



An Coimisiún um
Rialáil Cumarsáide
Commission for
Communications Regulation

Electronic Communications Services - Strategy Statement 2019 – 2021

Following a mid-term review of ComReg's Five
Year ECS Strategy

Reference: ComReg 19/52

Date: 30 May 2019

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1. Foreword

In 2017 ComReg published its five year strategy for the electronic communications sector. In 2019, half way through the five years, it is timely to reflect on progress made against this strategy and set out our priorities for the remaining period.

The electronic communications sector plays an important role in shaping our economy and society. Over the last 10 years the adoption of electronic communication technologies has enabled people to connect in ways they had never done before and allowed for the creation of new business models and opportunities.

Today, there is virtually no part of our lives which remains untouched by innovations in digital connectivity. The European Commission predicts that a digital single market could contribute €415 billion per year to economic growth, boosting jobs, competition, investment and innovation within Europe. In addition, the EU Digital Europe Programme (2021-2027) will invest in five key digital sectors: high performance computing, artificial intelligence, cybersecurity and trust, advanced digital skills, and ensuring the wide use and deployment of digital technologies across the economy and society, in order to strengthen European industrial technological leadership.

Despite the progress made over the last number of years, not all end-users have benefitted equally. The availability and adoption of new networks, technologies and services has not been uniform throughout the country and end-users in these areas may not have sufficient connectivity to meet their needs.

Private sector investment, State intervention and regulation all have a role to play in ensuring the growing connectivity needs of end-users are met. Recent announcements regarding network rollout and investments in electronic communications are encouraging and underline the confidence in the Irish market. ComReg welcomes investments in technologies and networks which can enhance the overall connectivity of end-users.

As the regulator for the electronic communications sector, ComReg strives to shape the competitive landscape, provide regulatory certainty and give the necessary incentives to make large scale investments in electronic communications networks possible. Without independent regulation it is likely that certain investments would have been slower to occur or not occurred at all, resulting in less innovation and end-users having less choice at higher prices.

This strategy statement notes the progress made over the last two years of the Five Year Strategy and details how we will implement this strategy over the near term.

Over the last two years we made a series of regulatory decisions, including for example, decisions relating to key wholesale broadband markets, unlocking further private sector investment and network rollout across the country. In addition, recognising the importance of connectivity in our everyday lives, we have commenced

the process of assigning significant tranches of new radio spectrum which will help deliver enhanced mobile services. Over the last two years we have targeted our various compliance and enforcement activities in a way to maximise effectiveness. Furthermore, we have taken steps to enhance governance arrangements in Eir which will help strengthen competition in the sector.

Our Five Year Strategy set out five strategic intents for the organisation:

- **Competition** – The market delivers innovation and the greatest possible choice of wholesale and retail operators.
- **Consumer Protection** – Consumers can choose and use communications services with confidence.
- **Investment** – Efficient investment has enabled affordable, high-quality and widespread access to communications services and applications.
- **Enforcement and Compliance** – Regulated entities comply with regulatory obligations.
- **Organisation** – We are an effective and relevant regulator.

Over the next two years of our strategy we look forward to progressing our vision for the sector – that **consumers and businesses in Ireland have affordable, high-quality, and widespread access to communications services and applications that support their social and economic needs.**

Garrett Blaney, Chairperson

Jeremy Godfrey, Commissioner

Robert Mourik, Commissioner

2. Introduction

Background

- 2.1 The Digital Economy is an essential and growing component of the Irish economy, estimated to be worth 6% (€12.3bn) of Ireland's GDP in 2016.¹
- 2.2 The European Commission's Digital Economy and Society Index² ranked Ireland in sixth place in Europe in 2018. A key part of the DESI calculation is *connectivity*, that is, the ability to exchange information using electronic communications services and electronic communications networks. ComReg has a central role in regulating these services to ensure that consumers and businesses have affordable, high-quality, and widespread access to communications services and applications that support their social and economic needs.
- 2.3 Electronic Communications Services ('**ECS**') and Electronic Communications Networks ('**ECN**'), together referred to as '*the ECS sector*', play an important role in shaping our economy and enabling the digital economy. Services such as mobile telephony and broadband have helped shape our lives and today we rely on them in more ways than ever before. It is estimated that in 2016 the sector contributed €2.4 Billion to the Irish economy, or 1.4% of Gross National Income (GNI*).³ This figure does not take into account the contribution that the ECS sector makes in terms of facilitating economic activity across the wider economy and society (e.g. healthcare, education and social networking).
- 2.4 To be competitive in the ECS sector, telecoms operators must provide a range of innovative wholesale and retail products. Competition is the driving force behind markets, driving investment and innovation, and delivering quality services to users at lower prices. However, markets do not always work well, and regulatory interventions are often needed to ensure that markets work correctly and consumers are protected.
- 2.5 As the regulator for the ECS sector⁴, decisions by ComReg have shaped the competitive landscape, provided regulatory certainty and given the necessary incentives to make large scale investments in telecommunications networks possible. Without regulation it is likely that certain investments would have been slower to occur or not occurred at all, resulting in less innovation and end-users having less choice at higher prices.
- 2.6 Over the past five years, many end-users have benefited from access to new networks and technologies, offering faster download speeds and a wider range

¹<https://www.dccae.gov.ie/en-ie/news-and-media/press-releases/Pages/Trading-Online-Enterprise-Impact-Reports.aspx>

² The DESI is an index summarising Europe's digital performance and tracks each EU Member States digital competitiveness. Further details on the DESI are available from: http://europa.eu/rapid/press-release_MEMO-18-3737_en.htm

³ Frontier Economics, report for ComReg, February 2019 – The Contribution of the Telecommunications Sector to the Irish Economy.

⁴ We also regulate the postal sector. Our vision, role, mission and values encompass both the electronic communications and postal sectors, but our strategy for the postal sector is published in a separate strategy statement.

of service bundles (e.g. triple and quad play bundles). Investments in fixed and mobile networks in Ireland over the last 5 years amount to €2.9 billion, ensuring these new networks reach more end-users than ever before.

- 2.7 Despite the progress made over the last number of years, not all end-users have benefitted equally. The availability and adoption of new networks, technologies and services has not been uniform throughout the country. There are still areas of the country where investment is considered uncommercial and unlikely to occur without State intervention. End-users in these areas may not have sufficient connectivity to meet their needs. Private sector investment, State intervention and regulation all have a role to play in ensuring the connectivity needs of end-users are realised.

Our five year vision for the communications sector

- 2.8 In 2017 we published our Five Year ECS Strategy for the period from 2017 to 2021, setting out a vision of the communications sector over the period, the likely regulatory challenges and various goals we aimed to achieve over the period to help deliver on this vision. This Statement acts as a mid-term review of our Five Year ECS Strategy and reaffirms our five Strategic Intents identified in 2017.
- 2.9 Our vision, as set out in the Five Year ECS Strategy, is of a sector where **consumers and businesses in Ireland have affordable, high-quality, and widespread access to communications services and applications that support their social and economic needs**. This vision for the sector is aligned with the broader vision for the sector set down by the Department for Communications, Climate Action & the Environment ('DCCA') and with our legal mandate, as set down in legislation. In addition, ComReg's vision for the sector takes into account the aims of the European Commission's Digital Single Market agenda and the work of the Body of European Regulators for Electronic Communications ('BEREC').⁵
- 2.10 However, ComReg alone cannot deliver this vision for the sector. It will require a combination of Government policy interventions, regulatory interventions by ComReg, and, of course, investment by industry. Nonetheless, we consider our strategy should be guided by a vision of the outcome which we aim to help to bring about.

Our vision for the communications sector

Consumers and businesses in Ireland have affordable, high-quality, and widespread access to communications services and applications that support their social and economic needs.

⁵ The Body of European Regulators for Electronic Communications (BEREC) was established by Regulation (EU) 2018/1971 of the European Parliament and of the Council of 11 December 2018.

Our role, mission and values

- 2.11 Our Five Year ECS Strategy set out that our role, as an economic regulator, is to **ensure that communications markets operate in the interests of end-users and society**. Ensuring a well-regulated market is one of the most important tools in working towards this vision for the electronic communications sector.
- 2.12 We take a broad view of what it means for a market to operate in the interests of end-users and society. In this regard, we consider that the market should provide as many end-users as possible with advanced services, both fixed and wireless. Other examples of this broader interest include the provision of services such as emergency calls and the universal design and adaptation of services so that, for example, people with disabilities can participate fully in society.
- 2.13 Our mission reflects this broad view of our role: Through effective and relevant regulation, to facilitate the development of a competitive communications sector in Ireland that attracts investment, encourages innovation and empowers consumers to choose and use communications services with confidence.

ComReg's Role and Mission

ComReg's role is to ensure that communications markets operate in the interests of end-users and society.

Through effective and relevant regulation, we facilitate the development of a competitive communications sector in Ireland that attracts investment, encourages innovation and empowers consumers to choose and use communications services with confidence.

- 2.14 In order to be an effective economic regulator, it is important that stakeholders have confidence that we discharge our functions independently, based on high-quality evidence and analysis, that we are not biased towards any market participant and that we do not suffer from so-called "regulatory capture". Our values enable stakeholders to have this confidence.

ComReg's Values

- Integrity
- Impartiality
- Effectiveness
- Excellence
- Transparency

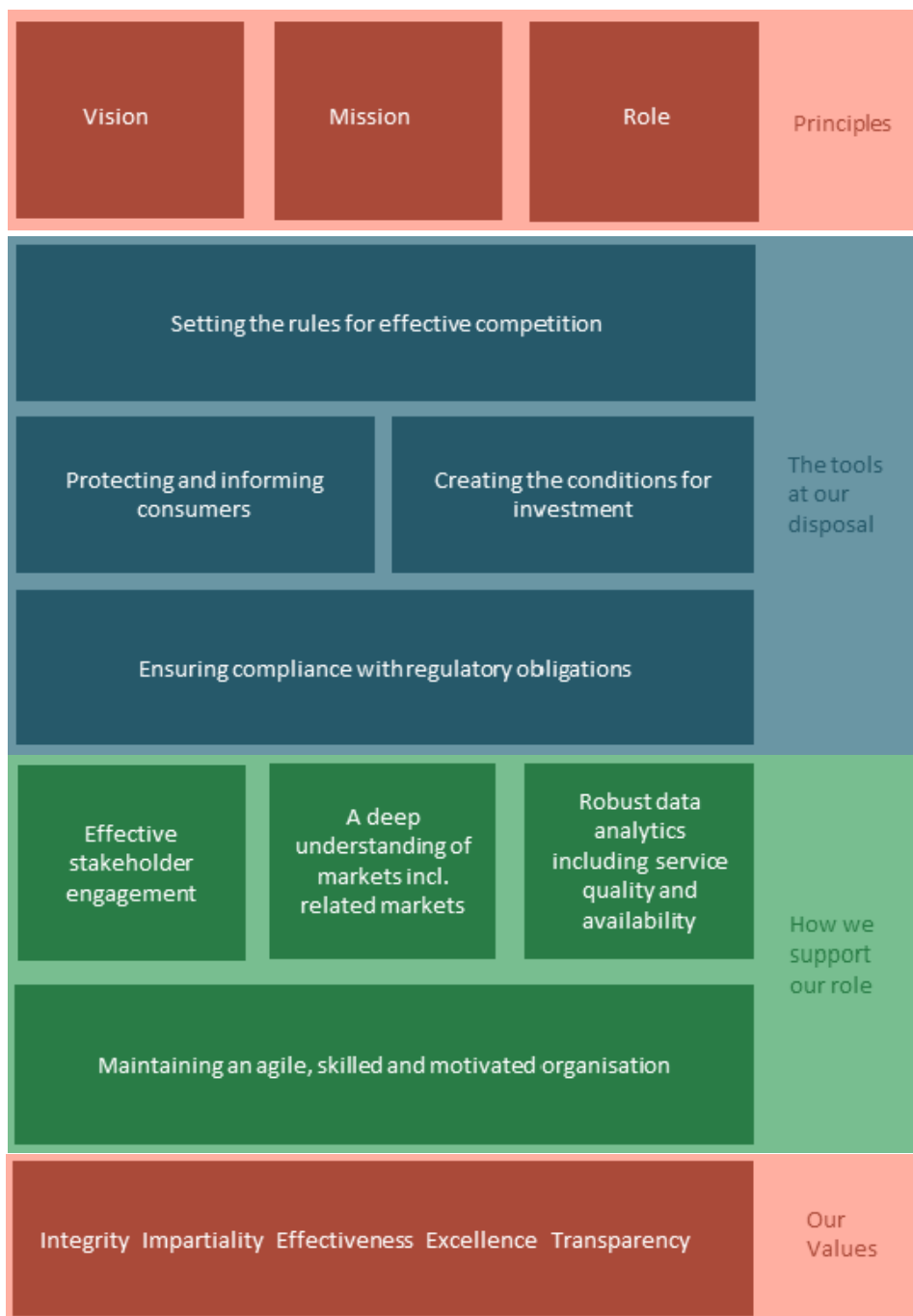
ComReg's Strategic Intent

- 2.15 As set out in our Five Year ECS Strategy, adopting a five year outlook enables us to focus on longer term developments and to begin developing our thinking on what the role of regulation might be in enabling innovation and in dealing with issues that might arise in the future. It also allows stakeholders to plan in a similar fashion. This statement acts as a mid-term review of our Five Year ECS Strategy and reaffirms our vision, mission and strategy identified in 2017.

In addition, this statement acts as the formal ECS Strategy Statement 2019-2021, as required under the Act.

2.16 In our Five Year ECS Strategy we set out our strategic framework (reproduced in Figure 1 below) which helped capture the relationship between our Vision, Mission and Role and the tools available to us. The tools we have to deliver our mission can be categorised into four broad areas – Competition, Consumer Protection, Investment, and Enforcement and Compliance. Underpinning our ability to deliver on our vision and mission is the development of our organisation.

Figure 1: ComReg Strategic Framework



2.17 Against the backdrop of our role, mission and vision, we also set out five statements of strategic intent, describing what we hope to achieve over the period 2017-2021 through the use of the various tools at our disposal. Each of these intents is summarised below and discussed in further detail in the later chapters of this Strategy Statement.

Strategic Intentions 2017-2021		
1.	Competition	The market delivers innovation and the greatest possible choice of wholesale and retail operators
2.	Consumer Protection	Consumers can choose and use communications services with confidence
3.	Investment	Efficient investment has enabled affordable, high-quality and widespread access to communications services and applications
4.	Enforcement and Compliance	Regulated entities comply with regulatory obligations
5.	Organisation	We are an effective and relevant regulator

2.18 In what follows, we first review the economic and legal framework that we operate within and discuss some changes that have arisen since the Five Year ECS Strategy was published in 2017. We then consider the principal trends and challenges that are likely to have an impact on effective and relevant regulation by ComReg over the period to 2021. Finally, we consider each of our strategic intents summarised above, the progress made against each of these and the related goals and particular programmes of work which ComReg intends to undertake over the period 2019-2021.

3. The Economic and Legal Context

The economics of electronic communications

- 3.1 As discussed in our Five Year ECS Strategy, there are several reasons why the various ECS markets we regulate and monitor may be at risk of not operating efficiently nor in the interests of end-users and society (see Explanatory Box 1). ComReg's remit and powers allow it to intervene in the various ECS markets (as appropriate) to help ensure these markets operate efficiently.

Explanatory Box 1: Reasons why ECS markets may not operate in the interests of end-users and society

The commercial nature of private investment may mean that high-quality networks may only be rolled out in areas where population densities are such that potential revenues from the end-users in those areas exceed costs. Furthermore, the quality of basic networks may not be maintained in areas where costs are high and competition is correspondingly weak or non-existent. Similarly, the price at which electronic communications services would be offered on a commercial basis may mean that some services are not affordable for certain end-users. Further, for reasons other than service availability or affordability, certain end-user groups may be unable or uninterested in adopting new technologies. Consequently, investment decisions made on this basis may not fully take into account the economic and the social value to society as a whole of more widespread service adoption.

Market failures impede the ability of the normal competitive process to yield welfare optimal outcomes. The objective of economic regulation is to attempt to correct or compensate for the presence of market failures through appropriate interventions. It is possible to map many of ComReg's statutory functions and objectives back to an underlying market failure. There are four main market failures are: market power (or monopoly power in the extreme), externalities (related to public goods), information asymmetry and behavioural bias.

- **Market power** refers to the ability of one operator to raise prices above, or reduce quality below, that which would prevail in a competitive market. Market power may stem from two principle sources - the reluctance or the inability of consumers to switch in response to a degradation of terms and conditions. This may occur because switching is difficult/costly, or because there are limited or no comparable alternatives available, or in other words, because the market structure is monopolistic. In electronic communications markets, both of these sources of market power are present, though it is the latter source – the monopolistic market structure – which has been the traditional focus of regulation in the sector. The monopolistic structure of some electronic communications markets arises because of the often large sunk costs associated with establishing a physical network. This provides the motivation for the wholesale regulation of such markets.
- **Externalities** refer to the costs or benefits of any economic activity which are not fully felt by the economic actor undertaking the activity. Activities that generate negative externalities are undertaken more than is socially desirable, but those with positive externalities are underprovided. Intervention is thus required to promote behaviour that yield positive externalities and discourage activities with negative externalities. There are examples of both positive and negative externalities in electronic communications markets.
- **Information asymmetry** refers to the situation where parties to a transaction have different information. An example of asymmetric information in the electronic communications markets can occur, for example, if a consumer does not understand the specifications or terms and conditions of products and services. Having incomplete information about a good or product makes it difficult for a consumer to determine how much they value it – essentially, it prevents the price mechanism from working effectively and may lead to consumers overpaying for a product, or not purchasing something that actually suits their needs. ComReg tackles this particular information asymmetry by requiring accurate product descriptions and quality guarantees.
- **Behavioural bias** refers to how individuals often act in a non-rational manner, contrary to the expectation of conventional economic models. Such irrational behaviour can lead to people making poor choices. In the ECS sector this can manifest itself in people choosing products and services that may not suit their needs, or failing to make switching decisions that would save money.

A third characteristic of electronic communications markets is that they form part of a wider eco-system, which includes a range of related markets such as markets for content and services delivered over the internet. Much of the economic and societal value of electronic communications markets derives from their role as an enabler of innovation in these markets. There are complex dynamics to the inter-relationships among these markets and it is important that electronic communications markets do not evolve in a way which inhibits innovation.

- 3.2 The growth and take-up of services such as mobile telephony and broadband have helped shape our lives, our social interactions and our working environment. Our reliance on affordable, high-quality and widely accessible ECS should therefore not be underestimated.
- 3.3 As noted in Figure 17 (Chapter 7), there has been considerable investment in the ECS sector over the last 5 years. This level of investment underlines the significant contribution that the ECS sector makes to the Irish economy. Investments in ECS support change and innovations across the entire economy. Investments in ECS have transformed the way we work, communicate and consume. ECS have helped lower barriers to entry and associated transaction costs, allowing consumers and businesses to interact in more ways than before. In addition, as the use of ECS grows over time, it helps enable a new generation of personal and home devices, known as the 'Internet of Things' or 'IoT'. Furthermore, ECS supports the delivery of social goods, such as education or healthcare and allows citizens to communicate in new ways via social networks.
- 3.4 The contribution of ECS to the Irish economy and society cannot simply be limited to the economic value created in the sector itself, instead a wider assessment of the contribution of ECS to the economy is required. As part of the 2019-2021 ECS Strategy Statement, ComReg set out to estimate the contribution of the ECS sector to the wider economy and society. A report for ComReg by Frontier Economics estimates that:
- The total value added of telecoms goods and services produced in Ireland amounted to €2.4 billion in 2016.⁶
 - ECS is a crucial enabler in many sectors of the economy. These sectors produce up to €69 billion in 2016.⁷
- 3.5 Further details on the contribution of ECS to the Irish economy are set out in ComReg Document 19/09b, appended to this Consultation.

Macroeconomic Outlook

- 3.6 Since ComReg published its Five Year ECS Strategy in 2017, there have been a number of developments in the wider economy that have the potential to impact the markets we regulate and monitor, and the various stakeholders who engage with these markets.
- 3.7 ComReg recognises that ECS markets do not and cannot operate in isolation to the wider economy. As such these markets are vulnerable to changes in the

⁶ In order to understand the full contribution to the economy it is necessary to include product taxes which are levied on products and services which are not included within 'Gross Value Added'. This figure of €2.4 billion is therefore the sum of sector value added, product taxes and indirect impacts.

⁷ Frontier considered those sectors which are either particularly intensive users of telecommunications or very digitally intensive (and thus depending of telecommunications). Intensive telecommunications users were classified as sectors above the 85th percentile in the following two metrics; telecoms inputs as a percentage of output, and the proportion of total inputs that are telecommunications inputs. Digitally intensive sectors are those ranked above the 85th percentile in either its use of either publishing or computer programming inputs, using data from the CSO's input-output tables. The total GVA of the 22 identified sectors was €69 billion in 2016.

macro economy and to decisions made internationally which can impact the Irish economy and telecommunications generally. Many ECS providers operating in Ireland are part of wider groups of companies, providing services in a number of countries. As such, investments in ECS in Ireland can depend on how these companies are performing, both domestically and internationally at group level.

- 3.8 The macroeconomic climate in Ireland and globally has the potential to impact the telecommunications sector. Changes in the macroeconomic climate can influence consumer expenditure, the sentiment of the ECS sector to make investment decisions, and government policy and spending decisions on telecommunications.
- 3.9 The domestic economic conditions are relevant to ECS and related markets as they directly and indirectly affect both service providers and consumers. For example, higher employment means that households typically are earning more. They can choose to spend some of this extra money on ECS services, thus increasing sales and revenue for the industry. A better business investment sentiment means that operators will feel more inclined to invest in the market or that other businesses will be likely to invest in better communication systems.
- 3.10 There are challenges, however. While the Irish economy has been on a steady recovery path since the last recession, international factors, such as Brexit and geopolitical tensions may cause the economy to slow. The RED C Consumer Mood Monitor from January 2019⁸ shows a decline in general consumer confidence, with a large majority of people expressing concern about the possible negative impact from Brexit on the Irish economy.
- 3.11 The impact of Brexit depends on the terms of the UK withdrawal from the EU. The uncertainty around Brexit has potential implications for the telecommunications industry in Ireland both through:
- Direct ways (for example, roaming regulation and the impact on operators who are part of a group company based in the U.K.); and
 - Indirect ways via broader macroeconomic impacts (such as consumer spending and confidence, investment, economic sentiment, impacts on trade etc.)
- 3.12 The potential impact of Brexit on the ECS sector is further discussed in Explanatory Box 2.

⁸ RED C Consumer Mood Monitor (January 2019) <https://www.redcresearch.ie/wp-content/uploads/2019/01/RED-C-Consumer-Mood-Monitor-January-2019.pdf>

Explanatory Box 2: The impact of Brexit on the Irish ECS sector

On 29 March 2017, the United Kingdom notified the European Council of its intention to leave the European Union, in accordance with Article 50 of the Treaty on European Union. This triggered the start of a two-year negotiation, also known as the Article 50 process.

The objective of the negotiations is to agree the terms of the UK's departure from the EU in an orderly manner. The ultimate consequences of the UK's decision to leave the EU will take time to be fully realised, but a number of short to medium term potential repercussions for the ECS and related markets can be identified.

These are in addition to the well-documented implications for the wider economy which may include interrupted supply chains, decreased consumer and investor sentiment, an increase in unemployment and a high level of economic and social uncertainty, telecommunications sector specific implications.

ComReg is actively monitoring the potential implications of Brexit on the telecommunications sector, and will issue guidance and information as required. Potential developments may include the following:

- In the case of a no deal Brexit, the UK will not be subject to the Roam Like at Home regulations. These regulations were introduced in June 2017 and mean that consumers pay domestic rates when using their mobile devices regardless of where they are in the EU. As well as affecting those who travel frequently to the UK, the reintroduction of roaming rates would have particular implications for the 456,000⁹ Irish consumers living in the border region where inadvertent roaming (when a phone signal connects to a network in another country) may become an issue.
- Communications operators headquartered in the UK could be impacted by any recession in that market, especially in relation to investment decisions in Ireland. This would particularly be the case if a constriction of capital markets in the UK reduced the ability of firms to access funds.
- The post-Brexit relationship between the UK and the EU is unknown. It is possible that non-trivial trade barriers could be imposed, increasing the costs to British-based firms of operating in the Irish market.
- Post Brexit, regulations could create barriers to UK service providers serving the EU market.
- In the short term, ECS providers buying electronics carrying a CE mark may face delays in importing UK originating goods to Ireland, as safety checks may need to be carried out to ensure compliance with the CE standard as such checks will no longer be carried out in the UK.

The legal context

3.13 ComReg was established by the Communications Regulation Act 2002¹⁰ ("the 2002 Act") as the successor to the Office of the Director of Telecommunications Regulation (ODTR), which had itself been established in 1997¹¹. Over the last two decades the scope of our regulatory remit has changed, reflecting changes in domestic and European policy towards communications markets as well as changes in technology. Today, ComReg's core remit encompasses:

- The regulation of electronic communications networks and services¹²;

⁹ Source: CSO, Census 2016

¹⁰ The Communications Regulation Act 2002 has been amended by, *inter alia*, the Digital Hub Development Agency Act 2003, the Broadcasting (Amendment) Act 2007, the Communications Regulation (Amendment) Act 2007, the Broadcasting Act 2009, the Communications Regulation (Premium Rate Services and Electronic Communications Infrastructure) Act 2010, the Ministers and Secretaries (Amendment) Act 2011, the Communications Regulation (Postal Services) Act 2011, the Protected Disclosures Act 2014, the Competition and Consumer Protection Act 2014, the Freedom of Information Act 2014 the Communications Regulation (Postal Services) (Amendment) Act 2015, and the Communications Regulation (Postal Services) (Amendment) Act 2017.

¹¹ By section 2 of the Telecommunications (Miscellaneous Provisions) Act 1996, which entered into force on 10 March 1997.

¹² Section 10(1)(a) of the 2002 Act.

