



An Coimisiún um
Rialáil Cumarsáide
Commission for
Communications Regulation

Draft ECS Strategy Statement

Public Consultation

Reference: ComReg 21/32

Version: Consultation

Date: 31st March 2021

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1. Introduction

Telecommunications – central to our society & economy

- 1.1 Electronic communications services ('**ECS**') – such as broadband, mobile, and the fixed (home) telephone services – impact our lives in new ways every day. Today, as the country continues to deal with the Covid-19 pandemic, our ECS have become central to everything we do and how we do it. Innovation, new technologies and digital services have transformed our social and economic life. From how we stay in contact with friends and family, through to how we consume our entertainment, work or conduct our business, to how we interact with public services (e.g. education and health), there is virtually no part of our lives that is not potentially affected by our ability to connect digitally.
- 1.2 Over the last five years operators have continued to invest in ECS and electronic communications networks ('**ECN**'). Today 1.47 million premises in Ireland can access a Very High Capacity network ('**VHCN**') capable of delivering a broadband service greater than 500Mbps¹. Over the next five years, continued investment by commercial operators and public investment through the National Broadband Plan will deliver near ubiquitous fixed VHCN coverage. Additional investment in mobile and wireless network coverage will also enhance 4G coverage and provide a greater availability of 5G services across the country.
- 1.3 The strategic importance of this public and private investment has been underlined by our experience of the Covid-19 pandemic. Trends toward digitalisation have accelerated. As well as affecting how and what goods and services we consume, there are also profound social consequences affecting, for example, how and where work, where we live, and the sustainability of our economy. The essential nature of connectivity has never been more apparent.

Our Strategy

- 1.4 As has been ComReg's approach in recent years, we have decided to adopt a five-year perspective when developing this ECS Strategy for the period 2021-2026. This five-year time horizon allows us focus on medium-term developments and innovations that will shape the role of regulation in the future.
- 1.5 Under the Communications Act 2002 (as amended), we are obliged to publish a Strategy Statement document every two years. Our **Five-Year ECS Strategy**, set out in this document, also acts as our ECS Strategy Statement for 2021-2023 and sets out how we will implement the first two years of our Five-Year Strategy. This document sets out various goals for the organisation and particular programmes of work which we intend to undertake over the period 2021 to 2023. In 2023 we will publish a further ECS Strategy Statement, which will incorporate a mid-term review of our Five-Year ECS Strategy.

¹ For the purposes of this ECS Strategy, Very High Capacity Networks ('VHCN') refers to networks that offer download speeds of at least 500Mbps.

Our vision for the communications sector for the next five years

- 1.6 In developing our strategy for the next five years, we have adopted a vision of the communications sector. We recognise that delivering on this vision cannot be done in isolation and that a combination of Government policy interventions, regulatory interventions, and industry actions will be required. However, we believe our strategy should be guided by a vision of the outcome which we aim to help to bring about.
- 1.7 Five years ago, it would have been difficult to predict the scale of the transformation of the sector and the impact global challenges, such as the Covid-19 pandemic, would have on the communications sector. Similarly, looking towards 2030, it is impossible to foresee all of the technological and social innovations that will shape the way we live and work. However, what does appear certain is that our ECS and ECN will play an increasingly central role, both economically and socially.
- 1.8 Our vision is of a sector where consumers and businesses in Ireland have affordable, high-quality, and widespread access to secure communications services and applications that support their social and economic needs.

Our vision for the communications sector

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

Our role, mission, and values

- 1.9 Our role and mission set out the contribution that ComReg makes toward achieving the vision for the sector. As an economic regulator, our role 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 our vision of the communications sector.
- 1.10 Our mission remains unchanged from our previous Five-Year Strategy (2017-2021): **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.**
- 1.11 In order to be effective as an economic regulator, it is important that stakeholders have confidence that we discharge our functions independently, based on quality evidence and analysis, that we are not biased towards any market participant and that we do not suffer from so-called “regulatory capture”.

ComReg’s Values

- Integrity
- Impartiality
- Effectiveness
- Excellence
- Transparency

Our values – also unchanged from the last strategy statement – enable stakeholders to have this 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.

Our Strategic Framework

- 1.12 The tools available to us to deliver our role and mission derive from our regulatory powers. These can be summarised into four main categories: promoting effective competition and facilitating investment, protecting consumers, ensuring widespread connectivity, and making sure that regulated entities comply with the rules. Our ability to use these tools depends on the skills and resources of our organisation. For each of these areas, we have developed a statement of strategic intent, and goals that support the strategic intent.
- 1.13 The relationship between the tools at our disposal and our role and mission is captured in our strategic framework which is illustrated in Figure 1 below.

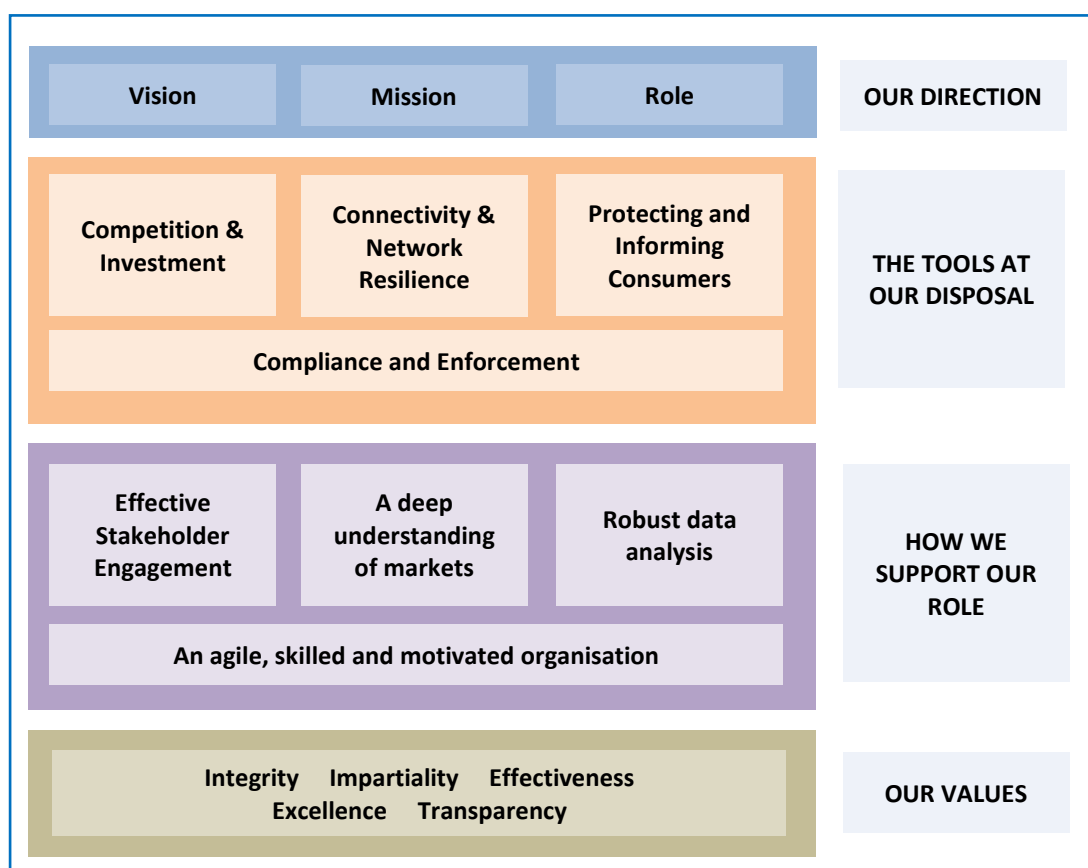
Competition & Investment

- 1.14 Our guiding principle is that effectively competitive markets deliver optimal outcomes in terms of investment and price, quality, choice and innovation, ultimately to the benefit of consumers. Over the past five years, end-users in Ireland have benefited from access to new networks offering high-speed data communications both at fixed locations and on the move. Regulation has been a critical factor in enabling this investment to occur. The strategic intention associated with this role is that the electronic communications sector in Ireland is **a competitive sector that delivers efficient investment, innovation and choice.**

Consumer Protection

- 1.15 Protecting and informing consumers involves setting rules to ensure that consumers can access basic services and that they are armed with the information they need to engage with the market with confidence. The strategic intention associated with this role is that **consumers can choose and use electronic communications services with confidence.** Better informed end-users who are ready and able to switch providers help drive competition.

Figure 1: ComReg's Strategic Framework



Connectivity & Network Resilience

1.16 As we become increasingly reliant on digital platforms, online media and remote working, the importance of widespread, continuous and high-quality connectivity increases. By 'connectivity' we mean having access to the necessary ECN to allow for the use of the various services and applications required. As our reliance on ECS has grown, we have also become more dependent and reliant on the proper functioning of ECS and ECN. However, such networks and services are vulnerable to equipment malfunction, human error, malicious attack, weather events and incidents in other sectors (e.g. electricity outages). The strategic intention associated with this role is that **end-users have widespread access to high-quality and secure communications networks, services and applications.**

Enforcement and Compliance

1.17 Regulatory obligations have no effect unless regulated entities comply with them. An effective compliance and enforcement strategy underpins the previous three strategic intentions. The strategic intention associated with this role is that **regulated entities comply with regulatory requirements.**

Organisation

1.18 The electronic communications sector is fast moving, complex and increasingly fundamental to the functioning of Irish society and business. We recognise that we need to continually reflect on our activities and change as necessary in order to best fulfil our mission. To enable us to undertake our role and adapt to the

changing expectations, we believe we will need to continue to focus on ensuring that **we are an effective, agile and relevant regulator**. We see the fundamental elements of that as including effective **stakeholder engagement**, **robust data analytics**, a **deep understanding of markets**, including related markets, and **an agile, skilled and motivated workforce**.

ComReg's Strategic Intents	
SI 1: Competition & Investment	A competitive sector that delivers efficient investment, innovation and choice
SI 2: Consumer Protection	Consumers can choose and use electronic communications services with confidence
SI 3: Connectivity & Network Resilience	End-Users have widespread access to high-quality and secure communications networks, services and applications
SI 4: Compliance & Enforcement	Regulated entities comply with regulatory requirements
SI 5: Organisation	We are an effective, agile and relevant regulator

2. The Economic and Legal Context

Overview

- 2.1 This chapter considers the broad policy context, encompassing economic and legal dimensions, in which ComReg forms its strategy for regulation of the electronic communications sector.
- 2.2 While trends toward digitalisation have lead society to rely more and more on ECS and ECN, this trend has accelerated with the experience of Covid-19. The implication of this is that in terms of policy considerations, the strategic significance of sector has increased.
- 2.3 In turn, these developments have implications for incentives to invest in the sector, as do the broader macroeconomic impacts of Covid-19 and the uncertainty about the future trajectory of the economy over the medium to long term.
- 2.4 Nonetheless, the economic characteristics of the electronic communications sector remain such that market failures arise. In this context, the rationale for regulation, while evolving, is as relevant as ever.
- 2.5 This chapter considers the following sections in turn:
 - The Macroeconomic Outlook;
 - The Economics of Electronic Communications; and,
 - The Legal Context.
- 2.6 The next chapter focuses on micro trends affecting the sector.

The Macroeconomic Outlook

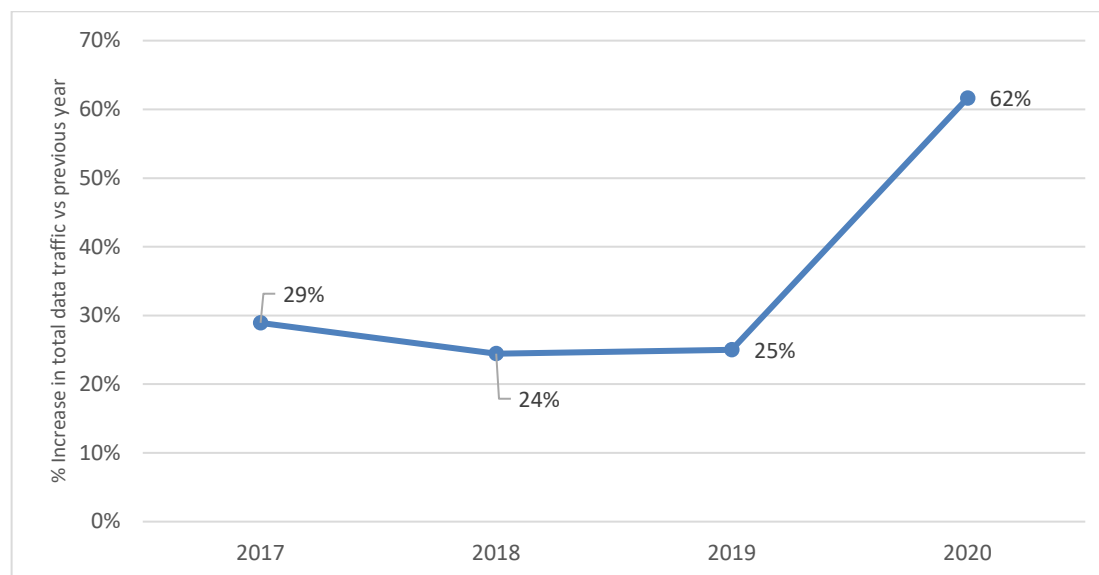
- 2.7 The electronic communications sector is affected by developments in the wider economy. The Covid-19 pandemic has rapidly accelerated digitalisation across the economy and has increased the use and reliance on ECS and ECN as a result. These developments will have implications for the development of the sector in Ireland. At the same time, the profound effects of Covid-19 on the wider economy, and the continued uncertainty about its development, mean that the medium-term outlook for the Irish economy is uncertain. The small, open nature of Ireland's economy also means that other international developments and the development of the global economy can significantly impact the economy. These circumstances have the potential to impact the markets ComReg regulates and monitors and the various stakeholders who engage with these markets.

Covid-19 and The Irish Economy

- 2.8 Digitalisation, and therefore connectivity, has been essential for the continuity of economic and social activity during the Covid-19 pandemic. For example, amid lockdown, businesses quickly moved to remote working, education moved online, and people have relied on video calls to see family and friends. Adoption of digital services has increased rapidly across the country. As more of our lives have moved online, access to ECN and ECS has become even more

fundamental to our daily lives. This step change in internet activities, especially in video calls and other video-related activities, has led to substantial increases in data traffic on networks. Figure 2 below shows the year-on-year percentage increase in total data traffic on fixed and mobile networks. The figure shows a reasonably constant level of growth of total data traffic of around 24-29% in the years preceding the pandemic when the rate of growth more than doubled.

Figure 2: Year-on-Year percentage increase in Total Data Traffic (2017-2020)²



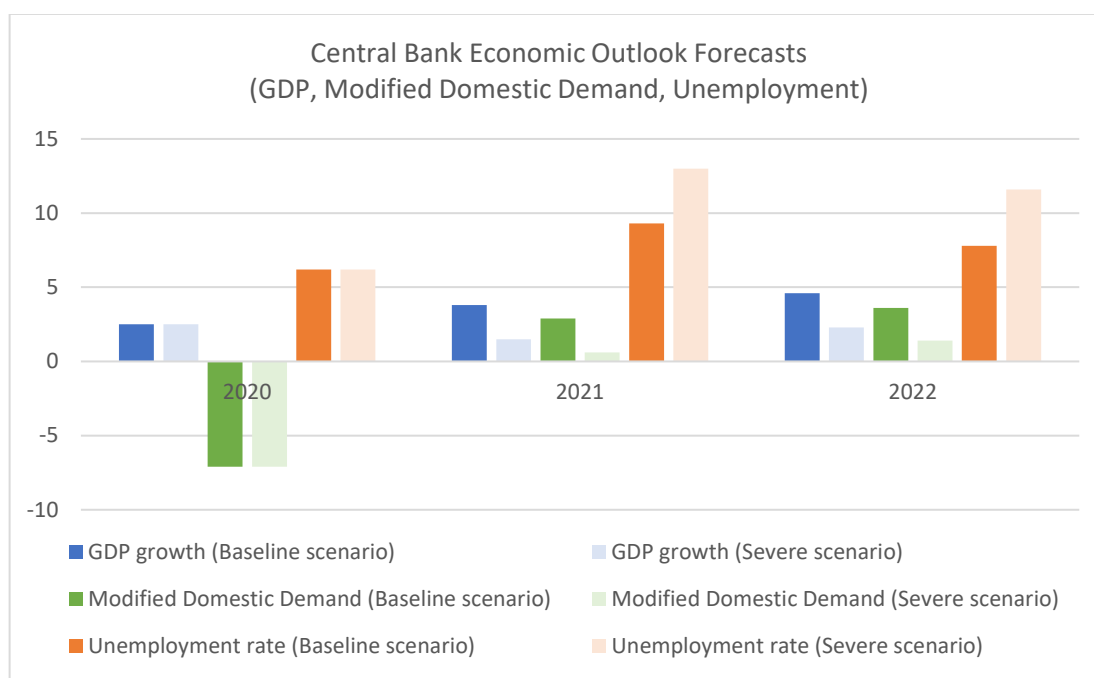
- 2.9 Covid-19 will have medium-run (and possibly long-run) implications for both demand and supply-side drivers within Irish markets including ECS. On one hand, the step change in demand for data may reflect a persistent change in underlying behaviour, or it may reflect temporary effects. Sustained increases in both mobile and broadband traffic may further incentivise investments in new technologies that are more reliable and bring faster speeds, such as fibre and 5G. On the other hand, investment may be adversely affected if supply chain disruptions due to post-Covid-19 restrictions constrain the production capacity of firms that engage in the trade of intermediate inputs.³ The launch of new network devices (including 5G compatible smartphones) and services may be postponed. Users may not renew their mobile plans if they still foresee themselves spending the majority of their time indoors with adequate broadband for Wi-Fi calling/texting.
- 2.10 At the same time, wider developments in the economy need to be considered. The macroeconomic implications of Covid-19 are also uncertain. Restrictions on commercial and social activity, through 2020 and into 2021, have been important means used by the government to contain the spread of Covid-19. The economic impacts of this strategy, for example in relation to unemployment, government expenditure and debt levels, will play out over the medium term and, with less certainty, over the long term. The Central Bank estimates

² ComReg QKDR Q4 2020, (2021), ComReg Document 21/20

³ Central Bank of Ireland, (2020), Q2 *Quarterly Bulletin*

(assuming an effective deployment of vaccines) that GDP will grow by 3.8% and 4.6% in 2021 and 2022, respectively.⁴ However, macroeconomic conditions will depend on the development of Covid-19, which is uncertain. The Central Bank projections also account for a “severe” scenario, in which sustained restrictions dampen economic activity until successful medical treatments are in place. This scenario foresees a weaker economic recovery, as shown in Figure 3 below. Although economic growth is expected, the uncertainty surrounding Covid-19 means that the trajectory is not clear.

Figure 3: Central Bank Economic Outlook Forecasts⁵



2.11 The longer-term impacts on growth will depend upon, among other things, the extent of scarring effects on the productive capacity of the domestic and global economy. In addition to domestic issues, international developments can impact the wider economy and the ECS sector.

International Developments and The Global Economy

2.12 Due to the small, open nature of Ireland’s economy, international developments can significantly impact the economy. In this regard, the EU-UK trade deal which took effect on 1 January 2021 – the EU-UK Trade and Co-operation Agreement – has important implications for the Irish economy. This agreement has averted the threat of a ‘No Deal’ scenario, meaning that the severe disruption to economic activity (e.g., supply chain disruption, trade barriers) that would have accompanied this outcome have been avoided. However, the new economic relationship introduces some frictions relative to the previous relationship between Ireland and the UK, and this may have repercussions for ECS markets.

2.13 The deal means that the UK is no longer subject to Roam Like at Home

⁴ Central Bank of Ireland, (2021), Q1 Quarterly Bulletin

⁵ Central Bank of Ireland, (2021), Q1 Quarterly Bulletin

Regulations. These regulations allow consumers to pay domestic rates regardless of where they use their mobile devices in the EU. To this point, Irish and UK Mobile Network Operators (MNOs) have indicated that they will not introduce roaming charges for consumers travelling to the UK and vice versa. These roaming rates would have particular implications for Irish consumers living along the border with Northern Ireland where inadvertent roaming (when a phone signal connects to a network in another country) may again become an issue. ComReg is actively monitoring the implications of Brexit on the electronic communications sector and has issued consumer guidance and information⁶.

