative digital economy. On 5G, while the UK has launched the first phase of funding for 5G testbeds, a lot will depend on the auction of the 5G bands scheduled for early 2020. At the same time, work on the 4G front should continue to increase territorial coverage. Competition on the mobile market continues to bring benefits for end-users.

⁴⁸ Consultation on the financing model is expected in autumn 2020.