- The management of the radio frequency spectrum and national numbering resource¹³; and
 - The regulation of postal services¹⁴.
- 3.14 ComReg also has a number of additional functions, including the regulation of Premium Rate Services ('**PRS**')¹⁵, Emergency Call Answering Services ('**ECAS**')¹⁶, the reduction of the costs of high speed broadband deployment¹⁷, roaming¹⁸ and net neutrality¹⁹ amongst others²⁰. In addition, ComReg has shared powers with the Competition and Consumer Protection Commission²¹ and some shared and complementary powers with the Data Protection Commission in respect of specific aspects of data privacy.²² ComReg also has a variety of other powers and functions derived from national legislation.
- 3.15 From 2002 to date (and continuing until 20 December 2020), electronic communications in EU member states have been regulated pursuant to a Common Regulatory Framework comprised of five principal directives:
- The Framework Directive²³
 - The Authorisation Directive²⁴
 - The Access Directive²⁵
 - The Universal Service Directive²⁶
 - The Privacy Directive²⁷
- 3.16 These directives were implemented in Ireland by way of a suite of domestic regulations made in 2003 and amended in 2011, following the adoption by the

¹³ Section 10(1)(b) of the 2002 Act.

¹⁴ Section 10(1)(ba) and (c) of the 2002 Act.

¹⁵ Section 10(1)(cb) of the 2002 Act, inserted by the Communications Regulation (Premium Rate Services and Electronic Communications Infrastructure) Act 2010.

¹⁶ Section 10(1)(ca) of the 2002 Act, inserted by the Communications Regulation (Amendment) Act 2007.

¹⁷ 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; European Union (Reduction of Cost of Deploying High Speed Public Communications Networks) Regulations 2016 (S.I. No. 391 of 2016).

¹⁸ Various EU and domestic regulations from 2007 to 2017.

¹⁹ See, e.g., Regulation (EU) 2015/2120 of the European Parliament and of the Council of 25 November 2015 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.

²⁰ For clarity, the list of powers and functions outlined here is not intended to be an exhaustive list. For more detail on ComReg's functions and powers, please see ComReg's website - <https://www.comreg.ie/about/legislation/>

²¹ In respect of certain ex post competition legislation and consumer protection legislation, insofar as they apply to the electronic communications and PRS sector.

²² European Communities (Electronic Communications Networks and Services) (Privacy and Electronic Communications) Regulations 2011, S.I. No. 336 of 2011

²³ Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive)

²⁴ Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive)

²⁵ Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive)

²⁶ Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive).

²⁷ Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Privacy Directive).

EU in 2009 of two amending directives (the Better Regulation Directive²⁸ and the Citizens' Rights Directive²⁹).

- 3.17 The 2002 Act and the Framework Regulations set out a number of statutory objectives for ComReg to follow, which include:
- Promoting the interests of end-users of communications services
 - Promoting investment and innovation
 - Promoting competition, and
 - Ensuring efficient management and use of the radio spectrum.
- 3.18 When exercising our statutory powers, we make individual decisions based on the evidence, taking action in a proportionate manner having regard to our statutory objectives. Our statements of strategic intent and our strategic goals are consistent with our statutory objectives and are used to help us establish priorities.

Changing Regulatory Framework

- 3.19 The EU Commission has replaced the entire Common Regulatory Framework for the regulation of the electronic communications sector. This has been done by way of the adoption of a new directive that when in force replaces the current suite of directives that comprise the EU Common Regulatory Framework for electronic communications.

The European Electronic Communications Code

- 3.20 On 17 December 2018, the European Parliament adopted a new directive to replace the 2002 Common Regulatory Framework, Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the “European Electronic Communications Code (Recast) Text with EEA relevance”, known colloquially as “the European Electronic Communications Code”, “the EECC” or simply “the Code”. While this Directive came into force on 20 December 2018, Member States have until 21 December 2020 to adopt and publish the laws, regulations and/or administrative provisions necessary to comply with and give effect to the Code and those new measures will be applied from 21 December 2020.
- 3.21 The EECC replaces the Common Regulatory Framework adopted in 2002 and amended in 2009 under which ComReg (and all other NRAs) have regulated electronic communications since 2002.
- 3.22 With the advent of the new European Electronic Communications Code,

²⁸ Directive 2009/140/EC of the European Parliament and of the Council on 25 November 2009 amending Directives 2002/21/EC on a common regulatory framework for electronic communications networks and services, 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities, and 2002/20/EC on the authorisation of electronic communications networks and services .

²⁹ Directive 2009/136/EC of the European Parliament and of the Council of 25 November 2009 amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector and Regulation (EC) No 2006/2004 on cooperation between national authorities responsible for the enforcement of consumer protection laws.

ComReg will likely have a number of new functions and objectives, additional to those contained in the previous Common Regulatory Framework, including, for example, in relation to connectivity.

- 3.23 The EECC is the most recent and primary legislative initiative dealing with the new infrastructure required for the digital economy. Other legislative changes are briefly discussed below. The EECC is part of the wider connectivity package proposed by the European Commission in September 2016. Its aim is to enable full participation of EU citizens and businesses in the digital economy.
- 3.24 The European Electronic Communications Code was created to provide a new legislative framework for ECS markets in Europe that allows for closer harmonization between the different markets across the European Union, and thus facilitates the move towards the Digital Single Market. The EECC places particular emphasis on the following:
- Having a consistent approach to spectrum management;
 - Incentivising investment in high-speed broadband networks;
 - Updating end-user rights in relation to OTTs and bundles so as to create a more level playing field;
 - Establishing rules around symmetric access to infrastructure;
 - Putting into place modified procedures for market analysis and peer-revision of remedies;
 - Setting common 5G goals and spectrum bands;
 - Redefining the approach to universal broadband access; and
 - Addressing some governance issues related to the autonomy of NRAs and the functioning of BEREC³⁰.
- 3.25 Specific measures included in the EECC are further discussed in Explanatory Box 3 below.
- 3.26 As the new Code is being introduced across the EU by way of a single new directive, this directive will need to be transposed into the national law of each Member State, and this process of transposition is entirely for each individual Member State to undertake. In Ireland, the primary responsibility for transposition of the new Code into domestic Irish law will lie with the Department for Communications, Climate Action and the Environment. Delivery of digital legislation to complete the Digital Single Market Strategy will enable ComReg to contribute to the delivery of the National Digital Strategy. In particular the timely transposition of the new Code, to provide regulatory certainty for business and citizens from a solid regulatory framework as a foundation to build trust, increase investment and rollout of digital infrastructure, and enable opportunity for citizens and society. ComReg welcomes the engagement with DCCAE on the delivery of the new Code and subsequent discussions to date on transposition of that new Code into domestic law in Ireland, in support of our common strategic objectives. Further detailed engagement on the

³⁰ BEREC stands for Body of European Regulators for Electronic Communications. Further information on BEREC can be found on its website: <https://berec.europa.eu/>

Department's project plan to ensure a smooth and timely transposition would better enable ComReg to deliver implementation of the Code.

- 3.27 The policy implications of the EECC will be realised once it is transposed into Irish national law by DCCA. The impacts it will have will vary with time, some effects being more immediate than others, and will vary for each market player³¹.
- 3.28 By 21 December 2025 and every five years thereafter, the Commission shall review the functioning of the EECC and report to the European Parliament and to the Council. Those reviews shall evaluate in particular the market implications and whether the *ex-ante* and other intervention powers pursuant to the EECC are sufficient to enable national regulatory authorities to address uncompetitive oligopolistic market structures, and to ensure that competition in electronic communications markets continues to thrive to the benefit of end-users. In addition, by 21 December 2025, and every five years thereafter, the Commission shall review the scope of universal service, in particular with a view to proposing to the European Parliament and to the Council that the scope be changed or redefined. Furthermore, BEREC shall, by 21 December 2021 and every three years thereafter, publish an opinion on the national implementation and functioning of the General Authorisation, and on their impact on the functioning of the internal market.
- 3.29 To ensure ComReg's various activities are informed by and not adversely impacted by the EECC, insofar as possible, our strategy, vision, programme and activities set out in this Strategy Statement take into account the various provisions of the EECC. ComReg is mindful of the key features of the EECC and how they impact ongoing work streams. As such, where an item in ComReg's work programme (such as a regulatory decision) covers the period post 2020 (i.e. after the repeal of the old framework and transposition of the EECC into Irish law) to the extent it is appropriate at the time of taking any action, we will take into account the aims and requirements set out in the EECC.

³¹ The EC has published a number of helpful documents that review the regulatory framework for electronic communications, available here: <https://ec.europa.eu/digital-single-market/en/news/review-electronic-communications-regulatory-framework-executive-summaries>

Explanatory Box 3: Key Features of the new EECC

The European Electronic Communications Code (EECC) entered into force on 20 December 2018, with Member states having two years to transpose the EECC into national law, i.e. by 21 December 2020 the latest.

The table following summarises the main elements of the EECC.

New General Objective

The EECC has four stated objectives - promoting competition; contributing to the development of the internal market; promoting the interests of EU citizens; and promoting the widespread access to, and take-up of, very high capacity networks (both fixed and wireless), for all end-users on the basis of reasonable price and choice. The final objective, relating to the connectivity of end-users, is a new objective in the EECC.

Access regulation

- Symmetric regulation: NRAs may impose symmetric obligations, upon reasonable request to wiring, cables and associated facilities, inside the building or up to the first concentration point or distribution point outside the building, when replication of network elements is “economically inefficient” or “physically impractical”.
- Co-investment: The EECC allows for regulatory relief for SMP operators which offer commitments to deploy very high capacity networks via co-investment. BEREC shall produce guidelines for NRAs on the consistent application of criteria to evaluate commitments on co-investment.
- Wholesale only networks: NRAs should apply a “more favourable” regulatory treatment on relevant SMP operator where the operator is a wholesale only provider (i.e. does not operate in the retail market).

Market Analysis

- Reviews of market analyses should take place every 5 years.
- Termination rates: the methodology for setting voice call termination rates will be set by a Commission Decision, rather than by the individual NRA. The EC rates shall be based on the weighted average of efficient costs in fixed and mobile networks.

Consumer protection provisions:

- Ensuring that all citizens have access to affordable communications services;
- Ensuring that international calls within the EU will not cost more than 19 cents per minute;
- Giving equivalent access to communications for end-users with disabilities;
- Promoting better tariff transparency and comparison of contractual offers;
- Guaranteeing better security against hacking, malware, etc.;
- Better protecting consumers subscribing to bundled service packages;
- Making it easier to change service provider and keep the same phone number, including rules for compensations if the process goes wrong or takes too long;
- Increasing protection of citizens in emergency situations, including retrieving more accurate caller location in emergency situations, broadening emergency communications to text messaging and video calls, and establishing a system to transmit public warnings on mobile phones.

Spectrum

- License durations: The EECC includes minimum license durations for harmonised bands, with obligations to license spectrum use for at least 15 years, or up to 20 years.
- Peer review: the RSPG shall organise and lead any voluntary peer review processes for national spectrum assignments which NRAs may request.

3.30 This Strategy Statement, which covers 2019 to 2021, includes the period when transposition of the EECC must be completed. As such, this represents an opportunity for ComReg to consider how this new regulatory framework might impact the sector we regulate and also a challenge for ComReg and the sector over the next two years until transposition, which is further discussed in Chapter 3.

3.31 The EECC has four stated objectives - promoting competition; contributing to the development of the internal market; promoting the interests of EU citizens;

and promoting the widespread access to, and take-up of, very high capacity networks (both fixed and wireless), for all end-users on the basis of reasonable price and choice. The fourth objective, relating to the connectivity of end-users, is a new objective in the EECC³².

3.32 As such, for ComReg and Ireland generally, this means supporting the rollout of the highest capacity networks that are economically sustainable in a given area, while at the same time aiming for convergence in the network capacity available in different areas. This new objective broadly aligns with our vision for the telecommunications market, as set out in Chapter 1, that *consumers and businesses in Ireland have affordable, high-quality, and widespread access to communications services and applications that support their social and economic needs*.

3.33 ComReg, in November 2018, published the results of three connectivity studies which considered how best to meet consumer's connectivity needs³³, estimating future mobile connectivity network costings³⁴ and the implications for spectrum awards and coverage obligations³⁵. Of particular note from these studies is that:

- Connectivity (both fixed and wireless) is understood as being the ability of users and their devices to connect and communicate with each other and their networks. This can take different forms, with many different networks (both fixed and wireless) and devices being used, increasingly seamlessly, to communicate and consume content and applications.
- Policy or regulatory interventions could be used to secure more extensive coverage outcomes than would result from marketplace competition alone. These would, however, need to be carefully designed, and based on an assessment of the costs and benefits to society of the additional coverage sought.

3.34 ComReg further considers the implications of the connectivity objective in Chapter 7 of this Strategy Statement.

Other changes to legislation

3.35 In addition to the changes outlined above regarding the regulatory framework, there has been a host of new EU legislation relating to, amongst others, data protection, broadband costs, roaming, net neutrality (often referred to as open internet access), cyber-security, taxation of online platforms, e-commerce, "big

³² The first three objectives, promoting competition, contributing to the development of the internal market and promoting the interests of EU citizens are existing objectives under the existing EU Common Regulatory Framework.

³³ Documents 18/103a and b, "Meeting Consumers' Connectivity Needs" – a report (Document 18/103b) and accompanying infographic (Document 18/103a) from Frontier Economics Ltd. which provides an overview of the challenges in providing connectivity for consumers in Ireland and outlines actions that can be taken by all stakeholders, including consumers, industry, government and ComReg, to optimise the levels of connectivity given these challenges

³⁴ Document 18/103c - "Future Mobile Connectivity in Ireland" - a report (Document 18/103c) from Oxera Consulting LLP, with Real Wireless Ltd., which considers the future mobile connectivity services likely to emerge in Ireland and the estimated costs of providing connectivity to such services at high coverage levels in Ireland.

³⁵ Document 18/103d: "Coverage obligations and spectrum awards" – a report (Document 18/103d) from DotEcon Ltd. which considers options as to how appropriate coverage and rollout obligations could be included in future spectrum awards.

data”, data retention, the enforcement of European competition law, copyright in the DSM, the regulation of online platforms and, in due course, e-privacy and others.

- 3.36 ComReg recognises that as the political, economic, social and environmental landscape changes, both in Ireland and at an EU level, additional changes to our role, functions and legislative powers may arise. Where appropriate, we will offer technical expertise and advice to the Department for Communications, Climate Action and the Environment at a national level and/or with BEREC at the EU level on any proposed legislative changes to our role, functions or powers.

4. Trends and Challenges

4.1 In our Five Year ECS Strategy we identified five principal trends and challenges which are likely to shape the sector and pose regulatory challenges over the period to 2021:

- **Non-uniform end-user experiences:** Accessibility and connectivity have not evolved uniformly, and the experience of end-users has not always kept pace with changes in expectations.
- **Expanding set of related markets relevant to the regulation of electronic communications:** Effective regulation requires an understanding of the complex electronic communications ecosystem, especially where electronic communications is an enabler of innovation in related markets.
- **Continued evolution of fixed and mobile networks:** Future electronic communications networks, such as 5G networks, are likely to have differing requirements.
- **Increase in connected “things”:** While the current electronic communications ecosystem focuses primarily on how people connect, the next wave of innovation is anticipated to be in relation to connected “things”.
- **Changing regulatory framework:** As part of a broader digital strategy in Europe, the regulatory framework for electronic communications introduced in 2002 (and updated in 2009) was revised, and the European Electronic Communications Code was set in its place in 2018.

4.2 In arriving at these trends and challenges, ComReg considered the range of external environmental factors³⁶ that may impact the sector, its consumers and the role of the regulator itself. In this Strategy Statement we review each of these trends and challenges and consider how they might impact the sector over the period to 2021.

End-user Experience

4.3 In our Five Year Strategic Outlook we identified the expanding user experience of Irish consumers as a key trend over the five years from 2017 to 2021. As part of this trend we noted the growing popularity of hand-held and mobile devices, how the growing diversity of networks available is impacting traditional consumer and business behaviours, and the continued adoption of new technologies.

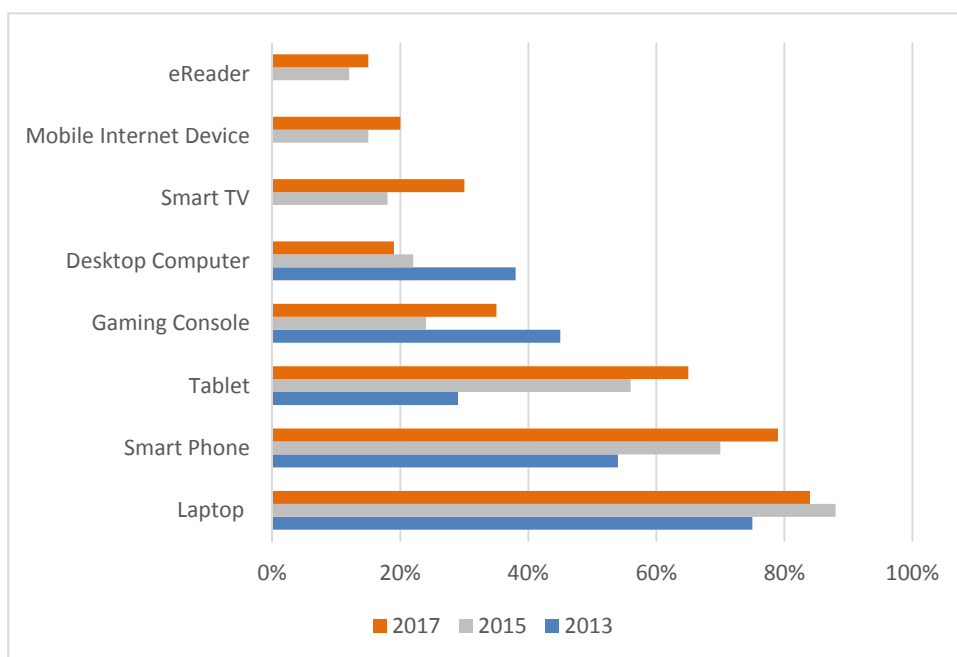
4.4 We have seen these developments continue to move strongly in the same direction in the period since the Five Year Strategic Outlook and expect them to continue to grow over the coming years.

³⁶ ComReg determined the range of trends and challenges to be considered using a PESTLE analysis.

Popularity of hand-held and mobile devices

4.5 Over the last 10 years the adoption of electronic communication technologies has enabled people to connect in ways they had never done before. Today, there is virtually no part of our lives which remains untouched by innovations in digital connectivity.³⁷ The popularity of handheld and mobile devices is continuing to grow as consumers switch away from traditional forms of internet access (see Figure 2 for a breakdown of devices used throughout Irish homes between 2013 and 2017). We expect that this trend will continue over the forthcoming period, with further growth in the use of smartphones, tablets and in-home IoT devices (e.g. Smart TV).

Figure 2: Home (%) with devices connected to Fixed Broadband³⁸



Continued adoption of new technologies

4.6 Irish consumers are continuing to adopt new technologies in their homes and expect to use more technology in the future. Figure 3 from ComReg's Ireland Communicates Survey 2017 shows the current and anticipated use of various technologies in 2022. Based on these survey results, Irish consumers expect that ownership and use of mobile technologies (e.g. tablet computers) and personal and in-home IoT devices (e.g. smart speakers) will increase.

4.7 ComReg recognises that the availability and adoption of many emerging technologies may not be uniform – it will likely be led by younger consumers, living in urban areas, where disposable incomes are higher and faster access networks are available.

4.8 The expected future ownership of technologies suggests Irish consumers will require a greater level of access to fixed and mobile networks in the future, as

³⁷ European Commission, Digital Agenda Scoreboard Key Indicators.

³⁸ ComReg Ireland Communicates Survey, 2017, ComReg Consumer ICT Surveys 2013 and 2015.

their consumption pattern changes.

Figure 3: Current and Anticipated Future technology use³⁹

	Use (as of 2017)	Anticipated Future Use (in 2022)
	%	%
Petrol/ Diesel based Car	84	↓ 72
Tablet/ iPad	65	↑ 74
Smart TV	29	↑ 56
TV Streaming Box	13	↑ 34
Smart Watch/ Wearable Fitness Tracker	9	↑ 25
Apple/ Android Pay	7	↑ 26
Smart Home Thermostat	4	↑ 32
Hybrid Car	4	↑ 26
Other Smart Home Devices	3	↑ 25
Fully Electric Car	1	↑ 14
Autonomous/ Self-Driving Car	N/A	4

Changing traditional consumer and business behaviour

4.9 The growing diversity of social networks available is impacting traditional consumer and business behaviours.

- **Consumers:** A number of photo and video sharing platforms and professional and social networks are influencing how much people go online, how they use the internet, watch TV, and send and receive phone calls and messages. This trend continues to grow, as 66% of Irish adults aged 15 years and older own a Facebook account, 39% own an Instagram account, 33% own a Twitter account, and 33% own a LinkedIn account⁴⁰.
- **Businesses:** Business practices and working behaviours are also changing as advances in electronic communication services create new opportunities. For example, the percentage of people employed in Ireland who received a portable device from their employers was 51% in 2017, well above the EU average of 23.4%. 68% of companies in Ireland use social media, compared to 47.5% in the EU⁴¹.

4.10 Another related tendency is that of online commercial channels becoming more common as they allow businesses to expand sales online. For example, 46% of large companies sell online with a turnover from e-commerce of 42%, while 30% of small-to-medium enterprises sell online with a turnover of 23%. This increased e-commerce activity over time can be seen in Figure 4 below.⁴² The Five Year ECS Strategy Statement noted that in 2015, 63% of Irish people had ordered goods or services online, rising to 70% in 2018. This trend will continue to rise over time, as the range of e-commerce sites available to Irish consumers

³⁹ ComReg Ireland Communicates Survey, 2017

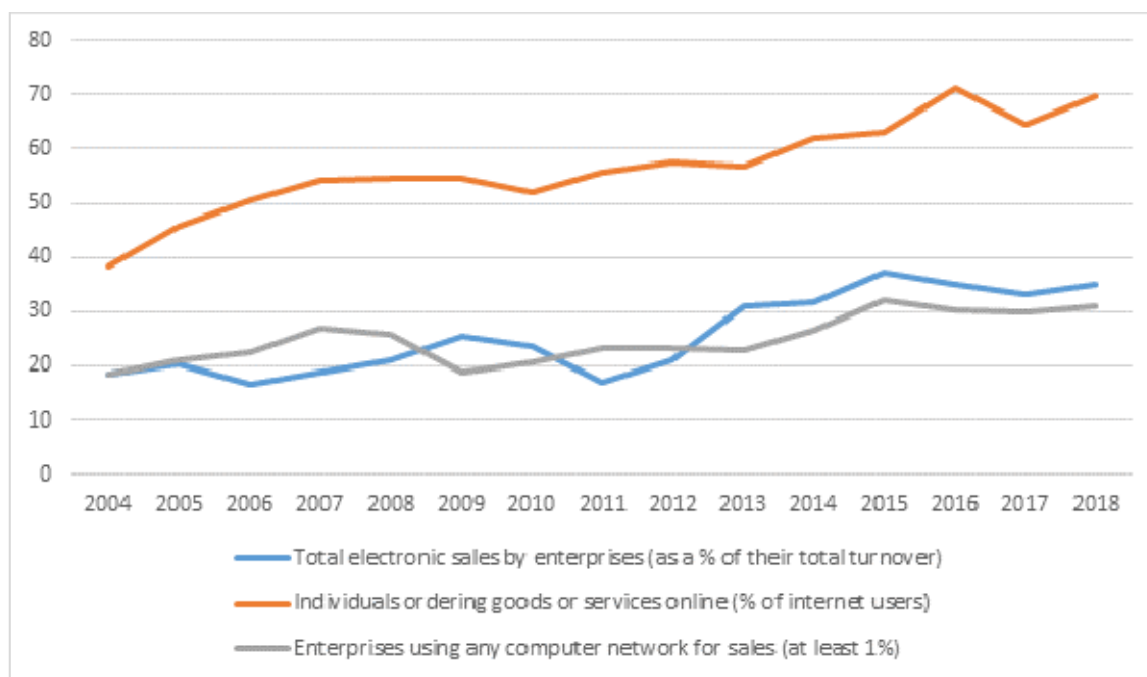
⁴⁰ Ipsos MRBI, Social Networking Tracker, June 2018

⁴¹ European Commission, Digital Agenda Scoreboard Key Indicators

⁴² European Commission, Digital Agenda Scoreboard Key Indicators

rises.

Figure 4: E-Commerce Trends in Ireland over time



- 4.11 In the Five Year ECS Strategy statement we also identified how these end-user experience-related trends have not developed uniformly. Demographic factors such as age and geographic location have been relevant to the take-up of innovations afforded by technological advances in electronic communication technologies across the country.

Age Factors

- 4.12 ComReg's Mobile Consumer Experience survey⁴³ and Ireland Communicates survey⁴⁴ show that younger people are significantly more likely to adopt ECS than older people. Younger people are more likely to have a fixed broadband service at home, have made or received a video call or own a Netflix account (see Figure 5 below for a breakdown in technology ownership and usage by age). In addition, 96% of those aged 16-24 go online at least weekly, compared to just 40% of those aged over 65.⁴⁵ These trends indicate that home broadband ownership and use is likely to increase over time.
- 4.13 Across all age groups, the ownership of mobile phones is near universal, with those aged 65+ being the slowest to adopt (at 88%). Home phone services, on the other hand, are used by those over 65 but by less than half of those under the age of 54.

⁴³ ComReg document 17/100

⁴⁴ ComReg document 18/23a

⁴⁵ Eurostat, Digital Economy and Society, 2017

Figure 5: Ownership of technologies in the home⁴⁶

	18-34	35-54	54-65	65+
	%	%	%	%
Access to Fixed Broadband at home	70	80	61	50
Access to a home phone service	31	47	58	74
Owns a mobile phone	100	99	99	88
Made/Received a Video Call in last 6 months	60	51	28	13
Owns an Tablet/ iPad	79	77	55	31
Owns a Smart TV	33	38	24	8
Has a Netflix account	56	53	31	11
Owns a Smart Watch/ Wearable Fitness Tracker	11	11	9	3

Geographic Factors

4.14 Ireland's geography and population distribution can present particular challenges for the rollout of both fixed and wireless networks. Ireland's population density is considerably lower than the EU average and is highly concentrated around our cities. The 2016 Census⁴⁷ shows that:

- 37% of the population lives in a rural area;
- 70% of the population lives in 3% of the total land area;
- 3% of the population lives in 25% of the total land area; and
- 76% of the total land area is forestry or farmland.

