

Telecommunications Sector Report

1. This is a report for the House of Commons Committee on Exiting the European Union following the motion passed at the Opposition Day debate on 1 November, which called on the Government to provide the Committee with impact assessments arising from the sectoral analysis it has conducted with regards to the list of 58 sectors referred to in the answer of 26 June 2017 to Question 239.
2. As the Government has already made clear, it is not the case that 58 sectoral impact assessments exist. The Government's sectoral analysis is a wide mix of qualitative and quantitative analysis contained in a range of documents developed at different times since the referendum. This report brings together information about the sector in a way that is accessible and informative. Some reports aggregate some sectors in order to either avoid repetition of information or because of the strong interlinkages between some of these sectors.
3. This report covers: a description of the sector, the current EU regulatory regime, existing frameworks for how trade is facilitated between countries in this sector, and sector views. It does not contain commercially-, market- or negotiation-sensitive information.

Description of sector

Sector Overview

4. The availability of telecoms infrastructure underpins much of the economic and social activity in the UK and is considered by many to be of great importance (e.g. a broadband connection is now considered essential by most people)¹. There is hardly a sector in the UK that will not rely in some shape or form on the connectivity provided by telecoms, the services it enables, and the activities it supports. As such, telecoms is considered to be part of the UK's critical national infrastructure. The failure of telecoms systems, or the failure to invest in upgrading them to meet increasing demand, can have a direct and negative impact on people's ability to do business and to interact socially.
5. Electronic communications (telecoms) networks and services include fixed and wireless based communications such as broadband, voice and data services. Fixed-based telecoms include broadband and telephony provided over a landline, whereas wireless connections usually refer to mobile phone and mobile broadband services, but also includes fixed wireless services and some satellite communications services. As technology converges there is increasing overlap with other sectors, such as the broadcasting sector, and the digital tech sector. For example, several of the large

¹ See <https://press.which.co.uk/whichpressreleases/broadband-now-seen-as-one-of-top-five-modern-day-essentials/>

"New research from Which? finds that nine in 10 people think a broadband connection is essential to their everyday life alongside other essentials such as food, housing and utilities like water and energy."

telecoms firms provide content services alongside electronic communications services and/or networks, often to consumers as bundles of services.

6. The sector is highly regulated at the EU level through the Electronic Communications Framework (which is currently being recast as the European Electronic Communications Code (EECC)). It seeks to strengthen competition in the sector, stimulate investment, drive innovation and foster freedom of choice for consumers. In particular, under these EU rules, National Regulatory Authorities (NRAs) - Ofcom, in the UK - are required to analyse specified markets in order to identify market failure or dominance (or SMP - Significant Market Power) and adopt remedies in order to ensure effective competition. The markets subject to scrutiny under the EU rules include: the business connectivity market; residential and business narrowband and broadband access; and fixed telephony and the mobile phone call termination market. Market reviews are currently conducted every three years.

Fixed Telecommunication Services

7. The market for fixed telecoms services comprises a number of providers operating at national level and some in certain geographical areas of the UK. BT, the former state-owned monopoly ('the incumbent'), has historically dominated the fixed market, as it owns the most geographically comprehensive fixed electronic communications network in the UK. Under regulation by Ofcom, BT's position has been addressed through EU regulation with the goal of creating competitive electronic communications networks and services markets in the UK. In 2005, BT voluntarily agreed to functionally separate from Openreach (responsible for operating the 'last mile' of BT's access network, from the rest of the BT Group). In early 2017, BT agreed voluntarily to separate from Openreach legally; this will include transferring 32,000 staff and establishing a separate board². They are required to open their local networks to wholesale broadband providers, and to provide access for their competitors to use their duct and pole network³.
8. Virgin Media is expanding its ultrafast fibre optic network and announced⁴ its plans to reach 17 million homes and businesses in the UK by 2019. Virgin Media does not provide wholesale access to competitors, instead providing their own services to consumers solely over their own network. The UK also has a number of alternative infrastructure operators, including KCOM, who operate a retail and wholesale service solely in Hull, and fibre wholesales and retail providers such as Hyperoptic, and Gigaclear. CityFibre provides wholesale-only full fibre infrastructure in some parts of the UK.
9. In the retail fixed broadband market, BT holds a 37% market share, followed by Sky (24%), Virgin Media (20%), TalkTalk (12%) and other providers (8%)⁵. As a result, the consumer market offers a range of services to choose from.

² [Ofcom press release](#) - BT agrees to legal separation of Openreach - 10 March 2017

³ [BT agrees to legal separation of Openreach](#), Ofcom press release 10th March 2017

⁴ Virgin Media press release, 27th April 2016

⁵ Communications Market Report, Ofcom, 3rd August 2017

10. Some of the largest operators operate at international level, delivering communications services to businesses outside the UK (for example BT Group deliver services in 180 countries⁶).