- 2.14 Broader trends in the global economy are also of relevance to the sector. Many ECS providers in Ireland operate as part of wider groups of companies, providing services in a number of countries. Investments in ECS in Ireland can depend on how these companies are performing, both domestically and internationally at a group level.
- 2.15 Potential exists for geo-political tensions in the medium term. Drivers of these developments include a perceived rise of nationalism within trade and immigration matters, and national security concerns, with Brexit and US-China trade disputes featuring as prominent examples in recent years. While global trade is projected to rebound in 2021 following the impact of Covid-19 on 2020 levels⁷, trade volumes may grow at a slower pace.
- 2.16 Further uncertainty in the international taxation or business environment would likely adversely affect Ireland in particular. There have been attempts at the EU level to reform how digital MNCs are taxed⁸.
- 2.17 In general, uncertain domestic economic conditions can impact consumer sentiment and the level of investment. However, the growth in data demand may mean that demand for ECS is more robust to cyclical macroeconomic effects in the wider economy.
- 2.18 In 2020, ComReg published a review of the Weighted Average Cost of Capital (WACC).⁹ An appropriate WACC is an important element in the regulatory process as it is central to the regulated price-setting process. ComReg is mindful of the need to ensure that the WACC is at a level that is appropriate to promote a favourable climate for efficient and timely investment in the sector, while also not allowing a regulated company to earn excessive returns.
- 2.19 In addition to understanding the impact of the wider economic context on the sector, it is important to consider the economic characteristics of the sector itself.

The Economics of Electronic Communications

- 2.20 While the macroeconomic environment may impact the sector, the economic characteristics of ECS markets are fundamental to the dynamics in the sector. The commercial nature of private investment may mean that high-quality

⁶ See ComReg's website: <https://www.comreg.ie/consumer-information/brexit/>

⁷ World Trade Organization, (2020), PRESS/862 PRESS RELEASE

⁸ European Commission, (2018), Fair Taxation of the Digital Economy - Council Directive Proposals

⁹ ComReg Document 20/96

networks are only 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. The commercial price of ECS may also be unaffordable for certain end-users who wish to purchase these services.

Market Failures

2.21 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. Many of ComReg's statutory functions and objectives map back to an underlying market failure.

Market Power

2.22 Market power refers to the ability of one operator to profitably raise prices above, or reduce quality below, that which would prevail in a competitive market. Market power may stem from the reluctance or the inability of consumers to switch in response to a degradation of quality, escalating prices (for the same good), or changes in product/service terms and conditions. This may occur, for example, because switching is difficult/costly, or because limited or no comparable alternatives exist in the market. This can arise in network industries, such as ECS, as a result of the characteristics of the market (discussed in Explanatory Box 1 below). For example, monopolistic market structures arise within ECS markets because of the often large sunk costs of establishing a physical network which competitors cannot replicate economically. This provides the motivation for the wholesale regulation of such markets to promote competition.

Externalities

2.23 Externalities refer to the costs or benefits of an economic activity which are not fully incorporated into the decision process of the economic actor undertaking the activity. These externalities are (or could be) felt by third parties outside the agent's decision. Intervention is thus required to promote behaviours that yield positive externalities and discourage activities with negative externalities. For example, a consumer's decision to join a network positively affects their own welfare, but as he/she joins, the network becomes larger and more connected, which further increases the welfare of other end-users on the same network (positive network externalities).

2.24 In the context of network rollout, investing in networks in some areas may not be commercially viable for private investors, though they may yield significant social value, enabling consumption and innovation in adjacent markets and the wider economy. Therefore, some investment occurs through direct intervention by the State in the marketplace, e.g. the National Broadband Plan.¹⁰ When considering network reliability, resilience and security, the presence of externalities may mean that individual operators do not internalise the external

¹⁰ Government of Ireland, (2019), *Delivering the National Broadband Plan*

costs to society from a network outage.

Explanatory Box 1: Network Industries

In network industries, market products are heterogenous, sunk costs are significant, innovation is essential, and the raising of market entry barriers by dominant firms is feasible. These markets involve large capital (and possibly risky) investment. Therefore, market failures in network industries may be significant.

Network industries tend to have four characteristics¹:

- *Complementarity* as consumers shop for 'systems' rather than a single product (e.g. a mobile phone and a mobile phone plan). In order to produce these complementary products, they must be compatible with one another (e.g. the sim card must fit into the mobile device, the mobile antenna must be capable of picking up signal). Therefore, complementary products must operate on the same standard, but this creates coordination problems such as firms agreeing on the same standard.
- *Network effects* occur when consumer benefit (utility) derived from the consumption of a good, e.g. a mobile network, is affected by the number of other people using similar or compatible products. As more consumers begin to use this good, the utility of all users increases as the 'communications loop' increases.
- *Switching costs* for consumers within network industries can 'lock' consumers into these markets. Users can be locked into service through contracts. Consumers may not switch often to avoid the costs of searching and shopping for new markets, or to avoid losing benefits as preferred customers with their current supplier.
- *Significant economies of scale* exist when the production of the first quantity of the market good involves a large sunk cost but subsequent quantities cost very little to reproduce. For example, for a network operator to supply one customer with network coverage, it must undertake expensive, irreversible infrastructure investment. But once this infrastructure is completed to supply this one customer, it costs nothing to supply this network coverage to a second and third customer. As quantity of the market good/service supplied increases, the average cost function of the operator declines as total costs are spread over a larger consumer base.

¹Shy, O., (2010), *The Economics of Network Industries*

Information Asymmetry

2.25 Information asymmetry refers to the situation where parties to a transaction have different information. Asymmetric information can occur in ECS markets if, for example, a consumer does not understand the specifications or terms and conditions of a product/service they purchase. Having this incomplete information about a good 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. Consumers who have difficulty in obtaining and assimilating product/service information are typically more susceptible to adverse market practices e.g. deliberate misinformation from an ECS supplier. ComReg tackles this particular information asymmetry by requiring accurate product descriptions, accessible and transparent pricing and quality guarantees.

Behavioural Bias

2.26 Behavioural bias refers to how individuals often act in a non-rational manner and make sub-optimal choices. The electronic communications sector is characterized by complex products, fast changing technology, a dynamic service-provision environment, and immediacy of demand – all of which make it sensitive to behavioural biases (e.g. inertia, status quo bias, framing effects, present bias). 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. Operators who understand behavioural biases may be able to extract additional revenue to the detriment of consumer welfare.

Explanatory Box 2: Behavioural Economics

Behavioural Economics is a stream of economics that studies economic decision-making through the incorporation of psychological insights to understand why, in reality, consumer decisions are not as fully rational (and welfare-maximising) as traditional economic models assume. It considers how limitations in an individual's thought processes and behavioural biases can interfere with rational thought and action.

In some cases, behaviourally-informed policy and regulation can help consumers to overcome these limitations and biases, for example, by “nudging” consumers to make the decisions that benefit them most. Behavioural insights have been adopted explicitly and implicitly by governments and regulators throughout the world.

Behavioural insights can shed new light in understanding market failures in the telecommunications sector and how to address them. The telecommunications sector is particularly subject to behavioural biases because of the nature of the industry:

- Products are complex both in the technical sense and in the way they are provided through contracts that are sometimes difficult to understand.
- Consumer satisfaction (utility) is derived indirectly, not directly, from telecommunications devices. Demand within ECS markets constitutes a ‘derived demand’. Consumers do not demand broadband to ‘consume’ the service on its own, but to consume goods and services through it (e.g. purchasing goods and watching content online, sending emails etc.). The value of ECS depends on how much consumers care for the service they deliver, which can be intangible.
- The industry is changing rapidly, making the environment uncertain, future predictions hard to make, and requiring frequent decision-making.

2.27 Given the potential for market failures, ComReg’s remit and powers allow it to intervene in various ECS markets (as appropriate) to help ensure these markets operate efficiently in the interests of society and end-users. While these fundamental rationales remain unchanged, technologies and markets evolve, as does the practical application of regulation. A key factor in this process is the evolution of the legal framework.

The Legal Context

The European Electronic Communications Code

2.28 On 17 December 2018, the European Parliament adopted the European Electronic Communications Code (**EECC**) or simply “the Code”.¹¹ The Code is considered as a central piece of legislation to achieve Europe's Gigabit society and ensure full participation of all EU citizens in the digital economy and society.

2.29 The EECC, which is now in force, replaces the old suite of directives that comprised the EU Common Regulatory Framework for electronic communications (discussed in Explanatory Box 3: Background and Evolution of Legislation below). The EECC updates the main pillars of regulation in the

¹¹ 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”.

sector, such as access regulation and consumer protection.

- 2.30 The EECC 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:
- 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;
 - Having a consistent approach to spectrum management;
 - Setting common 5G goals and spectrum bands;
 - Redefining the approach to universal broadband access; and
 - Addressing some governance issues related to the autonomy of National Regulatory Authorities ('**NRAs**') and the functioning of the Body of European Regulators for Electronic Communications ('**BEREC**')¹².
- 2.31 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 EECC¹³. This new objective is embodied via new measures, such as those related to co-investment as noted in Explanatory Box 4.
- 2.32 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 emphasis on connectivity in the EECC is reflected in our strategy, with the inclusion of a new strategic intent. Moreover, this objective broadly aligns with our vision for the electronic communications sector, that consumers and businesses in Ireland have affordable, high-quality, and widespread access to secure communications services and applications that support their social and economic needs.
- 2.33 With the advent of the EECC, 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. Specific measures included in the EECC are further discussed in Explanatory Box 4 below.

¹² Further information on BEREC can be found on its website: <https://berec.europa.eu/>

¹³ 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.

Explanatory Box 3: Background and Evolution of Legislation

Given the presence of market failures, ComReg was established by the Communications Regulation Act 2002ⁱ (“the 2002 Act”) as the successor to the Office of the Director of Telecommunications Regulation (ODTR), which had itself been established in 1997ⁱⁱ. 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 encompassesⁱⁱⁱ:

- The regulation of electronic communications networks and services;
- The management of the radio frequency spectrum and national numbering resource; and
- The regulation of postal services

ComReg also has a number of additional functions, including the regulation of Premium Rate Services (‘PRS’)^{iv}, Emergency Call Answering Services (‘ECAS’)^v, the reduction of the costs of high speed broadband deployment^{vi}, roaming^{vii} and net neutrality^{viii} amongst others^{ix}. In addition, ComReg has shared powers with the Competition and Consumer Protection Commission^x and some shared and complementary powers with the Data Protection Commission in respect of specific aspects of data privacy^{xi}. ComReg also has a variety of other powers and functions derived from national legislation.

Since 2002, electronic communications in EU member states have been regulated pursuant to a Common Regulatory Framework comprised of five principal directives^{xii}, The Framework Directive, The Authorisation Directive, The Access Directive, The Universal Service Directive, and The Privacy Directive. These directives were implemented in Ireland by way of a suite of domestic regulations made in 2003 and replaced in 2011, following the adoption by the EU in 2009 of two amending directives^{xiii} (the Better Regulation Directive and the Citizens’ Rights Directive).

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.

The EECC, which is now in force, replaces the old suite of directives that comprised the EU Common Regulatory Framework for electronic communications.

ⁱ 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.

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

ⁱⁱⁱ Section 10 of the 2002 Act.

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

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

^{vi} 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 ix Deploying High Speed Public Communications Networks) Regulations 2016 (S.I. No. 391 of 2016).

^{vii} Various EU and domestic regulations from 2007 to 2017.

^{viii} 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.

^{ix} 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/>

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

^{xi} European Communities (Electronic Communications Networks and Services) (Privacy and Electronic Communications) Regulations 2011, S.I. No. 336 of 2011

^{xii} Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 (Framework Directive), Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 (Authorisation Directive), Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 (Access Directive), Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 (Universal Service Directive), Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 (Privacy Directive).

^{xiii} 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 and 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

Transposition

2.34 As the new Code is being introduced across the EU by way of a single new directive, this directive is being 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 lies with the Department of the Environment, Climate and Communications ('DECC'). The transposition process has included extensive and ongoing engagement with relevant key stakeholders, including ComReg, industry, the Office of the Data Protection Commissioner, other Government Departments and the European Commission. The Code was to be transposed by Member States by 21 December 2020. ComReg understands that the Code is now likely to be transposed into national law in Q2 2021. In the interim, electronic communications providers must continue to comply with their obligations, ComReg continues to regulate the electronic communications sector under its existing powers, and redress mechanisms for customers continue unchanged until new legislation is introduced. The Communications Regulation Act 2002 continues in force (without further change/amendment). The suite of 2011 Electronic Communications Regulations continue in force until further legislation is introduced, which amends or repeals them.

- 2.35 ComReg's Regulatory Guidance on the End-User Rights of the European Electronic Communications Code was first published on 10 November 2020 and the first update was published on 23 December 2020. On 4 December 2020, DECC published draft regulations in respect of the end-user rights provisions of the Code.
- 2.36 DECC has stated that once the full draft text of the regulations transposing the Code is finalised, they will share it with all interested parties and hold a public consultation in early 2021¹⁴. DECC also noted that during this process, all interested parties will be invited to provide written submissions on any aspect of the text, including the end-user rights provisions.
- 2.37 Full transposition of the new Code will 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. Delivery of digital legislation to complete the Digital Single Market Strategy will enable ComReg to contribute to the delivery of the National Digital Strategy.
- 2.38 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 sector 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 will publish an opinion by 21 December 2021 and will publish further opinions every three years thereafter,

¹⁴ Government of Ireland, (2020), Digital Inclusion, <https://www.gov.ie/en/policy-information/cecd1c-digital-engagement/> ; and Government of Ireland, (2020), European Electronic Communications Code, <https://www.gov.ie/en/publication/339a9-european-electronic-communications-code-eecc/>

on the national implementation and functioning of the General Authorisation, and on their impact on the functioning of the internal market.

Explanatory Box 4: Key Features of the new 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;
- Promoting better tariff transparency and comparison of contractual offers;
- Requiring provision of pre-contractual information;
- Guaranteeing better security against hacking, malware, etc.;
- Better protecting consumers in relation to bundled service packages;
- Making it easier to change service provider; and
- Increasing protection of citizens 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.

2.39 ComReg’s various activities take account of the EECC, insofar as possible, and its 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.

3. Trends and Challenges

Overview

- 3.1 The electronic communications sector is shaped by different social, economic, legislative, and technological forces which are both internal and external to the sector. These forces become trends over time and drive the sector's development. Some of them have a positive impact on markets and act as catalysts for the advancement of communication technology and the value it can bring to Irish society; while others present challenges that require industry innovation or government regulation so that they do not inhibit the proper functioning of the market.
- 3.2 In this Chapter, ComReg analyses the various factors influencing the development of the electronic communications sector and its ecosystem. ComReg has identified four main trends which are likely to shape the sector, and which may pose regulatory challenges in the coming period. These are:
- Enhanced Connectivity and New Technologies
 - The Consumer Experience
 - The Evolution of Adjacent and Related Markets
 - The Changing Future of Regulation in the Sector.

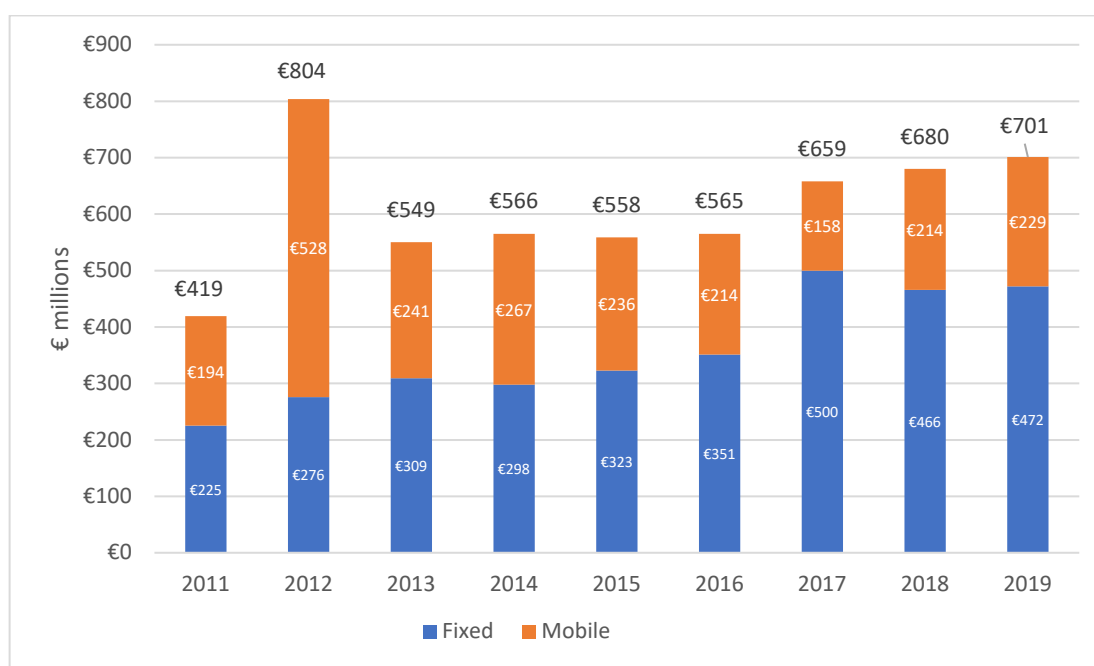
Enhanced Connectivity and New Technologies:

Fixed Network Rollout

- 3.3 The increasingly important role played by faster ECN across the country will continue to shape Ireland over the coming 5 years.
- 3.4 Between 2011 and 2019, commercial network operators have invested €5.5 billion in expanding the reach of their fixed and mobile networks to more people in the country (See Figure 4 below).¹⁵ Commercial fixed investments by operators have centred around the roll out of fibre network technologies and upgrading of existing networks (e.g. Cable networks), while copper-based networks are being phased out.
- 3.5 With these investments, by Q4 2020, of the 1.52 million total fixed broadband subscriptions in Ireland, 81.6% have sold download speeds of at least 30 Mbps. Moreover, the proportion of fixed broadband subscriptions with sold download speeds exceeding 100Mbps is 42.5% (with 39.1% with speeds in the range 30-99Mbps). By comparison, just four years previous, in Q4 2016, 21.6% of the 1.36m total fixed broadband subscriptions had advertised download speeds exceeding 100Mbps (with 43.4% having speeds in the range 30-99Mbps).¹⁶

¹⁵ Eurostat

¹⁶ Prior to Q1 2019, ComReg collected information from operators relating to advertised download speed. Since Q1 2019, sold download speed information has been collected from operators. There are minor differences in the definitions of advertised and sold speeds.

Figure 4: Fixed and Mobile Investment in ECN/S (2011-2019)¹⁷

- 3.6 The availability of faster networks enables innovation and digitalisation across different sectors of Irish society and allows for the electronic communications sector to play a greater role in people’s lives.
- 3.7 New networks with faster download speeds, lower latency and increased bandwidth can impact consumer experience and take-up of services available over these networks (e.g. TV services) and of products and services available in adjacent markets (e.g. better mobile handsets). However, as networks improve, consumers are likely to become more reliant on their ECS and ECN. This increased reliance can also lead to increased demand and higher expectations of the services provided. ComReg expects this trend to continue, especially with the likely widespread adoption of fibre and 5G networks in the future.

The National Broadband Plan

- 3.8 Despite the advances in network rollout so far, the geography and population distribution in Ireland can present challenges for the rollout of both fixed and wireless networks. Ireland’s population density is lower than the EU average¹⁸ and is highly concentrated around cities, with 63% of the population living in urban areas¹⁹. The commercial realities of network rollout mean that network rollout may not occur at all in geographic areas where the population is sparse.
- 3.9 The National Broadband Plan (**‘NBP’**) is the government’s initiative to ensure the availability of high-speed fibre to the home (**‘FTTH’**) broadband services to all premises in Ireland through investment from commercial enterprises as well as intervention from the State in parts of the country where there are no private investment plans. The contract for the NBP was awarded and signed on the

¹⁷ Eurostat

¹⁸ 70 people per square kilometre vs 111 people per square kilometre. - “Population Density (people per sq. km of land area)”, World Bank

¹⁹ Central Statistics Office, (2016), “Infographic Census 2016”

19th of November 2019. The successful tender was led by Granahan McCourt and was followed with the incorporation of an Irish registered company called National Broadband Ireland ('NBI').

- 3.10 The State intervention area covers 538,000 premises, 1.1 million people, over 54,000 farms, 44,000 non-farm businesses, and 695 schools. Over the lifetime of this Medium-term Strategy, it is expected that the majority of this network rollout will have been completed.