4.15 Achieving a widespread rollout of next generation networks in such a scenario will require investment from commercial operators and the State. While over 1 million Irish users⁴⁸ now avail of NGA based broadband services, the commercial realities of network rollout mean that NGA network rollout may not occur at all in geographic areas where the population is sparse. Today, 73% of Irish households living in urban areas report having access to a fixed broadband service at home, while only 58% of Irish households in rural areas have a fixed broadband service.⁴⁹

4.16 Ireland's three major mobile phone networks each claim to have a population coverage that exceeds over 90% of the population (as distinct from geographic coverage) for 2G, 3G and 4G services. While many consumers are satisfied with their connectivity, there remains a level of dissatisfaction among end-users with the quality of coverage in more rural areas.

4.17 In 2017 ComReg undertook market research⁵⁰ to measure the importance, satisfaction and scale of issues Irish consumers were facing when using a mobile phone at home and in other locations:

⁴⁶ Ireland Communicates Survey 2017

⁴⁷ Census 2016 information is available from the Central Statistics Office, www.cso.ie

⁴⁸ Q4 2018 ComReg QKDR – figures include VDSL, FTTH and DOCSIS Cable platforms.

⁴⁹ ComReg ICT Survey, 2017

⁵⁰ Mobile Consumer Experience Survey, 2017

- ComReg's research confirmed that mobile phones are increasingly used for much more than making and receiving calls and messages – they are increasingly our device of choice, even while at home.
 - Four out of five Irish consumers are satisfied with their current mobile service where they live (i.e. at their homes) and in other areas where they visit/travel, although some mobile users reported experiencing performance issues. According to the survey, while consumers can experience connectivity issues regardless of their location, performance issues occur more frequently while indoor and in more rural parts of the country. Performance issues were also reported at other locations and when travelling, albeit at a lower rate.
 - Our expectations of, and reliance upon, mobile phone coverage has increased significantly.
- 4.18 In 2018, ComReg published a mobile traffic forecast up to 2022⁵¹. The demand for mobile data in Ireland is forecasted to grow at an average rate of 32% per year up to 2022, though the rate of growth will slow down throughout the forecast period. Total annual mobile data traffic will increase from 273 million GB/year in 2017 to 1,059 million GB/year in 2022. Results from ComReg's Quarterly Key Data Report ('**QKDR**') show that between Q4 2017 and Q4 2018 total mobile data traffic in Ireland grew by 43.5%.
- 4.19 In the future, meeting the needs of Irish consumers accessing data hungry applications from mobile devices will require not only the improved coverage of mobile networks, but also the ability of consumers and services to roam seamlessly between mobile and fixed broadband networks, for example using Wi-Fi and native Wi-Fi calling⁵² on a fixed broadband connection. The National Broadband Plan ('**NBP**') and the availability of additional spectrum through future spectrum awards are key enablers to meet this challenge.
- 4.20 In November 2018, ComReg published the results of a connectivity study which considered how best to meet consumer's connectivity needs⁵³, estimating future mobile connectivity network costings and the implications for spectrum awards and coverage obligations. These reports highlight the challenges, solutions and actions required to improve connectivity in Ireland. The reports make a number of findings relevant to coverage and rural connectivity:
- The use of Wi-Fi and native Wi-Fi calling on a fixed broadband connection, and the use of licence-exempt mobile phone repeaters are viable solutions for indoor connectivity. The availability of fixed broadband will be critical to the penetration and uptake of Wi-Fi and Native Wi-Fi calling services.

⁵¹ Report by Frontier Economics for ComReg, dated 27th April 2018. Reference 18/35

⁵² Native Wi-Fi calling is a service for Android and iOS smartphones providing the ability to make and receive phone calls over an internet connection with sufficient download speed and latency in the home. ComReg has previously acknowledged that, eventually and in most instances, native Wi-Fi calling is likely to be the most effective mechanism to improve indoor reception issues. Consumers who have both an internet connection and a Wi-Fi calling enabled phone would be able to avail of Wi-Fi calling. Eir is the only Irish mobile network operator to have rolled out native Wi-Fi calling to date. ComReg is actively encouraging all mobile service providers to follow suit.

⁵³ ComReg Documents 18/103a, b, c, d

- It seems feasible for the market by itself to increase the 30 Mbit/s mobile broadband coverage from current levels to at least 90% of the population (where people live) in the period up to 2025. Achieving this coverage level would also provide significant incidental coverage improvements for other coverage dimensions (geographic, motorway, primary roads).
- Very high levels of 30 Mbit/s mobile broadband coverage on a geographic basis would not be achieved by the market itself as this would require networks to have two to four times as many cell sites as exist today. This would take many years to achieve and the overall cost to stakeholders would likely be substantial.

4.21 In setting out the award proposals for various spectrum bands, ComReg will consider these reports, with the aim of publishing a further consultation in early 2019.

Explanatory Box 4: Mobile and Broadband Taskforce

The 2016 Programme for Government committed to the establishment of a Mobile Phone and Broadband Taskforce, which was thus formed in July of 2016. The Taskforce report in 2016 identified 40 actions aimed at identifying solutions to broadband and mobile phone coverage deficits and to investigate how better services could be provided to consumers prior to the rollout of the NBP.

ComReg attends meetings of the Taskforce and has updated the Taskforce on a number of ongoing work streams relevant to the work of the Taskforce, including:

- The development of a composite national coverage map.
- Testing the performance of handsets currently on the market to better inform consumers of the effect handset performance can have on their experience.
- Produce a five year forecast of data traffic by consumers, both fixed and mobile.
- Develop a scheme for mobile phone repeaters, allowing users to boost signals in their premises.

The Taskforce Implementation Group has published a number of Progress Reports, available on the DCCA website⁵⁴. ComReg has completed a number of the above work streams in 2017 and 2018 and published the composite national coverage map in Q1 2019 – www.comreg.ie/coveragemap.

The Electronic Communications Ecosystem and Related Markets

Over the Top Services

4.22 In our Five Year ECS Strategy we noted that ECS services are made available and sold within an ecosystem. Increasingly, we are seeing different communications services (TV and radio, voice telephony, online services), which previously were delivered on different platforms, being now available on a single platform. What would have been traditionally regarded as media companies are now competing (or converging) with traditional telecommunications operators. These trends have continued to move in the same direction.

4.23 An increasingly important related market concerns Over-The-Top ('OTT')

⁵⁴<https://www.dccae.gov.ie/en-ie/communications/topics/Broadband/mobile-phone-and-broadband-taskforce/Pages/ProgressReports2018.aspx>

service providers (e.g. Netflix, Spotify, messaging apps and social networks). Over the last two years we have seen ECS providers engaging with the broadcasting sector, through the acquisition of TV channels and offering OTT TV content streaming services to their broadband and TV customers. The digitisation and delivery of services over the internet has removed geographic boundaries that have traditionally existed for telephony, television and media services. The worldwide revenue of the OTT industry increased from 6.1 billion U.S. dollars in 2010 to 46.5 billion in 2017 and is expected to reach 83.4 billion in 2022⁵⁵.

- 4.24 ComReg recognises that many consumers use a mix of ECS based services and OTT services in their daily lives. Increasingly, consumers are using a number of OTT services provided by the same provider (e.g. Alphabet, which owns Google, provides a number of popular social media, photo sharing, search, email and video services, as well as a mobile phone operating system). Using a single platform for such services (or eco-system) has a number of potential benefits for consumers (e.g. common login and passwords, common user interfaces, etc.). However, as consumers become more reliant on such eco-systems, issues have arisen regarding user privacy and the volume of information held by the owners of these eco-systems. In addition, end-user reliance on eco-systems can also lead to a reduced ability to switch to an alternative provider of services and hamper the market entry by potential OTT competitors.
- 4.25 The impact of OTT services on the traditional electronic communications markets raises a number of issues relevant to effective regulation, in particular where OTT services overlap or replace traditional telecommunications services such as messaging and voice. Results from ComReg's Ireland Communicates Survey (2017) show that forty percent of Irish mobile phone users have received a mobile OTT voice call, with Facebook's WhatsApp service being the most popular smartphone application⁵⁶. 56% of Irish mobile phone users who use OTT based video or voice calls report that they now make fewer or no traditional voice calls over their home phone or mobile phone network.
- 4.26 On the ground, and most directly related to ECS markets, the growth of OTT has manifested in the growing importance of bundled services which often contain non-ECS related products or services, for example, media content. In Q4 2018, 51.8% of the subscriptions related to a bundle of services while the remaining 48.2% related to standalone subscriptions⁵⁷.
- 4.27 The new Code recognises these changes and aims to appropriately evolve the legislative framework accordingly to address the next generation of services. Electronic communications services under the EECC encompass Internet access services and interpersonal communications services, in addition to those conveying signals. Interpersonal communications services are further subdivided between "number-dependent" and "number-independent" services. The former includes standard telephony services, while the latter encompasses

⁵⁵ Digital TV Research, January 2018

⁵⁶ Ireland Communicates Survey 2017

⁵⁷ ComReg QKDR Q4 2018

OTT services like Skype, WhatsApp and others.

Complementary Product Markets

4.28 Complementary products or services in this context refer to markets for products or services consumed alongside electronic communications services and which can have a significant influence on the consumer's experience of the electronic communications service, e.g., end-user equipment. The quality of services experienced by end-users of mobile phones depends on a variety of factors in addition to the received strength of the transmitted mobile signal, such as the weather, local topography, and in the case of indoor use, the building materials and the quality of home insulation. Another key factor however is the performance of the handset itself. It is well known that the extensive functionality built into smartphones, has come at a cost to how well they receive transmitted mobile signals. When making appropriate policy and regulatory interventions in the context of a debate about mobile coverage, it is important that ComReg maintains an understanding of related markets and technologies, such as in the case of handsets, for example. In this regard, ComReg has recently published a number of reports comparing the signal transmitting performance of different handsets⁵⁸.

Input Markets

4.29 Input markets include markets for network equipment which tend to be global in nature, but where harmonisation and standardisation are important issues. There are also inputs relating to access to civil engineering infrastructure such as poles, ducts and sites. Following the introduction of the European Union (Reduction of Cost of Deploying High-Speed Public Communications Networks) Regulations 2016⁵⁹ ("the Broadband Costs Regulations") which implement the so-called "Broadband Costs Directive"⁶⁰ in Ireland (see Chapter 4), ComReg has a dispute resolution role with respect to access requests to non-electronic communications infrastructure. To date, no disputes have been raised with ComReg regarding the Broadband Costs Directive.

Data Economy and the Digital Economy

4.30 Although data itself is not new, new ways of collecting and using it (e.g. IoT) have led to an exponential increase in the amount of data that is available. This has led to the creation of new markets, sometimes referred to as the 'data economy' with players and dynamics of their own.

4.31 In the data economy, platforms use consumer data to create revenue generating opportunities (by selling to advertisers or other third parties). For example, a search engine using the search results of its users to gather data about their behaviour online and gain insights into user personality and preferences. This information can then be used to create attractive propositions for advertisers, offering them an ability to target specific customers who have

⁵⁸ ComReg documents 18/05, 18/73, 18/78, 18/82

⁵⁹ S.I. No. 391/2016.

⁶⁰ Directive 2014/61/EU of the European Parliament and to the Council of 15th May 2014 concerning measures to reduce the cost of deploying high-speed electronic communications networks.

behaviours and preferences which are amenable to their product or service offering. In this way, the costs faced by firms to acquire consumers is reduced.

- 4.32 In 2017, the Economist⁶¹ called data the ‘fuel of the future’ because of how central it will become to day-to-day business functioning as well as individual lives. The value of the EU data economy in 2015 was more than €285 billion, which is over 1.94% of EU GDP for that year, and is expected to increase to 739 billion by 2020 (up to 4% of EU GDP).
- 4.33 As the data economy grows, there will be a growing demand for network capacity to carry all this information. The data economy will drive the creation of new devices to generate, collect, and analyse more data, requiring more ECS. In addition, the growth of the data economy raises the possibility of new market failures, which may adversely affect consumers and the wider ECS sector. For example, the existence of strong network effects or firm level decisions to restrict interoperability can lead to market tipping, where one firm emerges as a dominant player, to the potential detriment of consumer welfare.
- 4.34 The data economy can be distinguished from the digital economy, which facilitates transactions via digital means. In the digital economy, data is not exchanged as the principal product or service but ICT enables or improves the efficiency of the transaction. For example, many retailers now offer products for sale online (e.g. supermarket shopping). This gives consumers an opportunity to browse through products from the comfort of their own home.
- 4.35 How the data economy and digital economy will impact competition, the legislative and ethical controversies that will arise, and the range of regulatory solutions that may be available, are interesting developments for the ECS sector and ComReg to monitor.

Continued evolution of ecosystem

- 4.36 ComReg recognises that the wider ecosystem of markets which interact with ECS services is evolving at a considerable pace. ComReg does not regulate each of these markets, and some of these markets (e.g. OTT TV services) are closely related to the role and remit of other public bodies⁶². The potential for market failures in the wider ecosystem raises the possibility of a gap in the wider regulatory framework. ComReg will continue to monitor developments in the wider ecosystem to ensure the ECS sector and its consumers are not adversely affected by such market failures. Where necessary, we will advocate for powers to ensure the efficient functioning of the ECS sector.

Evolving Networks

- 4.37 In the Five Year ECS Strategy we identified how in recent years commercial network operators have invested in next generation fixed and mobile networks.
- 4.38 With respect to fixed networks, Eircom’s upgrade of its exchanges from current generation, copper based services to FTTC-based services is now largely

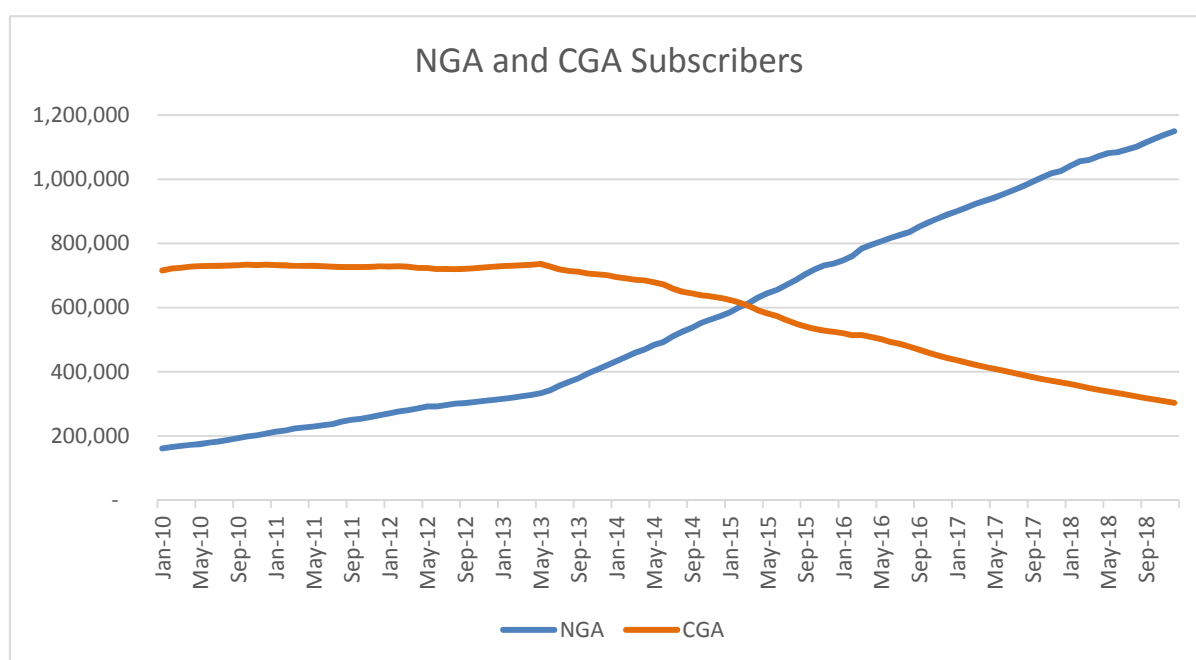
⁶¹ <https://www.economist.com/briefing/2017/05/06/data-is-giving-rise-to-a-new-economy>

⁶² For example, the Central Bank of Ireland, the Broadcasting Authority of Ireland or the Competition and Consumer Protection Commission.

complete with an FTTH network upgrade that is advancing in certain areas.

- 4.39 SIRO (a joint venture between ESB and Vodafone) continues to rollout an FTTH network in regional towns and Virgin Media is expanding its CATV network and FTTH network footprint as part of its Project Lightning network expansion.
- 4.40 Figure 6 illustrates that the number of Irish subscribers on fixed NGA networks has now passed 1 million, while the numbers using CGA networks continues to decline. Over the coming period, consumer demand for faster broadband speeds and the growing consumption of data over networks will result in more consumers seeking out very high capacity networks.
- 4.41 The Government's National Broadband Plan is the principal intervention aimed at bridging the digital divide between urban and rural areas. The objective is to ensure every premises in Ireland will have access to a high-quality network with capacity to deliver at least 30 Mbps speed.
- 4.42 With the growing coverage of NGA networks, it is feasible that elements of network such as the copper local loop and POTS based voice services will be retired over the next few years as the migration to all-IP networks accelerates.

Figure 6: Fixed Networks: NGA and CGA Subscribers⁶³



- 4.43 With respect to mobile networks, the rollout of 4G networks by Eir, Three and Vodafone continues. Figure 7 below shows the evolution of mobile networks since 2014. Over this period there has been steady growth in the number of 4G subscriptions, mirrored by a decline in 3G subscriptions, reflecting the natural transition from 3G to 4G as consumers upgrade handsets. ComReg's 2017 Mobile Consumer Experience survey⁶⁴ showed that while the majority of survey

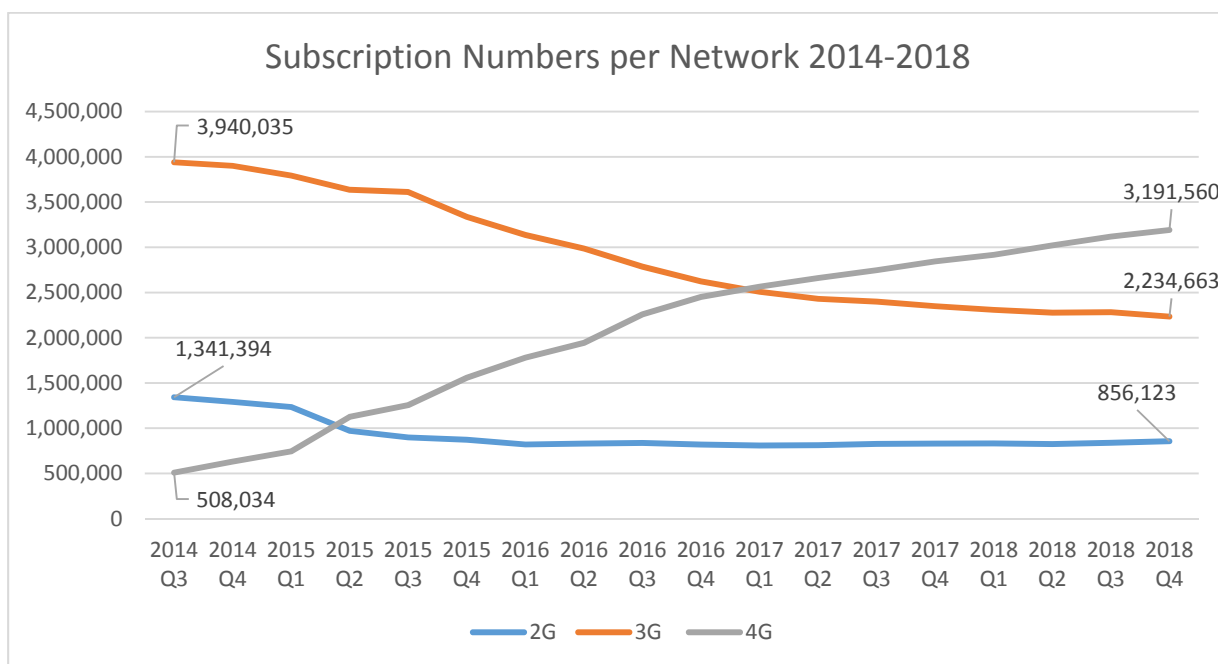
⁶³ CGA includes CGA Bitstream, CGA SABB & LLU Copper based services. NGA includes NGA Bitstream, VUA, Cable and FTTH based services. Source: ComReg Quarterly Key Data Report.

⁶⁴ ComReg Document 17/100a

respondents were satisfied with their mobile phone provider, many respondents were experiencing coverage/signal issues. Those living in more rural areas were much more likely to experience service issues.

- 4.44 Over the coming period it is likely that more people and businesses than ever before will use their mobile phone to communicate, pay for services and watch TV. We will connect more devices to each other and to internet based services, and we will interact with the internet in new ways. Each of these new uses will result in an increased demand for mobile data and access (see Figure 3 above for a breakdown in current and anticipated use of various technologies in 2022).

Figure 7: Mobile Subscriptions per Network, 2014-2018⁶⁵



- 4.45 In 2018 ComReg commissioned Frontier Economics to estimate the likely future demand for mobile data. Frontier predicted that there would be an average growth of 32% in the demand for mobile data in the years 2017-2022.⁶⁶ With a prediction that 78% of Western Europe’s internet traffic will be video in 2021, high throughput networks will be required.⁶⁷ Meeting this challenge will likely require fibre to be pushed further out to the end-user to deliver the capacity needed for fixed and wireless networks.⁶⁸

- 4.46 The arrival of new wireless networks, with enhanced mobile connectivity and low latency will help create new business models and use-cases, requiring investments in new infrastructure and spectrum.

- 4.47 Today there is more certainty regarding what 5G is and what spectrum bands will be used to provide 5G services. 5G networks will be capable of delivering

⁶⁵ Includes Machine to Machine subscriptions and Mobile Broadband subscriptions. ComReg QKDR

⁶⁶ Frontier Economics, April 2018, Mobile Data Traffic Forecast In Ireland

⁶⁷ Cisco Visual Networking Index, June 2016 and Global Mobile Data Traffic Forecast Update, 2016–2021 White Paper, February 2017.

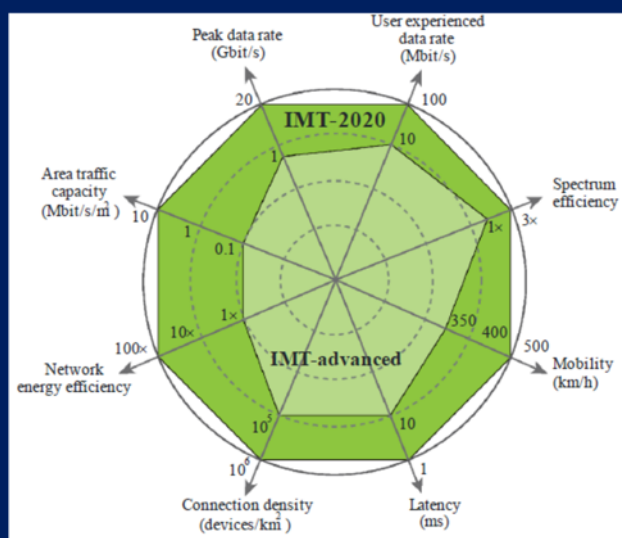
⁶⁸ Fibre to base stations and small cells will allow wireless operators to provide the capacity for their users.

enhanced operational performance (e.g. higher data rates and low latency) and an enhanced user experience (e.g. better mobile connectivity, IoT and new consumer services). See Explanatory Box 5 below for a summary of 5G capabilities and business models.

- 4.48 ComReg recognises that the rollout of 5G networks may not be uniform across the country or different user groups. For many consumers the availability of 5G may, at first, mean better 3G/4G based services. The increased flexibility that new 5G networks will allow also raises the possibility of market structures and vertical chains changing significantly. The emergence of new networks, vertical chains and technologies raises the possibility of new types of consumer harm and competition problems. This remains an area we will continue to monitor and research over the period of this Strategy Statement.

Explanatory Box 5: 5G Capabilities and Business Models

5G refers to the next generation of wireless radio communications technology. The figure below from the ITU⁶⁹ shows how the key capabilities of 5G networks (referred to as IMT-2020) are an improvement on 4G networks available today (referred to as IMT-advanced). It will allow for a wide variety of capabilities in a network, such as very high speeds, very low latency levels, high data throughput, and the technical potential of handling many devices at once. 5G networks will help realise the IoT, by connecting a vast range of smart appliances, machines and other objects without human intervention. In addition 5G networks will help to facilitate developments such as self-driving cars, smart homes and cities.



Some of the new potential business cases for 5G that may arise include:

Service related

- Differentiated services: The technological capabilities of 5G will allow for the specialization of services catered to niche uses according to their unique needs. For example, a customer may prefer low latency and high data throughput, while another may prefer large multiple device connectivity; 5G could be used to cater to either request. This service diversification will expand how network services are demanded and provided.
- Intermediaries: This opportunity of specializing services may give way to the rise of intermediaries who work to cater available network to specific end-user demands.
- Charging Models: In response to service diversification, charging models will have to become more complex and flexible as prices will have to match the characteristics of the service offered. They will also have to account for multiple device connectivity, as the cost-efficiency of current connectivity charging models may affect the demand for particular 5G use cases.