Broadband Coverage

11. There are three brackets of broadband services in the UK, defined in terms of the download speed they offer: standard broadband services have download speeds of up to 24 Mbit/s; superfast broadband services to have download speeds greater than 24 Mbit/s; and ultrafast broadband services to have download speeds of at least 100 Mbit/s.
12. With regard to coverage of standard broadband, Ofcom's figures show that coverage has reached 95% of UK premises⁷. Superfast broadband coverage is growing; Ofcom's⁸ figures for 2016 show that - at that time - 89% of UK premises were able to receive a superfast broadband service (Ofcom defines *superfast* download speeds as 30Mbit/s and higher). Other sources, including ThinkBroadband, show that we are currently over 94% coverage (though for connections at 24Mbit/s speeds)⁹. Take-up of subscription for these services by consumers in 2016 reached 78% for all broadband services, 54% for services of 10Mbps and 31% for superfast services. Take-up for ultrafast services is less than 1%¹⁰. According to Ofcom's European broadband scorecard EU5 2016¹¹, benchmarking the UK against Germany, France, Italy and Spain on the basis of comparable data from 2015, the UK ranks first coverage of standard and superfast coverage.
13. Private investment in superfast and ultrafast fixed networks is continuing. BT¹², Virgin Media¹³, CityFibre, Hyperoptic¹⁴ and Gigaclear¹⁵ have all recently announced investment in infrastructure. CityFibre has joined Sky and TalkTalk in a co-investment model in York¹⁶. CityFibre and Vodafone also recently announced a long-term strategic partnership to deploy Fibre-To-the-Premises (FTTP) infrastructure to up to 5 million homes and businesses by 2025¹⁷.
14. Government launched the Broadband Delivery UK (BDUK) programme (£1.7 billion public funding to complement private sector investment in the deployment of superfast broadband services with the aim to reach 95% of premises by the end of 2017)¹⁸. In 2015, the Government announced plans to implement a Universal Service Obligation (USO) for a broadband connection of 10Mbit/s¹⁹.

⁶ <http://www.btplc.com/Thegroup/BTUKandWorldwide/>

⁷ [Connected Nations 2016](#), Ofcom 16th December 2016

⁸ [Connected Nations 2016](#), Ofcom 16th December 2016

⁹ [UK Superfast and Fibre Coverage](#), ThinkBroadband, 12th November 2017

¹⁰ [Connected Nations 2016](#), Ofcom, 16th December 2016

¹¹ [International Communications Markets Report 2016: EU5 Broadband Scorecard](#), Ofcom, 16th December 2016

¹² [BT Plc press release](#), 5th May 2016

¹³ [Virgin Media press release](#), 27th April 2016

¹⁴ [Hyperoptic press release](#), 28th July 2017

¹⁵ [Gigaclear press release](#), 5th May 2017

¹⁶ [Press release](#), CityFibre 26th March 2015

¹⁷ [Press release](#), CityFibre 9th November 2017

¹⁸ [Broadband Delivery UK](#), DCMS 19th October 2017

¹⁹ [Achieving decent broadband connectivity for everyone](#), Ofcom, 16th December 2016

15. The Government is also working to remove domestic barriers to investment and deployment of infrastructure. Government recently announced its Local Full Fibre Networks Programme (£200 million to fund locally-led projects across the UK to leverage commercial and local investment to deliver full-fibre connections).²⁰

Mobile Voice and Data Services

16. There are four mobile network operators (MNOs) in the UK market: Vodafone (a British company with its global headquarters in the UK), EE (part of BT), O2 (owned by Spain's Telefonica), and Three (owned by Hong Kong based Hutchison Whampoa). There were five operators in the UK until T-Mobile and Orange merged to form EE in 2010. As well as operating their own networks, these provide wholesale services to a large number of mobile virtual network operators (MVNOs), which provide consumers with greater retail choice. The four main mobile operators have formed two joint ventures to allow sharing of a large part of the mobile network infrastructure. The UK also has a small number of wholesale-only wireless infrastructure providers, including Arqiva and WIG.
17. The mobile operators' networks require access to radio spectrum (a range of radio frequencies allocated to the mobile industry and other sectors for communication over the airwaves). Spectrum is a finite resource and its use for electronic communications networks is licensed by Ofcom in the UK, with new allocations of spectrum to mobile usually made following a competitive auction.
18. In addition to mobile operators, there are fixed wireless and satellite services, and there are a number of special internet service providers which retail these services.

Mobile Coverage and usage

19. According to Ofcom's figures²¹, 4G services are now available to 72% of UK premises at a signal strength sufficient to be used indoors. Geographical coverage of all mobile services remains a challenge in the UK. Therefore the Government and Ofcom have used a number of tools to stimulate investment in mobile infrastructure and coverage. Obligations included in the mobile operators' licence conditions have been used to ensure adequate coverage. Ofcom has placed an obligation on Telefonica to deliver indoor 4G coverage to 98% of the population by the end of 2017²², and the other providers have decided on a competitive response to deliver similar levels of coverage. In addition, in December 2014, the UK government signed an agreement with each of the four mobile network operators to deliver 90% geographic coverage for basic voice and text by the end of 2017.²³

²⁰ [Six areas to pilot UK's fastest broadband as part of £200 million project](#), DCMS 3rd September 2017

²¹ [Connected Nations 2016](#), Ofcom 16th December 2016

²² [Press release](#), Ofcom, 20 February 2013

²³ [Press release](#), DCMS, 18 December 2014

Market Dynamics

20. The sector as a whole is subject to competitive pressures, with constantly-evolving technology, increasing user expectations and the requirement for investment in new digital infrastructure.
21. An industry response to these pressures has been a move to consolidation across Europe to enable operators to gain scale, increase margins and invest more. Mergers have tended to be of two types, 'mobile operator with mobile operator' or 'mobile operator with fixed-line broadband operator'. A number of mobile-to-mobile mergers have been allowed by the European Commission (recent examples are Orange/Hutchison 3G in Austria and Telefonica Ireland/Hutchison 3G in Ireland), but others have been blocked - predominantly the Three and O2 merger in the UK on the basis that the merger would have led to "less choice and higher prices for UK consumers"²⁴. Mergers between mobile and fixed operators have raised fewer competition concerns, for example in the UK, BT and EE were allowed to merge by the Competition and Markets Authority (CMA), and in the Netherlands Liberty Global and Vodafone were permitted to merge their operations.
22. Mobile usage by consumers is changing. Mobile operators have seen increased competition from "over the top" (OTT) instant messaging services such as WhatsApp and Facebook Messenger, leading to a decline in total SMS and MMS messaging volumes²⁵. As a result, mobile operators are responding by changing their business models to shift emphasis onto charging for data usage.