5G Technology and other network developments

- 3.11 Until recently, 5G was a nascent development at the periphery of global electronic communications sector. However, as the necessary spectrum bands have been assigned, operators have commenced the rollout of networks, device manufacturers have started developing and selling 5G handsets, and international bodies have clarified standards.
- 3.12 In June 2017, ComReg granted 3.6 GHz licenses to five operators following a spectrum auction. Mobile operators in Ireland have begun to rollout 5G services. However, widespread adoption will depend on the availability and take-up of new 5G enabled handsets and use cases. In December 2020, ComReg published a response to consultation and decision on a multi-band spectrum award that will include licenses in the 700 MHz and has proposed to release new licenses in the 26 GHz band in the future²⁰.
- 3.13 Growth in the use of 5G and other developments in mobile networks can have implications for service offerings and competitive dynamics in the sector in future, as seen in Explanatory Box 5 below.
- 3.14 Besides 5G, there are several other new technologies that aim at increasing and improving connectivity. Two of them are Wi-Fi 6 and Low Earth Orbit ('LEO') Satellites.
- 3.15 Wi-Fi 6 is the next generation Wi-Fi technology currently being deployed, capable of delivering reliant, fast, widespread, and traffic-heavy connectivity. Integrating 5G network technology with Wi-Fi 6 technology will allow operators to optimise traffic across access networks and provide efficient indoor-outdoor coverage. Offloading to Wi-Fi can provide cost-savings for mobile operators delivering 5G without affecting quality. Used together, these technologies can support large deployments of Internet of Things ('IoT') devices and facilitate use cases like connected vehicles and smart cities where there will be a mix of fixed and mobile devices²¹. Some service providers across Europe started to offer Wi-Fi 6 in Europe in 2019²². Manufacturers have also released Wi-Fi 6-compatible devices and/or routers.

²⁰ ComReg Document 20/122 and ComReg, (2020), "About 5G"

²¹ Syed Measum Haider Bokhari, (2019), "Introduction and Architecture of Wi-Fi 6 (802.11ax)" and Cisco Meraki, (2019), "Wi-Fi 6: The Next Generation of Wireless"

²² For example, Swisscom and Telefonica have launched Wi-Fi 6, 10 Gbps gateways and repeaters in Europe in late 2019. ("Swisscom Launches First Wi-Fi 6, 10 Gbps Gateway and Repeater in Europe, Powered by SoftAtHome Software", November 2019; "Telefonica reinvents its Digital Home Connectivity with the new Smart WiFi 6 Amplifier", June 2020).

Explanatory Box 5: Emerging Technologies

OpenRAN

Radio Access Networks ('RAN') are used to connect devices to a mobile network. RAN vendors such as Ericsson, Nokia and Huawei supply hardware and software to telecoms operators. In a traditional RAN, hardware and software are coupled, and are not interoperable between vendors. Thus, operators may be heavily reliant on their chosen vendor. However, Open RAN aims to disaggregate mobile base stations by standardising open interoperable interfaces between the radio and signal processing elements, with the aim of increasing supply chain diversity, lowering costs and increasing innovation.ⁱ This could enable operators to avail of multivendor deployments, reducing dependence on individual vendors and enabling a more competitive vendor market.ⁱⁱ While operators typically rely on a limited number of RAN vendors operating in a concentrated market, the introduction of Open RAN could reduce barriers to entry for new vendors to introduce their own services and allow operators to customise their network, creating a more agile RAN.

Software Defined Networks & Network Function Virtualisation

Technological developments may allow new network management possibilities that enable a single physical network to support a number of virtual networks with different performance characteristics.ⁱⁱⁱ Two key technical developments that make this possible are Software Defined Networks ('SDN') and Network Function Virtualisation ('NFV'). NFV decouples network functions from proprietary hardware appliances so they can run in software. SDN transfers network functions from the hardware to the software layer and is complementary to NFV for network management.^{iv} These developments effectively allow for the creation of separate networks that share one physical infrastructure, with each network designed to meet its own specific requirements. This could allow operators to provide services with difference performance characteristics to different customers using the same physical network. This may be particularly useful given that different types of use cases for mobile networks in the future may have different requirements in terms of download speed, reliability or latency. Services can be targeted at particular sectors (verticals), opening up opportunities for new business models.

ⁱ O-Ran Alliance, (2020), "O-RAN Specifications"

ⁱⁱ O-Ran Alliance, (2018), "O-RAN: Towards an Open and Smart RAN", White Paper

ⁱⁱⁱ BEREC, (2018), Study on Implication of 5G Deployment on Future Business Models, A report by DotEcon Ltd and Axon Partners Group

^{iv} OECD, (2019), The Road to 5G Networks: Experience to Date and Future Developments

- 3.16 In the last few years, there has been a resurging interest in LEO satellites to offer ECS. These satellites typically orbit earth at a lower altitude than existing broadband satellites (from 180km to 2,000km). LEO satellites have the potential to offer higher capacity (up to 23.7 Tbps²³), broader coverage, and lower latency than existing broadband satellite networks²⁴. Because of their altitude, there must be a full constellation of satellites that communicate with each other and with devices on the Earth in order for service to be provided. These constellations will allow for broadband network coverage in areas where the rollout of fixed networks is not commercially viable²⁵. It is possible that the future use cases of LEO satellites will focus on either niche applications or in helping reach universal broadband coverage in remote areas, rather than directly competing with traditional broadband services. Nonetheless, their retail potential of offering an alternative version of current services cannot be ignored.

Demand on Networks

- 3.17 Results from ComReg's Quarterly Key Data Report ('**QKDR**')²⁶ in Figure 5 below show the increasing volumes of fixed and mobile data traffic in recent

²³ Del Portillo, I., Cameron, B., and Crawley, E., (2018), "Technical Comparison of Three Low Earth Orbit Satellite Constellation Systems to Provide Global Broadband"

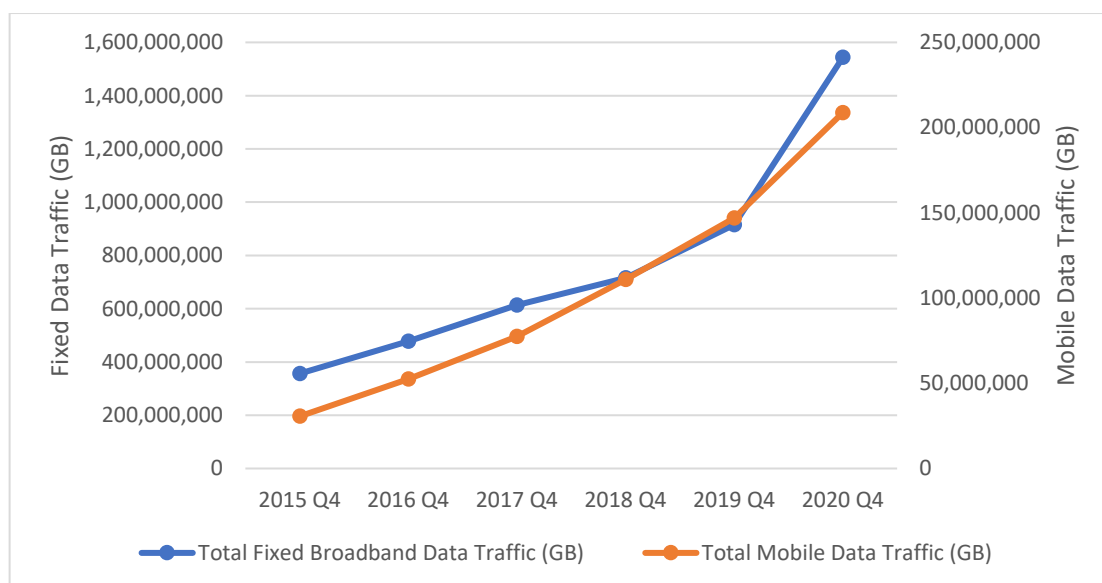
²⁴ European Commission, (2017), "Low-Earth orbit satellites: Spectrum access"

²⁵ European Commission, (2017), "Low-Earth orbit satellites: Spectrum access"

²⁶ ComReg QKDR Q4 2020, (2021), ComReg Document 21/20

years, with particular increases arising in 2020, following the emergence of Covid-19.

Figure 5: Total Fixed and Mobile Data Traffic²⁷



- 3.18 Figure 2 (above in Chapter 2) shows the year-on-year percentage increase in total data traffic on fixed and mobile networks. The figure shows a reasonably constant level of growth of total data traffic of around 24-29% in the years preceding the pandemic when the rate of growth more than doubled (rising to 62%).
- 3.19 Increasing demands for data are expected to continue. In the future, meeting the needs of Irish consumers accessing data-hungry applications (such as video streaming, social media etc.) 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 calling²⁸ on a fixed broadband connection. The National Broadband Plan and the availability of additional spectrum through future spectrum awards are key enablers to meet this challenge.
- 3.20 While demands for data on networks are increasing, it also the case that patterns of use are changing. ECN and ECS are increasingly being relied upon for crucial economic activities, such as working from home. In this context, the quality of service (e.g. reliability) may be even more important than when doing other activities online (e.g. streaming video content). In this regard, the reliability, resilience and security of networks is becoming increasingly important.

Network Security and Resilience

- 3.21 A key consideration regarding networks and connectivity is the increasing need of improving their security and resilience. The growing number of connected

²⁷ ComReg QKDR Q4 2020, (2021), ComReg Document 21/20.

²⁸ 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.

devices and the exponential increase in data that IoT and other technologies function on add an extra layer of vulnerability to networks. In addition, the increase in the number of devices accessing a network and the growing reliance of consumers on ECN increases the potential threat of malicious attacks and security risks. Other risks to network security and reliability include climate change and weather events (such as floods and storms).

- 3.22 Network reliability and security has advanced with each technology. For example, one-way encryption used in 2G was elevated to mutual authentication in 3G and 4G. Next generation networks will likely continue this trend to address the unique security challenges that they pose. One of these challenges is that communications are no longer confined to individuals but have come to include communications between devices as well as within vertical industries. This brings about new business models with a broad range of security needs. Additionally, the more online life becomes, the more sensitive the information transferred becomes and the higher the risk and potential for damage from a cyberattack are.
- 3.23 The security of fixed and mobile networks depends not only on technical security features, but also on the design, implementation, and operation of the network. ComReg also works with other organisations to protect consumers from scams and other malicious attacks by increasing awareness of security issues.

The Consumer Experience

- 3.24 Related to the trend of increased and improved connectivity is the changing user experience and expectations of Irish consumers. As part of this trend, ComReg notes the growing reliance on connectivity, the increased adoption and usage of new technologies and the persisting non-uniform end-user experience.

Growing Reliance on Connectivity

- 3.25 Over the last 10 years, the development of networks and the adoption of new technologies have enabled people to connect in ways they had never done before. There is virtually no part of our lives which remains untouched by innovations in digital connectivity²⁹. In 2019, over 90% of Irish households had an internet connection at home and had been engaged in a wide range of internet activities³⁰.
- 3.26 Covid-19 has rapidly accelerated trends towards further digitalisation, moving even more of our lives online. The number of people working from home on a daily basis since the March 2020 lockdown has increased from 7% to over 40% in Q4 2020³¹. In November 2020, 76% of online users estimated that their household use of broadband had increased since March.³² Seven in 10 workers believe that they will be working more from home after the crisis than they did

²⁹ European Commission, Digital Agenda Scoreboard Key Indicators

³⁰ Central Statistics Office, (2019), Information Society Statistics – Household

³¹ ComReg Consumer Awareness and Confidence Survey Q4, (2020)

³² Comreg, (2021), 'Impact of Covid-19 on consumer use and perception of telecommunications services - 4th Survey Q4 2020,' ComReg Document 21/06

before and agree that the traditional way of conducting voice-based conference calls will change to video-based conference calls³³.

- 3.27 Moreover, the January 2021 National Remote Working Strategy³⁴ published by the Department of Enterprise, Trade and Employment (**'DETE'**) underlines the enduring nature of developments during Covid-19. The strategy proposes a range of actions which will promote remote working beyond Covid-19. These include mandating that home and remote work should be the norm for 20 percent of public sector employment and legislating for the right to request remote working. The proposals for continued remote working beyond the pandemic underscores that our reliance on connectivity will continue to grow.
- 3.28 These developments mean that individuals rely heavily on ECN and ECS to carry out various social and economic related activities. In December 2020, 75% of online users reported that the reliability of internet connection had become more important in the last year.³⁵ The substantial increase in internet activities, especially in video calls and other video-related activities, has led to substantial increases in demands for data on ECS networks. Consumers' perception and expectations for current and future network connectivity are likely to be influenced by these developments.
- 3.29 Other digital services such as e-Government, e-learning, and cloud storage services are becoming increasingly popular in recent years³⁶, and Covid-19 may further accelerate adoption of new online services (e.g. e-health).³⁷
- 3.30 Online activities are also becoming more important for businesses. The Digital Economy and Society Index (**'DESI'**) 2020 report ranks Ireland as first in Europe in terms of integration of digital technology³⁸, with Ireland leading Europe in all three indicators under e-commerce (i.e. SMEs selling online, e-commerce turnover and selling online cross-border). The report notes that 35% of Irish small and medium enterprises (**'SMEs'**) sell online, compared with an EU average of 18%.³⁹ For SMEs, 29% of total turnover comes from online sales, almost three times the EU average. With the onset of the Covid-19 pandemic, the importance of online activity has become even more crucial for businesses, suggesting that these figures may increase further over time. At the same time, Irish companies also rank relatively high in the report on the use of big data, cloud services and social media.

Continued Adoption of New Technology

- 3.31 Along with the growing reliance on connectivity, consumers continue to adopt new technologies. As shown in Figure 6 below, smartphones are now used in nearly every home, and the use of tablets continues to increase while laptops are used in more than 80% of homes. Smart TV's are now present in more than two thirds of homes while nearly one in three households use a smart home device.

³³ Ericsson, (2020), Ericsson Mobility Report 2020

³⁴ Department of Enterprise, Trade and Employment, (2021). "Making Remote Work: National Remote Working Strategy"

³⁵ Digital Services & Online Safety Survey, (2021), ComReg Document 21/09

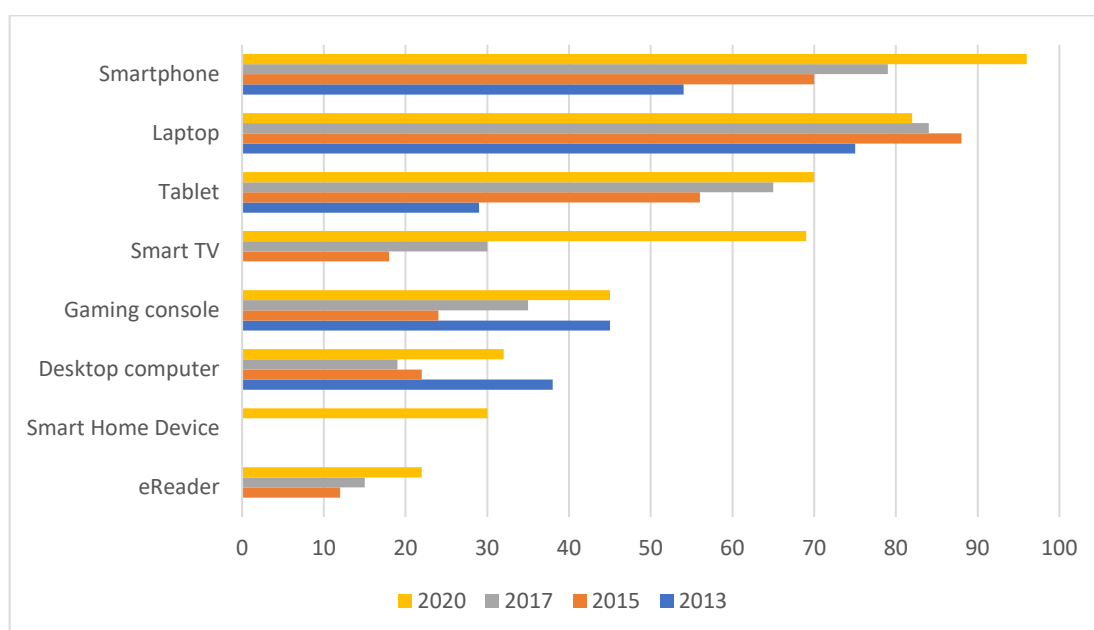
³⁶ Central Statistics Office, (2019), Information Society Statistics – Household

³⁷ Ericsson, (2020), Ericsson Mobility Report 2020

³⁸ European Commission, (2020), Digital Economy and Society Index (DESI) 2020: Thematic Chapters

³⁹ European Commission, (2020), Digital Economy and Society Index (DESI) 2020: Ireland

Figure 6: Home (%) with devices connected to Fixed Broadband 2013-2020⁴⁰



3.32 While new technologies continue to be adopted, consumers expect this trend to continue. Figure 7 below shows the current and anticipated use of various technologies in 2025 by online users.

Figure 7: Current and Anticipated Future Technology Use⁴¹

	Past Use - 2017	Current Use - December 2020	Anticipated Future Use (in 2025)
	%	%	%
Petrol/ Diesel based Car	84	77	↓46
Tablet/ iPad	65	65	60
TV Streaming Box	13	43	44
Smart Watch/ Wearable Fitness Tracker	9	40	↑44
Smart Speaker	-	29	↑37
Apple/ Android Pay	7	25	↑35
Smart Home Thermostat	4	12	↑35
Hybrid Car	4	5	↑36
Other Smart Home Devices	3	21	↑35
Fully Electric Car	-	N/A	21
Sem-Autonomous Car	-	N/A	12

3.33 Nearly a third of online users currently use a smart speaker. Increased adoption of smart technologies is anticipated by consumers in the coming years (e.g. smart speaker, Apple/Android Pay, other smart home devices). A recent Cisco

⁴⁰ ComReg Connectivity Survey, (2021), ComReg Document 21/30 and ComReg Ireland Communicates Survey, (2017), ComReg Document 18/23a

⁴¹ ComReg Technology Survey (2021), ComReg Doc 21/32b, Digital Services & Online Safety Survey, (2021), ComReg Document 21/09 and ComReg Ireland Communicates Survey, (2017), ComReg Document 18/23a

report⁴² estimates that connected home appliances will be the category with the largest share of IoT connections, accounting for almost half of total Machine-to-Machine (M2M)⁴³ share by 2023.

- 3.34 The expected future ownership of technologies suggests that Irish consumers will require a greater level of access to fixed and mobile networks in the future as their consumption patterns change. 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.
- 3.35 The continued growth in the use of IoT devices anticipated over the coming years will be driven by improved functionality, the growing availability of high capacity fixed networks, and the development of 5G networks. This will in turn increase Irish consumers' daily online activities and their demand for data traffic and more consistent and stable connectivity.

Non-Uniformity of Experience

- 3.36 This increased adoption of technology and services has not been uniform throughout the country nor across demographics. As mentioned above, there are differences in connectivity levels between urban and rural areas, largely due to differences in the availability of networks. On one hand, in densely populated urban areas where investments are commercially viable, VHCN have already been rolled out, or will be soon. On the other hand, in the most remote parts of the country with the lowest population densities, investments in VHCN may not be commercially viable. Ensuring roll out of VHCN in these areas where commercial plans for VHCN are non-existent will be addressed by the National Broadband Plan. However, between these extremes, there are other areas where commercial roll out will be slower and there will likely remain a need for ex-ante regulation.
- 3.37 Recognising the unprecedented change in living and working patterns during the Covid-19 pandemic, in March 2021 the Irish Government published '*Our Rural Future*', its plan to transform rural Ireland over the next five years. Amongst other things, the Plan highlights the role that our telecommunications networks will play in promoting remote working and revitalising the rural economy. The Plan notes that the rollout of the NBP will help bring new opportunities in areas like eHealth, remote learning, online trading and new technologies. The Plan commits to having 20 percent of the public service working remotely, with incentives to encourage people to settle in rural areas, to be served by 400 remote working hubs.
- 3.38 The use and take-up of ECS also varies across age groups. ComReg's Connectivity Survey 2020⁴⁴ shows that a considerably higher proportion of those aged 18-34 have access to a fixed broadband service at home compared to those over 55 (86% vs 58%). Though, they are less likely to have access to

⁴² Cisco, (2020), 'Cisco Annual Internet Report (2018–2023) White Paper'

⁴³ 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.

⁴⁴ Mobile Consumer Experience Survey, (2019), ComReg Document 19/101

a home phone service (25% vs 49%). Younger cohorts are more likely to use Netflix (62% vs 18%) and use a greater variety of devices to watch TV. They also use a wider variety of online services on a daily basis, such as email, video content, online banking, online shopping and have adopted new technologies, such as smart watches or smartphone payments. See Figure 8 below for a breakdown in technology ownership and usage by age.