Network related

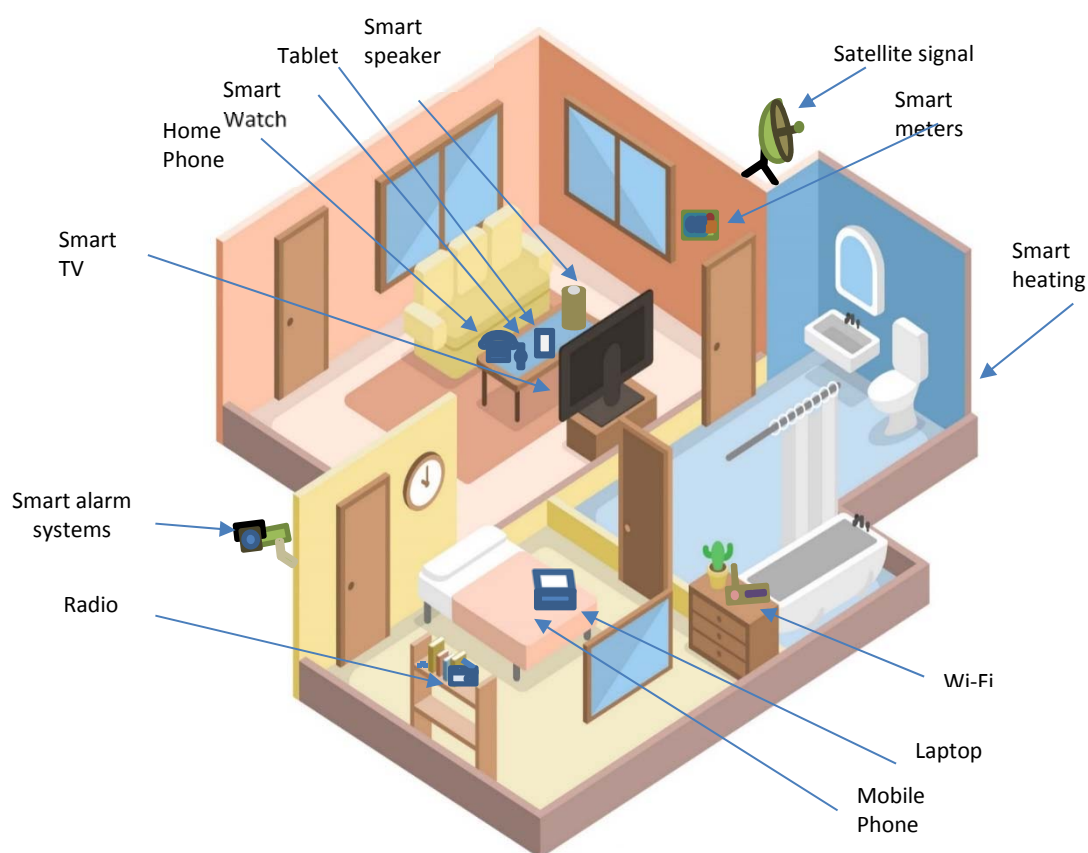
- Densification: The deployment of 5G requires a large number of small cell sites placed close together in a dense network to ensure speeds and capacity given the small range of the technology. This means that a lot of sites will have to be made available for the installation of cells, potentially giving site-owners increased bargaining power. This also raises questions about how access will be granted, if operators will compete for it, if new entrants will appear as intermediaries, or if a sole operator will be granted exclusive access to then further distribute it.
- Convergence: Services currently offered over an independent network infrastructure may be offered over the same network infrastructure as commercial networks using software defined networking and network function virtualisation to effectively allow for the creation of separate networks that share one physical infrastructure, with each network designed to meet its own specific requirements. There may provide for the convergence of PPDR (public protection and disaster recovery services), mobile network operator, and FWA (fixed wireless access) services on one network
- Infrastructure sharing: For some use cases, it may be attractive for 5G providers to engage in infrastructure sharing to lower costs and avoid infrastructure duplication. Similarly, costs and risk sharing agreements across the vertical chain might become popular as a way to support network and service deployments.

Which of these potential business cases become realised will depend on the take-up of 5G and its widespread deployment.

Connectivity and the Internet of Things (IoT)

- 4.49 Over the coming period, the increased availability of high capacity fixed networks and new frequency bands of 5G will allow for faster internet connections, increased connectivity and a wider adoption of the internet of things (IoT).
- 4.50 The concept of IoT refers to the connection of people and devices (beyond traditional internet related devices such as computers and smartphones) to the internet and/or each other. Figure 8 below shows the breadth of the connected devices in our homes today, allowing users to interact with technology and the internet in more ways than ever before.

Figure 8: Device in our homes



- 4.51 As part of the IoT, devices have the ability to interact with their environment and each other, without the physical constraints of geography. A range of IoT devices are already in use in our homes today, including smart home devices such as thermostats, alarms and cameras, as well as fitness trackers and connected cars (See Figure 3 above).

⁶⁹ ITU-R M.2083-0

⁷⁰ "Study on the Implications of 5G Deployment on Future Business Models", DotEcon Ltd and Axon Partners Group for BEREC, March, 2018

- 4.52 However, growth in the use, range and scale of such devices is anticipated over the next number of years. The nature and functions of these new connected devices is as yet unknown, but key areas currently benefiting from IoT services include automotive, e-health services, smart metering/smart grids, smart homes, smart cities, industry/automation and agriculture. It is expected that by 2020 there may be 20 to 30 billion connected devices globally⁷¹.
- 4.53 The advent of IoT will yield particular challenges for ComReg. In particular, the connectivity requirements for IoT devices are likely to be wide and varied; and will require new service offerings and business models to meet the individual requirements. In addition, the arrival of new IoT devices may require significant numbering resources. Given the significant potential for life-style and productivity enhancement associated with IoT, ComReg is conscious of its role in relation to the facilitation of innovation and investment to drive connectivity. ComReg also recognises that care should be taken around the potential risks IoT presents for network security and data privacy.
- 4.54 Ireland has positioned itself as a global leader in the development and deployment of IoT. Irish telecoms operators are rolling out IoT solutions to the Irish market, opening up their networks to new applications and consumer solutions. In addition, ComReg offers a special licensing regime called 'Test & Trial'⁷² to encourage innovation and development involving new radio technologies or services. These licences make it easy and cost effective to conduct wireless research using Ireland's radio spectrum.
- 4.55 In Q4 2018, there were just over 1 million machine to machine (M2M)⁷³ subscriptions in Ireland, an increase of 22% since Q4 2017. The majority of M2M uses to date are likely low bandwidth applications, which include the use of smart grids, vehicle tracking and smart home applications. The growth of M2M communication in Ireland is in no small part driven by the expansion of next generation telecommunications technology and a decline in the cost of the embedded wireless modules and sensors that enable M2M services. This continued improvement in the infrastructural environment around M2M has led to a rapid growth of applications and services that meet users' needs.

Changing Regulatory Framework – the EECC

- 4.56 A final trend that we identified was a changing regulatory framework.
- 4.57 In September 2016 the Commission published a Proposal for a Directive of the European Parliament and of the Council establishing the European Electronic Communications Code, which, aims to replace the Common Regulatory Framework adopted in 2002 and amended in 2009 under which ComReg (and all other NRAs) have regulated electronic communications since 2002.
- 4.58 During the EU legislative process surrounding the EECC, ComReg played an

⁷¹ Cisco, 2018. Link here- <https://blogs.cisco.com/datacenter/internet-of-things-iot-data-continues-to-explode-exponentially-who-is-using-that-data-and-how>

⁷² Further information is available from <http://www.testandtrial.ie/>

⁷³ Machine to Machine (M2M) refers to technologies that involve data communication between devices or systems in which, at least in principle, human intervention does not occur. These technologies may encompass either wireless or wired communications, or both.

active role, through the provision of expert and independent advice to DCCAE, as requested, and through its membership of BEREC, to the European institutions. This process was completed in December 2018.

- 4.59 As set out earlier, member states have until 21 December 2020 to transpose the EECC – that is to adopt and publish the laws, regulations and/or administrative provisions necessary to comply with and give effect to the EECC – and those new measures will be applied from 21 December 2020. While transposition is a matter for the member state, ComReg is engaging with the Department regarding the transposition of the EECC and will, where possible with the resources available to ComReg, commence preparatory work on matters arising from the EECC that relate to our work and role as regulator.
- 4.60 As noted in Chapter 2, with the advent of the new European Electronic Communications Code, ComReg will likely have a number of new functions and objectives, additional to those contained in the old Common Regulatory Framework, including, for example, in relation to connectivity. We consider it is right and proper that ComReg, and indeed other stakeholders, should prepare for the introduction of the EECC prior to its transposition. ComReg must refrain from adopting measures liable to seriously compromise the result prescribed in the Code. Items of work set out in this statement of strategy that cover the period post 2020 will therefore, where appropriate and insofar as is possible, take into account the aims and requirements set out in the EECC when considering regulatory decisions that affect the period post 2020 (i.e. after the transposition of the EECC).
- 4.61 On the same date that the new Code entered into force (20 December 2018), a new EU BEREC Regulation also entered in to force. This regulation requires no transposition into domestic legislation but rather is effective throughout the EU member states from the date it came into force. This EU regulation, while principally dealing with the internal organisation and functioning of BEREC, will also impact on the relationship of BEREC with NRAs such as ComReg and on how they carry out day-to-day activities such as sharing information and developing guidance. The regulation also provides for regulation of Intra EU Calls and those new rules will apply from 15 May 2019.

Conclusion

- 4.62 In reviewing the Strategic Intents set out in the Five Year ECS Strategy, ComReg has sought to understand how the various trends and challenges set out above impact our strategy. As these trends continue to evolve over the coming period, we will continue to monitor them and how they impact on the ECS sector and consumers who use ECS services. With the analysis presented in this chapter in mind, we have set out the various projects to be completed over the period of this Strategy Statement. These are discussed under each Strategic Intent in the following chapters.

5. Setting the Rules for Effective Competition

Introduction

- 5.1 The telecommunications sector has a number of characteristics which impede the full functioning of competitive forces. Such features include high barriers to entry, market power, information asymmetry and stickiness when it comes to switching. ComReg believes that competition enhances the welfare of consumers as operators are motivated to reduce prices, innovate and increase investment. As such, ComReg intervenes in order to mitigate weaknesses in the functioning of the market where objectively justified and proportionate.
- 5.2 ComReg recognises that the telecommunications sector evolves rapidly and notes the trade-off between static efficiency, which prioritises driving prices to cost in the short term, and dynamic efficiency which takes into account investment and innovation over time. ComReg's strategic intent around investment is discussed in more detail in Chapter 7.

Strategic Intent 1:	The market delivers innovation and the greatest possible choice of wholesale and retail operators.
What does this look like?	<ul style="list-style-type: none"> • There is a choice of providers in wholesale and retail electronic communications markets • Competition is as strong as possible; with rules to mitigate harm where competition is weak • Quality of electronic communications products and services is among the highest in our peer group • There is clear evidence of: <ul style="list-style-type: none"> - Competition over time - Innovation in electronic communications and in related markets, and - Consumers exercising choice

- 5.3 As illustrated below in Figure 9, ComReg's view is that regulating to drive competition involves:
- Monitoring markets, including related markets, so that market failures are well-understood, thus,
 - Enabling targeted intervention,
 - Aimed at facilitating competition.
- 5.4 ComReg recognises that this is a dynamic process requiring continual updating

and adjustment, and that over time, the **scope of regulation should reduce**⁷⁴.

Figure 9: Regulating to Drive Competition



Competition in Fixed and Mobile Markets

Competition on fixed networks

- 5.5 Since 2011, Eircom, the former monopoly fixed network provider, has been rolling out its next generation access network with download speeds up to 100Mb/s, based on fibre to the cabinet (FTTC) and exchange-launched VDSL (EVDSL). In addition, in April 2017, Eircom announced a rollout of its fibre to the home (FTTH) network to 300,000 premises in rural Ireland, as part of a commitment given to DCCAIE under the National Broadband Plan. Eircom has also announced plans to extend its FTTH network to 1.4 million homes and businesses, largely beyond the 300,000 FTTH premises in rural Ireland.
- 5.6 Eircom faces varying degrees of network level competition from Virgin Media and SIRO, the latter a joint venture between ESB Networks (see Figure 10) and Vodafone. Eircom faces a degree of competitive constraint from Virgin Media in urban areas where its CGA and FTTC network overlaps with Virgin's CATV network, which offers download speeds up to 360Mb/s. Eircom faces less of a competitive constraint from the SIRO network, as SIRO's network coverage is lower relative to Eircom's. ComReg recognises the potential for competition to occur at a localised level where there are competing networks.
- 5.7 Other market competitors, so called access seekers, include BT⁷⁵, Vodafone and a variety of other smaller operators (including fixed wireless operators) which have made varying levels of infrastructure investment, in large part due to the availability of wholesale access products mandated by regulation. As would be expected, the extent of infrastructure rollout is deeper in urban areas where the population and premises densities are greater.
- 5.8 The deeper the level of network investment by the access seeker, the more

⁷⁴ While the scope of regulation will reduce over time as the market evolves with competition, market failures are likely to persist, requiring some regulatory intervention.

⁷⁵ BT supplies services to a number of players, including Sky Ireland.

control an access seeker has over the pricing and nature of the products and services supplied over the Eircom network. However, pure service level competition, whereby operators use the Eircom's network to supply services, does have the benefit of allowing entrant operators to establish a subscriber base and attain scale economies before making more significant infrastructural investments. In addition, service level competition can allow entrants to serve niche parts of the market (e.g. bespoke enterprise services).

Figure 10: Next Generation Network Rollout

Eircom	1.8m premises passed with high speed fibre technology (as of 30 September 2018) including 228,000 FTTH lines. ⁷⁶
Virgin Media	900,000 homes passed with fibre broadband.(as of June 2018) ⁷⁷
SIRO	200,000 premises passed by with fibre broadband service (December 2018) ⁷⁸

Competition on mobile networks

- 5.9 There are also two types of operators in the mobile sector, mobile network operators (MNOs) which have invested in an access network (towers, masts and associated backhaul), and mobile virtual network operators (MVNOs) which purchase network capacity from them. Unlike in fixed networks, the decision to sell capacity to an MVNO is typically based on commercial considerations⁷⁹. Network sharing arrangements are also a feature of mobile networks. These allow two or more operators to share certain parts of their networks, with agreements ranging from the sharing of passive infrastructure (such as sites, masts and antennae) to more active parts of their network including some core infrastructure.
- 5.10 The promotion of effective competition in the management of spectrum for ECS and the spectrum management tools are considered in further detail in section 3.2.3 of ComReg's recently published Radio Spectrum Management Strategy Statement⁸⁰.

The state of competition in retail markets – fixed and mobile

- 5.11 Figure 11 below shows the level of market concentration in retail fixed broadband, fixed voice and mobile voice markets. The graph uses the Herfindahl-Hirschman Index (HHI). This is a common measure of market concentration used to determine market competitiveness. It is calculated by squaring the market share of each firm competing in a market and summing the resulting numbers. The higher the market's concentration (and the lower its

⁷⁶ <https://www.eir.ie/pressroom/eir-announce-first-quarter-FY19-results-to-30-September-2018/>

⁷⁷ <https://www.virginmedia.ie/about-us/press/2018/virgin-media-announces-landmark-figure-of-900-000-premises-now-passed/>

⁷⁸ <https://siro.ie/sky-ireland-now-live-on-siro-network/>

⁷⁹ The Virgin Media MVNO was a condition of the Three/O2 merger. This is discussed in the following section.

⁸⁰ ComReg 18/118, Radio Spectrum Management Strategy Statement 2019 to 2021, published 20 December 2018.

competition), the higher the HHI.

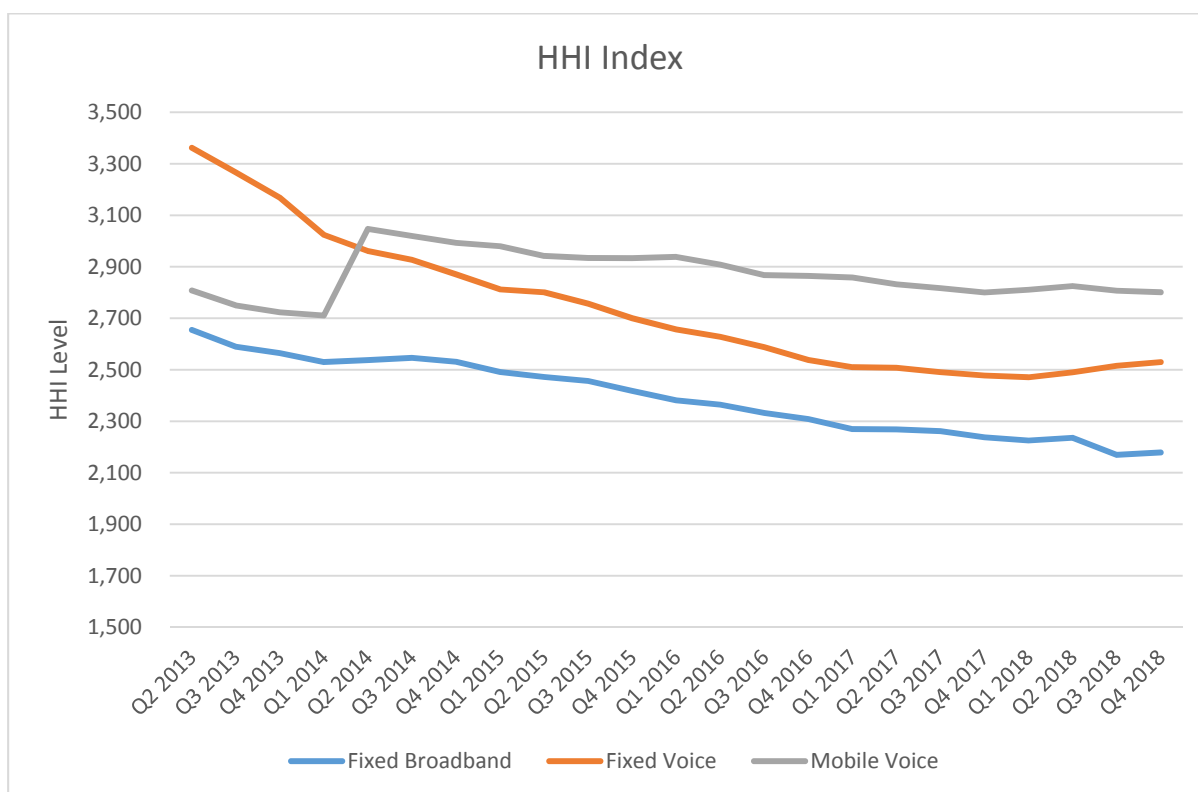
- 5.12 Up to 2014, the long term trend in retail mobile markets had been one of decreasing concentration, with the HHI falling. However, the merger between Hutchison 3G and Telefónica O2⁸¹ in 2014 eliminated a network competitor, leading to a jump in market concentration. In an attempt to reduce negative implications arising from increased competition, the package of remedies accepted by the European Commission involved the creation of two MVNOs. ComReg raised concerns about the merger and the agreed package of remedies in May 2014.⁸² In April 2018 one of the MVNO remedies, iD Mobile, exited the Irish market, having only picked up a small share of the retail mobile market. The second MVNO, Virgin Mobile, launched its services in 2015, and has grown to a revenue and subscriber share of circa 1% in Q3 2018⁸³. In 2018 BEREC reviewed⁸⁴ the experience of three separate mobile market mergers in the EU area, including the 2014 Hutchison 3G and Telefónica O2 merger in Ireland. This study found that the merger led to Irish consumers paying higher prices than they otherwise would have, had the merger not taken place.
- 5.13 The dynamics of the fixed retail broadband market, the rollout of new networks and the entry of new retail and wholesale offerings, have helped make the retail fixed broadband market more competitive. Today many consumers take up triple and quad-play bundles of fixed voice, broadband, TV and mobile phone services. All of the main fixed broadband providers now offer triple play bundles and many offer mobile phone services (via an MNO or MVNO arrangement) in a quad-play bundle. As more consumers bundle fixed voice and broadband services together, the concentration in these markets has become more aligned. This trend is expected to continue over the coming period.

⁸¹ This transaction was conditionally cleared by the European Commission in its decision dated 28 May 2014, M.6992 – Hutchison 3G UK/Telefonica Ireland ("Three/O2")

⁸² ComReg Document 14/53

⁸³ ComReg Quarterly Key Data Report

⁸⁴ BEREC Report on Post-Merger Market Developments, available here: https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/8168-berec-report-on-post-merger-market-developments-price-effects-of-mobile-mergers-in-austria-ireland-and-germany

Figure 11: Retail Concentration, Q2 2013 to Q4 2018

Monitoring Markets

- 5.14 Part of ComReg's role is to ensure that communications markets operate in the interests of end-users and society (see Chapter 6). In order to effectively determine appropriate interventions, it is essential that we have an accurate and thorough understanding of how well markets are working.
- 5.15 To this end, ComReg gathers data and undertakes analysis, including market analyses which are conducted as required by the EU's regulatory framework. In addition, ComReg monitors other markets within the electronic communications ecosystem. Such markets include electronic communications markets that are no longer recommended for market analysis, markets involving the supply of essential inputs (such as access to poles, ducts and cell sites), markets for products that are commonly bundled with ECS (such as media content), and markets for products that critically affect the end-user's experience of ECS (such as mobile handsets). A developed understanding of why markets may not be working well for end-users allows ComReg to better target regulatory interventions across the breadth of its functions.
- 5.16 ComReg's Five Year ECS Strategy set out two goals relating to *monitoring markets*:
- ✓ **Goal 1: Effectiveness of competition to be regularly monitored across communications markets, including fixed and mobile, and related markets.**
 - ✓ **Goal 2: Regulation of electronic communications markets targeted at mitigating market failure and preventing harm.**

- 5.17 In the 2017-2019 ECS Strategy Statement, ComReg planned a number of key initiatives:
- **Market Monitoring:** To initiate a programme to gain better insight into relevant markets. This programme of work would inform ComReg's activities across the breadth of its functions.
 - **Market Investigation powers:** To study the use of ex post market investigation-type powers in other jurisdictions, and to advocate for such powers in Ireland if deemed appropriate.
- 5.18 ComReg monitors the effectiveness of competition in the various retail and wholesale markets we regulate or are impacted by regulation and monitors through various means, including through the ongoing activities of our various Divisions, our compliance monitoring activities and our research functions.
- 5.19 A key component of ComReg's market monitoring activities relates to ComReg's Market Intelligence function. This Market Intelligence function involves a programme of regular data collection from industry. The data collected is used to inform ComReg's functions as well as to inform the public and the industry of market trends through the publication of the Quarterly Key Data Report (QKDR) and data through its Data Portal⁸⁵. As further discussed in Chapter 9, ComReg is currently engaging with operators on how we gather data, what we gather and how we process and store this information. The outcome of this project will be a more efficient data collection process which ensures the timely availability of high quality data to assist ComReg in making evidence based decisions. This project will also enhance the insights available from the data and ensures that it remains up to date and fit for purpose. It will also enable ComReg to publish a richer set of data for stakeholders. The Code also provides for enhanced information to be gathered and published, including in relation to geographic surveys of networks, and ComReg will seek to facilitate this, as appropriate.
- 5.20 ComReg's research activities include conducting a number of market research surveys (discussed in Section 7) to gain insights into consumer usage and experience. This information is supplemented with external research which ComReg acquires from industry or analysts.
- 5.21 Since the publication of the 2017-2019 Strategy Statement, an internal Strategic Insights Group has been formed. The activities of this group include horizon scanning and the identification of changes, trends and issues that may have implications for the markets or for ComReg. A number of cross-divisional working groups have been set up to analyse identified topics, and the output of these groups feeds into projects throughout the organisation.
- 5.22 Related to Goals 1 and 2, over the coming period ComReg intends to:
- **Market Monitoring:** ComReg intends to further develop its market monitoring functions. Planned activities include working with operators to continually improve existing data gathering and reporting functions to ensure their efficiency, effectiveness and relevance, enhancing the insights

⁸⁵ www.comreg.ie/industry/electronic-communications/data-portal/.

that can be derived from collected data, including the manner in which such information can be appropriately made publicly available, the further development of the Strategic Insights function and increasing the availability of open data through the ComReg Data Portal on our website⁸⁶.

- **Research:** Further enhance our understanding of various telecommunications markets (including the range of product substitutes and complements) and the behaviour of market players and consumers, through the collection and analysis of demand-side and supply-side market data, and the use of robust research techniques.

Promoting Competition, Access to Services and Consumer Choice

5.23 There are three principal ways in which ComReg may promote competition and consumer choice in electronic communication markets:

- Through the SMP Framework.
- Through the efficient use of spectrum and numbering resources.
- By ensuring consumer mobility (i.e. consumers are willing and able to switch provider).

5.24 Under the regulatory framework, where an operator is identified as having significant market power (SMP), ComReg may impose a range of pro-competitive obligations. Such obligations are designed to promote competition by enabling other operators and new entrants to compete on a level playing field with the SMP operator.

5.25 The Five Year ECS Strategy sets out two goals relating to *Promoting Competition*:

- ✓ **Goal 3: Our work seeks to promote effective competition and facilitate consumer choice within the Single Market**
- ✓ **Goal 4: Regulation mitigates market power and facilitates market entry and expansion where feasible in wholesale and retail electronic communications markets.**

5.26 In the 2017-2019 ECS Strategy Statement, ComReg planned a number of key initiatives under these goals;

- **Market Analysis:** To publish decisions on markets 1 and 2 (wholesale fixed voice call termination and mobile voice call termination markets), markets 3a and 3b (wholesale local access and wholesale central access markets) and market 4 (wholesale high-quality access).
- **Eircom's Vertically Integrated Structure:** To continue the review of Eircom's regulatory governance from an operational and structural perspective.

⁸⁶ <https://www.comreg.ie/industry/electronic-communications/data-portal/>

- **Legacy Networks:** To engage with stakeholders regarding Eircom's withdrawal of legacy services.
- **Broadband Cost Reduction Regulations:** To continue to fulfil its functions under the Broadband Cost Reduction Regulations.