5G services and Technologies

23. The 'fifth generation' of telecommunications systems (5G), is widely predicted to mark a step change in digital communications, changing the way people, institutions and objects interact²⁶. 5G technologies will provide faster connectivity and the effect of virtually ubiquitous broadband capacity, not only to individual users but also to connected objects (the 'internet of things'), and could support a wide range of advanced technologies and services. A global process is now underway with the aim of creating a set of international 5G standards for manufacturers and others.
24. The UK's 5G strategy, published at Spring Budget 2017, sets out a plan to be a world leader in 5G. It identifies seven key themes that will determine our progress towards achieving this aim and to create the necessary conditions for the market to develop and deploy 5G as rapidly and efficiently as possible. Fundamental to the success of the strategy is the Government's programme of 5G testbeds and trials announced at Autumn Statement 2016 as part of a £1bn package of announcements to boost the UK's digital infrastructure.

²⁴ [European Commission press release](#) "Mergers: Commission prohibits Hutchinson's proposed acquisition of Telefonica UK" - 11 May 2016

²⁵ [Ofcom Communications Market Report](#), August 2017

²⁶ [Next Generation Mobile Technologies: A 5G strategy for the UK](#), DCMS 8th March 2017

25. There is a degree of uncertainty about the nature and range of applications 5G will enable. Ofcom estimated that between 2011 and 2015, mobile data traffic increased eightfold²⁷. Between 2015 and 2016, the mobile data consumption per subscriber has grown at a rate of approximately 49%²⁸.

Retail Markets vs. Wholesale Markets (Fixed Networks)

26. The wholesale markets in the fixed telecoms sector are usually dominated by one or two large firms, and therefore lack natural competition. This usually leads to the regulation of wholesale access to these networks and in order to open up competition at the retail level. BT Openreach provides the infrastructure network to other operators such as Sky and TalkTalk. Ofcom regulates the price BT can charge other providers for use of its networks.

²⁷ Mobile Data Strategy, Ofcom 30th June 2016

²⁸ Connected Nations 2016, Ofcom 16th December 2016

Department for Digital, Culture, Media and Sport (DCMS) Sectors Economic Estimates²⁹

GVA Contribution of the Telecoms Sector

	GVA (£bn)						
	2010	2011	2012	2013	2014	2015	5 year growth
Telecoms	24.7	25.4	26.0	28.0	29.1	30.2	22.3%
% of UK total	1.7%	1.8%	1.7%	1.8%	1.8%	1.8%	
UK Total	1,414.6	1,452.1	1,495.6	1,551.6	1,624.3	1,661.1	17.4%

1. Data are in current prices (i.e. have not been adjusted for inflation).
2. 2015 GVA is based on the output measure of GVA to allow consistency with the sector measures for 2015. This is aligned to average GVA up to and including 2014 (last Supply Use balanced year) but then uses growth in the output measure as a proxy for GVA beyond that. The 2015 figure therefore differs from ABML. 2010 – 2014 GVA estimates use balanced GVA at current prices (ABML).

- GVA of telecoms sector was £30.2 billion in 2015, an increase of 22.3% from 2010. GVA for the whole UK economy, by comparison, grew by 17.4% over the same period³⁰.
- The telecoms sector accounted for 1.8% of the UK economy in 2015, up from 1.7% in 2010.
- There are no disaggregated telecoms GVA figures separately for England, Wales, Scotland and Northern Ireland.

27. Number of Enterprises in the Telecoms Sector³¹

	Number of enterprises (000's)							
	2009	2010	2011	2012	2013	2014	% of UK (2014)	5 year growth
Telecoms	6.0	6.3	7.0	7.6	7.8	7.7	0.4%	28.3%
UK Total	1,903.7	1,885.8	1,941.0	1,945.2	2,029.6	2,094.1		10.0%

²⁹ [DCMS Sectors Economic Estimates](#), DCMS

³⁰ Trends between GVA telecoms figures and Ofcom telecoms revenue figures provided above differ as Ofcom's figures are adjusted for inflation. There may also be some differences in scope between the two sets of figures.

³¹ Published in [DCMS Economic Estimates \(2016\)](#) based on data from the [Annual Business Survey \(ABS\)](#) and use the ABS definition of enterprises.

28. Percentage of Enterprises in Telecoms Sector by Size (2014)³²

	% of firms in each size band (by number of employees)				
	Micro		Small	Medium	Large
	0-4	5-9	10-49	50-249	250+
Telecoms	81.1%	8.0%	8.2%	2.0%	0.6%
UK Total	75.7%	12.6%	9.6%	1.7%	0.4%

29. Telecoms here is **defined** as all activity within the Division 61 Standard Industrial Classification codes.

- In the UK in 2014 there were 7,700 enterprises in the telecoms sector in the UK, a figure that is 28.3% greater than in 2009. By comparison, the number of enterprises across the UK economy grew by 10% over the same period. The telecoms sector accounted for 0.4% of the total number of firms in the UK in 2014.
- Of the 7,700 firms in the telecoms sector in 2014, 89.1% were micro firms (fewer than 10 employees), and 99.3% were SMEs (fewer than 250 employees).³³

30. Employment in the telecoms sector (000s)^{34 35}

	2011	2012	2013	2014	2015	2016	% change since 2011	% change since 2015
Telecoms	174	164	174	184	174	176	1.6%	1.3%
% of UK	0.6%	0.5%	0.6%	0.6%	0.5%	0.5%		
UK	30,129	30,334	30,760	31,410	32,037	32,422		

³² Published in [DCMS Economic Estimates \(2016\)](#) based on data from the [Inter Departmental Business Register \(IDBR\)](#).