- 3.39 Although younger users use online services more frequently, these results suggest that use among older cohorts has increased since 2019. The CSO's ICT Household Survey in 2019 found that just 53% of internet users in the 60-74 age group accessed the internet daily⁴⁵, while Figure 8 shows that nearly three quarters of those over 55 use messaging apps on a daily basis and 81% use email daily .
- 3.40 A noticeable discrepancy persists in smartphone ownership, with nearly all (99%) of mobile phone users aged 18-24 having a smartphone, while just 59% of those aged over 65 having a smartphone.⁴⁶ Though, this has increased from less than half (47%) of those aged over 65 in 2019.⁴⁷

Figure 8: Ownership/Usage of Technologies in the Home⁴⁸

	18-34	35-54	55+
	%	%	%
Access to Fixed Broadband at home	86	81	58
Access to a home phone service	25	39	49
Access to a mobile phone	97	98	91
Watch TV on a(n) Tablet/ iPad	11	9	1
Watch TV on a Smart TV	76	75	48
Watch TV on a smartphone	21	14	5
Use Netflix	62	46	18
Daily use of Email*	92	91	81
Daily use of Messaging apps*	90	86	74
Daily use of Video content*	76	64	39
Daily use of Online banking*	51	40	31
Daily use of Online shopping*	25	22	7
Smart watch/wearable fitness tracker**	46	43	32
Apple pay or Android pay**	40	26	14
*Results from ComReg's Digital Services & Online Safety survey (Online)			
**Results from ComReg's Technology Survey 2021 (Online)			

Consumer Behaviours

- 3.41 Consumers' confidence in choosing optimal telecom goods and services is subject to various factors such as their knowledge and awareness of the

⁴⁵ Central Statistics Office, (2019), Information Society Statistics – Households

⁴⁶ Behaviour & Attitudes, (2020), "Techscape 2020"

⁴⁷ Mobile Consumer Experience Survey, (2019), ComReg Document 19/101

⁴⁸ ComReg Connectivity Survey, (2021), ComReg Document 21/30, ComReg Digital Services & Online Safety Survey, (2021), ComReg Document 21/09 and ComReg's Technology Survey, (2021), ComReg Document 21/32b

relevant markets, their capability of processing information, the quality and prices of goods on offer, and the context in which the decision is made. The nature of the electronic communications sector creates an environment that is particularly complex and difficult for consumers to make decisions in. First, the products are complex and can entail contracts that may be difficult to understand. Second, benefit is derived indirectly from the use of services, thus making it difficult to monitor intangible usage. Third, the industry is changing rapidly, making the environment uncertain, future predictions hard to make, and requiring decision-making of consumers to be frequent⁴⁹. Because of these industry characteristics, consumers may not always make the best choices and operators may choose to further distort the market by choosing carefully how they present information and choices to consumers in order to increase profits.

- 3.42 ComReg has a role to protect consumers' rights and prevent operators from using consumer vulnerabilities to impede competition in the telecom markets. ComReg has and will continue to monitor service provider compliance with a range of obligations relating to consumer rights, effectively provide consumers with appropriate and adequate information to assist them in choosing and using ECS and ensure that consumers have effective redress mechanisms.

Mobile and Broadband Taskforce

- 3.43 In July 2016, the Government established the Mobile Phone and Broadband Taskforce to help identify 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. In 2019, the Taskforce Implementation Review 2018 was published, which reviewed the progress made in 2018 and included the 2019 Work Programme which identified 35 new actions.
- 3.44 ComReg attends meetings of the Taskforce and has updated the Taskforce on a number of work streams relevant to the work of the Taskforce, including:
- The development of ComReg's outdoor mobile coverage map⁵⁰.
 - Testing the performance of handsets currently on the market to better inform consumers of the effect handset performance can have on their experience.⁵¹
 - Produced a five-year forecast of data traffic by consumers, both fixed and mobile.⁵²
 - Developed a scheme for mobile phone repeaters, allowing users to boost signals in their premises.⁵³
- 3.45 The Taskforce Implementation Group has published a number of Progress Reports, available on the DECC website. ComReg has completed the above work streams between 2017 and 2019. The mandate for the Taskforce was

⁴⁹ ESRI, (2012), 'Telecommunications Consumers: A Behavioural Economic Analysis'

⁵⁰ coveragemap.comreg.ie

⁵¹ ComReg Document 18/05, ComReg Document 18/78, ComReg Document 18/82 and 18/84, ComReg Document 18/109 and ComReg Document 19/67

⁵² ComReg Document 18/35 (Mobile Data Traffic Forecast in Ireland) and 18/35a (Information Notice - Mobile Data Traffic Forecast in Ireland)

⁵³ ComReg Document D08/18 and Mobile Repeater website page

renewed in the Programme for Government published in 2020.

The Consumer Experience

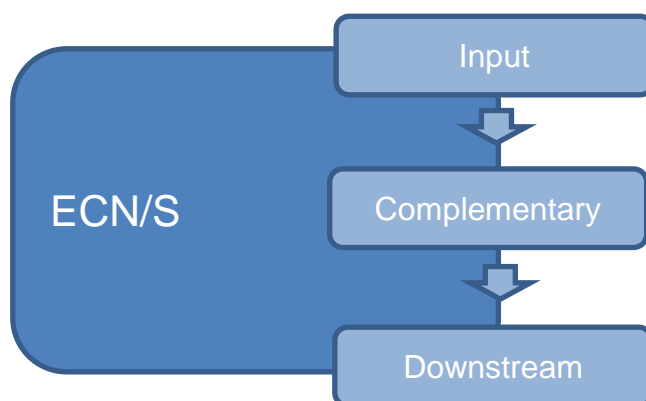
3.46 Consumers’ reliance on connectivity has been rapidly accelerated by Covid-19, for example, with the growth of remote working and greater use of video calling applications. However, the pattern of network rollout across the country as well as varying levels of adoption of technology across demographics mean that consumer experiences in the sector are not uniform. These developments imply new, or more sharply drawn, digital divides. Given the increasing reliance on connectivity in daily life, these divides are potentially more acute and divisive socially than ever before, and will therefore draw regulatory as well as political attention over the coming period about a holistic understanding of digital inclusion.

Related Markets and Services

3.47 A third trend identified is that of how changing dynamics in related markets can influence the electronic communications sector. As these related markets evolve, lines between markets get blurred and change the industry’s structure and competitive landscape. Under this trend, ComReg considers input markets, complementary markets and downstream markets.

3.48 Input markets include areas such as network equipment manufacturers which create the equipment to facilitate the use of ECS. Input markets affect the sector in various ways, such as the cost of network rollout, quality of service and security. Complementary markets (e.g., handsets or IoT devices) are important to consider as they affect the quality of experience of using ECS services, including coverage and security. Finally, downstream markets are also considered (e.g., OTTs, Broadcasting), as consumer demand for ECN/S is ultimately driven by consumers’ desire to participate in these downstream markets (e.g. to communicate with friends, family, colleagues or to be entertained).

Figure 9: Related Markets and Services



Input Markets

3.49 Two developments are considered in the context of input markets, eSims and Artificial Intelligence. The embedded Sim (eSim) is the most recent iteration of the Sim card technology which allows for over-the-air provisioning of network

services without the need of a physical card. It is resistant to physical shocks, vibrations and humidity, and has a long lifespan. The eSim is therefore suitable for large scale M2M deployments such as in the car industry, where physically changing Sims would not be economically feasible. It is also suitable for various consumer device uses such as mobile handsets and wearables. Because of these characteristics and the potential use cases it offers, eSims have the potential of changing the competitive landscape in the mobile, M2M, and related markets. For example, in the M2M case, eSims may significantly reduce switching costs in cases where there are many connected devices in a system. Intermediaries may even take on the challenge of finding the best offers for businesses and managing their subscriptions. For consumers, eSims may enable multi-device subscriptions.

- 3.50 The full potential and development of eSims will depend on the standards adopted by industry. There are currently no operators in Ireland offering eSims. ComReg continues to monitor this space and any developments in it.
- 3.51 Another important trend is the use of Artificial Intelligence ('AI') as an input in the ECS sector. As discussed in Explanatory Box 6 below, AI is being used in the sector in a variety of ways, from optimising the use of radio resources to reducing operation costs via customer services chatbots. As noted in Explanatory Box 5 above, which discusses developments relating to Open RAN and Software Defined Networks & Network Function Virtualisation, there are also emerging technologies in fixed and mobile networks that may impact service offerings and competitive dynamics in telecommunications markets in the future.

Explanatory Box 6: Artificial Intelligence

According to the European Commission, AI “refers to systems that display intelligent behaviour by analysing their environment and taking actions – with some degree of autonomy – to achieve specific goals”.ⁱ AI systems can be purely software based (e.g. image analysis software, search engines, translation tools, facial recognition technologies) or embedded in hardware devices (e.g. drones, IoT devices, advanced robots, autonomous vehicles).

In the ECS sector, Artificial Intelligence is already used for a range of functions. Operators have introduced machine learning algorithms to optimise the usage of radio resources to minimise energy consumptionⁱⁱ as well as using chatbots to engage with customers. An Ericsson report which surveyed 132 telecoms service providers globally found that more than half of operators expected to have adopted AI by the end of 2020, with a further 19% looking to adopt by 2023. The main areas where operators are seeing the benefits of AI are through service quality management (17%) and operational cost savings (16%).ⁱⁱⁱ

Although the use of AI can bring significant benefits across sectors and is expected to increase considerably, it is also associated with a number of concerns, including regarding bias, opacity, safety, liability and ethics. For example, AI systems can learn from data to improve. However, if the data used contains an inadvertent bias or is incomplete, this may lead to bias being embedded within AI systems and deployed at scale.^{iv} The European Commission is expected to propose a regulatory framework on AI in 2021.

Given the increasing role played by digitalisation in society and the foundational nature of ECS services, it is imperative that ComReg, at a minimum, maintains an awareness of these developments and keeps on open dialogue with other sectoral regulators. In this regard, ComReg will continue to work collaboratively with the Economic Regulators Network (ERN) on issues relating to developments in European digital legislation and the implications for Irish digital policy and regulation.

ⁱ European Commission, (2017), “Artificial Intelligence for Europe”

ⁱⁱ ComReg Document 20/27

ⁱⁱⁱ Ericsson, (2018), “Employing AI techniques to enhance returns on 5G network investments”

^{iv} McKinsey Global Institute, (2019), “Tackling bias in artificial intelligence (and in humans)”

Complementary Markets

- 3.52 A complementary market of relevance to ComReg is the market for consumer handsets. ComReg’s 2019 MCE Survey shows that 40% of respondents owned a Samsung smartphone, while 32% had an Apple iPhone⁵⁴. Smartphone manufacturers continue to innovate, offer new services, and avail of new network technologies where available. Over the coming years, ComReg expects that these handsets will play a key role, alongside fibre and 5G networks, in advancing people’s use, experience and reliance on ECS.
- 3.53 Related to the brand of a handset itself, is the operating system of a device. Google’s Android operating system and Apple’s iOS operating system are by default the most predominant systems used in Ireland given the trends in handset brands. These markets are relevant because the quality of the operating system and the handset may influence the consumer experience. A user might perceive download speeds to be slower than they are paying for, their network coverage worse, and their overall ease of use different simply because their device has a smaller antenna, a different look and feel, or a poor-quality screen.
- 3.54 Over the coming period ComReg’s understanding of the traditional mobile handset may change as device manufacturers innovate and consumers begin

⁵⁴ Mobile Consumer Experience Survey, (2017) , ComReg Document 17/100a

to adopt other complementary devices such as smart watches and Virtual Reality or Augmented Reality headsets.

Downstream markets

- 3.55 Developments in downstream markets, such as Over-the-Top (OTT) services, are of relevance as they drive demand for ECS. OTT services refer to communication services provided over the internet, including sending messages (via platforms such as WhatsApp), making calls (via applications such as Zoom), and watching TV (via streaming services such as Netflix).
- 3.56 While ECS plays a fundamental role, OTTs offer a range of services to consumers to enable them to communicate, work, learn and be entertained. For example, the availability of video conferencing and team virtual collaboration applications have facilitated the working from home “revolution” driven by Covid-19. Use of OTTs continues to increase. By December 2020, 82% of online users use OTT messaging apps at least daily while 59% view video content daily.⁵⁵ The rise of these messaging, voice and video calling OTT services has impacted network traffic and revenues of traditional telecoms operators and this is expected to continue.
- 3.57 Broadcasting markets have also been impacted significantly by the rise of OTT services. There are 1.2 million users of subscription-based video services in Ireland and this number is expected to grow⁵⁶. ComReg’s Connectivity Survey 2021 found that 40% of respondents use Netflix while 13% use Amazon Prime.⁵⁷ This impacts the competitive landscape for broadcasting operators, as the demand for video entertainment and news affects viewership and revenues. Two thirds of those who use streaming services watch less traditional TV.⁵⁸ In response to this rising pressure from OTT services, Irish broadcasters are enhancing their online presence, offering catch-up players (used by 20%⁵⁹) and live, cultural and sports content. Notably, Sky and Virgin Media have launched OTT video services NowTV and VirginMedia Player, respectively. Eir has also launched an online offer partnered with AppleTV.
- 3.58 The increase in the use of OTTs and the trend of digitalisation more broadly, is affecting all sectors of the economy and all aspects of our lives. Every wave of innovation has disruptive effects, though not all of these will be beneficial, particularly during periods of transition. Although a wide array of benefits have been created by digitalisation, it is becoming increasingly clear that the digital economy poses a wide range of challenges.
- 3.59 Governments, regulators and wider society are becoming increasingly aware of the potential harms associated with the digital economy, including concerns relating to the market power of digital platforms, harmful content online, privacy and security, among others. For example, ComReg’s Digital Services & Online Safety Survey in December 2020 found that two-thirds of online users report becoming more conscious of their privacy online in the last year and 57%

⁵⁵ Digital Services & Online Safety Survey, (2021), ComReg Document 21/09

⁵⁶ Statista, (2020), “Video Streaming (SVoD) Ireland”

⁵⁷ ComReg Connectivity Survey 2021, ComReg Document 21/30

⁵⁸ ComReg Connectivity Survey 2021, ComReg Document 21/30

⁵⁹ ComReg Connectivity Survey 2021, ComReg Document 21/30

recognise the challenge of harmful content online.⁶⁰ Many of these issues transcend economic regulation and are well beyond the scope of ComReg's activities.

- 3.60 There has been a notable development in the regulatory environment of the broadcasting and online service markets. In January 2020, the Online Safety and Media Regulation Bill was published.⁶¹ The proposed Bill seeks to provide for the establishment of a Media Commission (including an Online Safety Commissioner) which would replace the Broadcasting Authority of Ireland ('BAI').⁶² The Media Commission's powers will be extended to policing content uploaded on social media websites. This will allow them to address issues such as children's access to harmful content and adult material by enforcing policies such as requiring parental controls and age verification tools on websites. The Bill proposes investigatory and compliance powers for the Media Commission, including administrative financial sanctions.
- 3.61 Given the foundational nature of ECS services in the digital economy, an awareness of these developments is essential. As will be discussed below, in December 2020, the European Commission has also made two legislative proposals for the regulation of digital platforms.

The Future of Regulation in the Sector

- 3.62 The final key trend identified relates to the rate of change of regulation in the sector. With the recent formation of a new government and a new European Commission, a range of developments in the regulation of the ECS and related sectors will arise during the course of this strategy statement. The European Commission has made 'A European Green Deal' and 'Making Europe fit for the digital age' two of its key pillars for its current mandate. Both of these pillars have implications for the development of regulation in the ECS and related sectors. At the same time, the 2020 Programme for Government has committed to the publication of a National Digital Strategy and to bolster ComReg's enforcement powers. A number of the key developments that will take place in relation to the regulation of the sector (and related markets) are discussed in detail below.
- 3.63 The Code was to be transposed by Member States by 21 December 2020. ComReg understands that the Code is now unlikely to be transposed into national law until late Q2 2021 at the earliest. However, in the interim electronic communications providers must continue to comply with all their obligations, under the current regulatory framework. ComReg continues to regulate the electronic communications sector under its existing powers, and redress mechanisms continue unchanged until new legislation is introduced. The Communications Regulation Act 2002 continues in force (without further change/amendment) and the suite of 2011 Electronic Communications Regulations continue in force until further legislation is introduced, which amends or repeals them.

⁶⁰ Digital Services & Online Safety Survey, (2021), ComReg Document 21/09

⁶¹ Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media, (2020). Online Safety and Media Regulation Bill <https://www.gov.ie/en/publication/d8e4c-online-safety-and-media-regulation-bill/>

⁶² Online Safety and Media Regulation Bill

3.64 By 21 December 2025, and every five years thereafter, the Commission is required to review the functioning of the EECC and report to the European Parliament and to the Council. Those reviews will evaluate in particular the market implications of the operation of the EECC 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 the electronic communications sector continues to thrive to the benefit of end-users. In addition, by 21 December 2025, and every five years thereafter, the Commission must 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 where necessary. Furthermore, BEREC is required, by 21 December 2021 and every three years thereafter, to publish an opinion on the national implementation and functioning of the General Authorisation, and on their impact on the functioning of the internal market.

Legislative Changes and Developments

3.65 Over the coming period there will be a number of legislative changes and developments that will impact ComReg's role and mandate. ComReg, in its preparation of this ECS Strategy, has considered the impact of these legislative developments. Throughout this document, where appropriate, ComReg has sought to address these developments.

- **Consumer Protection mandate:** The EU has been developing its New Consumer Agenda and this is contributing to the development of ComReg's mandate under Irish Law. The Consumer Rights Bill is now in the government's Spring Legislative Programme to transpose the relevant EU Directives, and to update and consolidate the statutory provisions on consumer rights and remedies in relation to contracts for the supply of non-digital services, unfair contract terms, and information and cancellation rights. National legislation is also being developed for ComReg in respect of the Consumer Protection Cooperation Regulation.
- **Cybersecurity Strategy for the Digital Decade:** ComReg has an evolving role under this EU strategy including: the Directive on Security of Network and Information Systems (NIS Directive and proposed NIS 2 Directive) both in respect of the inclusion of electronic communications as an essential service and the related digital infrastructure sector; the Telecoms Security Rules resulting from the 2019 EU Recommendation 2335; and the legislative proposal for additional measures on critical infrastructure protection. ComReg seeks to ensure effective and efficient legislative development to enable compliance by telecom operators and digital businesses to protect the infrastructure for delivery of their essential services.
- **Broadband Cost Reduction:** ComReg is participating in the delivery of the toolbox of best practices resulting from the review of the Broadband Cost Reduction Directive. ComReg foresees a continued role in this area as the requirements evolve.
- **Privacy and Electronic Communications:** ComReg's role in respect of electronic privacy is evolving and ComReg has a continued input into the

development and subsequent implementation of the proposed EU E-Privacy Regulation and EU proposed derogation from the Privacy and Electronic Communications Directive 2002/58/EC (Irish S.I. No. 336 of 2011). These proposals are still being debated at EU level, and, in the interim, ComReg's monitoring and enforcement role continues under the old Directive (2002/58/EC).

- **Market Surveillance:** ComReg is the designated Market Surveillance Authority in respect of two EU Directives - the Electromagnetic Compatibility Directive⁶³ ('**EMCD**') and the Radio Equipment Directive⁶⁴ ('**RED**'). As the Market Surveillance Authority for the Radio Equipment Directive, ComReg is also responsible for the safety requirements of the Low Voltage Directive⁶⁵ ('**LVD**'), as they apply to radio equipment. The purpose of market surveillance is to prevent non-compliant products from entering the market, anywhere in the EU, and to seek out and remove non-compliant products which have entered the market. The new EU "Goods Package" Regulation (EU) 2019/1020 on market surveillance and compliance of products applies from 16 July 2021. The EU Regulation will bring in a number of important changes that will drive ComReg's evolving role as a Market Surveillance Authority including:
 - A requirement for an EU-based economic operator responsible for certain compliance tasks for products that fall under the regimes listed (broadly, the CE marking regimes).
 - Responsibilities for fulfilment service providers in respect of products that fall under the legislation listed and are handled by them where there is no other EU-based economic operator with responsibility for compliance.
 - A minimum set of powers that Member States must provide to their market surveillance authorities.
 - A requirement for Member States to lay down rules for penalties for breaches of legislation to the extent they have not already done so.
 - The ability for Member States to authorise their market surveillance authorities to "the totality of the costs of their activities with respect to instances of non-compliance" from the relevant economic operator in certain circumstances.
 - Provisions to increase the exchange of market surveillance related information between market surveillance authorities, including the establishment of a Union Product Compliance Network that will be composed of representatives from each Member State.
 - Provisions to increase cooperation between customs authorities and market surveillance authorities, including specific details on the

⁶³ The EMCD is transposed into Irish law by way of the European Union (Electromagnetic Compatibility) Regulations 2017 (S.I. No. 69/2017)

⁶⁴ The RED is transposed into Irish Law by way of the European Union (Radio Equipment) Regulations 2017 (S.I. No. 248/2017).