- 5.27 Over the years, market analysis has become increasingly complex and detailed, due, in part, to the increased competition in certain markets and the increased focus on competition at a sub-national market level. ComReg devotes considerable resources to the market analysis function, and published a number of documents over the past two years. In particular, in October 2017, ComReg published its consultation on its draft proposal for regulation of the Fixed Voice Call Termination (FVCT) and Mobile Voice Call Termination (MVCT) markets, with a related Consultation on associated price control aspects published in March 2018. ComReg expects to publish its final decision on these termination market reviews in 2019. In addition, in November 2018, ComReg published its decision on its analysis of the Wholesale Local Access (WLA) and Wholesale Central Access (WCA) markets^{87,88,89}. In summary ComReg has concluded that deregulation is justified for about half the country – mostly in urban areas – in the Urban WCA market. This is because of increased competition in these areas. ComReg has decided that Eircom still has Significant Market Power (SMP) in the WLA market and Regional WCA market and is therefore subject to regulation.
- 5.28 In July 2016, Eircom wrote to ComReg requesting prior approval for the retirement of legacy networks and services. ComReg responded in the summer of 2017 seeking a detailed plan for withdrawal of services. To date, no formal submission has been received from Eircom. ComReg will engage with industry on the matter of the withdrawal of legacy networks should a formal submission be received from Eircom.
- 5.29 Eircom, as the former state owned monopoly, own the only ubiquitous network in Ireland and acts as a wholesale or retail supplier in a number of vertically related wholesale and retail markets, most notably the wholesale and retail broadband markets. ComReg has had concerns around Eircom's vertical structure for a number of years and addressed these concerns through regulatory obligations imposed in various market reviews, where Eircom was designated with significant market power. In addition, ComReg undertook a number of compliance cases to address specific concerns. In 2016, ComReg engaged consultants to review Eircom's structure and governance arrangements to determine if Eircom's internal governance arrangements were insufficient to ensure full regulatory compliance with its obligations to industry and ComReg.
- 5.30 In December 2018 ComReg reached an agreement with Eircom⁹⁰ that includes

⁸⁷ ComReg Document No. 18/94, ComReg Decision D10/18: Market Reviews: Wholesale Local Access and Wholesale Central Access, published 19 November 2018 ("ComReg Decision D10/18"). Available at: <https://www.comreg.ie/publication/3a-3b-market-analysis-decision/>

⁸⁸ ComReg document 18/95

⁸⁹ ComReg document 18/96.

⁹⁰ ComReg document 18/110

a set of commitments which, when implemented, will result in the establishment and operation of an enhanced Regulatory Governance Model (“RGM”) in Eircom. Under the agreement, Eircom will implement a number of important measures to improve Eircom’s internal governance and increase the independence of its Wholesale arm from the rest of its business, including, inter alia, the creation of an Independent Oversight Body (‘IOB’) (See Explanatory Box 7 in Chapter 7 for more detail).

5.31 ComReg has roles in facilitating access to physical infrastructure for the purpose of providing electronic communications under Section 57 of the 2002 Act and also under the Broadband Cost Reduction Regulations⁹¹. Over the period 2017-2019, no formal complaints have been received by ComReg in relation to access to physical infrastructure under the Broadband Cost Reduction Regulations.

5.32 Related to Goals 3 and 4, over the coming period ComReg intends to:

- **Market Analysis:** Over the coming period ComReg plans to commence and advance its reviews of the Retail Access Markets, the Fixed Access and Call Origination markets and the Wholesale broadcasting transmission and distribution services markets. In addition, ComReg is continuing to review the Wholesale High Quality Access Markets and expects to publish its final Decision in early 2019.
- **Legacy Networks:** In September 2018, Eircom announced a 5 year plan for FTTH rollout to 1.4million premises. Following this, ComReg has re-initiated engagement with Eircom on its plans for fibre deployment and the impacts related to the withdrawal of and migration from legacy regulated services. In parallel, ComReg will engage the broader industry on the issues and impacts for consideration for Access Seekers and their customers.
- **Eircom’s Vertically Integrated Structure:** ComReg will oversee implementation of the Eircom’s RGM as set out in the settlement agreement between Eircom and ComReg, including the establishment of the IOB, and structural changes and governance arrangements necessary in order to ensure Eircom’s Wholesale Function operates in a transparent and non-discriminatory manner.
- **Broadband Cost Reduction Regulation:** Over the coming period ComReg will continue to fulfil its functions under the Broadband Cost Reduction Regulations and monitor the take up and use of physical infrastructure generally. In addition, in light of the new provisions under the EECC, ComReg will engage with BEREC on the preparation of guidelines relating to co-investment arrangements and consider whether such opportunities exist in an Irish context.

5.33 As a member of BEREC, ComReg plays an active role in a number of BEREC work streams relating to the promotion of the Single Market. In its Strategy 2018-2020 document, BEREC highlighted strategic priorities to (i) identify competition problems that may arise in different Member States as high-

⁹¹ The European Union (Reduction of Cost of Deploying High-Speed Public Communications Networks) Regulations 2016 (S.I. 319 of 2016)

capacity networks are developed, with the intention to increase awareness on how competition is affected, and (ii) address the existence of potential bottlenecks to competition to ensure markets are kept open and neutrality is safeguarded. ComReg experts provide ongoing input to the work of BEREC (notable recent input includes contribution to the European Electronic Communications Code).

Access to Essential Inputs: Spectrum and Numbering Resource

- 5.34 Radio spectrum and numbers are essential for the functioning of electronic communications. ComReg manages the allocation and assignment of both of these finite resources. The management of radio spectrum is discussed in more detail in the Radio Spectrum Management Strategy.
- 5.35 Broadly speaking, spectrum management is the process of regulating the use of the radio spectrum to promote its efficient and effective use in the interests of society. The majority of ComReg's spectrum management work relates to the licensing of spectrum, including determining the precise nature of spectrum rights, designing and implementing awards of spectrum rights, granting rights of use/licences on foot of same and establishing the technical criteria to ensure compatibility and co-existence of users. Numbering management requires balancing the need to conserve numbers while ensuring that there is always an adequate supply to support the demands of existing and new customers and service providers. ComReg is also tasked with attaching conditions for rights of use of numbers.
- 5.36 The ComReg Five Year ECS Strategy set out one goal each related to spectrum and numbering:
- ✓ **Goal 5: Spectrum management for electronic communications markets takes account, inter alia, of the promotion of competition.**
 - ✓ **Goal 6: Number management facilitates competition.**

Spectrum

- 5.37 In the 2017-2019 ECS Strategy Statement, ComReg identified a number of key initiatives in relation to spectrum:
- **Spectrum Leases:** To establish a framework for spectrum leases.
 - **Spectrum Award Design:** To ensure that award process(es) to assign spectrum rights of use are appropriately designed in light of prevailing circumstances.
 - **Release of harmonised spectrum that can be used for mobile, nomadic, and fixed wireless broadband services:** To complete the award process for the 3.6 GHz band by Q3 2017, and to significantly progress the award process(es) for the 700 MHz, 1.4 GHz, 2.3 GHz and/or 2.6 GHz bands.
 - **Release of other spectrum:** To continue to make available and assign radio spectrum in a timely manner.

- **Expiry of spectrum rights:** To continue to consider the expiry of existing radio spectrum rights significantly in advance of licence expiry, and set out ComReg's spectrum assignment proposals in relation to same.
- 5.38 In relation to spectrum rights of use, where existing spectrum rights of use are due to expire within the near future (e.g. within the next five years) ComReg endeavours to set out its proposals on the future use of such bands well in advance of expiry including, where appropriate, defining and carrying-out an assignment process for same. As such, ComReg published a Radio Spectrum Management Strategy every two years, which comprehensively sets out our radio spectrum work plan priorities so as to best utilise this key resource for the benefit of all users.
- 5.39 In terms of auctions carried out over this time period, ComReg finalised its award for rights of use of the 3.6 GHz band in June 2017. This award, in which 594 lots spread over nine regions (four rural and five cities) was offered by way of auction, and resulted in the assignment of all 350 MHz of available spectrum rights.
- 5.40 The award resulted in five winning bidders, Imagine Communications Ireland Ltd ("Imagine"), Airspan Spectrum holdings Limited ("Airspan"), Meteor Mobile Communications Ltd ("Meteor"), Three Ireland Hutchison Ltd ("Three") and Vodafone Ireland Ltd ("Vodafone"). All spectrum rights of use run for 15 years and will expire on 31 July 2032, by which time winning bidders will have paid over €78m. This award increased the total amount of harmonised spectrum for mobile, nomadic and fixed wireless broadband services assigned in Ireland by 86%.
- 5.41 In June 2018, ComReg completed the 26 GHz Band Spectrum Award for point-to-point radio links⁹². The award resulted in a 25% increase in the amount of 26 GHz rights assigned to the market and will support the requirement for point-to-point radio links, a critical piece of backbone infrastructure for Ireland's mobile communications networks.
- 5.42 In June 2018, ComReg issued a preliminary consultation⁹³ with a focus on which spectrum bands should be included in the proposed award of spectrum rights of use suitable for the provision of wireless broadband services. ComReg is of the preliminary view that the following bands should be included: the 700 MHz duplex band; the paired 2.1 GHz band; the 2.3 GHz; and the 2.6 GHz band both paired and unpaired.
- 5.43 Following receipt and due consideration of submissions in response to this consultation, and any other relevant material, ComReg intends to proceed with the development of more informed and detailed award proposals, and to publish a response to this consultation and further consultation in that regard.
- 5.44 In November 2018, ComReg published the results of three studies and an Information notice⁹⁴, which together discuss some of the challenges, solutions and actions for improving connectivity in Ireland. The purpose of these studies

⁹² ComReg Document 18/53 – Results of the 26 GHz spectrum award 2018.

⁹³ ComReg 18/60

⁹⁴ Documents 18/103, 18/103a 18/103b, 18/103c, and 18/103d

is to assist ComReg in its development of award proposals for its forthcoming spectrum awards and, in particular, its consideration of appropriate coverage obligations. These studies are discussed further in Explanatory Box 6 in Chapter 6.

5.45 In December 2018 ComReg published its Radio Spectrum Management Strategy for 2019 to 2021⁹⁵. This strategy sets out ComReg's priorities and work plan up to 2021 and includes, amongst other items, the following work plan items:

- Develop and finalise the multi-band award proposals for the release of spectrum rights for the provision of wireless broadband (both mobile and fixed broadband) services;
- Take the necessary measures to enable the deployment of Machine to Machine technologies in the 900 MHz and 1800 MHz frequency bands;
- Consider opening up the 130 – 134 GHz, 141 – 148.5 GHz, 151.5 – 164 GHz and 167 – 174 GHz frequency bands to facilitate the licensing of terrestrial fixed links; and
- Conclude the consultation process on the potential award of rights of use in the 400 MHz band.

Numbering

5.46 In the 2017-2019 ECS Strategy Statement, ComReg identified a number of key initiatives in relation to numbering:

- **Numbering Plan:** to provide an ongoing numbering plan management function to make sufficient numbers available on an equivalent and transparent basis to all service providers that need them.
- **Numbering Conditions:** to update the Numbering Conditions of Use and Applications Process in 2017 and at least every 2 years.
- **Numbering for Mobile, OTT and M2M:** to conduct a full review of numbering for mobile, OTT and M2M services in 2017, with the aim to support innovative new services (particularly international M2M services) but without requiring any number changes for existing mobile end-users.

5.47 A range of documents relating to numbering were published since the publication of the Five Year ECS Strategy. These include the periodic report on numbering⁹⁶, and the Numbering Conditions of Use and Application Process, which was revised following a consultation process⁹⁷.

5.48 Machine to machine services are becoming increasingly prevalent, and numbers are likely to remain the most common universal identifiers for the foreseeable future. Over 2017 and 2018, ComReg reviewed the long term numbering scheme for mobile services and, following consultation, opened the

⁹⁵ ComReg 18/118. Radio Spectrum Management Strategy Statement 2019 to 2021. Available at <https://www.comreg.ie/publication/radio-spectrum-management-strategy-statement-2019-to-2021/>

⁹⁶ ComReg 17/96

⁹⁷ ComReg 18/44

088 number range for machine-to-machine services⁹⁸.

5.49 In 2018 ComReg also completed its review of non-geographic numbers ('**NGN**') in the 1800, 1850, 1890, 0818 & 076 number ranges⁹⁹. ComReg's decision introduces two measures designed to address the cost of using such numbers and also tackle confusion among consumers about the differences between the numbers. The main problem is that consumers cannot tell the different NGNs apart and do not know, or cannot estimate, the retail charges for calling different NGNs. Many consumers have also experienced "bill-shock" at some time from calling an NGN. This happens because retail tariffs for some NGN calls can be high, particularly when made from a mobile phone. Most NGN calls are also not included in the typical monthly "bundle of call minutes" offered by Irish telecom operators.

5.50 The changes being introduced by ComReg are:

- **Geo-linking Condition:** from 1 December 2019, a call to an 1850, 1890, 0818 or 076 NGN will cost no more than the cost of calling a landline number. This means that if landline calls are included in your "bundle of call minutes" then NGN calls will also be "in bundle". No separate charge will apply for any NGN call (unless you have used up your bundle of call minutes).
- **NGN Consolidation:** From January 1 2022, the five NGN ranges will be reduced to two. The 1850, 1890, 076 ranges will be withdrawn and the 1800 (Freephone) and 0818 range will remain. This 3 year period is to allow organisations that use NGNs time to prepare.

5.51 ComReg published its outline plan and next steps for implementing the New NGN Platform¹⁰⁰ on January 4 2019. This provides ComReg's preliminary proposals for how ComReg and industry can co-ordinate the successful implementation of improvements to the NGN platform¹⁰¹.

5.52 ComReg also participates in a number of international numbering fora, including CEPT ECC Working Groups, BEREC Expert Working Groups and EC Workshops on numbering issues.

Switching

5.53 Effective competition depends not just on supply-side considerations relating to the ease of entry to markets or the availability of essential inputs. Effective competition also depends on demand-side factors, as set out in Goals 1 and 2 above, and principally the ability and willingness of customers to switch in response to a better deal in the marketplace, whether switching to another supplier or switching to another offer or bundle provided by their existing supplier.

5.54 In part of its review of the Five Year ECS Strategy, ComReg came to the view

⁹⁸ ComReg 18/46

⁹⁹ ComReg 18/106

¹⁰⁰ ComReg 19/01

¹⁰¹ This is intended primarily for consideration by affected operators. For organisations that currently use NGNs ('Service Providers' or 'SPs'), ComReg proposes that the serving operator would contact their own SP customers directly to provide full details of the changes and advice on what to do next.

that the goal relating to switching (Goal 7) should be moved to the Strategic Intent covering Consumer Protection issues to better align with ComReg's functions relating to consumer rights. However, ComReg recognises that competition remains the primary driver of consumer choice.

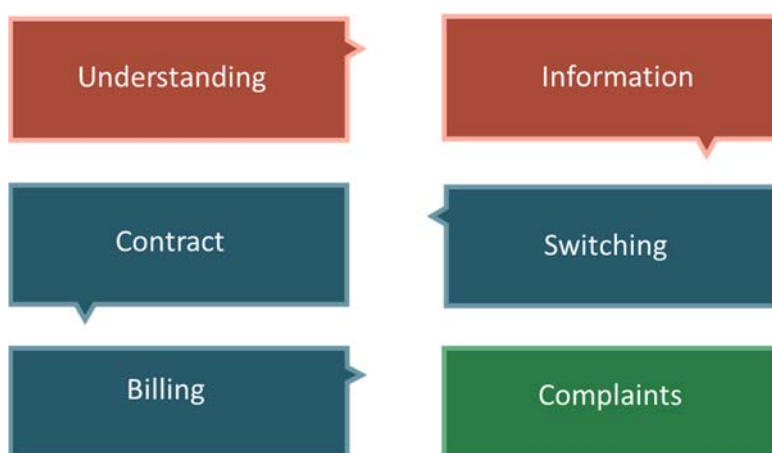
- 5.55 ComReg's second high level strategic intent is that consumers can choose and use communications services with confidence. This is outlined in the next chapter.

6. Protecting and Informing Consumers

Introduction

- 6.1 ComReg's second strategic intent is that **consumers can choose and use communications services with confidence**. This Chapter sets out ComReg's strategic goals associated with **protecting and informing consumers** with this high level intent. Our aim is to be an effective advocate for consumers and to provide expert input on matters affecting how markets work for consumers.
- 6.2 Our consumer protection strategy emphasises the role of informed decision-making, and has three elements, broadly corresponding to the experience of a consumer navigating the market (described in Figure 12 below):
- **Preparing the consumer for the purchasing decision:** To effectively provide consumers with appropriate and adequate information to assist them when choosing and using electronic communications services, it is necessary that we understand their behaviours and preferences.
 - **Accessing and using products and services:** ComReg monitors compliance by electronic communications and premium rate service operators with their obligations. Our strategy is designed to ensure that consumers have access to basic services and that appropriate sector specific measures are in place to protect them and to ensure that their rights are upheld, with respect to, inter alia, switching, contracts, service use and billing.
 - **Consumer complaints and redress:** For consumers to have confidence in the electronic communications sector, they need to have access to a resolution process that addresses the power differential between a large operator and an individual. ComReg's strategy is to ensure that consumers have effective redress mechanisms. Over the upcoming period we will be seeking to improve minimum standards in complaints handling by operators and to develop alternative dispute resolution mechanisms, as appropriate.
- 6.3 Our aim is to be an effective advocate for consumers and to provide expert input on matters affecting how markets work for consumers.

Figure 12: The Consumer Journey



Strategic Intent 2:	Consumers can choose and use communications services with confidence.
What does this look like?	<ul style="list-style-type: none"> • Essential and basic services are available for all as technology changes • Vulnerable users are protected • Consumers are empowered through clear and adequate information and effective redress • Consumers are treated fairly by ECS and Premium Rate Services (PRS) providers • Consumers get the service they contract and pay for

Common Consumer Issues

- 6.4 As noted in the 2017-2019 ECS Strategy Statement, ComReg operates a dedicated Consumer Line¹⁰² to help answer queries and handle complaints from consumers relating to both ECS and PRS Providers.¹⁰³
- 6.5 Figure 13 below shows the breakdown of contacts by ComReg's Consumer line into queries and complaints and by ECS and PRS markets. It is worth noting that not all issues raised by consumers give rise to a formal complaint. In Q4 2018, 89.5% of all issues handled by ComReg's Consumer Line were queries and not complaints. This graph shows in the last six years, the number of queries varied between 15,000 and 25,000 per year¹⁰⁴, while the number of complaints received varied between 5,000 and 10,000 per year. Over this period there is a general downward trend in complaints to ComReg regarding ECS which indicates that complaints are being resolved in the first instance by providers as per their Code of Practice. Furthermore, where consumers contacting ComReg's Consumer Care line with an ECS issue are advised to lodge their complaint with their provider (as per the provider's Complaint Handling Code of Practice), these issues are being resolved without our complaint handling intervention.
- 6.6 Figure 14 below shows a breakdown of queries and complaints received over time. PRS issues amount to nearly 9k of the total issues received. Of the total 16k ECS issues billing, contractual and service matters continue to be the main areas raised by consumers. However, other categories, in particular switching, installation and customer service are clearly also issues.

¹⁰² ComReg's Consumer Line can be reached via phone, email, webchat, SMS, post and online form.

¹⁰³ ComReg reports consumer line statistics on a quarterly basis. Available at: www.comreg.ie/publications/

¹⁰⁴ In 2017/18 ComReg's Consumer Line received 65,000 individual contacts, relating to circa 25,000 queries and complaints.

Figure 13: ComReg Consumer Line – Queries & Complaints

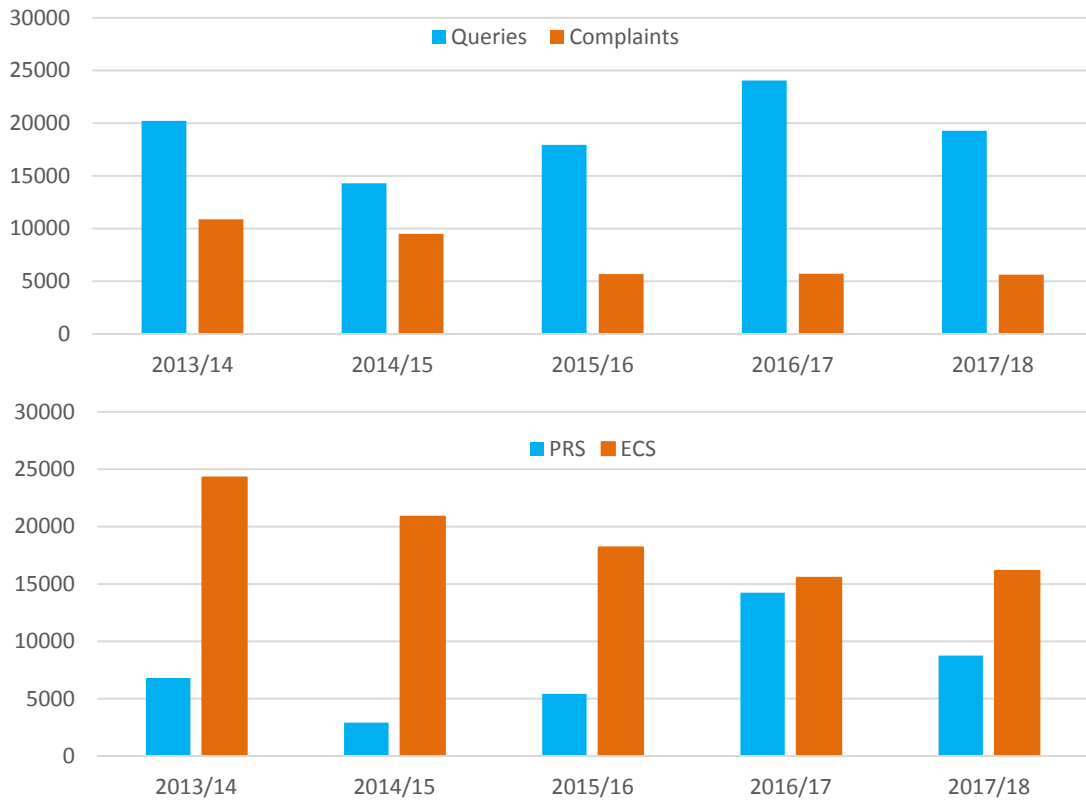
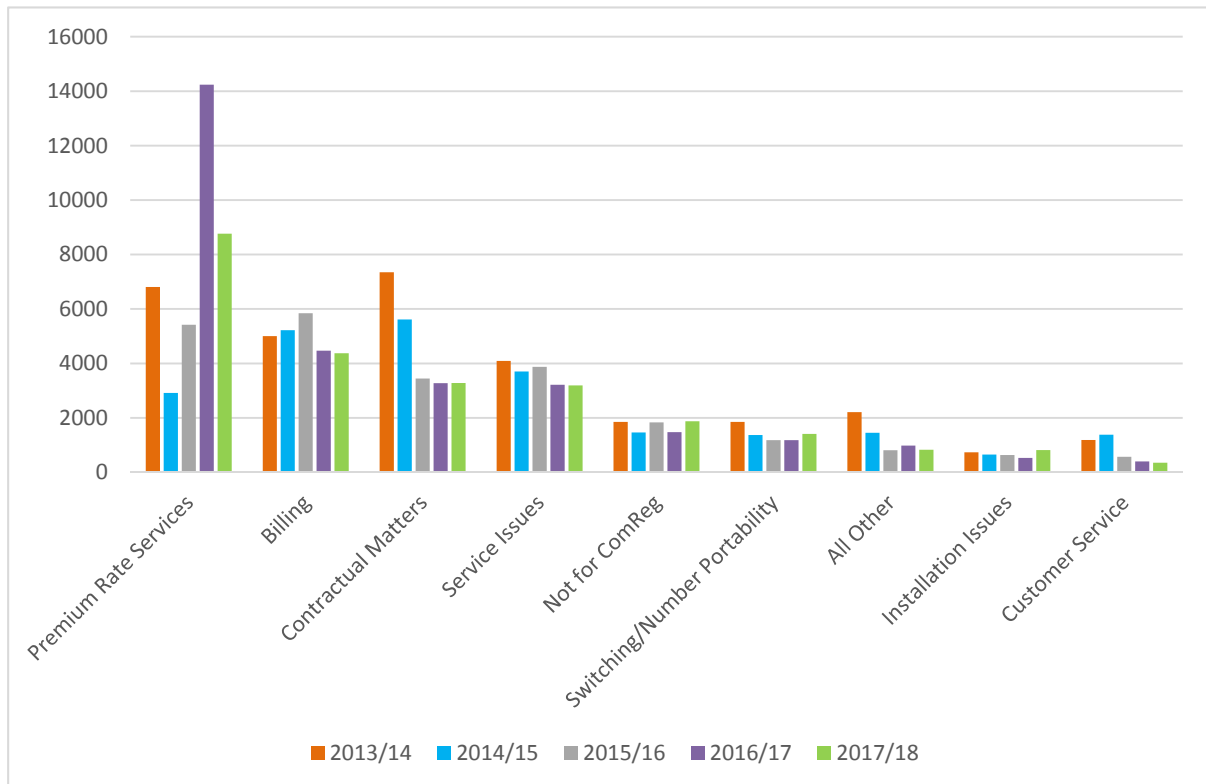


Figure 14: Breakdown of Queries & Complaints (PRS and ECS)



The Consumer Journey

Preparing the consumer for the decision

6.7 Telecommunications products and services can be complex products, meaning decision making can be a difficult task for consumers. As services are bundled in new and varied ways, consumers may not always make the 'economically rational' choice required.

6.8 To be an effective and relevant regulator ComReg must have a deep understanding of the consumer journey and be in a position to offer consumers information and advice to help them make informed decisions. In the Five Year ECS Strategy we set out a general goal about ensuring that consumers face low barriers to switching and two Goals relating to understanding and informing consumers:

- ✓ **Goal 7: There are low barriers to consumers exercising their choice¹⁰⁵.**
- ✓ **Goal 8: ComReg understands evolving consumer needs, preferences, behaviours and perceptions.**
- ✓ **Goal 9: All consumers, including vulnerable users, have access to clear and adequate information that facilitates informed choice.**

6.9 In the 2017-2019 ECS Strategy Statement we planned a number of key initiatives:

- **Market Research:** We planned to conduct regular market research to understand the changing preferences, behaviours and perceptions of consumers. In addition we planned to research consumers' experience of mobile coverage.
- **Advisory panels:** ComReg planned to host panels to gain insights into consumer issues including issues for people with disabilities.
- **Complaints Data:** As well as publishing statistics relating to our Consumer Line, we planned to analyse data from complaints and queries received to better understand the consumer journey and any trends emerging.
- **Our online presence:** We noted that our website had been significantly updated in 2016 and we intended to add new functionality to the website, including a tool to allow consumers to compare prices and packages from ECS providers.
- **Code of Practice for Complaint Handling:** We planned to publish a Code of Practice for Complaint Handling and ensure consumers are better informed about the code of practice and the redress process.
- **Net Neutrality:** We planned to ensure that service providers are fully compliant with obligations relating to net neutrality.
- **The Mobile Market:** ComReg planned to undertake handset sensitivity tests to examine the relationship between antenna performance and

¹⁰⁵ This Goal has been moved from the Competition Chapter to the Consumer Protection Chapter, following a review of the Strategic Intents and associated Goals set out in the Five Year ECS Strategy, published in 2017.

network coverage, and to publish a national coverage map, allowing consumers choose the network provider that best meets their needs for where they live and work.