³³ DCMS Economic Estimates (2016) based on data from the Annual Business Survey (ABS)

³⁴ Both sets of employment figures from: [DCMS Estimates for Employment and Trade 2017](#)

³⁵ a. Estimates rounded to the nearest 1,000.

b. Percentages have been calculated based on raw data, so may not exactly equal those calculated with rounded data.

c. Estimates for 2015 and 2016 are provisional.

31. Employment by nationality (2016)³⁶

	% UK	% EU	% Non-EU
Telecoms	89%	5%	6%
All DCMS sectors (excluding tourism)	90%	5%	4%

Trade³⁷

32. Exports of Services in the Telecoms Sector³⁸

The value of services exported by the telecoms sector in 2015 was £6.4 billion (£2.7 billion to the EU and £3.8 billion to the rest of the world).

	Exports of Services (£bn)							Exports of services to EU v/ rest of the world 2015	
	2010	2011	2012	2013	2014	2015	Change since 2014	% going to EU	% going to non-EU
Telecoms	4.6	4.6	5.2	6.3	6.8	6.4	-5.1%	41.4%	58.6%
% of UK total	2.7%	2.4%	2.6%	2.9%	3.1%	2.9%			
UK Total	174.1	188.8	197.5	214.5	218.8	225.5	3.1%	39.4%	60.6%

³⁶ Figures may not sum to 100% due to rounding.

³⁷ a. Data in this section are in current prices (i.e. have not been adjusted for inflation).

b. UK estimates are taken from ONS Pink Book 2016.

³⁸ [DCMS Economic Estimates: Employment and Trade 2017](#), DCMS

33. Imports of services in the telecoms sector³⁹

The value of services imported by the telecoms sector in 2015 was £5.1 billion (£3.4 billion from the EU and £1.7 billion from the rest of the world).

	Imports of Services (£bn)							Imports of services to EU v/ rest of the world 2015	
	2010	2011	2012	2013	2014	2015	Change since 2014	% from EU	% from non-EU
Telecoms	4.5	4.2	4.3	4.2	5.1	5.1	-0.5%	66.2%	33.8%
% of UK total	3.7%	3.5%	3.4%	3.2%	3.9%	3.7%			
UK Total	119.3	120.9	123.9	133.1	132.4	137.7	4.0%	49.4%	50.6%

34. The predominant issues in the international trade of telecoms services tend to relate to access to incumbent infrastructure, non-discriminatory treatment and foreign equity caps.

35. Much like in the EU, access of foreign companies to incumbent fixed network infrastructure is a key issue in the international telecoms industry, mainly in relation to the business market. A number of nations, including China and the USA, have foreign equity caps on investment in national services and infrastructure, which limits international investment.

National and Regional Footprint

36. The telecoms sector is relatively decentralised from London, with just over 19% of those employed in telecoms being based in the capital. There are clusters in the North West, where there are 18,000 people employed in telecoms, and the South West, where there are 17,000.⁴⁰

³⁹ [DCMS Economic Estimates: Employment and Trade 2017](#), DCMS

⁴⁰ [DCMS Economic Estimates: Employment and Trade 2017](#), DCMS

37. Employment in the Telecoms Sector by UK area/country (2016)^{41 42}

Region (England)	Total employment (000's)	% of jobs in all regions
North East	8	4.6
North West	18	9.9
Yorkshire and the Humber	14	8.2
East Midlands	7	3.8
West Midlands	13	7.3
East of England	14	8.1
London	34	19.4
South East	28	16.0
South West	17	9.8
Devolved Administration	Total employment (000's)	% of jobs in all regions
Wales	-	-
Scotland	12	7.0
Northern Ireland	-	-

EU funding

38. There are a number of EU funding opportunities available for individual companies in the context of telecoms and broadband deployment, for example via the Horizon 2020 programme (Research and Development focus), the European Regional Development Fund (ERDF)⁴³ and the European Investment Bank (EIB)⁴⁴. In addition,

⁴¹ [DCMS Economic Estimates: Employment and Trade 2017](#), DCMS

⁴² a. Estimates rounded to the nearest 1,000.

b. Percentages have been calculated based on raw data, so may not exactly equal those calculated with rounded data.

c. '-' denotes suppressed data: figures are suppressed due to ONS statistical disclosure control to safeguard confidentiality given the small sample sizes.

d. Split between employed and self-employed is not available due to small data sample for the Telecoms sector.

e. Totals for all regions will not equal the sum of regions and devolved administration because totals also include figures for 'Outside UK'.

⁴³ European Regional Development Fund

in December 2016 the EU launched a new broadband infrastructure fund: the Connected European Broadband Fund. The European Commission intends for the Connecting Europe Broadband Fund to invest in broadband network infrastructure across underserved areas of Europe.⁴⁵ The Fund was launched under the umbrella of the European Fund for Strategic Investment (EFSI) announced in 2015.

39. The UK's smaller fixed network providers have recently successfully sought investment from the EU; in January 2016, Gigaclear secured £18 million committed debt facility from the European Investment Bank's (EIB's) InnovFin – EU Finance for Innovators' MidCap Growth Finance scheme to support rollout of their fibre network⁴⁶ and on 19 July 2016, Hyperoptic announced a £21 million investment from the EIB in their fibre network⁴⁷.
40. The ERDF helped to fund the Superfast Cornwall project, supporting various rural broadband roll-out schemes. £132 million total investment was needed to fund the project: £53.5 million from the ERDF and an additional £78.5 million from BT⁴⁸.