⁶⁵ The LVD is transposed into Irish Law by way of the European Union ((Low Voltage Electrical Equipment) Regulations 2016 (S.I. 345/2016)

release for free circulation of products, suspension of release for free circulation and refusal to release for free circulation.

New EU Proposals and Expected Future Proposals

- 3.66 As noted above, the European Commission has made ‘Making Europe fit for the digital age’ a key pillar of its current mandate. To achieve this, its digital strategy sets out a number of initiatives related to the ECS sector. It proposes an update of the Broadband Cost Reduction Directive, an Updated Action Plan on 5G (and 6G), a new Radio Spectrum Policy programme and an initiative on 5G Corridors.⁶⁶
- 3.67 As noted above, although a wide array of benefits have been created by digitalisation, it is becoming increasingly clear that the digital economy poses a wide range of challenges. In December 2020, the European Commission published the Digital Services Act (**‘DSA’**) and Digital Markets Act (**‘DMA’**) legislative proposals. Together, these proposals amount to a paradigm shift in the regulation of digital platforms in Europe.
- 3.68 The DMA will establish an ex ante regulatory framework for specific digital platforms designated as “Gatekeepers”. These gatekeepers will be subject to a set of obligations and prohibitions which seeks to ensure contestable and fair markets in the digital sector. The DSA will set out “uniform rules for a safe, predictable and trusted online environment.” Online intermediaries will be required to take due diligence measures to protect users from illegal content online, while at the same time ensuring transparency on content moderation and the rights of the affected users. These rules aim to better protect consumers online and foster innovation, growth, and competitiveness in the single market.
- 3.69 ComReg has been closely monitoring these developments. Given the need for strong collaboration in Ireland between sectoral regulators in the digital sphere, ComReg is engaging with the Economic Regulators Network (**‘ERN’**), in particular with colleagues from the Competition and Consumer Protection Commission (**‘CCPC’**) and the BAI on the topics of digital regulation. At the same time, ComReg has also contributed to the work of BEREC on these issues, with a particular focus on the DMA. Parallels have been drawn between the DMA proposal and the ex-ante regulatory framework applied in the ECS sector. As such, ComReg’s experience in the ECS sector may be relevant as the debate on these proposals evolves.
- 3.70 A legislative proposal on AI is also expected in 2021. ComReg will continue to monitor these developments and engage with the ERN and relevant government departments, as necessary. These matters are further discussed in Chapter 8 of this ECS Strategy.

Climate Change and ECS

- 3.71 Responding to Climate Change has become a key priority at both European and national level. There is also increasing awareness and attention being placed on the relationship between the ECS sector and climate change. On one

⁶⁶ Communication From The Commission To The European Parliament, The European Council, The Council, The European Economic And Social Committee And The Committee Of The Regions, Shaping Europe’s Digital Future, 19.2.2020 COM(2020) 67 Final

hand, the ECS sector can be an enabler for decarbonisation, enabling greenhouse gas emission ('**GHGE**') reductions across sectors of the economy, from remote-working to smart agriculture, to smart meters, among others. On the other hand, the digitalisation of the economy and ever greater use of ECS services could potentially increase the carbon footprint of the sector itself and increase e-waste.

- 3.72 The European Commission has emphasised the importance of a sustainable digital sector. It will consider measures to improve the circular economy performance of the digital sector as well as its energy efficiency, ranging from ECS networks to data centres to ICT devices.⁶⁷ In addition to assessing the need for more transparency on the environmental impact of ECS and more stringent measures when deploying new networks, the importance of the circular nature of devices has been highlighted in the Circular Economy Action Plan. Internationally, a number of regulatory bodies in the ECS sector have begun taking action on this topic, including Arcep⁶⁸ (the French ECS regulator) and the Radio Spectrum Policy Group⁶⁹ ('**RSPG**'). ComReg is also actively contributing to the work of a newly formed expert networking group on Sustainability at BEREC.
- 3.73 Given the breadth of initiatives that will be pursued to assess and address the carbon footprint of the ECS sector in the coming years, this is a key trend which ComReg will need to monitor.

Explanatory Box 7: Call for Inputs - Connectivity and Decarbonisation

In December 2019, ComReg published a Call for Inputs on Connectivity and Decarbonisation.ⁱ The purpose of the Call for Inputs was to enable ComReg to better understand the electronic communications sector's relationship with climate change, including how the sector can assist in facilitating decarbonisation across the economy, how the sector can reduce its own carbon footprint and how it can adapt to a changing environment.

ComReg received seven responses to the Call for Inputs which were subsequently published.ⁱⁱ The Call for Inputs and the responses received highlighted that the ECS sector can be an enabler for GHGE reductions across a variety of sectors of the economy, such as transport, electricity, industry and agriculture. Notably, respondents from beyond the ECS sector (e.g. energy, agriculture) emphasised the reliance they will place on connectivity to deliver reductions in GHGE in the coming years.

At the same time, ECS operators highlighted their ongoing efforts to estimate and reduce the GHGE associated with their operations. Several operators noted their documented targets and future plans to decarbonise and highlighted the environmental benefits associated with the transition to fibre, from copper networks.

ⁱ ComReg Document 19/126 ⁱⁱ ComReg Document 20/27

⁶⁷ Communication From The Commission To The European Parliament, The European Council, The Council, The European Economic And Social Committee And The Committee Of The Regions. The European Green Deal COM/2019/640 Final

⁶⁸ For Example, Arcep, (2020), "Networks And The Environment", <https://en.arcep.fr/news/press-releases/view/n/networks-and-the-environment.html>

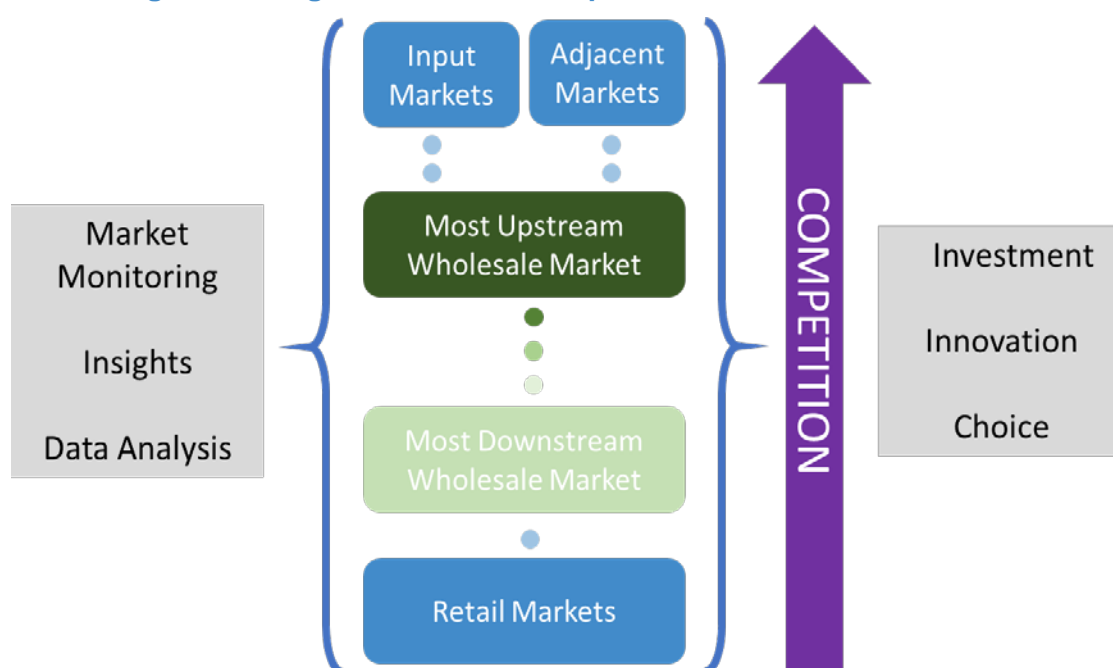
⁶⁹ RSPG, (2019), "Work Programme For 2020 And Beyond"

4. Competition & Investment

Introduction

- 4.1 ComReg's guiding principle is that effectively competitive markets deliver optimal outcomes in terms of investment and price, quality, choice and innovation, ultimately to the benefit of consumers and society. However, markets in the electronic communications sector have certain characteristics, e.g., the presence of market power arising from control of infrastructure bottlenecks, which mean that, if left unregulated, it is likely that investment would occur more slowly, that end-users would have less choice, and that prices would be higher (see Chapter 2).
- 4.2 Over the past five years, end-users in Ireland have benefited from access to new networks offering high-speed data communications both at fixed locations and on the move. Regulation has been a critical factor in enabling this investment to occur. Decisions made by ComReg have created a competitive incentive to invest in new networks and to upgrade existing ones.
- 4.3 This Chapter sets out ComReg's strategic goals associated with the first high-level strategic intent, that the electronic communications sector in Ireland is a **competitive sector that delivers efficient investment, innovation and choice**. As illustrated in Figure 8, ComReg's view is that regulatory actions by ComReg play a key role in facilitating competition and encouraging efficient investment across Ireland.
- 4.4 When carrying out its functions in pursuit of this first strategic intention, ComReg will consider appropriate measures to promote competition (e.g. facilitating expansion of existing market players and new entry) and encourage investment where objectively justified and proportionate and minimise distortions in those markets directly affected, as well as in related markets.
- 4.5 ComReg recognises that regulating in an evolving market is a dynamic process, requiring continual monitoring, updating and adjustment, and that over time, the scope of regulation should reduce as sustainable competition becomes entrenched.

Strategic Intent 1:	A competitive sector that delivers efficient investment, innovation and choice.
What does this look like?	<ul style="list-style-type: none"> • There is clear evidence of: <ul style="list-style-type: none"> - Sustainable competition over time - Innovation in electronic communications and in related markets, and - Consumers exercising choice • Infrastructure coverage that enables all end-users to participate in the digital society • Wholesale ECS services that meet market demand • Regulatory certainty allows for efficient investment • A sector that is attractive to investors

Figure 10: Regulation drives Competition and Investment

4.6 ComReg has a range of tools at its disposal relating to competition and investment. These include:

- Imposing regulatory obligations on firms found to have Significant Market Power (SMP) in a market, with such obligations designed to facilitate competition and efficient investment, including setting wholesale prices in absolute and relative terms.
- Imposing regulatory obligations to provide 'symmetric' access to local infrastructure facilities.
- Setting the regulated cost of capital for electronic communications and broadcasting markets.
- The allocation and assignment of Spectrum resources.
- The allocation and assignment of numbering resources.

4.7 This Chapter proceeds by first giving an overview of the state of competition in fixed and mobile markets and the levels of investment in ECS and ECN over the last five years. There is then a discussion of ComReg's goals relating to retail and wholesale markets, including the need for regulatory certainty and efficient investment in these markets. Finally, the Chapter concludes with ComReg's proposals relating to key essential inputs – spectrum and numbers.

Competition in Fixed and Mobile Markets

Overview

- 4.8 Ireland, as a small country of 5 million people⁷⁰, has retail communications markets that are national in nature. In general, these retail communications markets operate with multiple different Service Providers selling services such as fixed voice, mobile voice and home broadband in a variety of ways, and often bundled with other services sold in adjacent related markets (e.g. TV broadcasting). In some cases, these markets may not be competitive, and so ComReg may need to intervene to ensure services are offered.
- 4.9 The competitive conditions in retail communications markets depend heavily on the nature of the underlying competitive conditions in upstream wholesale markets. The competitive conditions in wholesale markets depend on their ability to sustain competing networks. As these wholesale markets evolve, they are less likely to be national in nature, with different network providers imposing competitive constraints in different regions.
- 4.10 The EECC places a somewhat greater emphasis on only regulating wholesale markets to address competition problems in downstream retail markets. Where improvements in innovation and competition are emerging, wholesale markets can be deregulated over time, through a market analysis process.

ECS and the competitive landscape of Ireland

- 4.11 As set out in Chapter 3, the competitive landscape in Ireland is not uniform. Some parts of Ireland, where population and premises density and economic activity are higher, are for the most part, well served by ECN, with a variety of networks and providers offering both retail and wholesale services. Competitive forces in these areas have led to greater investments in networks, offering consumers faster speeds over fixed networks (up to 1Gbps in some cases) and more reliable mobile and wireless services. In some of these areas, the competitive forces in certain markets may be strong enough such that ComReg may not need to intervene on an *ex-ante* basis⁷¹. Over the coming period, ComReg expects that retail competition and investment in some of these areas can deliver greater choice for consumers, in many cases without the need for *ex-ante* regulatory intervention. Over the last number of years the market review process (discussed later in this chapter) has allowed us to scale back the geographic extent of regulation in certain wholesale markets.
- 4.12 In general, over time, greater or “deeper” investment is made by competing network operators in more densely populated areas than in other less densely populated areas where such investment cannot be supported by a more thinly spread subscriber base. Outside of these densely populated areas, there will likely remain a need for *ex-ante* regulation to one degree or another. Lower population densities, more difficult terrain and higher network deployment costs mean that competitive forces are not as strong as in urban centres. Typically,

⁷⁰ The Central Statistics Office published population statistics for April 2020. <https://www.cso.ie/en/releasesandpublications/er/pme/populationandmigrationestimatesapril2020/#:~:text=2001%20population%20estimates.,See%20table%201.,Irish%20nationals%20returned%20from%20abroad.>

⁷¹ However, *ex ante* regulation may remain in some of these markets where competition concerns persist.

these areas may only be served by one or two fixed networks, usually including the incumbent provider. Regulation in these areas ensures that the incumbent provider maintains its network to an adequate standard and grants wholesale access to enable the provision of downstream services. Over the coming period, ComReg expects commercial investments by network operators in these areas will lead to the availability of faster broadband services. However, the extent of network competition is likely to remain lower relative to urban areas, requiring ex-ante wholesale regulation, as appropriate, to ensure a competitive retail market.

- 4.13 Similarly, mobile and wireless network operators have typically focussed investments in areas where population density is greatest and later expanded network coverage along transport infrastructure routes and into more sparsely populated areas.
- 4.14 In the most remote parts of Ireland, where population/premises densities are lowest, investments in fixed and high-speed mobile network deployment may not be commercially viable for private investors. As a result, the availability of some ECS is limited by the quality of the networks. While Eircom, as the USO provider, continues to provide universal telephony services, broadband services available to approximately 540,000 premises across the State are slower (less than 30Mbps) or non-existent. Through state-aid intervention⁷², the Irish Government, via National Broadband Ireland ('NBI'), is investing in FTTH broadband access for these premises, with appropriate wholesale access and related obligations, ultimately to ensure competitive outcomes at the retail level. Over the coming period, a major role for ComReg in this area is to ensure NBI can access and avail of Eircom's various physical infrastructure assets and regulated products. ComReg will also consider NBI's impact when carrying out its market analyses. In addition, ComReg also continues to provide technical advice to DECC in matters relating to NBI's role and State Aid generally where ComReg has relevant expertise.
- 4.15 As noted in Chapter 3, developments in related markets are important from a competition perspective. In particular, ComReg recognises that investment and innovation in the electronic communications sector will come not only from traditional ECS operators in fixed and mobile markets, but also from other operators, such as Over the Top ('OTT') service providers. In addition, ComReg recognises that innovations in other markets (e.g. digital markets and mobile handset markets) can often lead to changes in the competitive dynamics of the electronic communications sector.
- 4.16 In addition, there are a number of key inputs to communications markets, such as the allocation of spectrum and numbering resources, required to make these markets operate in the best interest of consumers. These are discussed below.

Competition on fixed networks

- 4.17 Competition involving fixed ECN can be thought of as being on a spectrum

⁷² In 2008 the Irish Government awarded a contract to Three Ireland to provide broadband to the areas under the National Broadband Scheme (NBS) for rural areas. Although this scheme came to an end in August 2014, many rural users still depend on the mobile broadband service provided by Three Ireland on a commercial basis.

between service-based competition and infrastructure-based competition⁷³. Pure service-based competition is where entrant operators utilise or resell the network of another operator to supply their own services, without making infrastructure investments of their own. Pure infrastructure-based competition is when operators rely entirely on their own infrastructure and do not rely on inputs supplied by other operators. In practice, the majority of operators are somewhere between these two extremes and compete using a mix of their own infrastructure and rental access to others' networks. In addition, some operators will decide to only offer services to other operators in a wholesale market. The benefits of both forms of competition and the ladder of investment approach towards infrastructure-based competition are discussed in the explanatory box below.

Explanatory Box 8: The Ladder of Investment

Certain industries (like electronic communications, electricity and water) have high barriers to entry such that, without regulatory incentives, entrants may be unable to surmount entry barriers and compete with the incumbent.

In the presence of these entry barriers, access regulation allows entrants to compete with the incumbent via service-based competition. This promotion of competition can drive down prices and improve choice for consumers, for example, by allowing an operator to offer a full bundle of services. However, it does not deliver the level of variety or innovation that can be found in the presence of infrastructure-based competition (where entrants build out their own infrastructure rather than relying on that of the incumbent).¹

To promote infrastructure-based competition, the 'ladder of investment' approach proposed by Martin Cave notes the importance of encouraging investment by both incumbents and new entrants. In the short term, entrants rely on access regulation to compete. However, as the size of their customer base and revenues increases over time, entrants can gradually increase their own investments and roll out their own networks. The ladder involves a number of 'rungs' which the competing providers can 'climb', as a competitor climbs these rungs they are required to make greater investments but this is rewarded with greater control over the network as well as being able to utilise scale and increase their operating margin. The rungs can range from pure resale of the incumbent's services to unbundling which gives the competitor access to the connection into the home and nothing else.

The shift from service-based to infrastructure-based competition over time will unlock the full benefits of competition and reduce the need for future regulation. This approach attempts to balance the trade-off between short-term gains from service-based competition without impeding infrastructure-based competition in the longer term.

¹ Cave, M., (2006), *Encouraging Infrastructure Competition via the Ladder of Investment. Telecommunications Policy, Volume 30 (Number 3-4), pp. 223-237.*

- 4.18 In Ireland, Eircom is the former incumbent monopoly fixed network provider. Eircom has a legacy network which has almost ubiquitous coverage of the more than 2 million premises in the State. Over the last decade, Eircom has also been upgrading its legacy access network with new fibre to the cabinet (FTTC) and fibre to the home (FTTH) technologies. These technologies pass about 2 million

⁷³ In many cases, an operator may use a variety of wholesale products in different areas to provide national coverage. This could include rolling out their own network assets in one area (e.g. FTTH), investing in network backhaul to avail of wholesale unbundled products (e.g. VUA) in another area, and buying wholesale bitstream products in another part of the country. In addition, some operators decide to offer only wholesale services, or business-only services (e.g. connections with dedicated capacity).

premises, currently serving approximately 798,000 subscribers.⁷⁴

- 4.19 As noted previously, Eircom faces varying degrees of network competition from other operators across parts of Ireland. Virgin Media’s network passes 946,500 premises (almost all of these being homes in urban areas), with 383,000 broadband subscribers.⁷⁵ SIRO, a joint venture between Vodafone and the ESB, commenced the rollout of an FTTH network in 2015 and, to date, has passed about 369,000 homes⁷⁶, largely outside of the Virgin Media footprint. There are also a number of other network operators, e.g., Magnet, with smaller fibre networks.
- 4.20 Eircom also faces competition from BT, Vodafone, Sky and a variety of other players (including fixed wireless operators) who have made varying levels of infrastructure investment, in large part due to the availability of wholesale access products mandated through SMP regulation. As is to be expected, the extent of infrastructure rollout is typically deeper in urban areas where the population/premises densities are greater.

Competition on mobile networks

- 4.21 There are three main sources of competition in the retail mobile market, as set out in Table 1 below. First there is network-level competition between the three mobile network operators (**‘MNOs’**), where each operator obtains spectrum rights of use and builds a mobile network to provide services. Second, there is a form of service-based competition which involves so called mobile virtual network operators (**‘MVNOs’**) purchasing capacity from one of the mobile network operators, instead of building their own mobile access network (base station transmitter, antenna and associated backhaul). Finally, there are sub-brands, owned and operated by an MNO. A sub-brand is typically part of a commercial strategy pursued by an MNO to address and serve segments that cannot be reached with the MNO’s main brand, and may be used by MNOs to segment their customer-base, e.g., in relation to price-sensitivity and quality.