- 6.10 ComReg monitors the level of switching in the ECS Markets through consumer research surveys. Through our compliance and enforcement actions, we have sought to ensure consumers are not disadvantaged by unfair or illegal practices that limit consumer switching. In addition, in 2017, ComReg launched its updated value comparison tool, ComReg Compare,¹⁰⁶ to provide consumers with a trusted way to compare the range of market offers, including handsets available. We also undertook various pieces of market research to help better understand consumer experience of the switching process.
- 6.11 Over the last two years ComReg has deepened its understanding of matters relating to consumer behaviour. As well as conducting various consumer and business surveys, ComReg has sought to explore new research techniques to explore the underlying causes of consumer behaviour. We have continued to conduct research with the Economic and Social Research Institute ('ESRI') into switching behaviour as part of its Price Lab programme. In addition, along with DCCAE we engage the ESRI to conduct research on the telecommunications markets.
- 6.12 In addition to market research ComReg has engaged its Consumer Advisory Panel¹⁰⁷ to help gain insight into issues faced by consumers and to advise on developments, innovations and areas of consumer concern. We have also held periodic workshops on matters related to disability issues. Over the coming period we will continue to meet with the Consumer Advisory Panel and representative groups to ensure ComReg continues to gain insights into these issues.
- 6.13 ComReg introduced a new Code of Practice for Complaint Handling¹⁰⁸ in 2017, which came into force in January 2018. This Code sets out the minimum requirements for Service Providers' codes of practices for complaint handling to assist consumers when making a complaint.
- 6.14 ComReg issued a Decision¹⁰⁹ in February 2018 requiring mobile service providers to provide a facility, from 1 January 2019, to allow their subscribers to select to bar Premium Rate services. Mobile service providers must also inform their subscribers of this facility.
- 6.15 ComReg issued a Decision¹¹⁰ in January 2018 regarding the provision of information regarding battery backup in the case of fixed services on non PSTN networks.

¹⁰⁶ www.comreg.ie/compare

¹⁰⁷ Details of ComReg's Consumer Advisory Panel are located here - <https://www.comreg.ie/engagement/consumer-advisory-panel/>

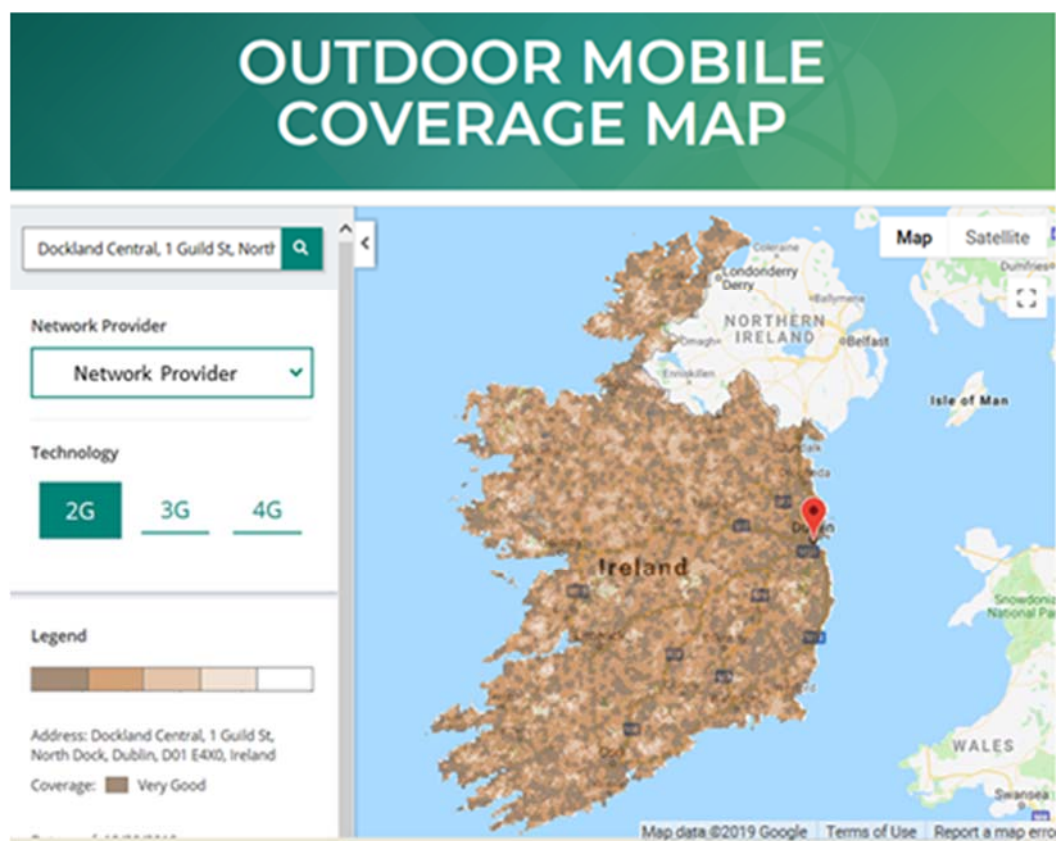
¹⁰⁸ Details are set out here - <https://www.comreg.ie/code-practice-handling-complaints/>

¹⁰⁹ "Selective Barring Response to Further Consultation 15/125 and Final Decision", February 2018: <https://www.comreg.ie/publication/selective-barring/>

¹¹⁰ Requirements regarding Battery Back-up and information for Fixed Voice Services over non Public Switched Telephone Networks" January 2018 <https://www.comreg.ie/publication/requirements-regarding-battery-back-information-fixed-voice-services-non-public-switched-telephone-networks/>

- 6.16 In the absence of legal powers, ComReg has not carried out any enforcement actions relating to Net Neutrality. Once ComReg has legal powers we will be in a position to carry out enforcement actions, as required.
- 6.17 ComReg's participation in the Mobile and Broadband Taskforce (Explanatory Box 4) coincided with a number of actions from the 2017-2019 ECS Strategy Statement (and Radio Spectrum Management Strategy Statement) relating to handsets and mobile coverage. Over the last two years ComReg has undertaken a range of tests involving popular mobile handsets in the Irish market and published its results¹¹¹. These tests covered both voice call and data and the impact that building materials may have on indoor mobile performance.
- 6.18 In February 2019, ComReg published its Mobile Coverage map on its website (www.comreg.ie/coveragemap). An example of the map is contained in Figure 15 below.

Figure 15: Mobile Coverage Map – www.comreg.ie/coveragemap



¹¹¹ ComReg Documents 18/05, 18/82, 18/84 and 18/109

6.19 Related to Goals 7, 8 and 9, over the coming period ComReg intends to:

- **Coverage Map:** ComReg intends to add new features to the Mobile Coverage map on its website over time to enhance its offering to consumers.
- **Research:** Over the coming period ComReg intends to continue to deepen its understanding of consumer behaviour and switching, including through research undertaken in house and in collaboration with experts, including the ESRI. Where appropriate, on foot of consumer complaints or other initiatives, we will seek to ensure that consumers can exercise their choice in a timely manner.
- **Market Research:** Building on our mobile consumer experience survey in 2017, ComReg intends to commission a study of mobile consumer experience in 2019. In addition, in 2019 we will commence studying the confidence of consumers to choose and use ECS services.
- **Testing of Mobile Handsets:** Over the coming period, ComReg intends to continue to measure the performance of new makes and models of mobile handsets that become available on the Irish market for voice and data, and to publish such measurements as they become available. Further details are set out in the Radio Spectrum Management Strategy 2019-2021.
- **Consumer Engagement:** Over the last two years, ComReg has expanded its consumer engagement with the publication of information on the ComReg website and ComReg Compare value comparison tool, campaigns through social media, digital and traditional marketing, networking events and outreach activities. Over the coming period, ComReg intends to maintain this and further expand its consumer engagement by developing a timely and relevant consumer communications strategy, including a ComReg consumer identity/brand, offering targeted messaging through multi-channels.
- **Other items:** In November 2018 ComReg issued its decision regarding formal dispute resolution¹¹², which will commence in September 2019.

Accessing and using products and services

6.20 Once consumers have obtained insightful and adequate information to make a purchase decision, they must be supported to ensure that products and services are fit for the purpose intended. As set out in the 2017-2019 ECS Strategy Statement, there are a number of consumer protection measures in place relating to a universal service obligation for voice at a fixed location, access to emergency call services and measures relating to ensure equivalence in access and choice for disabled end-users. In addition to these basic rights, consumers benefit from protections relating to purchasing and providing consent, switching, contracts, using services, billing and complaint redress.

6.21 ComReg also has functions relating to the operation of Ireland's Emergency Call Handling Services (ECAS), including monitoring the quality of service provided and reviewing the maximum call handling fees charged by ECAS

¹¹² ComReg document 18/104

providers to operators.

6.22 In this context, ComReg's Five Year ECS Strategy set out a goal relating to consumer rights as follows:

- ✓ **Goal 10: Consumer rights throughout their journey are upheld by their service provider.**

6.23 Following a review of the Five Year ECS Strategy Statement, the following Goal was moved from the Investment intent to the Consumer Protection intent:

- ✓ **Goal 16: Implement a USO to ensure that basic services are delivered, as appropriate¹¹³.**

6.24 In the 2017-2019 ECS Strategy, ComReg planned a number of key initiatives:

- **Monitoring compliance:** We planned to continue to monitor service provider compliance with a range of obligations relating to consumer rights and the amended Roaming Regulations.
- **Non-geographic numbering:** We committed to complete a review of non-geographic numbers to ensure reasonable prices for consumers.
- **Net Neutrality monitoring:** We planned to implement a monitoring and compliance programme for net neutrality matters in accordance with our powers.
- **USO:** We planned to consider any applications from Eir regarding the net cost of delivering on its USO obligations and to determine whether there was an unfair burden on Eircom, which may require the establishment of an industry universal service sharing mechanism. ComReg also noted it would review the Access at a Fixed Location ('AFL') USO designation following the NBP contract award. In a related context, ComReg planned to examine the issue of high speed broadband FIA requirements and whether Ireland needs a USO designation.

6.25 Over the last two years ComReg has actively monitored the compliance of service providers and taken a number of actions against service providers, as necessary. In addition to the active monitoring of obligations, ComReg analyses data from complaints received through the Consumer Care Line to ensure consumer rights are upheld throughout the consumer journey. With respect to the revised Roaming Regulations, ComReg actively monitors how service providers are implementing the 'Roam like at Home' regime since its introduction in 2017 and has also taken appropriate enforcement action. Over the coming period, ComReg will continue to actively monitor service provider compliance with obligations and take action/redress where appropriate.

6.26 ComReg completed its review of non-geographic numbers in 2018. Changes to be introduced in 2019 will ensure that calling any 1850, 1980, 0818 or 076 number will cost no more than an ordinary landline number and the such calls shall be included in any 'bundle of call minutes'. In addition, over the next three

¹¹³ This Goal has been moved from the Investment Chapter to the Consumer Protection Chapter, following a review of the Strategic Intents and associated Goals set out in the Five Year ECS Strategy, published in 2017.

- years ComReg intends to reduce the number of non-geographic number ranges from five to two, thereby simplifying and lowering the cost of non-geographic numbers for consumers.
- 6.27 As noted above, with respect to Net Neutrality, in the absence of legal powers, ComReg has not carried out any enforcement actions relating to Net Neutrality. We have made technical preparations and will implement a monitoring and compliance programme for net neutrality matters once ComReg has the necessary legal powers.
- 6.28 The Universal Service Directive and Regulations place primary responsibility on ComReg to ensure the provision of a minimum set of telecommunications services in the State. In July 2016, ComReg designated Eircom as the Universal Service Provider ('**USP**') up to June 2021¹¹⁴.
- 6.29 As part of the review of the Five Year ECS Strategy Statement, ComReg concluded that an additional goal was required to ensure consumer rights and protections, including for disabled end-users, are adequate to mitigate consumer detriment.
- 6.30 Competition may not always operate to the full benefit of consumers, with the result that in the presence of market imperfections there may be consumer harm (see Explanatory Box 1). Firms may not always follow a course of action of full benefit to consumers. Effective competition also depends on demand-side factors and principally, the ability and willingness of customers to switch suppliers in response to a better deal in the marketplace.
- 6.31 As noted above, ComReg has a variety of mechanisms for delivering an improved consumer experience.
- 6.32 Notwithstanding the existence of end-user rights and consumer protection measures that benefit and protect consumers, there may still be a risk of harm to consumers where these protections may not be sufficient to safeguard consumer interests in light of a rapidly changing market and consumer behaviour. To redress any deficiencies in the competitive process or commercial incentives to provide specific services including for disabled end-users, ComReg can, as appropriate, use its powers to further specify an intervention to help improve consumer outcomes by ensuring that markets work effectively for consumers.
- 6.33 The following new Goal has therefore been added:
- ✓ **Goal:** Consumer rights and protections, including for disabled end-users, are adequate to mitigate consumer detriment.
- 6.34 Related to the above three goals, over the coming period, ComReg intends to do the following:
- **Monitoring compliance:** We will continue to monitor service provider compliance with a range of obligations relating to consumer rights and the amended Roaming Regulations.

¹¹⁴ ComReg Decision D05/16. Document 16/65.

- **Review of Bill shock:** ComReg plans to first issue a Call for Inputs to understand the potential need for measures for end-users to be able to control the cost of publicly available telephone services to end-users. ComReg would like to better understand the issue of unexpectedly high bills, so we are inviting stakeholders to share their experiences. There are already a number of consumer protections in relation to control of expenditure. There are also some specific rules that protect consumers when they are travelling in other EU countries. ComReg will consider all the responses to this Call for Inputs, and the information gathered from Communications Providers, in order to better understand the issues around potential domestic bill shock. ComReg may further consult on any issues identified to be addressed and whether there is a case for intervention to ensure consumers are protected.
- **Review of disability accessibility statement:** To ensure that the measures put in place for disabled end-users reflect market evolutions and continue to meet consumer needs.
- **Net Neutrality monitoring:** ComReg will continue to monitor market developments as regards zero-rated products and services. In addition, ComReg is working with its colleagues at BEREC in relation to its program on open internet.
- **USO:** Over the coming period ComReg will continue to publish information on Eir's USO Quality of Service performance and make assessments regarding Eir's applications for funding the USO over the period. In addition, ComReg will begin a review 3 months after the Department has concluded the NBP contract award process. On foot of this review, ComReg will decide if it needs to commence a new consultation process in relation to AFL USO in the State and it will publish an information notice regarding this.
- **Numbering:** As set out in Chapter 4, ComReg has completed its review of non-geographic numbers in the 1800, 1850, 1890, 0818 & 076 number ranges¹¹⁵. ComReg's decision introduces two measures designed to address the cost of using such numbers and also tackle confusion among consumers about the differences between the numbers. These measures will take effect in 2019 and 2022.
- **The EECC:** We will prepare for the introduction of the Regulatory Framework by analysing the new end-user provisions and preparing to review existing policy measures or introduce new ones where appropriate. We will also participate in appropriate BEREC end-user working groups which are preparing for new consumer rights and standards.

Consumer Complaints and Redress

- 6.35 For consumers to have confidence in the process of choosing and using a telecommunications product or service, they need to have a mechanism to help address and resolve any issues that may emerge with their service provider.
- 6.36 In all instances, consumers must first raise a complaint with their Service

¹¹⁵ ComReg 18/106

Provider before contacting ComReg. All ECS Service Providers are obliged in law to have a Code of Practice for complaints handling in order to communicate how they deal with disputes and what steps a consumer must follow. If the consumer has not had their complaint resolved within 10 days they can then contact ComReg. ComReg offers a service to consumers who can contact the consumer line by phone, email, web chat, online form, ISL and text.

6.37 In this context, the Five Year ECS Strategy set out the following Goal:

✓ **Goal 11: Consumers have effective redress mechanisms.**

6.38 In the 2017-2019 ECS Strategy Statement, we planned initiatives aimed at resolving consumers complaints:

- We sought to improve and standardise procedures through a Code of Practice for Complaint Handling.
- We planned to consult on our complaint handling process and matters relating to the Alternative Dispute Resolution for consumer disputes (as set out in S.I. No 343 of 2015).

6.39 As noted above, ComReg introduced a new Code of Practice for Complaint Handling¹¹⁶ in 2017, which came into force in January 2018. This Code sets out the minimum requirements for Service Providers' codes of practices for complaint handling to assist consumers when making a complaint.

6.40 Over the last two years we have continued to publish consumer line statistics¹¹⁷ quarterly providing information on the number and nature of complaints and queries raised with ComReg's Consumer Care line relating to ECS and PRS.

6.41 Relating to Goal 11, over the coming period, ComReg intends to do the following:

- **Consumer Care and Complaint Handling:** We will be expanding our consumer statistics publication to include the length of time that cases are open, by operator. We also plan to provide new features to service providers to allow them to track their open ComReg cases and correspondence. We will also monitor compliance with the minimum standards set by ComReg in relation to service providers' Code of Practice for Complaint Handling. We envisage that these measures will improve the service provider resolution timeframes.
- **The EECC:** We will prepare for the introduction of the Regulatory Framework by analysing the new end-user provisions and equip our consumer care team with the appropriate knowledge, advice and training in light of the new rights.

Communication and Engagement

6.42 In addition to our engagement with consumers, we also engage with a range of

¹¹⁶ Details are set out here - <https://www.comreg.ie/code-practice-handling-complaints/>

¹¹⁷ These are published in document form and on our website, at <https://www.comreg.ie/consumer-information/consumer-care/statistics/>

representative bodies and other stakeholders and conduct market research to ensure ComReg has a thorough understanding of the issues facing consumers in the ECS markets. As the sector specific regulator for ECS and PRS, we engage with a range of bodies, such as the CCPC and the Advertising Standards Authority of Ireland, to ensure consumers who use ECS and PRS services are adequately represented. ComReg seeks to use the complete range of levers at its disposal, including our regulatory powers and soft powers, such as influencing skills, to promote the interest of end-users as appropriate.

6.43 Over the last two years, ComReg has engaged and informed consumers in a number of ways, including:

- Launched our ComReg Compare facility on our website;
- Used social media campaigns to provide information on how to discontinue premium rate services and on upcoming changes to Non-Geographic Numbering;
- Manned stands at various outreach events, including the Active Retirement Ireland Trade & Tourism Show in Dublin, Roscommon Older People's Council, the School Summit in Swords, Co. Dublin and the National Ploughing Championships in Tullamore.
- Displayed consumer guides in over 1,300 medical waiting rooms nationwide;
- Informed consumers through *Public Sector Magazine*, *Council Journal* and *Senior Times Magazine*.

6.44 We also informed about the range of services provided by ComReg through engagement with Broadband Officers of the Mobile and Broadband Task Force, TV and Radio interviews, presentations to Active Retirement Ireland groups and through consumer guide display in libraries.

6.45 In addition, we have continued to provide consumer news and information on our website, including information on factors that may affect consumers' quality of mobile experience and on aspects of the Quarterly Key Data Report which are of consumer interest.

6.46 In this regard, our Five Year ECS Strategy set out the following Goal:

✓ **Goal 12: ComReg is an effective advocate for consumers.**

6.47 Over the last two years, ComReg has advocated on behalf of consumers in a number of different ways, including through attendance of various Oireachtas Committee meetings and through engagement with DCCA and other Government departments and agencies, including the CCPC and Advertising Standards Authority of Ireland. In addition, we have submissions to the Law Reform Commission seeking new powers to aid our compliance and enforcement actions. We regularly use our regulatory powers and soft powers when engaging with industry and its representative bodies, to ensure the interests of consumers are promoted and upheld.

6.48 Related to Goal 12, over the coming period, ComReg intends to continue to expand its consumer engagement reach to inform consumers of their rights and

the information ComReg makes available by:

- Developing a ComReg consumer identity/brand and a consumer communications strategy.
- Producing and delivering content through multi-channels, including targeted direct and digital marketing campaigns.

6.49 Over the coming period, we will continue to engage with stakeholders including the Consumer Advisory Panel, Disability Forum, Departmental Consultative Committee, Broadband Officers (Mobile and Broadband Task Force) and Economic Regulators Network Subgroup.

6.50 ComReg intends to continue to inform its consumer engagement programme through the analysis of information gathered from various sources, including website analytics, advisory panels, data from complaints raised with ComReg and market research findings relating to matters such as levels of consumer awareness and confidence.

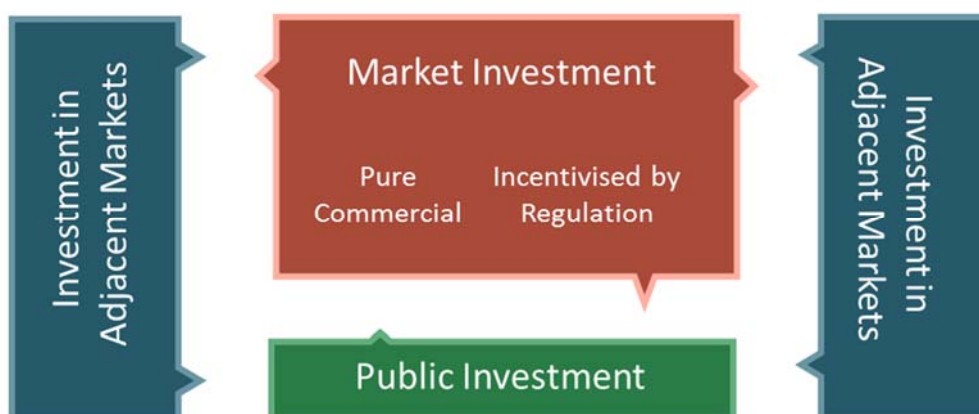
6.51 In addition, as noted above, ComReg intends to commence market research to examine the confidence of consumers to choose and use various ECS services.

7. Creating the Conditions for Investment

- 7.1 ComReg's third strategic intent is that **efficient investment has enabled affordable, high-quality and widespread access to communications services and applications**. Underlying all of ComReg's work is the belief that effectively competitive markets drive commercial incentives which will motivate the investments necessary to bring innovative products and services to market, and to generally improve connectivity and service quality.
- 7.2 As noted in Chapter 3, the new regulatory framework, the EECC, which is due for transposition by 2020, includes a new objective – promoting connectivity, and access to, and take-up of, very high capacity networks, including fixed, mobile and wireless networks. ComReg considers that this objective broadly corresponds with its Investment intent. Investment in telecommunications drives connectivity. Only through the availability of very high capacity networks (VHCN), both fixed and wireless, can consumers access the range of services and applications that support their social and economic needs.
- 7.3 Through the provision of the necessary regulatory incentives to invest, including the remediation of any market failures, and the provision of universal service obligations, ComReg seeks to ensure the availability of telecommunications infrastructure and services to the widest extent possible. In addition, where Government decides that State Intervention is required in the telecommunications markets (e.g. the National Broadband Plan), ComReg provides advice and support to the Government as the sector specific regulator.
- 7.4 It is useful to distinguish the different settings in which investment occurs (see Figure 16):
- **Commercial investment:** There is investment that is purely commercial in nature. ComReg's principal role in this context is to facilitate investment by fostering regulatory certainty, lowering barriers to entry and ensuring the availability of the necessary inputs as much as possible. This can involve mandating the supply of wholesale inputs under the SMP regime, setting prices that allow an adequate return on investment, effectively managing the radio spectrum and the administration of the national numbering resource.
 - **Incentivised investment:** Some investment occurs as a direct result of market intervention by ComReg. For example, all publicly accessible telephone service providers are required to invest to ensure uninterrupted access to the emergency call answering service.
 - **State intervention:** Some investment occurs in the context of a direct intervention by the State in the marketplace, e.g., the National Broadband Plan. While such investment may in practice involve a private dimension, it would not occur without direct financial involvement by a public body. Even though ComReg is not directly involved in such situations, it still has a role to play in advising and supporting the State so that interventions support the effective functioning of the market.
- 7.5 Finally there is investment that occurs, not directly in electronic communications markets, but in related markets. The manner in which ComReg undertakes its role in respect to electronic communications markets may affect incentives to

invest in certain related markets and vice versa.

Figure 16: Areas of Investment



7.6 ComReg's strategy over the upcoming period focuses on:

- **Facilitating commercial investment:** ComReg aims to ensure that competitive incentives drive commercial investment in infrastructure and services to the widest extent possible. ComReg's role in this can involve mandating the supply of wholesale inputs where appropriate, setting prices that allow an adequate return on investment, effectively managing the radio spectrum and the administration of the national numbering resource.
- **Creating regulatory incentives to invest where necessary:** Unregulated, the lack of competition in some ECS markets may not provide the right, or adequate, incentives for investment. Reliance on market-based incentives alone would also lead to non-provision of services to non-economic end-users.
- **Assisting policymakers:** Where direct State intervention is required, for example, in delivering broadband on a nationwide basis, it is ComReg's strategy to assist policymakers to design interventions that complement market realities. As such, ComReg aims to provide expert input based on its knowledge and experience of electronic communications and related markets.