The current EU regulatory regime

Key sector-specific legislation on telecoms

Electronic Communications Framework

41. Electronic communications services and networks are currently regulated in the UK by a European framework consisting of five directives and two regulations, known as the “Electronic Communications Framework” or “Common Regulatory Framework” adopted in 2002 and revised in 2009. It was implemented in the UK via the Communications Act 2003, and revised in 2011. The Framework aims to improve the functioning of the telecoms market across the EU, guarantees basic user rights and defines the powers, duties and independence of national regulators. A key principle is to promote competition in the electronic communications sector as a driver of private sector investment, and choice for consumers of high quality, innovative, affordable services. The competition aims are balanced with a range of consumer protection objectives.
42. The individual instruments are as follows:
- The Framework Directive (2002/21/EC) seeks to establish a harmonised framework for regulation of electronic communications networks and services

⁴⁴ European Investment Bank

⁴⁵ Commission and European Investment Bank announce a fund for broadband infrastructure open to participation of National Promotional Banks and Institutions and of private investors, European Commission press release 12th December 2016 -

⁴⁶ [Gigaclear secures €25m from EIB fuelling massive rural internet network expansion](#), Gigaclear press release, 26th January 2016

⁴⁷ [Hyperoptic to expand 1Gbps network with GBP 21 million backing from EIB](#), European Investment Bank press release, 19th July 2016

⁴⁸ [Superfast Cornwall Evaluation](#), June 2015

and lays down the objectives of national regulators such as Ofcom. This Directive also sets out the framework for assessing significant market power (SMP) in telecoms markets. The UK regulation of security and resilience of the telecommunications market derives from this directive. The relevant clauses in the EU Directive were transposed into UK Law in the Communications Act 2003, and were updated in 2011 following the revision of the Directive in 2009’;

- The Access Directive (2002/19/EC) (amended in 2009) harmonises regulation of access to, and interconnection of, electronic communications networks and associated facilities and to promote competition, interoperability and consumer benefits. This Directive empowers regulators to impose access and interconnection obligations, and under certain circumstances, to impose as a last resort remedy, the functional separation of a vertically integrated operator. It also sets out the conditions or access to digital television and radio service broadcast;
- The Authorisation Directive (2002/20/EC) (amended in 2009) is designed to facilitate cross-border market entry to further stimulate competition in the EU market. It introduced a general authorisation system for all electronic communications networks or services by removing the need for individual licences to be delivered by national regulators;
- The Universal Service Directive (2002/22/EC) (amended in 2009) strengthens consumer protection. It sets out users’ rights relating to the availability, affordability and accessibility of electronic communications networks and services. The directive allows member states to introduce a Universal Service Obligation (USO), which gives people the right to make a reasonable request for an affordable telephone and functional internet service from a designated provider. The Directive also requires provision of directory enquiries services, and phone directories, and the discretion for the regulator to require the provision of phone boxes;
- the E-Privacy Directive (2002/58/EC) aims to protect the individual’s privacy and regulate the processing of personal data in the electronic communications sector. As such this directive complemented the Data Protection Directive 95/46/EC (the revised General Data Protection Regulation, Regulation (EU) 2016/679, was adopted on 24th May 2016 and will enter into force 25 May 2018). The ePrivacy Directive specifies how some of the principles of Directive 95/46/EC apply to the electronic communications sector. Key areas it addresses include consent, cookies, unsolicited marketing and security breaches. EU negotiations on the proposals reforming the ePrivacy Directive into a Regulation are ongoing; and
- The Body of European Regulators for Electronic Communications (BEREC) was established by Regulation (1211/2009). BEREC is composed of regulators from each of the EU Member States as well as observers from other countries. BEREC assists the European Commission and the national regulatory authorities (NRAs) in implementing the EU regulatory framework

for electronic communications. As such it produces Recommendations, Guidelines and Opinions. It also serves as a platform for the exchange of best regulatory practice.

43. In addition to the above legislation, the European Commission issued a number of telecoms-specific Recommendations designed to assist Regulators in the implementation of the Framework. BEREC has also issued several non-binding Guidelines of interpretation of legislation that national regulators have to take account of when formulating their decisions.
44. The Framework is reviewed every seven years approximately, and is currently being recast (with the exception of the E-Privacy and Roaming rules) as the European Electronic Communications Code (EECC).⁴⁹

Mobile roaming

45. There is currently surcharge-free mobile roaming across the EU and European Economic Area (EEA). This arrangement, based on the EU Roaming Regulations, is called “Roam Like at Home” (RLAH). It came into effect in June 2017.
46. RLAH works by the EU imposing caps on what mobile operators can charge other mobile operators - so-called ‘wholesale rates’. The relevant Regulations are listed below. EU-imposed caps on wholesale rates have been introduced over the last ten years via these Regulations. This means that retail roaming rates in the EU/EEA have also gradually been reducing. RLAH is the conclusion of this process (for consumers) that led to the abolition of surcharges for roaming within the EEA.
47. RLAH benefits all consumers who use a UK mobile phone in the EU/EEA and all consumers who use an EU/EEA phone in the UK. In addition, RLAH benefits all consumers who live in a border region such as Northern Ireland/Ireland and Spain/Gibraltar.
48. The UK cannot act unilaterally to set roaming rates, as it cannot set wholesale rates on non-UK operators.
49. The following Regulations set the framework for the EU setting wholesale and retail rates in the EU/EEA. The Regulations represent the downward glide-path of EU wholesale rates, with the 2017 Regulation mandating retail-level surcharge-free roaming across the EU/EEA:
 - Regulation 717/2007 on roaming on public mobile telephone networks within the Community and amending Directive 2002/21/EC [i.e. the Framework Directive] (revoked by 531/2012 below), amended by

⁴⁹ [Proposed Directive establishing the European Electronic Communications Code](#), European Commission 14th September 2016