Table 1 – Operators in the Retail Mobile Market⁷⁷

Mobile Network Operators (MNOs)	Mobile Virtual Network Operators (MVNOs)	MNO Sub-Brands
Eircom Three Ireland Vodafone Ireland	Lycamobile Post Mobile Tesco Mobile Ireland Virgin Mobile	Gomo (Eircom) 48 Mobile (Three Ireland) Clear Mobile (Vodafone)

- 4.22 A key difference exists between competition on fixed and mobile networks. On the fixed side, the incumbent operator Eircom is required by regulation to offer wholesale access products to other service providers and thus facilitate the emergence of competition. By contrast, no such regulatory measures are in place, or have been deemed necessary, with respect to mobile networks (see

⁷⁴ Eircom Group Results for the second quarter FY21 to 31 December 2020 https://www.eir.ie/opencms/export/sites/default/.content/pdf/IR/presentations/2020_2021/eir_Q2_FY21_results_presentation.pdf

⁷⁵ Liberty Global Q4 2020 Fixed Income Release <https://www.libertyglobal.com/wp-content/uploads/2021/02/Fixed-Income-Q4-2020-Release.pdf>

⁷⁶ <https://siro.ie/>. Accessed on 18th March 2021.

⁷⁷ Cubic Telecom is headquartered in Ireland, but does not operate as an MVNO in Ireland, and relies instead on roaming agreements for its Irish connectivity

Explanatory Box 9 below for a discussion of the markets susceptible to ex ante regulation).

- 4.23 Competition in mobile networks also includes the presence of network sharing arrangements. These provide for two or more network operators sharing certain parts of their networks. In mobile networks, these arrangements can range from the sharing of passive infrastructure (such as sites, masts and antennae) to more active parts of their network including some core infrastructure. The main potential benefit for mobile operators is the reduction of cost.⁷⁸ On the downside from a regulatory perspective there may be a risk of a diminution of competition if operators lose control over some network operations and strategic technology choices.
- 4.24 The rollout of 5G services in Ireland is still at the early stages with mobile operators only recently having launched 5G services in 2019 and 2020. Similar to the rollout of other mobile technologies, the rollout of 5G networks has firstly focussed on the denser populated areas of Ireland, being the cities and larger towns across the country, where the economics of network rollout and ability to serve customers are more favourable. Over the coming period the rollout of 5G networks is likely to advance further as spectrum in the Multi Band Spectrum Award is released, in particular the 700 MHz band, and new 5G enabled handsets become available and other businesses cases become viable.
- 4.25 In addition, the investments made in mobile networks to date have allowed mobile voice and data networks (such as 3G or 4G) to be rolled out to areas currently unserved by fixed networks. All MNOs now claim to have at least 98% 4G population coverage and have launched 5G networks⁷⁹. Three claims to have 98% 4G coverage throughout Ireland and that its 5G network covers 35% of the population.⁸⁰ Vodafone claims to have over 99% 4G population coverage and was the first MNO in Ireland to launch a 5G Network⁸¹, while Eircom claims to have 99% 4G population coverage and 55% 5G population coverage.⁸² When compared with other EU member states, Ireland ranks above average in terms of 4G population coverage.⁸³ These investments have been made on the back of the 3G data network, which is still available where 4G services are not yet available. However, there are still geographic areas unserved by 4G networks, due to a variety of factors, including population density and difficult terrain (e.g. mountains). It remains to be seen how this pattern of investment might play out in future mobile rollouts.

The state of competition in retail markets – fixed and mobile

- 4.26 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

⁷⁸ Communities can also be favourable to sharing arrangements as it can reduce the number of cell-sites required to provide service or they get access to connectivity sooner due to reduced network deployment costs for the operators.

⁷⁹ See <https://n.vodafone.ie/network/5g.html> <https://www.three.ie/coverage-checker/> <https://www.eir.ie/5G/>

⁸⁰ <https://www.three.ie/coverage-checker/> (Accessed 12 January 2021) and <https://www.ericsson.com/en/news/3/2020/ericsson-and-three-launch-5g-in-ireland>

⁸¹ <https://n.vodafone.ie/terms/network-coverage.html> (Accessed 12 January 2021) and <https://n.vodafone.ie/aboutus/press/vodafone-ireland-switches-on-first-5g-network-in-five-cities.html>

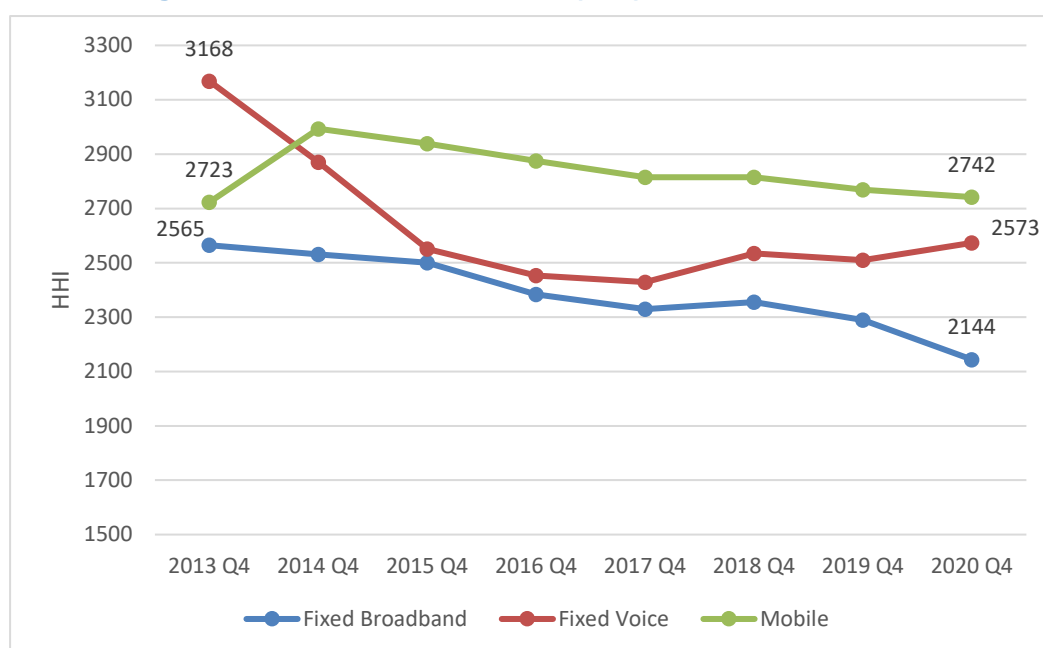
⁸² Eircom Group Results for the second quarter FY21 to 31 December 2020

⁸³ European Commission, Digital Economy Society Index - Connectivity

concentration used to determine market competitiveness.⁸⁴ The higher the market's concentration (suggestive of weaker competition), the higher the HHI.

- 4.27 With respect to the fixed markets, the gradual decline in retail market concentration, which is consistent with a much longer-term trend, for voice and broadband is indicative of increased competition in these markets. As infrastructure competition intensifies, with the rollout of VHCN networks, including the NBI rollout, further gains will be made in the HHI. Service-based competition will increase alongside infrastructure-based competition as these service providers seek to offer consumers the best available network and buy wholesale inputs from a variety of infrastructure-based service providers.
- 4.28 With respect to the mobile market, following an increase in concentration in 2014 owing to the merger between Hutchison 3G and Telefónica O2, concentration in the mobile market has steadily decreased since 2014. The Irish mobile market is now a three MNO market, with a number of MVNOs and sub-brands providing competitive pressures. Notwithstanding the launch of various sub-brands such as GoMo, Clear Mobile, and 48 Mobile in 2020, the Irish mobile market remains the most heavily concentrated subsector within the Irish electronic communications sector.

Figure 11: Retail Concentration (HHI), 2013 – 2020⁸⁵



Investment in ECS

- 4.29 Private investment in the electronic communications sector increased over the period 2011 to 2019, as shown in Figure 12. Over this nine-year period, total investment amounted to €5.5 billion.⁸⁶ Aside from the peak in 2012 - at 19% -

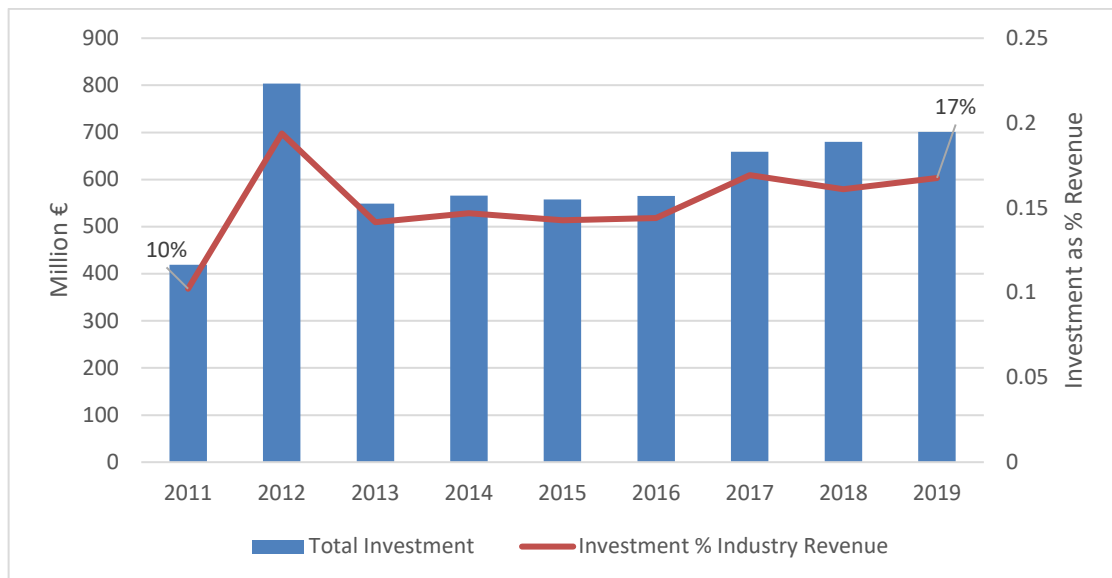
⁸⁴ It is calculated by squaring the market share of each firm competing in a market and summing the resulting numbers. The higher the number the more concentrated the market, with a pure monopoly having a HHI of 10,000. A market split exactly five ways would have a HHI of 2,000.

⁸⁵ ComReg QKDR Q4 2020, (2021), ComReg Document 21/20

⁸⁶ The peak in 2012 corresponds to ComReg's Multi-Band Spectrum Award.

corresponding to ComReg’s Multi-Band Spectrum Award, the trend depicts steady or slightly increasing investment as a percentage of overall industry revenue, averaging approximately 15% over the period.

Figure 12: Investment in ECS/ECN (Ireland, €million)⁸⁷



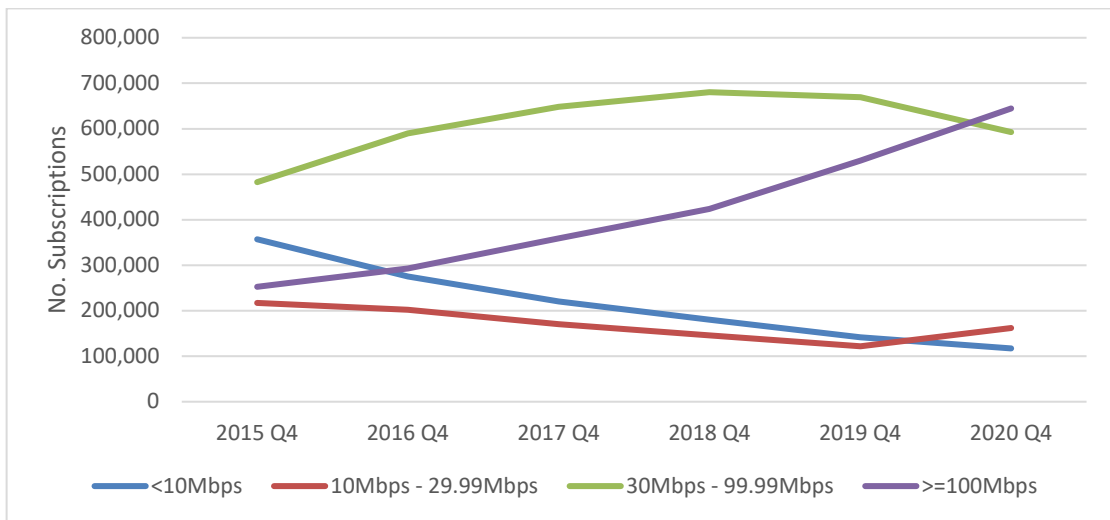
4.30 Operators have invested in both fixed and mobile networks. Over the period 2016 to 2020, there has been a marked increase in subscription speeds driven by the rollout of VDSL, cable and fibre technologies (see Figure 13 for the number of subscriptions by sold speed between Q4 2015 and Q4 2020⁸⁸). By Q4 2020, 81.6% of all fixed broadband subscriptions were at least 30Mbps, by sold download speed.⁸⁹ On the basis of the proposed NBI rollout and the various rollout plan announcements made by industry, by the end of 2026 it is quite possible that the vast majority of households and businesses in Ireland will have access to high speed broadband (30Mbps or greater download).

⁸⁷ Eurostat and ComReg Quarterly Key Data Report

⁸⁸ Prior to Q1 2019, ComReg collected information from operators relating to advertised download speed. Since Q1 2019, sold download speed information has been collected from operators. There are minor differences in the definitions of advertised and sold speeds.

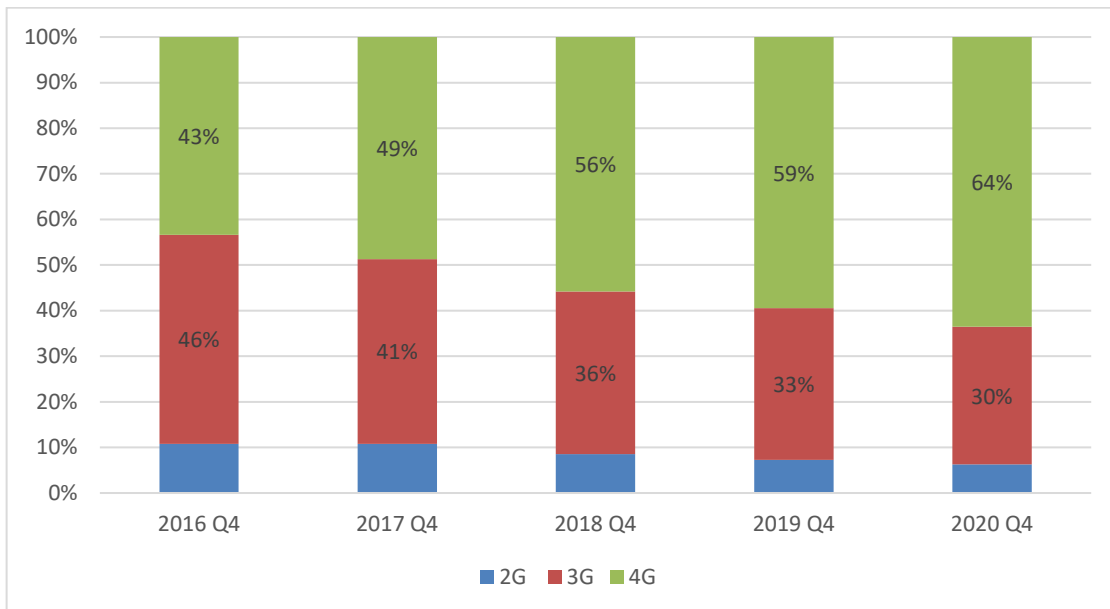
⁸⁹ ComReg QKDR Q4 2020, (2021), ComReg Document 21/20

Figure 13: Broadband Subscriptions by Speed (Q4 2015-Q4 2020)⁹⁰



4.31 With respect to mobile networks, roll out of 4G networks has continued since ComReg’s previous Five Year ECS strategy and this has been associated with a considerable rise in 4G subscriptions. As set out in Figure 14 below, by Q4 2020, 4G accounted for 64% of mobile subscriptions, compared with 43% in Q4 2016. The rollout of 5G networks which began more recently, will probably take a number of years before they are used by the majority of subscribers. The introduction of 5G handsets and various IoT and M2M applications will help advance the rollout of these new networks.

Figure 14 - Mobile Subscriptions by Technology (Q4 2016 – Q4 2020)⁹¹



⁹⁰ ComReg QKDR Q4 2020, (2021), ComReg Document 21/20

⁹¹ ComReg QKDR Q4 2020, (2021), ComReg Document 21/20

Competition & Investment

Retail Competition

- 4.32 Over the last 25 years, as the sector has moved from state monopoly to competition, the number of operators who are providing retail services has grown significantly. Over that period there has been a steady decline in regulation of retail electronic communications markets. The deregulation of these retail markets has been predicated on the introduction of effective regulation at the wholesale level, where persistent bottlenecks arise (discussed below).
- 4.33 Today, consumers can buy a variety of ECS from a choice of operators, competing against each other on price, network coverage, quality and speed. Consumers can choose to bundle services together or avail of standalone services and can switch between operators to get better deals.
- 4.34 ComReg aims to use its regulatory tools only where required to address market failures and assure optimal end-user outcomes. Indeed, the EECC notes that the role of *ex ante* regulation is to achieve effective and sustainable competition in retail markets. ComReg can therefore only impose upstream wholesale access obligations where one or more downstream retail markets are not likely to become effectively and sustainably competitive on a forward-looking basis without regulatory intervention.
- 4.35 In this context it is ComReg's goal that **there is effective and sustainable competition in retail ECN/ECS markets.**
- 4.36 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. An understanding of related markets will facilitate an awareness of the potential that the regulation of electronic communications markets has to impact innovation or the realisation of welfare gains. ComReg considers it important for ComReg to monitor the effectiveness of competition not only in the regulated markets themselves, but in other related markets within the wider ECS eco-system. This can include ECS markets that are no longer recommended for market analysis (such as wholesale access to mobile networks⁹²), markets involving the supply of essential inputs (such as access to physical network infrastructure), markets for products that are commonly bundled with ECS (such as broadcasting and media content), and markets for products that critically affect the end-user's experience of ECS (such as mobile handsets and IoT).
- 4.37 In this regard, ComReg has a number of key projects planned for the next two-year period:
- **Monitoring of Retail Markets** – To effectively regulate electronic communications markets, it is important to have an understanding of how

Goal 1.1

There is effective and sustainable competition in retail ECN/ECS markets.

⁹² See Explanatory Box 9 for a discussion of the Commission's recommendations on markets susceptible to *ex ante* regulation.

well markets are working, where the market failures are, and how different markets - fixed, mobile and related markets – affect one another.

- **Study of the Irish Mobile Market** – In 2020 ComReg engaged an external consultancy to assist in a study of the mobile market. This study is ongoing and will conclude in 2021.
- **Monitoring of Adjacent Markets** – With a view to informing ComReg’s various activities and projects, ComReg will monitor key related/adjacent markets (e.g. OTT and digital markets) as these markets have the potential to have disruptive effects on ECS markets.

Wholesale Markets and Access Regulation

- 4.38 A key market failure is that an operator might possess significant market power, i.e., the ability to operate without constraint from competitors. Unchecked, significant market power can lead to high prices, poor quality of service, or the prevention of the entry of competitors in other parts of the market which are potentially competitive.
- 4.39 ComReg has a number of regulatory tools at its disposal to intervene to control and mitigate the adverse effects of market failures where they occur in electronic communications markets. These tools include:
- Access obligations via the SMP Framework,
 - Ex-Post Competition Law, and
 - Provisions in the EECC to encourage efficient investment.
- 4.40 This toolkit helps ensure ComReg can intervene in communications markets to address persistent bottlenecks and barriers to entry, ensuring these markets deliver innovation and choice to consumers. This toolkit is complemented by ComReg’s other tools used to enhance connectivity (as set out in Chapter 6) and its various consumer protection, dispute resolution, and enforcement powers.
- 4.41 ComReg’s objectives are to only impose regulation in those markets where competition is not likely to be effective and, in doing so, to address competition concerns by imposing regulatory obligations at the most upstream level possible. In practice this typically involves regulation aimed at addressing bottlenecks at the wholesale rather than the retail level.
- 4.42 It is therefore ComReg’s goal that **there is effective and sustainable competition as far as is possible in wholesale markets, in the light of persistent bottlenecks and barriers to entry**. A lack of effective and sustainable competition in wholesale markets can undermine effective retail competition. ComReg uses the various tools in its toolkit to address persistent bottlenecks and barriers to entry in wholesale markets, to the benefit of downstream retail markets.

Goal 1.2

There is effective and sustainable competition as far as is possible in wholesale markets, in the light of persistent bottlenecks and barriers to entry.

Access Regulation – the SMP Framework

- 4.43 The ability to enter markets and grow market share by competing on the merits is fundamental to the notion of effective competition.
- 4.44 Under the regulatory framework, where an operator is identified as having significant market power in a given market, ComReg may impose a range of pro-competitive obligations as appropriate, including those relating to access, pricing, non-discrimination and transparency. Such obligations are designed to promote competition by enabling entrants to compete on a level playing field with the SMP operator. In this context it is important that access seekers enjoy an adequate quality of service in supply of wholesale inputs by the SMP operator. As set out in the EECC, markets have to be reviewed by ComReg every 5 years.