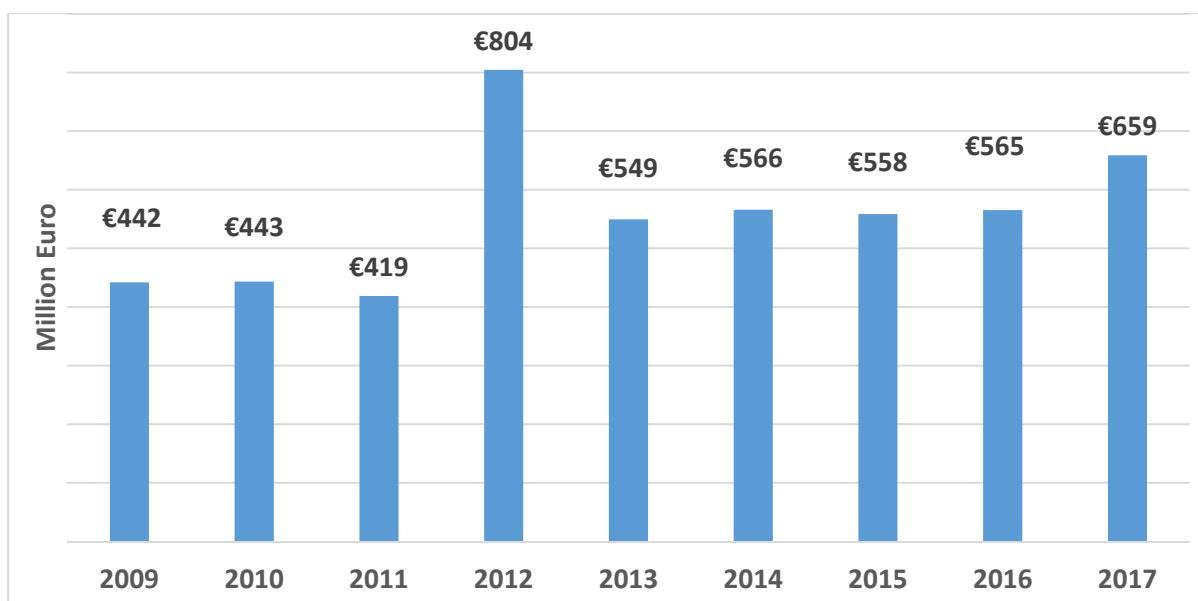
7.7 The pattern of private sector investment in Ireland is shown below in Figure 17. Over this period there has been an upward trend in investment in ECS/ECN, reflecting the positive economic sentiment associated with the recovery of the Irish economy.

7.8 For consumers, this investment by ECS providers translates into more consumers availing of faster services over both fixed and mobile networks. Today, more than 1.05 million subscribers¹¹⁸ avail of fixed next-generation broadband services in Ireland (see Figure 6, Chapter 2). Similarly, in the mobile market, consumers continue to switch to 4G services as they upgrade handsets to avail of faster mobile networks that are being rolled out across the country.

¹¹⁸ ComReg QKDR, Q4 2018.

- 7.9 Over the next period Irish consumers can expect to benefit from the advancing rollout of FTTH networks and investments made in mobile networks (including 5G networks). However, as noted in Chapter 4, the economics of network rollout and the varying population density on the island mean that not all consumers will see the benefits of faster fixed and mobile network at the same time. In some cases regulation and state intervention will be required to ensure widespread connectivity.

Figure 17: Investment in ECS/ECN (Ireland, €millions)¹¹⁹



Facilitating Commercial Investment

Access to Markets: The SMP Framework

- 7.10 As set out in our 2017-2019 ECS Strategy Statement, when markets are effectively competitive they help deliver optimal outcomes in terms of prices, quality, choice and innovation. In so far as possible, competitive incentives should lead service providers to enter the market, extend the reach of their networks or make the necessary investments to bring new products and services to the market. ComReg uses the range of regulatory tools at its disposal to safeguard and drive such competitive incentives, as the principal means of driving commercial investment in the market.
- 7.11 As discussed in Chapter 4, when markets do not operate effectively, ComReg may impose a range of regulatory obligations on an operator deemed to have Significant Market Power. Such obligations can include remedies relating to access, transparency, non-discrimination and price control. In addition, ComReg recognises that interventions in the various markets must allow for a reasonable rate of return for both wholesale and retail providers. Such interventions by ComReg are designed to remedy potential competition problems and provide the correct investment incentives to existing operators

¹¹⁹ Eurostat

and potential market entrants.

7.12 In this context, ComReg's Goals relating to *Facilitating Commercial Investment* are as follows:

- ✓ **Goal 13: Competitive incentives facilitate efficient commercial investment in infrastructure and services to the widest extent possible.**
- ✓ **Goal 14: Regulation allows for a reasonable rate of return, including for both wholesale and retail operators.**

7.13 In the 2017-2019 ECS Strategy Statement, ComReg planned a number of key initiatives:

- **Access and related remedies in markets where Significant Market Power (SMP) is found:** ComReg aimed to ensure that operators designated with SMP in markets had appropriate remedies imposed on them to encourage investments by other authorised operators in downstream markets. We noted that we would take into account the investment made by the operator, and allow a reasonable rate of return on adequate capital employed.

7.14 As discussed in Chapter 5 ComReg made a number of regulatory decisions regarding markets to promote competition and encourage investment by both the SMP operator and access seekers looking to climb the ladder of investment and expand the range and/or reach of their network and services. In 2018 ComReg imposed a number of regulatory obligations on Eircom, as the operator designated with having significant market power (SMP) in the Wholesale Local Access and Wholesale Central Access markets¹²⁰. This set of regulatory obligations included a cost orientation obligation on the pricing of Eircom's FTTC network.

7.15 Related to Goals 13 and 14, over the coming period, where ComReg seeks to designate an undertaking with SMP, we will ensure that regulatory obligations send the correct signals to industry regarding competition and investment decisions. In particular, during the forthcoming period, ComReg will be reaching decisions on the Wholesale High Quality Access market and the fixed and mobile termination markets. In 2019 ComReg will be consulting on a proposed approach to estimating the appropriate cost of capital in fixed, mobile and broadcasting markets.

7.16 As noted above, the EECC includes a new Connectivity objective. ComReg considers that this objective broadly corresponds with its Investment intent. Investment in telecommunications drives connectivity and therefore requires the right conditions for investment in very high capacity networks, both fixed and wireless.

7.17 ComReg notes that the growth in deployment of new and emerging digital technologies has the potential to play an important role in the decarbonisation of our economy. In this regard, ComReg has committed to conducting a study

¹²⁰ ComReg Document 18/94, Decision D10/18

of the connectivity needs and implications of the widespread adoption of digital technologies that support decarbonisation. Work on this study is ongoing and will be completed by the end of 2019.

Access to Essential Inputs – Spectrum and Numbers

- 7.18 When considering the management of spectrum, there are domestic and international factors to be considered.
- 7.19 On the international stage, harmonisation for radio spectrum includes aspects such as technology standards and identification of spectrum bands for technologies such as 5G. Such harmonisation is essential to ensure the efficient investment in spectrum. ComReg and DCCA play an active role in international forums to ensure that, as far as possible, decisions made relating to the international radio spectrum regulatory framework accommodate Ireland's specific requirements.
- 7.20 At a domestic level, ComReg acts on these international developments, exercising its spectrum management functions in a timely manner. The actions ComReg takes to assign spectrum and the various conditions attached to spectrum rights of use, help incentivise efficient investment in spectrum in Ireland.
- 7.21 In this context, in addition to Goal 13 and 14, ComReg's Five Year ECS Strategy includes a further Goal, specifically relating to the management of spectrum and the promotion of investment:
- ✓ **Goal 15: The management of spectrum and numbers facilitates efficient investment.**
- 7.22 In the 2017-2019 ECS Strategy Statement, ComReg planned a number of key initiatives relating to the management of spectrum:
- **5G Technology:** ComReg planned to promote Ireland's position in relation to the spectrum management aspects of 5G technology and its candidate bands.
 - **Test and Trial:** Continue to promote Test and Trial Ireland and the benefits of using Ireland as a location to test or trial wireless products and services in a real world environment.
 - **Licence Conditions:** ComReg noted it would consider the role that could be played by licence conditions (including coverage conditions) in promoting investment.
 - **Regulatory Certainty:** ComReg planned to continue to publish its forward-looking strategy for managing the radio spectrum.
- 7.23 Over the last two years, ComReg
- Published its Radio Spectrum Management Strategy for 2019-2021, setting out work plan priorities for this period, including information on bands suitable for next-generation (5G) connectivity.
 - Completed the 3.6 GHz Band Spectrum award, and issued spectrum rights of use to five winning bidders, facilitating any future provision of 5G services.

The 3.6 GHz band is an important band for the provision of wireless broadband services and has been identified as the primary band for 5G in Europe by the RSPG¹²¹;

- Continued to promote Test and Trial Ireland. The number of test and trial licences issued in 2018 has increased compared to previous years; and
- In November 2018, published the results of three studies and an Information Notice¹²², which together discuss some of the challenges, solutions and actions to improving connectivity in Ireland. The purpose of these studies is to assist ComReg in its development of award proposals for its forthcoming spectrum awards and, in particular, its consideration of appropriate coverage obligations.

7.24 Related to Goal 15, ComReg's Radio Spectrum Management Strategy for 2019 to 2021¹²³ sets out ComReg's priorities and work plan up to 2021 and includes, amongst other items, the following work plan items:

- Develop and finalise the multi-band award proposals for the release of spectrum rights for the provision of wireless broadband (both mobile and fixed broadband) services;
- Take the necessary measures to enable the deployment of Machine to Machine technologies in the 900 MHz and 1800 MHz frequency bands;
- Consider opening up the 130 – 134 GHz, 141 – 148.5 GHz, 151.5 – 164 GHz and 167 – 174 GHz frequency bands to facilitate the licensing of terrestrial fixed links;
- Conclude the consultation process on the potential award of rights of use in the 400 MHz band; and
- Continue to promote Test and Trial Ireland and the benefits of using Ireland as a location to test or trial wireless products and services in a real world environment.

Regulatory Incentives

7.25 ComReg's 2017-2019 ECS Strategy Statement highlights three areas where the risk of market failures may require ComReg to use its powers:

- Universal Service Obligations;
- Mobile Coverage; and
- Network Resilience, Reliability and Security (NRRS).

7.26 During the mid-term review of the Five Year ECS Strategy Statement, ComReg came to the view that matters relating to Universal Service Obligations should be moved to the chapter dealing with consumer protection matters. The associated goal, Goal 16, is similarly moved to Chapter 5 of this Strategy

¹²¹ RSPG Opinion on spectrum related aspects for next-generation wireless systems (5G) |Final|09 November 2016 Document RSPG16-032 FINAL

¹²² Documents 18/103, 18/103a, 18/103b, 18/103c, and 18/103d.

¹²³ Document 18/118

Statement.

- 7.27 The national importance of mobile coverage saw its inclusion in the 2016 Programme for Government and the establishment of the Mobile Phone and Broadband Taskforce (discussed further in Explanatory Box 4). Despite improvements in 3G and 4G mobile coverage in recent years, there is a perception that mobile consumer experience is weaker in some parts of the country. ComReg recognises that if the mobile coverage demanded by consumers cannot be delivered by commercial means, then it has regulatory tools that can improve consumer experience and/or incentivise infrastructure rollout in uncommercial areas.
- 7.28 The importance of network resilience, reliability and security is likely to grow over the coming years as our society and economy become increasingly dependent on ECS networks, whether fixed or wireless. The reliability, security and integrity of networks, equipment and devices is paramount to the continued expansion and adoption of ECS. In addition, the impact of adverse weather, electricity network outages or malicious activities by others can result in ECS networks failing, the exposure of our personal information or the hacking of our equipment¹²⁴, which can impact consumers, industry and the wider economy.
- 7.29 Having reviewed the goals in this section of the Five Year ECS Strategy, the following two goals fall under the heading of *regulatory incentives* as follows:
- ✓ **Goal 17: Mobile coverage obligations are used to promote investment where proportionate.**
 - ✓ **Goal 18: There are incentives, including regulatory incentives, where there is a risk of market failure, to invest in security, reliability, and capability.**
- 7.30 In the 2017-2019 ECS Strategy Statement, ComReg planned a number of key initiatives relating to the above Goals:
- **Coverage and Rollout Obligations:** We committed to consider the use of coverage and/or rollout obligations to ensure the efficient use of radio spectrum.
 - **Collaboration mechanisms:** We planned to examine the use of licence obligations to promote cost-effective collaboration mechanisms (such as site/infrastructure sharing) to facilitate infrastructure deployment to the benefit of end-users.
 - **Systemic risks to ECS:** We planned to identify systemic risks that could have widespread impact on ECS and determine the extent to which ComReg or other public bodies have the necessary powers or resources to manage such risks.
- 7.31 Over the last two years ComReg has continued to consider, and where appropriate use, coverage and rollout obligations to ensure the efficient use of

¹²⁴ For example, PBX hacking and telephony fraud.

radio spectrum. ComReg's 3.6 GHz Band Spectrum Award in May 2017¹²⁵, included an obligation to rollout and maintain a minimum number of base stations within 3 years. In addition, in November 2018, we published the results of three studies and an Information Notice¹²⁶, which together discuss some of the challenges, solutions and actions to improving connectivity in Ireland. The purpose of these studies is to assist ComReg in its development of award proposals for its forthcoming spectrum awards and, in particular, its consideration of appropriate coverage obligations. A summary of this work is contained in Explanatory Box 6.

- 7.32 In 2017 we established a dedicated Network Operations Unit to provide cross-divisional support and expert technical advice to other ComReg units on technical network issues, including the resilience, security and integrity of operator's networks. At the end of March 2019, the Network Operations Unit

¹²⁵ Document 17/38

¹²⁶ Documents 18/103, 18/103a, 18/103b, 18/103c, and 18/103d.

(NOU) published the its annual report¹²⁷. The report sets out in detail the legal basis for the work of the NOU, a summary of its activities in 2018 and sets out its focus in the coming twelve months.

- 7.33 Related to Goals 17 and 18, over the coming period, ComReg intends to continue to consider the challenges, solutions and actions to improving connectivity in Ireland, including the use of coverage and/or rollout obligations to ensure the efficient use of radio spectrum and collaboration mechanisms where appropriate. In addition, the Network Operations Unit will provide expertise to ComReg's various units on technical network issues and seek to measure the performance, resilience and integrity of operators' networks.

Explanatory Box 6: Improving mobile connectivity in Ireland¹²⁸

ComReg has an important role to play in facilitating market outcomes which promote efficient investment and effective competition to the benefit of consumers. Further in its role as manager of the radio spectrum in Ireland, ComReg has an important role in designing appropriate conditions for the award of spectrum rights of use. To assist ComReg in its development of award proposals for spectrum awards, and in particular its consideration of appropriate coverage obligations, ComReg commissioned three studies to provide advice on different aspects of providing mobile connectivity in Ireland.

Amongst other things these studies indicate that:

- Mobile network sharing is a commercial, operator-driven decision that is motivated particularly by the potential to save significant costs. While the potential benefits of network sharing can be seen, these need to be balanced against possible competition distortions that could arise¹²⁹;
- Coverage obligations can be an effective way of incentivising investment in mobile connectivity. The specific details of coverage obligations need careful consideration and should be designed around Ireland's distinct characteristics and priorities;
- Good solutions for indoor connectivity include the use of Wi-Fi and native Wi-Fi calling on a fixed broadband connection, and the use of licence-exempt mobile phone repeaters. By ensuring widespread access to high-speed fixed broadband connectivity, the NBP is clearly critical to the penetration and uptake of Wi-Fi and Native Wi-Fi calling services;
- It seems feasible for the market by itself to increase the 30 Mbit/s mobile broadband coverage from current levels to at least 90% of the population (where people live) in the period up to 2025. Achieving this coverage level would also provide significant incidental coverage improvements for other coverage dimensions (geographic, motorway, primary roads) and for the 3 Mbit/s and voice services, increasing this service to above 99% population and above 90% geographic coverage;
- Very high levels of 30 Mbit/s mobile broadband coverage on a geographic basis would not be achieved by the market itself as this would require networks to have two to four times as many cell sites as exist today. This would take many years to achieve and the overall cost to stakeholders would likely be substantial;
- Policy or regulatory interventions could be used to secure more extensive coverage outcomes than would result from marketplace competition alone. These would, however, need to be carefully designed, and based on an assessment of the costs and benefits to society of the additional coverage sought.

State Intervention

- 7.34 While private commercial investment in networks is seen as a primary means of expanding the coverage of new and existing networks, the economics of network deployment often mean that the rate of return sought by private investors is not always achievable. In particular, ComReg recognises that not all parts of the country can be served by commercial investment alone and that

¹²⁷ ComReg document 19/31

¹²⁸ This summary is based on ComReg's 2018 study of connectivity in Ireland. ComReg Document 18/103.

¹²⁹ Chapter 6 of Document 18/103c

governments in Ireland (and elsewhere) have stepped in to bridge the funding gap.

7.35 ComReg's Five Year ECS Strategy therefore included the following Goal:

- ✓ **Goal 19: Where necessary assist policymakers to design state interventions that complement the market and regulation.**

7.36 In the 2017-2019 ECS Strategy Statement, ComReg noted that while it is not responsible for the NBP, it does have a role in the NBP process. The European State Aid Guidelines recognise that as national regulatory authority (NRA) ComReg has "*gained technical knowledge and expertise due to the crucial role assigned to them by sectoral regulation. They are best placed to support public authorities with regard to the State aid schemes and should be consulted when target areas are being identified. NRAs should also be consulted with regard to determining the wholesale access prices and conditions and solving disputes between access seekers and the subsidised infrastructure operator.*" ComReg may be in a position to provide industry specific technical advice where appropriate. In this regard it has seconded a number of staff members to DCCAE in order to provide such assistance.

7.37 Relating to Goal 19, over the coming period we will continue to assist policymakers and provide technical advice where appropriate.

8. Enforcement and Compliance

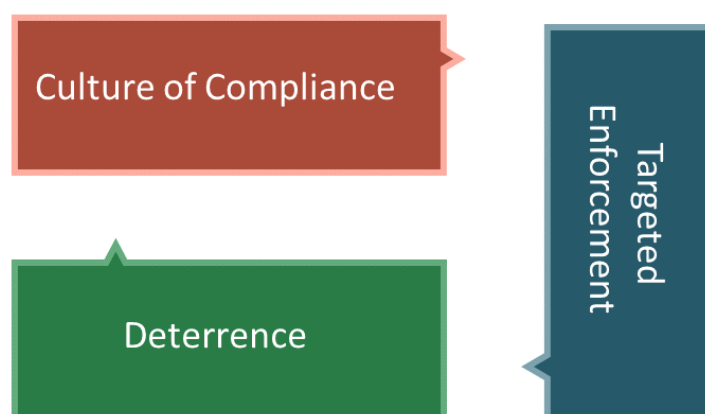
- 8.1 ComReg's fourth strategic intent is to ensure that **regulated entities comply with regulatory obligations**. ComReg recognises that market regulation is only effective and meaningful if regulated entities comply with obligations. As such, this strategic intent supports the three already outlined.

Strategic Intent 4:	Regulated entities comply with regulatory obligations.
What does this look like?	<ul style="list-style-type: none"> • Regulated entities are at all times fully cognisant of their obligations and comply with them • Regulated entities are deterred from contravening their obligations • There is an institutionalised culture of compliance in regulated entities

- 8.2 ComReg is active in a range of different compliance environments; this is reflected in our approach at an operational level. In general terms our strategy has three elements (described in Figure 18):

- **Culture of compliance:** We think that the optimum situation is for regulated entities to be fully aware of their obligations, comply with them and have an internal culture of compliance. ComReg strongly encourages operators to have robust internal controls and policies intended to prevent and detect non-compliance. Where appropriate, ComReg will utilise engagement and dialogue to help foster desired behaviours.
- **Targeted compliance and enforcement:** Targeted compliance and enforcement activities involve directing resources toward activities in a way that maximises effectiveness. The different enforcement settings in which ComReg is active means that prioritisation needs to be tailored to the relevant circumstances.
- **Effective deterrence:** The effectiveness of the regulatory regime depends not only on bringing non-compliant conduct to an end but also on deterring future non-compliance. It is ComReg's strategy to ensure that we have an effective set of powers to incentivise compliance and effectively monitor and enforce. As such, ComReg will advocate for legislative amendments that will enable it to deliver on its strategy, based on its expertise and experience of regulation.

- 8.3 In principle, the elements of the strategy form a virtuous circle where regulated entities come into compliance with respect to targeted conducts, allowing the regulator to refocus compliance and enforcement activities, and so on. Before moving on to a discussion of the elements it is useful to briefly review the different enforcement settings.

Figure 18: Optimal Enforcement

8.4 As set out in the 2017-2019 ECS Strategy Statement, ComReg has three principal areas of responsibility in respect of enforcement and compliance in the ECS markets – Consumer Protection, Wholesale Compliance and Spectrum. In summary¹³⁰, ComReg has an enforcement and compliance responsibility in the following areas:

Consumer Protection

- Monitoring and enforcing compliance of obligations on the USP to provide access at a fixed location as well as certain quality of service requirements;
- Monitoring and enforcing compliance of obligations on ECS undertakings in relation to roaming, net neutrality, number portability, switching, privacy in electronic communications, transparency, contracts and billing; and
- Monitoring and enforcing compliance of obligations on PRS providers.

Wholesale Compliance

- Monitoring and enforcement of obligations placed on ECS service providers designated with Significant Market Power (SMP) relating to:
 - Access;
 - Transparency;
 - Non-Discrimination; and
 - Price control and Accounting information.
- Resolving disputes arising from the EU (Reduction of Cost of Deploying High-Speed Public Communications Networks) Regulations 2016 (“the Broadband Cost Reduction Regulations”).

Spectrum Management

¹³⁰ A complete set of ComReg functions and legal powers is set out on our website, <https://www.comreg.ie/about/legislation/>

- Monitoring and supervising compliance with conditions attached to spectrum rights of use (e.g. the general authorisation and licence conditions)
 - Monitoring the use of the radio spectrum to detect unauthorised use and taking appropriate enforcement action, and
 - Investigating instances of interference reported by licensees and the general public, and taking appropriate enforcement action.
 - Market Surveillance of products being placed on the market with regard to the Radio Equipment Directive and Electromagnetic Compatibility Directive.
- 8.5 Where appropriate, ComReg publishes updates on its website relating to our compliance and enforcement activities, including an annual report on spectrum investigations.¹³¹

Culture of Compliance

- 8.6 ComReg recognises that in an ideal world, service providers in the ECS sector would be cognisant of all their regulatory and legal obligations and have the necessary internal procedures and processes in place to ensure they remained in compliance with such obligations.
- 8.7 In this context, ComReg's Five Year ECS Strategy set out the following Goal relating to *Culture of Compliance*:
- ✓ **Goal 20: Regulated entities are pro-active in ensuring their own compliance.**
- 8.8 ComReg considers that service providers, in particular regulated entities, should have internal control processes and governance arrangements to prevent and detect instances of non-compliance and should take the necessary steps to remediate any issues before they emerge. In addition, such processes and arrangements should flow through all levels of an organisation, thereby reducing the possibility of, and need for, enforcement action by ComReg and promoting efficient and sustainable competition.
- 8.9 In the 2017-2019 ECS Strategy Statement, ComReg set out that we will utilise engagement and dialogue to help foster a culture of compliance, noting that such engagement and dialogue was of particular relevance in the spectrum compliance area.
- 8.10 Over the last two years ComReg has engaged with industry in a variety of ways. Initiatives such as the Code of Practice for Complaint Handling, which came into force in January 2018, ensure that service providers treat consumer complaints in a manner that ensures the vast majority of consumers do not require the assistance of ComReg to help resolve any issues.
- 8.11 Over the last 2 years ComReg has been engaging with Eir regarding its Regulatory Governance Model ('RGM'). In December 2018 ComReg reached an agreement with Eircom that includes a set of commitments which, when

¹³¹ ComReg Document 18/86 - Spectrum Intelligence & Investigations Annual Report 2017-2018

implemented, will result in the establishment and operation of an enhanced RGM in Eircom.

Explanatory Box 7: Regulatory Governance in Eircom

In 2011, Eircom announced to industry (and ComReg) that it intended to proceed on a voluntary basis to implement a process of “Wholesale Reform”.

To deliver these Wholesale Reform objectives Eircom committed to the development of an enhanced Regulatory Governance Model (“RGM”) and updated industry on a number of occasions through published reports. Eircom’s RGM identified a number of shortcomings with its regulatory compliance, which have existed over a number of years. In 2016 ComReg commissioned Advisors to carry out a review of Eircom’s regulatory governance including its RGM. The Advisors published two reports in 2017 which highlighted a number of deficiencies in Eircom’s RGM¹³².

On 10th December 2018, ComReg and Eircom reached an agreement on a set of commitments which, when implemented, will result in the establishment and operation of an enhanced Regulatory Governance Model in Eircom. A number of ‘Performance Milestones’ will be underpinned by a cash amount of €9 million, placed in escrow, which can be drawn down by ComReg in the event of a late or non-delivery of the Performance Milestones by Eircom.

Under the agreement, Eircom will implement a number of important measures to improve Eircom’s internal governance, including:

- a) The creation of an Independent Oversight Body (“IOB”) with majority independent membership. This body will be charged *inter alia* with overseeing and assessing Eircom’s regulatory governance arrangements. The objective of the IOB is to provide assurance that there a clear and unambiguous set of measures, arrangements, structures and internal controls that will ensure compliance with the Eircom’s regulatory obligations. The IOB shall monitor and report on Eircom’s compliance with the undertakings committed to under the agreement and its regulatory obligations generally. In addition, the IOB will conduct an annual review of Eircom’s governance of its compliance with its regulatory obligations and prepare and publish a report with an opinion, regarding the implementation and effectiveness of Eircom’s RGM.
- b) The IOB will consist of 5 members, three of its members including its Chairperson will be appointed by ComReg with two further members appointed by Eircom from its board;
- c) Improved internal governance arrangements in Eircom and detailed reporting to the IOB;
- d) Eircom will increase the independence of its Wholesale function from the rest of Eircom’s business with increased transparency over internal decision making; and
- e) Measures to remediate Eircom’s IT systems and associated controls to ensure that access to IT systems is appropriately governed.

8.12 In the coming period, ComReg will continue to promote a culture of compliance in the ECS sector and develop our approaches further to ensure such a culture develops. Where appropriate, we will utilise engagement and dialogue to help ensure such a culture is the watchword of the sector.