- Regulation 544/2009 amending Regulation 717/2007 on roaming on public mobile telephone networks within the Community (also revoked by 531/2012 below)
- Regulation 531/2012 on roaming on public mobile communication networks within the Union (recast), amended by:
 - Regulation (EU) 2015/2120 laying down measures concerning open internet access and amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services and Regulation (EU) No 531/2012 on roaming on public mobile communications networks within the Union (also known as the Telecoms Single Market (TSM) Regulation and the Connected Continent package)
 - Regulation 2017/920 amending Regulation 531/2012 on roaming on public mobile communication networks within the Union
- Implementing Regulation (EU) No 1203/2012 [roaming]
- Implementing Regulation (EU) 2016/2286 [roaming]
- Implementing Regulation (EU) 2016/2292 [roaming]

Open Internet Access Regulation (“net neutrality”)

50. EU Regulation 2015/2120, which came into effect on 30 April 2016, lays down provisions concerning open internet access (“net neutrality”). BEREC adopted Guidelines of interpretation in August 2016. The EU Open Internet rules were implemented in the UK via the Open internet Access Regulations 2016.

51. The EU rules give end-users the right to access and distribute information, content, applications and services of their choice, and prevents providers of internet access services to the public from blocking specific content or traffic on their networks anti-competitively. Reasonable traffic management is permitted (e.g. to deal with temporary network congestion); however, blocking or reducing traffic is permitted only in specific circumstances.

52. The UK has a competitive market for internet access services, with a self-regulatory Code of Practice for the Open Internet⁵⁰ (reviewed in 2016 to bring it in line with the provisions of the EU Regulation). This has meant that “net neutrality” is not generally an issue in the UK⁵¹. All major providers of internet access services are signatories to the Code of Practice. Whilst the self-regulatory approach has worked well in the UK, the new EU rules have provided an additional legal backstop, providing Ofcom with responsibilities for the enforcement of the rules.

⁵⁰ [Open Internet Code of Practice 2016](#), Broadband Stakeholder Group

⁵¹ Ofcom report June 2017 - [Monitoring compliance with the EU Net Neutrality Regulation](#)

Broadband Cost Reduction Directive

53. The Broadband Cost Reduction Directive (2014/61/EU) was recently transposed (SI 2016/700) and requires telecoms operators and companies in a range of utility and transport sectors to share physical infrastructure (ducts, poles, and other 'passive' elements) at fair prices in order to roll out broadband networks. The Directive also requires sharing of information about such infrastructure, and encourages co-deployment when carrying out civil engineering works. Ofcom is responsible for resolving disputes between companies in the UK, with appeal to the courts.

Other relevant sector-specific EU legislation

54. A number of technical matters are dealt with by EU legislation. Of particular concern to telecoms and ICT providers are the following:

- Radio Equipment Directive (RED) - 2014/53/EU - came into force in June 2016. It covers the performance of radio receiving and transmitting equipment to ensure that they operate effectively and do not interfere with other equipment. It replaces the Radio and Telecommunications Terminal Equipment (RTTE) Directive. There are significant differences to RTTE in that it narrows the scope to radio products, but it embraces a wider range of radio products than before;
- Electromagnetic Compatibility Directive (EMCD) - 2014/30/EU - describes how equipment, devices or systems will not interfere with or prevent each other's correct operation through spurious emission and absorption of electromagnetic interference (ie radio waves). The current EMCD came into force in April 2016. It is broadly the same as its predecessor but streamlines and simplifies a number of issues; and
- European Standardisation Regulation - 2012/1025 - this describes how the EU works with standardisation and describes a legal hierarchy of standards and how they relate to each other.

Cross-sectoral rules, technical requirements and frameworks

55. The allocation of public funding to extend broadband coverage in areas where there are insufficient economic incentives for commercial operators to invest, is currently subject to EU State Aid rules. The BDUK funding programme, as described above, to roll-out superfast broadband is required to comply with those rules. The EU issued Guidelines specific to state aid for the deployment of broadband networks.⁵²

56. EU competition rules have implications for the sector. The most significant recent example being the European Commission's rejection of a bid by the mobile operator Three to take over competitor O2 under the EU Merger Regulation in May 2016, on the basis of strong concerns - shared by OFCOM and the CMA - that UK mobile

⁵² [Communication 2013/C](#), European Commission 26th January 2013

customers would have had less choice and higher prices as a result of the takeover, and that the deal would have harmed innovation in the mobile sector.⁵³

57. EU rules on horizontal consumer protection are also relevant. Horizontal consumer law aims to create growth by empowering and protecting consumers so they are able to make informed decisions when purchasing goods and services and actively participate in markets. Clear rules and enforcement underpin this. There are cross-sectoral protections for consumers of electronic communications services. For example, consumers are entitled to a 14 day cooling off period, they are protected by regulations set in relation to distance contracts, and are protected from unfair commercial practices and unfair contract terms originating from European consumer law.

58. The following wider legislation will also have impact on this area given that they apply to telecoms and electronic equipment needed by the sector to operate:

- Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) - EU Regulation 1907/2006) - concerning chemicals and their safe use;
- Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment (EEE) - Directive 2011/65/EU - controlling the amount and use of hazardous substances;
- Waste Electrical & Electronic Equipment (WEEE) - Directive 2012/19/EU - covering good use of materials and the disposal of electrical and electronic waste; and
- Low Voltage Directive (LVD) - 2006/95/EC - specifies safety requirements for equipment connected to the electrical supply for mains and similar voltages.