Explanatory Box 9: Markets Susceptible to Ex Ante Regulation

ComReg is responsible for assessing whether certain Electronic Communications markets in Ireland are effectively competitive. The European Commission's Recommendation on Relevant Markets sets out the list of predefined markets susceptible to *ex ante* regulation which ComReg is required to regularly review. Where operators are identified as holding Significant Market Power ('SMP') in these markets, ComReg imposes remedies adequate to address the market failures identified.

The European Commission's list of recommended markets has been regularly revised in order to take into account major developments in markets and technology at an EU level over the years. In 2003, the list included 18 markets.ⁱ In December 2020, the European Commission published its third revised list of Recommended markets.ⁱⁱ This list identifies two wholesale markets:

- Market 1: Wholesale local access provided at a fixed location
- Market 2: Wholesale dedicated capacity

ComReg, subject to certain conditions being satisfied, may also regulate markets not identified by the European Commission as being susceptible to *ex ante* regulation. ComReg regulates a number of markets on this basis.

The markets that ComReg currently regulates based on a finding of SMP are:*

- Access to the public telephone network at a fixed location for residential and non-residential customers (01/2007)
- Call origination on the public telephone network provided at a fixed location (2/2007)
- Wholesale Call Termination on Individual Public Telephone Networks Provided at a Fixed Location (01/2014)
- Wholesale Voice Call Termination on Individual Mobile Networks (02/2014)
- Wholesale local access provided at a fixed location (03a/2014)
- Wholesale central access provided at a fixed location for mass-market products (03b/2014)
- Wholesale high-quality access provided at a fixed location (04/2014)
- Broadcasting Market A – Wholesale Access to National Terrestrial Broadcast Transmission Services (18/2003)
- Broadcasting Market B – Wholesale Access to DTT Multiplexing Services (18/2003)

* The naming convention notes the market number and the year of the relevant recommendation. For instance, (02/2014) refers to Market 2 of the 2014 Recommendation.

The current set of Market Analysis Decisions are set on the ComReg website, here: <https://www.comreg.ie/industry/electronic-communications/regulated-markets-competition/regulated-markets/>

ⁱ <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:114:0045:0049:EN:PDF>

ⁱⁱ <https://ec.europa.eu/digital-single-market/en/news/commission-updated-recommendation-relevant-markets>

- 4.45 Where SMP regulation is necessary, ComReg will continue to focus on the imposition of obligations that encourage both infrastructure and service-based competition. However, ComReg's regulatory approach will seek to facilitate opportunities that enable greater infrastructure-based competition, where appropriate, as this ultimately enables the development of more effective and sustainable competition.
- 4.46 ComReg is required to undertake a review of various regulated markets every five years. In this regard, over the coming period ComReg plans to continue to monitor the various markets set out in Table 2 below and undertake market reviews where necessary.
- 4.47 In addition, ComReg notes that where an event, such as an acquisition or merger that has the potential to fundamentally change the nature of competition in the relevant wholesale market or downstream markets, ComReg may bring forward a formal market analysis to re-assess competition and examine the extent of any market failures and competition problems that arise from such an event.
- 4.48 Of particular note is the market for Physical Infrastructure Access (PIA). ComReg has not previously conducted a review of this market in its own right. Instead it has mandated access to Eircom's duct and poles as a remedy to the market for Wholesale Local Access. ComReg has now decided to explore the possibility of regulating PIA directly because it is the most upstream market that could potentially be regulated and therefore regulation here may afford the possibility of further de-regulation downstream. Furthermore, the use of PIA by other operators where it is viable provides them with a high degree of control over their product features and technology choices compared to, for example, the use of virtual unbundling. This has the potential to increase the dynamism of competitive forces.
- 4.49 In addition, ComReg intends to explore the opportunities afforded by various new regulatory provisions set out in the EECC in an Irish context (as discussed in Explanatory Box 10 below), as a complement to the SMP framework and having in mind the timely withdrawal of such regulation where appropriate. ComReg will also monitor relevant adjacent markets, including those markets which have been deregulated to assess that they continue to be effectively competitive.

Table 2: Proposed Market Reviews

Fixed and Mobile Termination
<ul style="list-style-type: none"> • These markets were last reviewed in May 2019, with the fixed termination market further updated in October 2020. • In December 2020 the EC adopted a single maximum European Union-wide termination rate, intended to come into effect in early 2021. • The European Commission has also removed termination markets from its 2020 Recommendation. • ComReg will further consider the implications for existing SMP regulation in these termination markets in light of these developments as part of its next market review cycle.
Physical Infrastructure Access
<ul style="list-style-type: none"> • Although not a market listed in the EC Recommendation on Relevant Markets, ComReg intends to conduct a Physical Infrastructure Access market review, generally relating to passive infrastructure such as ducts and poles which can be used for ECS/ECN. • This is in recognition of the desire to address competition bottlenecks at the most upstream level possible, to promote infrastructure over service-based competition and then to factor the impact of this in assessing the competitive dynamics in downstream markets. • The review is at the early stages of development, but it is expected that a final decision on this review will be adopted at least in parallel with its review of the WLA and WCA markets below.
Wholesale Local Access and Wholesale Central Access
<ul style="list-style-type: none"> • These markets were last reviewed in November 2018. • In line with the commitment given in its 2018 Decision, ComReg has commenced a mid-term assessment of the Wholesale Central Access (WCA) market, with a consultation having closed in mid-January 2021. This consultation proposed further de-regulation of the WCA market and ComReg expects to issue its decision in Q2 2021. • This market will be reviewed in line with the 5-year cycle, with its completion due in 2023.
Wholesale High Quality Access and Dedicated Capacity (WHQA/DC)
<ul style="list-style-type: none"> • This market was last reviewed in January 2020. • ComReg is continuing to engage with service providers in the collection of data, including at a granular geographic level, as part of its ongoing monitoring of this market. This should enable an in-depth and timely review of this market as part of the next market review 5-year cycle.
Retail Access to the Public Telephone Network at a Fixed Location and Wholesale Fixed Access and Call Origination
<ul style="list-style-type: none"> • These markets were last reviewed in 2014 and 2015 respectively. • A consultation on these markets was issued in June 2020, proposing to fully de-regulate the retail access market and partially de-regulate the wholesale access and call origination market. • ComReg expects to issue its decision in Q2 2021.
Wholesale Broadcasting transmission and distribution services
<ul style="list-style-type: none"> • Wholesale Broadcasting transmission and distribution services enable retail Free-to-Air TV programme service providers such as RTÉ, Virgin Media and TG4, and FTA national/quasi-national radio programme service providers such as RTÉ, Today FM and Newstalk, to broadcast their content to end users. • In February 2021 ComReg updated its 2013 decision on the Broadcasting Transmission Services markets (ComReg doc 21/14), which continues to regulate RTÉ / 2RN. Over the coming period we will continue to monitor developments in these markets, including the evolution of retail broadcasting.

Explanatory Box 10: Regulatory Tools in the EECC

The EECC introduces a number of new regulatory tools to address specific market failures and competition problems that may emerge in ECS markets. These include:

- Symmetric Access Obligations (Article 61 of the EECC) - obligations to provide 'symmetric' access to local facilities (to avoid 'inefficient' duplication and thus encourage effective competition through shared utilisation of bottleneck access infrastructure). ComReg may impose – upon reasonable request and regardless of any findings of SMP – access to wiring and cables and associated facilities inside buildings or up to the first concentration or distribution point as determined by the NRA. Access obligations may be imposed on electronic communication network providers or owners of such network elements, where replication of the network elements concerned would be economically inefficient or physically impracticable. Article 61 (3) authorizes ComReg to extend the imposition of access obligations (including active or virtual access obligations if justified) beyond the first concentration or distribution point up to a point capable of hosting a sufficient number of end-user connections to be commercially viable for efficient access seekers.
- Wholesale-only operators (Article 80 of the EECC) – To date no wholesale-only operator has been found to have SMP in an regulated wholesale market in Ireland and so there are no SMP-related regulatory obligations imposed on such operators. However, these operators are a key consideration in ComReg's assessment of SMP in various wholesale markets. Under the EECC, were ComReg to impose SMP obligations on a wholesale-only operator, the obligations would likely be limited to non-discriminatory access (Article 70), access to specific network elements (Article 73) or an obligation to charge fair and reasonable prices.

Timely withdrawal of regulation

4.50 Eircom has been designated as having SMP across a range of wholesale markets and ComReg has imposed a range of regulatory obligations on Eircom at the wholesale level designed to promote competition by enabling other operators to compete on a level playing field with Eircom.

4.51 Where wholesale regulation delivers effective competition in downstream retail markets, ComReg seeks to exit regulation of those retail markets. ComReg will also exit regulation of wholesale markets where effective competition develops. It is ComReg's view that while de-regulation of retail and downstream wholesale markets is desirable, this process depends to a large extent on the effectiveness of regulation in upstream markets, as appropriate. ComReg has in the recent past imposed proportionate remedies in wholesale markets which we believe will increase the likelihood of this occurring. In addition, ComReg has also deregulated some sub-national wholesale markets⁹³, where sustainable and effective competition can be found. The EECC provides that where ComReg removes regulation it has to be done in a way that is orderly and minimises disruption to the parties involved, competition and end users, while at the same time ensuring that regulation does not continue for longer than necessary. ComReg therefore has a goal to ensure that **sustainable and effective competition can allow for the timely withdrawal of regulation.**

Goal 1.3

Sustainable and effective competition can allow for the timely withdrawal of regulation.

4.52 Under this goal, over the coming period ComReg intends to continue to monitor

⁹³ ComReg deregulated the Urban WCA Market in 2018 (D10/18) and the Zone B MI WHQA Market in 2020 (D03/20)

regulated markets to ensure remedies are effective in addressing market failures and where possible to remove regulations where no longer necessary. ComReg's activities relating to active monitoring of regulated markets and remedies is further discussed in Chapter 7.

Ex-Post Competition Law

- 4.53 Following the introduction of the Communications Regulation (Amendment) Act 2007, ComReg was given the additional function of investigating ex-post competition law breaches in the electronic communications sector. ComReg shares this responsibility with the CCPC. ComReg has the power to carry out an investigation pursuant to a complaint or on ComReg's own initiative. Such investigations must be carried out on an ex-post basis, (i.e. after the fact) where the purported anti-competitive behaviour must either have occurred or be ongoing. It should be noted that the investigation of anti-competitive behaviour on an ex-post basis can also occur in electronic communications markets where ex ante regulation applies. Further details in relation to ComReg's role under competition law and the investigation of such complaints in the electronic communications sector is set out in its Guidance Notice on Competition Complaints.⁹⁴
- 4.54 ComReg will be provided with new competition powers resulting from the transposition of the ECN+ Directive by way of the Competition (Amendment) Bill currently undergoing pre legislative scrutiny. The Bill proposes to ensure that competition authorities have independence, sufficient resources and appropriate power of enforcement, including the ability to issue administrative financial sanctions. These enforcement powers would apply to prohibitions on undertakings from engaging in anti-competitive agreements and practices and the abuse of a dominant position. The Bill also provides for leniency programmes (which Ireland does not currently have). These powers have been long awaited and are welcomed. However, ComReg notes that changes in behaviour will only occur when effective deterrents, including the power to impose administrative financial sanctions, exist.

Investment and Regulatory Certainty

- 4.55 ComReg recognises that unregulated electronic communications markets may not function well enough to provide the right incentives for investment. In addition, even the best regulated markets may not deliver outcomes which are adequate. In particular, market-based incentives alone may not lead operators in electronic communications markets to make the investments necessary to deliver services to end-users in areas which are not commercially viable.
- 4.56 ComReg will employ measures aimed at driving, and safe-guarding, the competitive market process as the best and principal means of ensuring that operators invest: the greater the scope for driving competition, the greater will be the extent of commercial investment made by private operators to bring innovative products and services to market.
- 4.57 As noted previously, ComReg expects that investments in ECS over the coming

⁹⁴ Guidance on the Submission of Competition Complaints relating to the Electronic Communications Sector, Information Notice, ComReg Document 10/110, December 2010

period will largely be devoted to the rollout of new VHCN networks and mobile infrastructure to support 4G and 5G services. As these newer networks get rolled out, other older ECS networks and technologies will diminish in their use and importance in the sector, leading to a migration and eventual retirement.

4.58 The deployment of very-high capacity networks and new wireless technologies have a key role to play in supporting Ireland's economic growth and in acting as a driver of innovation. These technologies are key in enabling knowledge intensive industries, upon which our future economic growth and prosperity will depend. Creating a 'smart economy', a 'knowledge-led society' and carbon-neutral business environment, will increasingly rely on innovation in ECS markets. As the NRA for Ireland, ComReg's role is to facilitate innovation in

4.59 these markets to the greatest extent possible. ComReg does this by creating a stable investment environment and predictable regulatory regime, ensuring industry can develop and grow new products and services.

4.60 It is therefore ComReg's goal that **competitive incentives facilitate efficient commercial investment in new and existing infrastructure and services to the widest extent possible.**

Goal 1.4

Competitive incentives facilitate efficient commercial investment in existing and new infrastructure and services to the widest extent possible.

Price Signals

4.61 In general, ComReg has a preference for *infrastructure-based competition*, based on inter-platform competition as well as *access-based competition* at the deepest level possible. At all times, ComReg's wholesale pricing decisions aim to strike a balance between the following:

- Encouraging investment in VHCN (e.g. FTTH) by the network operators, whether by Eircom, Virgin Media, SIRO or other players where such investment is viable. It will be important that regulated access prices are not set so low that investment that would otherwise have been commercially viable is choked off;
- Encouraging viable investment in own infrastructure by those players who use access to others, particularly those who use regulated access to Eircom's network (i.e. moving up the ladder of investment);
- Ensuring that regulated prices reflect efficient practice and that excessive recovery by the incumbent operator (Eircom) does not happen;
- Ensuring that wholesale prices do not lead to price squeezes; and
- Wholesale prices do not lead to excessive end user prices.

4.62 It is also important that there is reasonable certainty about the trajectory of prices for all players, as far as possible. Insofar as existing price controls are concerned, where there are prices directed as part of the price control (including maximum prices), such prices will remain in place for the duration of the price control period, unless ComReg intervenes where there are material changes or exceptional circumstances.

- 4.63 At this time, ComReg does not have any plans to impose cost-orientated pricing obligations on Eircom's FTTH network. ComReg will continue to analyse the relevant competitive conditions and monitor the costs associated with Eircom's FTTH network. ComReg notes that a review of the wholesale pricing of Eircom's FTTH network will be well flagged in advance with industry and is not inevitable over the lifetime of this Strategy. Nevertheless, ComReg will monitor these wholesale prices and reserve its position on potential intervention if it judges that they are excessive in light of the risks involved.
- 4.64 Accordingly, while ComReg will monitor accounting (historic) cost recovery by Eircom this will be only one part of the assessment of the appropriateness of wholesale prices. Setting the most appropriate investment signals – especially the appropriate build or buy signals, will continue to be a critical part of ComReg's regulatory pricing policy - as it always has been. ComReg will continue to encourage investment at the deepest level of the network that makes economic sense.
- 4.65 In this regard ComReg considers that there is an opportunity to encourage investment using regulated access at the deepest level possible, which is by providing access to already existing passive infrastructure such as ducts and poles. Ensuring access in this way will require the provision of functional and efficient access to passive infrastructure by Eircom at prices that set the appropriate incentives for all players.
- 4.66 ComReg will also monitor access by NBI to Eircom's physical infrastructure assets to help contribute to the successful and timely rollout of the NBP.
- 4.67 Where additional investment is required to achieve desired market outcomes, beyond what would be delivered in an effectively competitive market, such investment should be undertaken in a manner which creates minimal market distortions and does not crowd out commercial investment. Further, creating the conditions for investment involves undertaking ComReg's regulatory functions in an appropriate and predictable fashion, thus providing regulatory certainty, increasing attractiveness of the sector to investors.
- 4.68 ComReg also recognises that, at a fundamental level, creating the conditions for investment is as much about regulatory certainty as it is about shaping operator financial incentives. As noted above, operators have invested heavily in the electronic communications sector over the last 10 years. Over the coming period ComReg expects similarly significant amounts of investment will occur in fixed and mobile networks as operators seek to rollout new networks and services to consumers. Making such large commercial investments depends at least in part on an expected rate of return and expected price level.

Reasonable Rate of Return

- 4.69 In many of the markets ComReg regulates, it imposes obligations that include price controls, including obligations to charge cost-oriented wholesale prices. A cost-oriented wholesale price includes a reasonable rate of return on investment. To that purpose ComReg estimate the Weighted Average Cost of Capital ('**WACC**') where the weightings are based on the costs and amounts of equity and debt capital.
- 4.70 ComReg is mindful of the need to ensure that the WACC is at a level that is

appropriate to promote a favourable climate for efficient and timely investment and to promote innovation in electronic communications and broadcasting infrastructure and services in Ireland. A WACC rate that is set too low could make future investment unattractive to investors. Similarly, a WACC that is too high would allow a regulated company to earn excessive returns at the expense of its wholesale and retail customers while also potentially distorting pricing signals to investors.

4.71 It is therefore ComReg's goal to ensure that **regulatory certainty, including certainty on wholesale pricing and the rate of return, facilitates timely investment decisions**. In particular, the choice of wholesale pricing regime and cost recovery should be appropriate to the circumstances taking account of the need to promote efficiency and effective competition and maximise consumer benefits.

4.72 In the context of these two goals, ComReg intends to do the following:

- Pricing Signals:** To encourage investments by all operators, ComReg aims to ensure the various wholesale prices it imposes in regulated markets can enable deeper infrastructure competition and allow operators to move up the ladder of investment. These wholesale prices, imposed on the SMP operator, act as pricing signals to the SMP operator and other operators seeking to invest in ECS/ECN. Efficient pricing signals should encourage an operator to invest efficiently and migrate away from legacy infrastructure.
- Reasonable Rate of Return:** ComReg will also encourage investments by other operators in downstream markets by mandating and enforcing appropriate access to inputs controlled by the SMP operator on fair, transparent and non-discriminatory terms. In order to encourage investments by the SMP operator, including in next generation networks, ComReg shall take into account the investment made by the operator, and allow a reasonable rate of return on adequate capital employed, taking into account any risks specific to a particular new investment network project.
- Cost of Capital:** ComReg updated the WACC applicable to Fixed & Mobile Telecommunications and Broadcasting in October 2020⁹⁵. Following this decision, ComReg will recalculate the WACC on an annual basis using updated parameters. The recalculated WACC values will then be used when price controls are amended or updated as part of any subsequent ComReg decision. Where prices have been previously set by ComReg (including in the form of maximum prices), for a defined future

Goal 1.5

Regulatory certainty, including certainty on wholesale pricing and the rate of return, facilitates timely investment decisions.

⁹⁵ ComReg Document 20/96

period, a subsequent change in the WACC will not automatically lead to any change in those prices.

- **Co-investment:** To incentivise investment further, the EECC introduces new conditions relating to co-investment agreements between operators, including an assurance (subject to meeting certain conditions and commitments) not to regulate an SMP operator that enters into an investment agreement with another operator. Although there has been limited evidence of any developments involving co-investment in the Irish market to date, ComReg will consider any such co-investment proposal to ensure that efficient commercial investments can occur and VHCN infrastructure can be deployed to the widest extent possible.
- **Legacy Networks:** Article 81 of the EECC requires the NRA to ensure that migrations from copper networks subject to SMP obligations carry transparent timetables and conditions, and that end-users can continue to access broadband and telephony products. In March 2021, Eircom published a white paper on transitioning away from its legacy infrastructure. ComReg is still considering this white paper and examining what oversight is required by ComReg, in line with Article 81 of the EECC and other SMP regulatory obligations. Existing regulatory obligations imposed on Eircom (e.g. USO and obligations not to withdraw services) remain in place. ComReg expects the switch off of the copper network will begin in the next five years.

Essential Inputs: Spectrum and Numbering Resource

Overview

4.73 Radio spectrum is a scarce resource having many different potential uses and end-users. Radio spectrum, as a medium over which data can be transmitted, is an essential input in the supply of wireless/radio based ECS. Most ECN, even fixed networks, contain wireless segments. The availability of spectrum is therefore necessary for the entry and expansion of many operators in electronic communications markets. The demand for radio spectrum continues to grow, driven by society's ever-increasing requirements in terms of access to data intensive services while on the move. In addition, access to numbers is essential to the functioning of electronic communications markets. As a finite national resource, ComReg seeks to ensure that there is always an adequate supply of numbers to support the demands of existing and new customers and service providers. In this context it is ComReg's goal that **the management of spectrum and numbers facilitates competition, enhances connectivity and promotes efficient investment.**

Goal 1.6

The management of spectrum and numbers facilitates competition, enhances connectivity and promotes efficient investment.