Targeted Compliance and Enforcement Activities

8.13 As ComReg has limited resources (further discussed under Strategic Intent 5 – Organisation), it must prioritise the enforcement actions that it initiates and investigates. As noted in the 2017-2019 ECS Strategy Statement, ComReg prioritises its compliance actions in different ways, depending on the areas in question, namely, Consumer Protection, Wholesale Compliance and Spectrum management.

8.14 ComReg’s Five Year ECS Strategy set out one goal relating to *targeted compliance and enforcement activities* as follows:

¹³² ComReg 17/64

✓ **Goal 21: Compliance and enforcement activities are targeted and prioritised appropriately.**

- 8.15 Over the last two years ComReg has taken a number of compliance and enforcement actions, including legal proceedings, against a number of ECS and PRS providers. Where appropriate, we publish information on our enforcement activities on our website.
- 8.16 ComReg considers a number of factors when deciding to take compliance or enforcement action including:
- The seriousness of the breach including the impact of competition and consumers;
 - The size of markets affected including downstream markets;
 - The duration of the breach; and
 - Any previous history of similar breaches.

Effective Deterrence

- 8.17 Failure to meet regulatory obligations harms consumers, industry and the growth of effective competition. Effective and robust enforcement powers are therefore crucial for the efficacy of regulation. Such powers should act as an effective deterrent, and the imposition of sanctions and penalties should deter future non-compliance in both service providers involved and other regulated service providers.
- 8.18 ComReg uses its existing enforcement powers in bringing criminal and civil actions against non-compliant ECS and PRS service providers. As noted in the 2017-2019 ECS Strategy Statement, ComReg may be hampered by certain shortcomings of the enforcement regime within which we operate. Improvements to our enforcement powers (both criminal and civil) would facilitate effective deterrence and where appropriate allow ComReg to take effective action. For ComReg to be an effective regulator, it must have proper and sufficient enforcement powers that have the necessary deterrent effect. As the sector evolves, ComReg continues to seek enhanced powers to meet current and future challenges in delivering on its statutory and regulatory remit, including, where appropriate, the power to impose financial penalties (as do many other regulators, both domestically in other sectors, and in other Member States). This is an issue that has been identified as a high priority, and is currently being examined by ComReg in conjunction with the Department. ComReg welcomes the fact that the Department is committed to ensuring that ComReg has the best, most appropriate and most effective powers available to it, though any final decisions/actions in this regard will, of course, be a matter for the Minister and, ultimately, the Oireachtas.
- 8.19 In this context, ComReg's Five Year ECS Strategy set out the following Goal relating to *Effective Deterrence*:
- ✓ **Goal 22: We have an effective set of powers to incentivise compliance and effectively monitor and enforce.**

8.20 In the 2017-2019 ECS Strategy Statement, ComReg noted that the enforcement regime could be improved in three main areas:

- **Administrative Sanctions:** ComReg noted that the ability to impose civil financial sanctions (administrative fines) in appropriate circumstances would greatly facilitate effective regulation of the electronic communications sector.
- **Financial Penalties:** We planned to continue to advocate for an increase in the maximum fine that may be imposed for criminal offences, following conviction on indictment. We consider that potential fines that are sufficiently high can act as a strong deterrent.
- **Standardised Powers:** Regulatory powers, and in particular certain inspection, investigation and enforcement powers, should be as standardised as possible across all regulatory bodies. This would improve the efficiency and effectiveness of regulation and help promote legal certainty.

8.21 In 2012 and 2016, ComReg made submissions to the Law Reform Commission on the necessity for the enforcement regime to embody effective deterrence mechanisms. In 2018 we made a further submission jointly with other State Agencies to the Law Reform Commission's work programme on *Regulatory Powers and Corporate Offences*. ALTO also made a supporting submission. This programme resulted in the publication of a major report in October 2018¹³³, which reflected and endorsed the views of ComReg and other economic regulators in Ireland that they should have available to them a full range of regulatory tools including the power to impose significant financial sanctions and to make regulatory enforcement agreements.

8.22 Over the coming period, ComReg will continue to advocate for the legislative changes that are essential to ensure the enforcement regime in the ECS and PRS sectors embodies the effective deterrence mechanisms necessary for ComReg to delivery on its strategy. This is an issue that has been identified as a high priority, and is currently being examined by ComReg in conjunction with the Department. It is recognised by DCCAE that it is in everyone's interests for ComReg to be an effective and robust regulator, given the crucial importance of the electronic communications sector to the wider economy and to society in general. ComReg understands that the Department is committed to ensuring that ComReg has the best, most appropriate and most effective powers available to it. Any final decisions/actions in this regard will, of course, be a matter for the Minister and, ultimately, the Oireachtas.

¹³³ Law Reform Commission (2018) Report on '*Regulatory Powers and Corporate Offences*', Volume 1. October 2018. (LRC 119-2018)

9. Being an Effective and Relevant Regulator

- 9.1 The fifth strategic intent is to ensure that **ComReg is an effective and relevant regulator**.
- 9.2 ComReg recognises the need to ensure that, in the context of changing technological, market and public policy circumstances, regulation continues to be effective and relevant. ComReg's view is that we cannot adopt a passive stance. Instead, we will strive to be an active and dynamic organisation that is capable of responding to the rapidly changing environment and that it is positioned, in terms of expertise, robust analytics and up-to-date information, as well as resources, to address issues that affect our ability to fulfil our mission. Accomplishment of this Strategic Intent ensures a greater likelihood of success for ComReg in achieving its other four Strategic Intents.

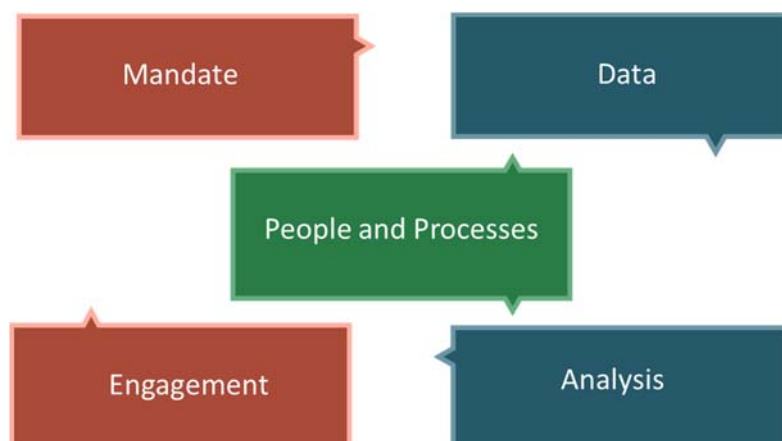
Strategic Intent 5:	ComReg is an effective and relevant regulator
What does this look like?	<ul style="list-style-type: none"> • Interventions are in response to demonstrable harm or well-defined public policy objectives • Interventions are effective and proportionate to the market failure or public policy objective in question • We are regarded as a thought-leader and our views are valued by others, both domestically and internationally • We are seen as providing a high level of public value

- 9.3 Figure 19 below illustrates the relationships between five key drivers of organisational success:
- **Data (or market intelligence):** ComReg requires access to high-quality, timely and appropriate data so that it can continue to develop a deep understanding of the sector.
 - **Analysis (robust analytics):** ComReg must have the capacity to undertake appropriate data analytics.
 - **Engagement (and thought leadership):** ComReg needs to engage proactively, expertly and persuasively with stakeholders, both domestic and international.
 - **Mandate:** ComReg should be able to leverage its expertise in the sector and contribute positively to public policy discussions, both domestic and international, which may impact on ComReg's ability to deliver on its mission.
 - **People and processes:** Underpinning the above four key drivers of organisational success is the requirement that ComReg is adequately

staffed by an agile, skilled and motivated workforce who are experts in their fields, and are supported by efficient organisational processes.

- 9.4 This is a foundational relationship in the sense that success under these five headings contributes to a greater likelihood of success for ComReg in achieving its strategic intentions set out in the previous chapters, and ultimately, its mission.

Figure 19: Ensuring Effective and Relevant Regulation



Data & Analysis

- 9.5 Access to reliable, high-quality and timely data is essential to ComReg in achieving its objectives and meeting its various priorities. ComReg gathers information from a range of sources and uses its regulatory powers where appropriate. ComReg supplements this data with information sourced through its market research and third party sources (e.g. the CSO). Data on subscribers, products, prices, network coverage, technological developments and consumer behaviour help ensure ComReg can act in a timely manner, as an effective and relevant regulator.
- 9.6 In meeting ComReg's mission, we use data and information in a number of ways, including regulatory decision-making, monitoring, compliance and enforcement and informing industry and end-users.
- 9.7 ComReg's Goals relating to *Data and Analysis* are as follows:
- ✓ **Goal 23: Robust data analytics, including service quality and availability, are based on the timely delivery of reliable data which is collected efficiently, regularly and handled properly.**
 - ✓ **Goal 24: Making use of a wide range of data, including market data and consumer insights, we have a deep understanding of markets, including those related to the markets we regulate, and are able to identify consumer benefits and harm and market failures.**
- 9.8 In the 2017-2019 ECS Strategy Statement, ComReg planned a number of key initiatives:

- **Data Strategy:** Following a review of our approach to data in 2016, we committed to identifying and adopting suitable data analysis techniques and tools and a data governance strategy for the organisation.
- **Quarterly Key Data Report (QKDR):** Working with key stakeholders, we committed to reviewing the QKDR to ensure it remains fit-for-purpose. We also committed to reviewing how we collect other data from operators.
- **Independent research:** Recognising the importance of original research into the Irish electronic communications market, ComReg planned to work with the ESRI on a number of projects, allowing ComReg to access data sources and techniques not otherwise available to the organisation.

- 9.9 Over the last two years, ComReg's reliance on quality, accessible and accurate data has grown. Furthermore, the increasing complexity of the markets we regulate and monitor can require advanced analytical techniques and skills to analyse and interpret such data. Access to such data and analysis has helped inform ComReg's thinking on a range of matters, including recent market reviews, compliance and enforcement actions, our review of non-geographic numbering and matters relating to our participation in the Mobile and Broadband Taskforce. Underlying this progress has been the development of a Data Governance Charter for ComReg and the rollout of various data standards across the organisation. In addition, we have enhanced the skillset of the organisation through training on data analytics, statistics and GIS methodologies. Over the coming period, ComReg plans to further develop how it acquires, handles and processes data through the rollout of further data standards and business intelligence tools across the organisation. We also intend to further enhance our analytical abilities through further staff training and development.
- 9.10 As part of our obligations under the General Data Protection Regulation (GDPR) we have updated our various data handling and processing policies and appointed a Data Protection Officer (DPO) to oversee compliance with our obligations.
- 9.11 Through the collection of statistical information from various sources, ComReg's QKDR data collection activities provides performance metrics on a range of indicators related to the electronic communications market. To supplement this, ComReg also collects data specifically in the conduct of its market analysis activities. Over the last year ComReg has undertaken a review of its data needs and has been engaging with operators on how we gather data, what we gather and how we process and store this information. Our aim is, as far as possible, to move to an agreed collection of a stabilised and richer set of pre-defined data that can be used to inform all ComReg's activities, thereby minimising the need for ad hoc data requests and improving the timeliness of decision making. We recognise that this will somewhat increase the burden for operators in the short term during the 'build' phase, however, in our discussions with operators it is recognised that this will achieve benefits for all parties. As part of our various Data Governance and IT projects, we are developing an improved data warehouse for the data that we gather and report on. Recognising the importance of data visualisation and open data, we have

introduced a data portal on our website¹³⁴ where we publish data in a graphical and tabular format. In addition we regularly publish infographics, setting out the main results from the latest QKDR.

- 9.12 As ComReg's role and mandate evolves over the coming period and beyond, it is likely that ComReg's data requirements and reliance will continue to increase. In this regard, ComReg notes that additional functions that may be added to its mandate arising, for example from the EECC, will result in an increase in the volumes and nature of the data required by ComReg to fulfil its functions.
- 9.13 ComReg regularly examines the role of new technologies in facilitating the delivery of our regulatory functions and activities, commonly referred to as 'RegTech'. Where appropriate, we seek to use various technologies, both software and hardware solutions, to streamline processes, data collection and analyses. In addition, we monitor advances in technologies, such as cloud computing, big data, AI, machine learning and blockchain, to understand the implications for the sectors we regulate and regulation itself.
- 9.14 Over the coming period ComReg plans to complete a number of change initiatives based on our defined Data Strategy to streamline and improve our processes for data collection, processing, and analytics for the production of key market metrics and indicators and as inputs to our regulatory market analysis exercises. These changes will include:
- Improvements to how we collect, analyse and publish information from market participants for our Quarterly Key Data Report (QKDR);
 - Streamlining and regularising our data collection processes for data we collect from Operators for Market Analysis purposes with a focus on working with Operators to provide certainty of our requirements and where possible reducing the burden of ad hoc requests for data;
 - Improving the skills of our professionals in handling, processing and analysing data and, in particular the management of larger data sets;
 - Applying best practice standards and processes in the manner in which data is managed; and
 - Deploying standardised data analysis tools to improve the efficiency of decision making processes.
- 9.15 Behavioural economics, now a corner stone of modern economics, has changed the way we view and analyse consumer behaviour and preferences. Recognising its importance, ComReg has collaborated with DCCAE and other public bodies to further our understanding of consumer behaviour and the electronic communications markets. In 2010, ComReg and DCCAE engaged in a joint research programme with the ESRI to study areas of mutual interest in the telecommunications markets and consumer demand. In this regard, the ESRI has published a number of papers relevant as part of this programme relating to the impact of broadband rollout and local economies, and broadband prices and quality. In addition, ComReg has co-funded the ESRI's PRICE Lab programme, a series of experiments to understand consumer decision making.

¹³⁴ <http://www.comreg.ie/data-portal>

Evidence from these various experiments and studies have supported various ComReg decisions across a number of markets and areas of interest. Over the coming period ComReg will support independent research on the electronic communications markets and consumer behaviour generally, through collaboration with research institutes such as the ESRI. Such research supports capacity building and assists in creating a deeper understanding of various issues facing consumers and industry in the electronic communications markets.

Engagement

- 9.16 ComReg's stakeholders include consumers, consumer representative groups, electronic communications operators, industry representative groups, domestic government, public bodies and elected officials, and international bodies such as BEREC, the ITU, RSPG and European Commission.
- 9.17 ComReg's staff are subject matter experts in a variety of areas relating to the electronic communications sector. Through our knowledge and expertise we act as an independent and objective regulator, informing public debate and providing information and advice to consumers, industry and government stakeholders.
- 9.18 Recognising that our stakeholders have a variety of needs and views, we aim to tailor our approach and engage in a variety of ways, including through the use of formal consultations, advisory panels, industry forums, meetings with stakeholders, our website, trade and industry shows and appearances at Oireachtas committees as requested.
- 9.19 ComReg's role and mandate, by virtue of the legislative framework that underpins our work, is subject to periodic review and amendments. To ensure we can continue to act as an effective and relevant regulator, we advocate for changes to the legislative framework, both domestically and at an EU level. As the regulator for the electronic communications sector we have sector specific expertise and are often relied upon to advise government and other public bodies on various matters, including negotiations on European and international policies, standards and legislation. In addition, ComReg regularly meets with, and has active and leadership roles, in a number of international bodies, including BEREC, the RSPG and CEPT.
- 9.20 ComReg Five Year ECS Strategy set out two goals relating to *engagement* as follows:
- ✓ **Goal 25: We are proactive in engagement with a range of stakeholders.**
 - ✓ **Goal 26: The legislative mandate evolves to enable us to deliver strategy.**
- 9.21 In the 2017-2019 ECS Strategy Statement, ComReg planned a number of key initiatives:
- **Communications Strategy:** We will ensure that our communications strategy is sufficiently flexible to meet the demands and needs of consumers and the electronic communications sector.

- **Mobile and Broadband Taskforce:** Engage with the Mobile and Broadband Taskforce and implement actions and outputs, as necessary.
 - **New EECC Directive:** Play an active role in the then proposed EECC by providing expert advice to both DCCAE and BEREC, as required.
- 9.22 Over the last two years ComReg has sought to engage with its stakeholders in a number of ways. Our website is an important tool for consumers and industry to access information, advice and support in matters relating to the electronic communications market. Our website was refreshed in 2016 and since then new functionality has been added and updated, including our value comparison tool, ComReg Compare, (www.comreg.ie/compare), allowing consumers to compare market offerings, including handsets, from Irish service providers. In addition, our Consumer Engagement team has expanded its reach with new consumer material and functionality, outreach to senior citizens, trade show presence and social media campaigns to inform consumers about our work and offer advice. Consumer Engagement is considered in further detail in Chapter 5.
- 9.23 In 2017 ComReg held its first national stakeholder conference in almost 10 years. The half day conference brought a variety of stakeholders together to discuss the changing landscape for telecommunications and issues for Ireland in a connected future. In addition, in 2018 ComReg held a stakeholder breakfast as part of its review of the Five Year ECS Strategy Statement. Where resources allow, it is our intention to hold similar national conferences and stakeholder engagement events in the future, covering a variety of topics relevant to our mission and of interest to the sectors we regulate and monitor. In addition, we will continue to engage with consumers and other stakeholders through activities such as networking events, targeted campaigns and online information tools, such as our mobile coverage, ComReg Compare and Service Checker tools.
- 9.24 As part of the Government's Mobile and Broadband Taskforce, we were tasked with implementing a number of actions, including the production of a mobile coverage map (www.comreg.ie/coveragemap), research on handset sensitivity due to antenna performance and setting out new minimum requirements for Service Providers' Codes of Practice for complaint handling. Where appropriate, completion and progress against these tasks are set out in the Taskforce's annual progress report. Over the coming period ComReg will continue to assist the Taskforce to complete outstanding action items.
- 9.25 As noted previously (in Chapter 2) our legislative mandate continues to evolve. In addition to the EECC, ComReg has engaged with Government and the Law Reform Commission around our powers, including those relating to powers to aid our compliance and enforcement actions, Net Neutrality, the Broadband Cost Regulation Directive, the NIS Directive and the EU Roaming regulations. To ensure a harmonised approach to matters relating to the ECS sector, ComReg has negotiated a new Cooperation Agreement with the CCPC. In addition, we engage with the Law Reform Commission on a variety of matters and make formal submissions where appropriate, as set out in Chapter 8.
- 9.26 ComReg's efforts in the coming period are likely to be influenced by the transposition of the EECC. We will play an active role in this process by

providing expert advice, as required, to assist Government and BEREC in matters relating to the EECC. New work streams and requirements arising out of the EECC are likely to have significant implications for ComReg over the coming period. In this regard, where appropriate, we will ensure that items of work already underway take in to account the various requirements set out in the EECC. In addition, ComReg will be contributing to a number of BEREC work streams to produce guidelines on matters arising out of the EECC.

International engagement

9.27 ComReg recognises that the pace of change in the markets we regulate and monitor requires a harmonised approach to regulation that stimulates competitiveness so that innovation, creativity and competition can thrive. We actively liaise with, and contribute to, a number of international bodies, including:

- European Institutions (Council, Parliament, and Commission);
- Body of European Regulators for Electronic Communications (BEREC);
- Radio Spectrum Policy Group (RSPG);
- Independent Regulators' Group (IRG);
- European Conference of Postal & Telecommunications Administration (CEPT);
- International Telecommunications Union (ITU); and
- Organisation for Economic Cooperation and Development (OECD).

9.28 Through our participation in these various organisations ComReg seeks to contribute to and benefit from the development of best practice techniques, processes, policies and guidance. Our active participation at international level helps underpin the continued development of the communications sector in Ireland.

Legislation and Powers

9.29 It is recognised that it is in everyone's interests for ComReg to be an effective regulator, given the crucial importance of the electronic communications sector to the wider economy and to society in general. For ComReg to be an effective regulator, it must operate in an appropriate legal context and have proper and sufficient powers to regulate effectively.

9.30 In relation to the former, as previously indicated, ComReg has been engaging and intends to continue to engage with the Department to ensure a smooth transposition of the new EECC into domestic law in Ireland. ComReg has also begun preparatory work to ensure a smooth transition from the current regulatory framework to the new framework and intends, in due course, to engage in an active programme of education in respect of the new regulatory framework.

9.31 In relation to ComReg's powers, it is recognised, for example that ComReg must have proper and sufficient enforcement that have the necessary deterrent effect, including, where appropriate, the power to impose financial penalties (as do many other regulators, both domestically in other sectors, and in other

Member States). This is an issue that has been identified as a high priority, and is currently being examined by ComReg in conjunction with the Department. ComReg understands that the Department is committed to ensuring that ComReg has the best, most appropriate and most effective powers available to it. Any final decisions/actions in this regard will, of course, be a matter for the Minister and, ultimately, the Oireachtas.

- 9.32 ComReg will follow a similar approach as regards its powers in other areas and will actively engage with the Department and other stakeholders to ensure that priority is given to ensuring that ComReg has available to it, the most appropriate and effective powers across its various functions.

People, Processes and Resources

- 9.33 ComReg's ability to deliver on its strategy and mandate depends on the people we employ. ComReg is staffed by a range of subject matter experts, including lawyers, accountants, economists, engineers and public policy specialists. The organisation comprises of four Divisions, supported by the General Counsel and the Senior Adviser for Economics, Policy and Research. Our staff work in cross-functional teams operating in a multi-disciplinary environment. This collaboration fosters a culture where knowledge sharing and creative thinking lead to innovative solutions to our work challenges.
- 9.34 A key driver of organisational success is the need for ComReg to be adequately staffed to meet, in a timely manner, the current and additional responsibilities and functions we are being called upon to discharge. The organisation is staffed with an agile, skilled and motivated workforce, who are supported by efficient processes. As an organisation we continue to invest in our staff development, our systems (e.g. IT systems) and our processes to ensure we can deliver on our mandate.
- 9.35 We therefore place a strong emphasis on the core areas of Recruitment, Development, Engagement and Wellbeing. We believe that building a culture which attracts talented people from diverse backgrounds leads to better service for consumers and stakeholders.
- 9.36 In line with our values, ComReg is committed to meeting our statutory obligations under the Irish Human Rights and Equality Commission Act, 2014. Section 42 of that Act establishes a positive duty on public bodies to promote equality, prevent discrimination and protect the human rights of all those with whom they engage - staff, service-users and stakeholders alike.
- 9.37 ComReg is required to ensure that we comply with sections 25, 26, 27 and 28 of the Disability Act 2005. We ensure that the public areas of our building are accessible to people with disabilities and that our mainstream public services are accessible to people with disabilities¹³⁵.
- 9.38 In line with the Official Languages Act 2003, ComReg has published its first Irish Language Scheme. ComReg's key commitments under the scheme include:

¹³⁵ ComReg's Access Officer may be contacted on access@comreg.ie

- Ensuring the availability of staff who speak Irish in our consumer services department to deal with all consumer queries and complaints in Irish.
 - Ensuring reception staff can help consumer contact designated staff members who speak Irish, where available, for callers wishing to conduct their business with ComReg through Irish.
 - Increase Irish language content on our website, focusing specifically on consumer content.
- 9.39 The Irish Language Scheme commenced on 20 March 2017 and will remain in force for a period of 3 years or until such a time as a new scheme has been confirmed by the Minister for Culture, Heritage and the Gaeltacht.
- 9.40 ComReg's Five Year ECS Strategy set out three goals relating to *our people, processes and resources* as follows:
- ✓ **Goal 27: We maintain an agile, skilled and motivated organisation.**
 - ✓ **Goal 28: We have efficient and effective processes and systems.**
 - ✓ **Goal 29: We have sufficient resources to fulfil our organisational strategy**
- 9.41 In the 2017-2019 ECS Strategy Statement, ComReg planned a number of key initiatives:
- **Code of Practice for the Governance of State Bodies:** We committed to implementing the Code of Practice following a review of its requirements.
 - **Internal Processes:** we committed to carrying out a review of internal financial and non-financial processes.
 - **Resources to fulfil mandate:** subject to obtaining the necessary consents, we would intend to increase staff numbers.
- 9.42 Over the last two years, ComReg has taken steps to ensure our processes and procedures were fit for purpose and meet the needs of the organisation and stakeholders. We have adopted the Code of Practice for the Governance of State Bodies and introduced enhanced financial reporting functions. We also published our Customer Charter and an Irish Language Scheme. Internally we have introduced a bespoke Competency and behavioural framework, initially used for recruitment and now extended to performance management. Our new Performance and Development Dialogue process was recently defined and launched. We continue to strengthen our mentoring programme and roll out to new and existing staff.
- 9.43 In June 2017 we relocated our offices to One Dockland Central in the IFSC. Our new working environment, with an open plan design, facilitates information sharing and collaboration between teams. In addition, modern facilities allow for the adoption of more green initiatives and energy efficient measures to help reduce our carbon footprint.
- 9.44 In 2017 following a review of our organisational layout and structures, we reorganised our Divisions to better meet the needs of stakeholders and to achieve aims set out in the Five Year ECS Strategy. We established a dedicated Network Operations Unit to provide cross-divisional support and

expert technical advice to other ComReg units on technical network issues, including the resilience and integrity of operator's networks. In addition our Postal team was moved to the Retail Division to better align our consumer functions and our International team, which in particular leads ComReg's contribution to BEREC, moved to the Commissioner's Office under the Senior Advisor for Economics, Policy and Research in light of the importance of the new EECC to the organisation. Efficiencies caused by enhanced IT systems resulted in the successful internal redeployment of a number of individuals.

- 9.45 Resourcing continues to remain a challenge. The buoyant economy and low unemployment rate has led to fierce competition for the specialist skills we require - Engineers, Economists, Accountants, Lawyers and Analysts. It can therefore be difficult to quickly fill our vacancies with the skill and experience required. A further challenge has been created by the loss of staff to other organisations in both the public and private sector, the delay in finding the specialist skills coupled with the time to upskill new staff places an additional workload on remaining staff. Our emphasis is on retaining key skills and we have created on-boarding and induction processes together with a number of other communication and engagement initiatives to help with retention. We continually review our comprehensive suite of technical and professional programmes based on training needs analysis in an effort to upskill and develop staff to enable them to deliver on their current and future requirements.
- 9.46 ComReg has recently been given approval by DCCAE to recruit additional resources. We will continue to engage with the DCCAE regarding our current and future staffing requirements, and subject to the necessary consents, to further increase our staffing numbers.