International obligations and standards

59. Domestic telecoms legislation is a mixture of law deriving from EU Directives, directly-applicable EU Regulations and Decisions, and law created in the UK. Standards are generally global, although there are standards that are uniquely European or UK. The production of standards and their relationship with the market is described further below. Some standards are cited directly by legislation as ways in which products and services may comply with aspects of that legislation.

60. There are several international telecommunications inter-governmental organisations:

61. The **International Telecommunication Union (ITU)** is treaty-based (i.e. established through a multilateral treaty signed by its members with the intergovernmental organisation), and the largest and most notable international telecoms organisation. The ITU is the United Nations specialised agency for information and communication

⁵³ [European Commission press release](#) "Mergers: Commission prohibits Hutchinson's proposed acquisition of Telefonica UK" - 11 May 2016

technologies (ICTs). Its membership includes 193 Member States (including the UK) and around 700 public and private sector companies, as well as international and regional telecommunication entities. Its HQ is in Geneva. The ITU is both an intergovernmental and a sectoral organisation that allocates global radio spectrum and satellite orbits, develops the technical standards that ensure networks and technologies seamlessly interconnect, and strives to improve access to ICTs to underserved communities worldwide.

62. The **European Communications Office (ECO)**, which includes greater Europe, including Russia and other non-EU countries, has its HQ in Copenhagen and is the permanent office supporting the CEPT (European Conference of Postal and Telecommunications Administrations). It is a treaty-based organisation established through a multilateral treaty signed by its member states. This in turn comprises its Presidency and its three Committees: the Electronic Communications Committee (ECC), the Committee for ITU Policy (Com-ITU) and the Committee for Postal Regulation (CERP). CEPT brings together the postal and telecommunications regulatory authorities of 48 European countries. CEPT's activities include co-operation on commercial, operational, regulatory and technical standardisation issues. CEPT plays a key role in coordinating the pan European position in preparation for the World Radiocommunication Conference. CEPT provides technical recommendations to ETSI, when it is necessary to produce standards.
63. The **Commonwealth Telecommunications Organisation (CTO)** is an international organisation subject to a Headquarters Agreement with the UK Government, and with its offices located in London. Its mission is to support the development and use of ICTs within the Commonwealth and beyond; promote the provision and use of ICTs to meet the needs of members, to support development in Member countries, and to ensure the inclusion of marginalised people; to promote effective cooperation and partnership amongst its members and other organisations.
64. The UK takes a leading part in the **Organisation for Economic Co-operation and Development (OECD) Committee on Digital Economy Policies (CDEP)** on various ICT issues, reports and initiatives. Besides participation by all 35 OECD Member States there are contributions by high-level representatives from non-member governments, business, civil society and the Internet technical community.
65. The **International Telecommunications Satellite Organization (ITSO)** is a Treaty-based intergovernmental organisation which establishes that communication by means of satellites be available to the nations of the world as soon as practicable on a global and non-discriminatory basis. It also incorporates the principle embedded in the "Outer Space Treaty," which states that outer space shall be used for the benefit and in the interest of all countries. ITSO is a treaty-based organisation established through a multilateral treaty signed by its member states.
66. The **International Mobile Satellite Organization (IMSO)** is the Treaty-based intergovernmental organisation (comprised of 102 Member States) whose primary purpose is the oversight of certain public satellite safety and security communication services provided by mobile satellite communication systems.

67. The **Eutelsat intergovernmental organisation (IGO)** was originally set up in 1977 to develop and operate a satellite-based telecommunications infrastructure for Europe. In 1982 Eutelsat started Sky satellite broadcasts. Its satellites are now used for broadcasting some 6,000 television stations across Europe, Africa and Asia. After privatisation of the satellite service provider (to become Eutelsat SA) Eutelsat IGO is now a Treaty-based intergovernmental organisation based in Paris comprising 49 Member States from across 'greater Europe'.

Spectrum

68. The main forum for international decisions about spectrum allocation (i.e. what radio frequencies can be used by what type of services under what conditions) is the World Radiocommunication Conference (WRC), run by the ITU. It is held every three to four years to revise the Radio Regulations, the international treaty governing the use of spectrum. The CEPT, of which the UK is a member of, plays a key role in coordinating the pan European position in preparation for the World Radiocommunication Conference.⁵⁴

69. The EU's Radio Spectrum Policy⁵⁵ aims at coordinating the approach to radio spectrum management across the EU. Whilst the European Commission does not manage radio spectrum directly, its role is to ensure that the use and management of radio spectrum in the EU takes account of all relevant EU policies. Spectrum allocation and management (i.e. decisions on what entity is allowed to use a particular band for a particular service) are actually administered by national authorities on the basis of the WRC Radio Regulations. EEA and non-EEA states tend to follow EU harmonisations for economic reasons (such as economies of scale for consumers, interoperability of consumer devices). Assigning spectrum bands differently from regulators in neighbouring countries can result in radio signal interference, requiring careful cross-border management by regulators.

Standards production

70. Standards underpin a range of issues such as trade, interoperability, security, quality, performance, innovation and market access. According to the Centre for Economics and Business Research (CEBR) 'standards have been hugely influential in boosting the sales of UK products and services abroad, with reported impacts averaging 3.2% of annual exports, equivalent to £6.1 billion per year in additional exports.'⁵⁶ ICT technical standards are agreements between predominantly industry partners to create products and services that work in a defined way. They are created in a standards body that is usually industry-lead, and thus industry is very influential.

71. A lot of the bodies in the ICT area are industry only and the main involvement of governments is thus about the regulatory environment in which they work. Some of

⁵⁴ See para. 64 for more information about the composition and role of the CEPT

⁵⁵ EU Spectrum policy framework

⁵⁶ [The Economic Contribution of Standards to the UK Economy](#), Cebr June 2015

the bodies are so-called “formal” standards bodies, meaning that there is some legal recognition of them by governments, often through mention in regulation.

72. There are three European standards organisations (ESOs) recognised by the EU: the European Telecommunications Standards Institute (ETSI), the European Committee for Standardization (CEN) and the European Committee for Electrotechnical Standardization (CENELEC). The UK is a member of both CEN and CENELEC in its own right.

Product and service regulation

73. Standards may be referenced by regulation directly. There is also a hierarchy of standards that is set largely through European legislation. This supports specific needs such as security and safety, as well as supporting products and services that work in all EU countries in a similar manner and facilitate the Single Market. The ESOs have a special status, working with national bodies such as British Standards Institute in the UK. In particular they have the ability to produce standards called ENs (European Standards) which are approved by the European Commission and in many cases EFTA as well.

Existing frameworks for how trade is facilitated between countries in this sector

74. The arrangements described in this section are examples of existing arrangements between countries. They should not be taken to represent the options being considered by the Government for the future economic relationship between the UK and the EU. The Government has been clear that it is seeking pragmatic and innovative solutions to issues related to the future deep and special partnership that we want with the European Union.
75. There are a number of existing arrangements which govern the way in which non-EU Member States trade with the EU in this sector.
76. Telecommunications is an example of a liberalised, yet highly regulated sector. Non-EU based telecoms companies operate in UK and EU markets without discrimination compared to domestic and EU companies as a result of commitments made under the WTO General Agreement on Trade in Services (GATS).
77. GATS includes an Annex on Telecommunications,⁵⁷ and a Protocol on Basic Telecommunications.⁵⁸ This sets out the international rules for a highly liberalised market in telecoms services. Post-GATS, WTO members negotiated on basic telecommunications services which are set out in the Fourth Protocol to the GATS which include additional commitments made by a subset of WTO Members. These

⁵⁷ [Annex on Telecommunications](#), World Trade Organisation

⁵⁸ [Protocol on Basic Telecommunications](#), World Trade Organisation

additional commitments have been scheduled in line with the principles and definitions set out in the Telecommunications Services Reference paper agreed in 1996 and is supplemented by a reference paper⁵⁹ that sets out regulatory principles. These rules apply to 108 of the WTO's 159 Member States and include the EU / UK. The GATS rules provide the rules for cross-border trade in telecoms services, which the UK currently adheres to as a member of the EU.

78. Paragraph 5(a) of the GATS telecoms annex states that each Member shall ensure that any service supplier of any other Member is accorded access to and use of public telecoms networks and services, on reasonable and non-discriminatory terms.
79. The EU Framework (EU Access Directive) is based on the same principles of liberalised and competitive markets as GATS. GATS does not require regulatory harmonisation but seeks to ensure liberalised access by any company that offers telecommunications services within any member (for example providing access to an incumbent's infrastructure).
80. Telecoms chapters of trade agreements go beyond the provisions in GATS to deliver further incremental liberalisation in the sector. For example, the EU-Canada Comprehensive Economic and Trade Agreement (CETA) improves access, while guaranteeing regulatory transparency and safeguarding against anti-competitive practices, while also including a requirement for suppliers to have access to domestic dispute resolution procedures.
81. The majority of EU agreements with third countries include a telecoms section. For example, these range from the Moldova-style Association Agreements⁶⁰ that are aimed at approximating the telecoms laws of Moldova to those of the EU *acquis*; to CETA⁶¹ that have a dedicated telecoms chapter but do not require fully harmonised law, through to agreements the EU has with countries like Algeria⁶² that call for a dialogue on telecommunications policies.
82. In addition, the EU - Moldova / Ukraine / Georgia Association Agreements establish Deep and Comprehensive Free Trade Agreements (DCFTAs), which allow third country access to EU markets and grant EU investors the same regulatory environment in the associated country as in the EU. The agreements refers to, among other things, the powers, impartiality and independence of NRAs; access to markets, networks and other elements; authorisation, registration and licensing; competition and significant market power; and interconnection and universal service obligations.

Devolution and overseas territories

83. Telecoms regulation is a reserved matter and implementation of the EU Electronic Communications Framework is undertaken at the UK level.

⁵⁹ [Reference paper to annex on telecommunications](#), World Trade Organisation

⁶⁰ [Moldova Agreement](#)

⁶¹ [CETA Agreement](#)

⁶² [Algeria Agreement](#)

84. Gibraltar is in the EU, having joined the EEC as part of the UK's 1973 accession. Following the Lisbon Treaty, Article 355 (3) of the TFEU applies to 'the European territories for whose external relations a Member State is responsible'. As such the EU Electronic Communications Framework currently extends to Gibraltar and the UK has addressed EU Pilot cases linked to potential breaches of the Framework in Gibraltar.
85. UK Overseas Territories and Crown Dependencies must be represented by the UK at ITU, OECD, CTO, ECO, ITSO, IMSO and Eutelsat IGO forums. The Overseas Territories cannot officially represent themselves or be represented by any country other than the UK in these forums.
86. Except for Gibraltar, the EU's roaming regulations do not apply to the Overseas Territories and Crown Dependencies. The current roaming rules allow Gibraltar consumers to use Spanish mobile phone networks surcharge-free. The roaming regulations have also removed the previous problem of accidental roaming across the Gibraltar / Spain border.
87. Telecoms is a reserved matter and therefore not devolved. However, mobile roaming is of particular importance to consumers in Northern Ireland, given the high volume of frequent cross-border travel and the effect on daily life for people in the border regions. The EU's roaming regulations have removed the previous problem of inadvertent mobile roaming across the Northern Ireland and Ireland border. (See section 2.1 above for further information on roaming).

Sector views

[This information was provided by the Government to the Committee, but the Committee has decided not to publish this section]