Spectrum

4.74 Broadly speaking, spectrum management is the process of regulating the use

of radio frequencies to promote its efficient use in the interests of society. Radio spectrum management involves a consideration of a broad range of factors (e.g. administrative, regulatory, social, economic and technical). In particular, spectrum management involves spectrum **allocation** and **assignment**, as well as the monitoring, compliance and enforcement of licence conditions and equipment standards.

- 4.75 Spectrum allocation refers to the designation of given frequency bands for use by one or more types of radiocommunications services⁹⁶, where appropriate, under specified conditions. This identifies the radiocommunication services that could potentially use a radio frequency band and is an important activity in the international harmonisation process. ComReg's radio frequency plan for Ireland sets out Ireland's radio spectrum allocations and this plan is updated regularly in line with developments at an international level.
- 4.76 Spectrum assignment refers to those spectrum management activities which involve the issue, and authorising the use of, rights of use for radio frequencies. In Ireland, the possession and/or use of radio equipment requires authorisation from ComReg and this authorisation may take the form of either a licence or a licence exemption under the Wireless Telegraphy Acts, 1926-2009. The majority of ComReg's spectrum management work relates to the licensing of spectrum. For example:
- Determining the precise nature of spectrum rights (e.g. technical conditions, geographic dimension, licence duration, licence conditions etc.),
 - Designing and implementing awards of spectrum rights, and
 - Granting rights of use/licences on foot of same.
- 4.77 In relation to the assignment of spectrum rights for ECS, ComReg determines the appropriate spectrum assignment approach on a case by case basis in light of specific facts and circumstances that arise. Notwithstanding this, ComReg⁹⁷:
- Notes the clear benefits that auctions offer for the award of spectrum rights of use in bands harmonised for fixed/mobile wireless broadband services, and observes that both Irish and international spectrum management experience support the continued appropriate use of auctions generally, and
 - Considers that in competitions for spectrum rights (and, in particular, auctions), spectrum competition caps are an important tool by which to safeguard and promote competition – both for spectrum rights and downstream competition.
- 4.78 The international harmonisation process for radio spectrum is a key driver of investment in the sector as it facilitates economies of scale in the manufacture of radio equipment (which lowers both the cost of deploying wireless networks and the cost of wireless devices for consumers). Importantly, from an

⁹⁶ These are services as defined by the international radio regulations – for example three of the 35 defined radiocommunication services include; the Fixed Services, the Broadcast-Satellite service and the Meteorological Aids Service,

⁹⁷ See ComReg's Spectrum Management Strategy for 2019 to 2021 (Document 18/118) for ComReg's current thinking on a number of topical spectrum management issues

investment perspective, the International harmonisation process is a key factor determining the technology roadmaps adopted by suppliers of radio equipment, many of whom are global in nature.

- 4.79 International harmonisation for radio spectrum involves many aspects such as the harmonisation or technology standards in organisations such as ETSI 3GPP, and the harmonisation of radio spectrum allocations and technical conditions in organisations such as the International Telecommunications Union ('ITU'), European Commission ('EC'), Radio Spectrum Policy Group ('RSPG') and Conference of European Post and Telecommunications Administrations ('CEPT').
- 4.80 Harmonisation activities focus on advancing the use of radio spectrum, and ComReg, together with DECC, plays an active role in international forums to ensure that, as far as possible, decisions relating to the international radio spectrum regulatory framework accommodate Ireland's specific requirements. At domestic level, participation in the international harmonisation process assists ComReg in actively taking into account and acting upon relevant developments in a timely manner in the exercise of its spectrum management functions in Ireland.
- 4.81 There are a number of spectrum projects that ComReg is already committed to that will take place in the coming period, these include:
- **MBSA2:** Completing the second multi-band spectrum award which will see the release of 470 MHz of harmonised spectrum rights in the 700 MHz Duplex, 2.1 GHz, 2.3 GHz and 2.6 GHz Bands⁹⁸. This represents a 46% increase in the harmonised spectrum assigned for the provision of wireless broadband services in Ireland. This will significantly enable operators to provide improved services to meet ever-increasing consumer demand.
 - **Fixed Links:** ComReg has issued more than 13,500 active fixed link licenses in twenty radio spectrum bands ranging from 1.3 GHz to 80 GHz. ComReg has begun work on and has held a consultation⁹⁹ to review the current Fixed Links licensing regime, which would include considering the future use of certain frequency bands and the current fixed links regulations. ComReg's intention is to issue a final decision in 2022, after which a number of work streams may emerge in order to open new bands, closed some bands, realign uses, etc.
 - **Satellites:** There has been a resurgence of interest in using constellations of small satellite in low earth orbits (LEOs) to provide internet access. To ensure that Ireland has an appropriate legislative framework, ComReg recently reviewed and then decided to adopt a single exemption order¹⁰⁰ to cover all terminals for satellite services. This permits any user terminals that meet the conditions of the exemption order to be used in Ireland. Over the period of this Strategy, ComReg will turn its attention to reviewing its

⁹⁸ See <https://www.comreg.ie/industry/radio-spectrum/spectrum-awards/proposed-multi-band-spectrum-award/>

⁹⁹ ComReg Document 20/109

¹⁰⁰ See <https://www.comreg.ie/publication/information-notice-on-the-permitted-licence-exemptions-for-terminals-for-satellite-services>

licence regime for satellite earth stations¹⁰¹. One identified deficiency in the current satellite earth station (SES) regulations is the lack of provision for licensing of SES below 3 GHz which is now used for command and control of some of the new satellite constellations. In addition, it has been 14 years since the original license regime for SES was put in place, technology has improved, services have expanded and ComReg needs to ensure that it can meet the current and future needs of satellite network and service providers in Ireland. As these earth stations often share the same spectrum as that used for fixed links, ComReg will need to consider how these earth stations can share the bands and how both services, fixed and satellite, can co-exist.

- 4.82 ComReg publishes information on current licensing, usage, its spectrum priorities and future plans. Subject to the protection of confidential information in line with ComReg's guidelines¹⁰², ComReg publishes information on existing licensees' spectrum assignments and usage because, among other things, this can increase the efficient use of spectrum by better informing consumers and other interested parties (such as actual and potential spectrum users).
- 4.83 Finally, ComReg will continue to publish its forward-looking strategy for managing the radio spectrum, which among other things sets out ComReg's envisaged spectrum actions. In the coming period, related to this goal ComReg intends to consult on and publish a new Radio Spectrum Management Strategy Statement covering the period the 2022 to 2024. This strategy statement helps define ComReg's workplan across this two-year period. Based on this workplan ComReg manages its workload in a manner that attempts to appropriately address the needs of a diverse range of actual and potential spectrum users. In that regard, ComReg balances the numerous considerations to establish a prioritised work plan commensurate with its resources, including:
- The capacity within the existing radio spectrum bands to meet spectrum needs and if future demand can be met via the existing spectrum assignments or if it necessary to award new assignments using existing authorisation processes;
 - The timing of the expiry of existing rights of use and the requirement for an appropriate re-assignment process in light of factors such as end user demand, harmonisation status, equipment availability and availability of related spectrum bands;
 - The harmonisation status and appropriate timing for release of spectrum bands that are currently unassigned;
 - The potential to remove certain restrictions (or "liberalise") currently placed on licences which may enable more efficient use of spectrum, facilitate innovation and potentially free up capacity which could be made available for other uses;

¹⁰¹ A Satellite Earth Station ("SES") is a type of radio equipment used to communicate with a space station (satellite) from the Earth's surface. SES can be used to provide data, broadband and telephony connections as well as backhaul, broadcast feeder links and corporate type communications

¹⁰² Set out in ComReg Document 05/24

- The potential for including multiple spectrum bands in a single award process where appropriate to achieve ComReg's statutory objectives and duties;
- The adoption of legislation (national or European) which requires ComReg to take defined actions within a set timeframe; and
- The potential for market mechanisms to address spectrum management issues;

4.84 ComReg will also take into account any other relevant considerations that may arise, as appropriate.

Numbers

4.85 ComReg is tasked with the management of the National Numbering Scheme, including attaching conditions for rights of use of numbers. ComReg's role is to balance the need to conserve this finite national resource while ensuring that there is always an adequate supply of numbers to support the demands of existing and new customers and service providers. Any new conditions of use that support competition and innovation nevertheless need to ensure that consumers remain protected against number misuse.

4.86 Numbers are likely to remain the most common universal identifiers between now and 2026 and well beyond. Numbers are trusted because they are coordinated at national level (by NRAs) and international level (by the ITU).

4.87 Two trends are likely to be relevant to effective regulation over the period to 2026. First, with respect to the IoT, many machines will need numbers. No ideal global solution currently exists for international Machine to Machine (M2M) communications services. Second, emerging business models will need to be considered. OTT services and apps that use numbers will undoubtedly proliferate over the period to 2026.

4.88 Traditional mobile operator networks and business models will evolve too. Services such as 'Wi-Fi calling', native or otherwise, will likely become commonplace¹⁰³. Handset manufacturers may seek to leverage reprogrammable or embedded SIM (eSIM) technology to move further up the mobile value chain, for example by offering new services, such as remote device activation and sim management platforms. The numbering and interoperability framework needs to adapt to cater for these new models. There may also be implications for the wholesale interconnection framework and a need to cater for more complex end-user switching scenarios. With a view to informing ComReg's various activities and projects, ComReg will monitor the development of these technologies and business models, which have the potential to have disruptive effects on ECS markets.

4.89 The EECC requires ComReg to introduce a dedicated number range for M2M services that explicitly permits 'extraterritorial' (i.e. permanent overseas) use. ComReg introduced this dedicated M2M number range in 2018, in anticipation of the EECC requirement and prompted by ComReg's forecasted exponential

¹⁰³ Wi-Fi Calling is already available over the Vodafone and Eircom networks. Three has announced plans to introduce Wi-Fi Calling.

growth of M2M connections on mobile networks and the clear market need for extraterritorial use. Going forward, ComReg will contribute to any BEREC and CEPT working groups that seek to address any remaining issues that impede the provision of global M2M/IoT connectivity solutions.

4.90 Related to the above goal, ComReg will undertake the following activities:

- Completing improvements to the Non-Geographic Numbering (NGN) platform:** ComReg and operators have been working together since early 2019 to ensure their affected customers have been fully informed about the cost savings and other benefits of migrating from 1850, 1890 and 076 numbers. This programme has already ensured that calls to NGNs have been included in retail call bundles since December 2019 and has introduced a new wholesale regime for NGN calls since May 2020. During 2021, operators will migrate any remaining customers from these numbers to new numbers and these three number ranges will cease to operate. From 1 January 2022, only the Freephone 1800 and Standard Rate 0818 NGN products will remain. These changes will ensure that Ireland has a fit for purpose and easy to understand NGN platform, and a competitive market for NGN services, where organisations can choose from over 30 operators to provide their NGN services..

Figure 15 – Changes to Non-Geographic Numbering ranges



- Factoring OTT services and ‘cloud’ numbers into updates of the Numbering Conditions of Use:** ComReg updates the Numbering Conditions of Use every 2-3 years, to take account of legislative changes, new technologies and market developments. The next update in 2021 will reflect several changes to numbering legislation in the EECC. ComReg is also undertaking consumer research in 2021 to inform any changes that may be needed to cater for online use of numbers, which industry sometimes refers to as ‘cloud numbers’. Numbers are increasingly being used by the major online platforms, sometimes on a temporary basis, to provide ‘click-to-call’ features and to enhance end-user privacy. In general, ComReg supports innovative new uses of numbers and will seek to engage with both online platforms and traditional players to ensure the Conditions of Use cater for new business models. ComReg will also factor new and existing legislative requirements and any research findings on consumer levels of trust in numbers and how consumers value the information that numbers provide.

- **Developing a strategy for promoting over-the-air (OTA) provisioning:**
The EECC requires Member States to promote over-the-air (OTA) provisioning to facilitate provider switching, with the emphasis on switching between M2M service providers. OTA provisioning relies on 'embedded' SIM ('eSIM') technology (See Chapter 3 above). In response to this new EECC requirement, ComReg commissioned an expert study in early 2021 to support the development of a strategy for the promotion of OTA provisioning in Ireland. ComReg is one of the first NRAs in the EU to address this requirement and is seeking to engage with both national and international stakeholders as part of the study. Given the EECC requirement, the study will consider how the potential impact of OTA provisioning could be maximised to facilitate switching, in line with ComReg's statutory objectives to promote competition, to contribute to the development of the internal market, and to protect the interests of users. OTA provisioning also contributes to ComReg's connectivity objective, insofar as it enables more consumer and IoT devices to be connected more easily. This also aligns with the clear business benefits of OTA provisioning for mobile operators and other service providers, so will also be factored into the study and the development of a strategy. The study report will provide a 5-year vision for developing OTA provisioning for both consumer mobile and for M2M services and a roadmap for the achievement of the vision. ComReg intends to publish the report with a Call for Inputs by mid-2021 and will decide how to progress the implementation of the strategy after this consultation stage.

5. Consumer Protection

Introduction

- 5.1 Well-functioning markets should maximise benefits for consumers.¹⁰⁴ However, markets, even well-functioning and competitive ones, do not always deliver optimal outcomes for consumers. Furthermore, even in the presence of upstream wholesale regulation, not all consumers in downstream markets may be adequately served and protected. In addition, market failures other than market power, such as information asymmetries, can prevent consumers from making and acting on fully informed choices.
- 5.2 Issues may also arise when service providers do not uphold consumers' rights or fail to provide adequate complaints and redress mechanisms when problems do arise. Furthermore, while all consumers may at times be vulnerable to detriment, some consumers may be particularly vulnerable.
- 5.3 The ability of consumers to compare available offers, exercise choice and easily switch service provider is essential to the functioning of competitive markets. Consumer protection legislation aims to redress the information and power imbalance for consumers when making purchasing decisions and using services. Empowered and protected consumers can play a vital role in improving economic performance and driving innovation.

Strategic Intent 2:	Consumers can choose and use communications services with confidence.
What does this look like?	<ul style="list-style-type: none"> • Vulnerable and Disabled end-users are protected • Consumers have easy access to the information they need to <ul style="list-style-type: none"> • make informed purchasing decisions • engage appropriately with their service provider • keep informed about issues that might impact their service or experience • Consumers have a choice of service providers but there is at least one provider available for basic (universal) services • The sign-up process for services is transparent and simple yet secure • Consumers receive the required contractual information, notifications and rights • Services are installed on time • Consumers are billed correctly and customers expect and understand the charges imposed • Consumers get the service they sign up for • Consumers have easy and timely access to customer care, and redress from their service provider • Consumers can switch easily and seamlessly without service disruption and without inappropriate penalties or notice periods • The refunds process is accessible and timely

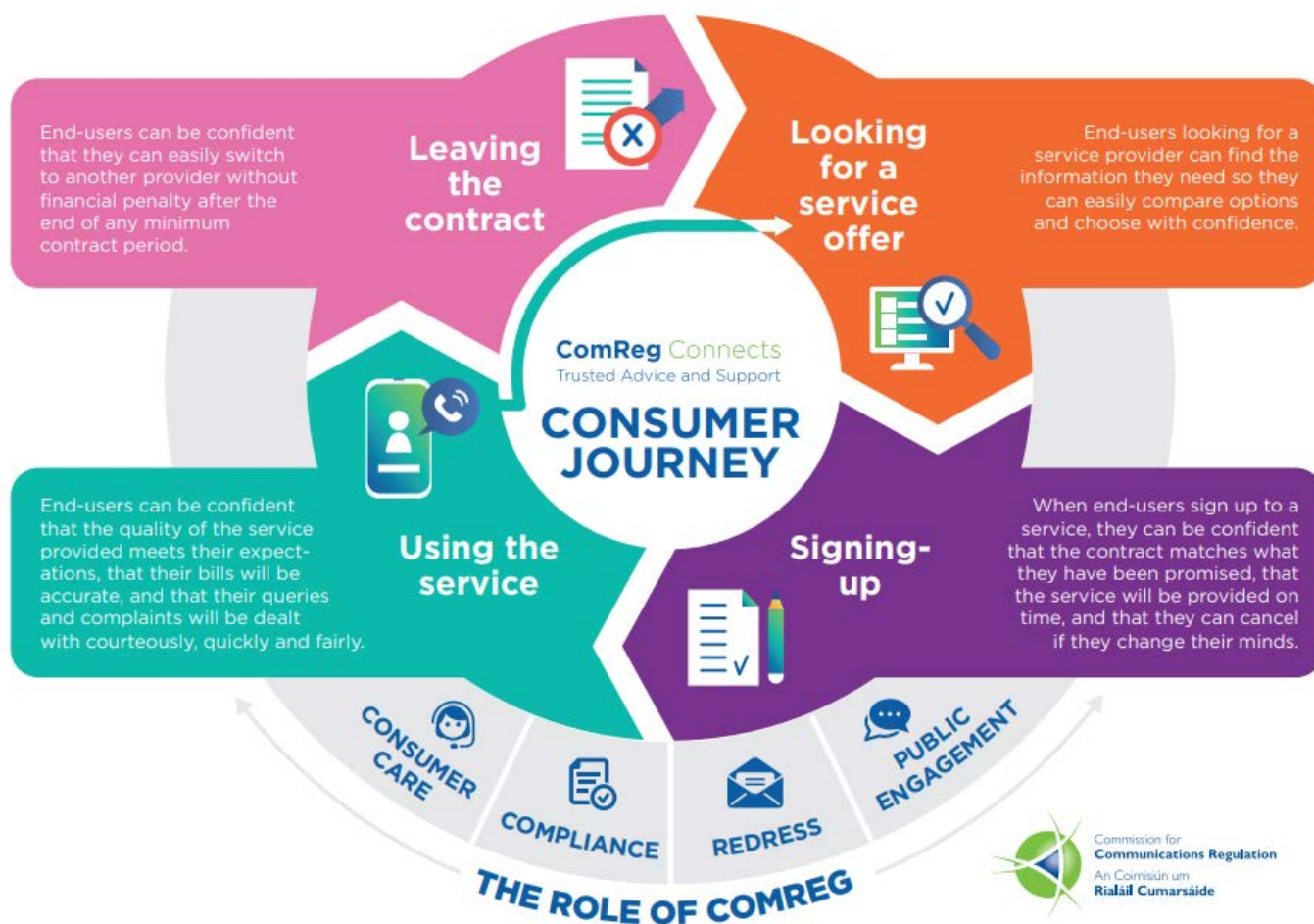
¹⁰⁴ ComReg's consumer role and associated protections, in certain cases, applies to small enterprises or microenterprises, not for profit organisations as well as consumers. Where this chapter uses the term consumer(s), it may also mean other end-users.

- 5.4 This Chapter sets out ComReg's strategic goals associated with protecting and informing consumers with the high-level objective of ensuring that **consumers can choose and use communications services with confidence**.
- 5.5 Covid-19, and in particular the reliance on working and learning from home, increased consumer dependence on ECS and the importance of consumers being able to access services to meet both their individual and household and professional needs. It brought into sharp focus the importance of being able to resolve consumer issues and service outages quickly. It also highlighted concerns such as handset unlocking delays, switching issues, data limits and unexpected charges. Provision of easy to understand information has been important to assist consumers navigating this new challenge and it has provided new channels of interacting with and supporting consumers. ComReg is also cognisant that more vulnerable consumers may have been disadvantaged because of the move to remote and online interactions rather than in person.
- 5.6 Consumer navigation of the market, or the "consumer journey", can be described in four broad phases, shown in Figure 16 below. The description of these phases has been informed by the EECC, including the new obligations on service providers and enhanced consumer rights. These phases are summarised below:
- **Looking for a service offer:** Prior to any decision to switch provider or to sign up to a new service, consumers should have accessible, readily available, accurate and comparable information to assist in making informed decisions. This might include comparing offers, using a comparison tool, comparing contract summaries (which must be provided by service providers pre-contract) or researching other information available.
 - **Signing-Up:** When signing-up to an offer or upgrading a service, the process must be easy for consumers yet conducted in a secure manner, so that they are not signed up against their will or misled about the details of the offer or upgrade. Consumers must get the necessary contractual information and rights to ensure they get accessible and durable information about the contract they have signed up to and the assurance, where relevant, that they can exercise cooling-off rights for distance sales. Installation time-frames should assist in setting consumers expectations as to when the service will be installed and when usage can commence.
 - **Using the Service:** While using the service consumers should be sufficiently informed about their service and rights to be able to engage with their service provider. Service providers should ensure that their customer care contact methods are varied (to meet the needs of a wide range of customers) and efficient. Consumers must be billed correctly and should understand and expect the charges they are billed for (including by providing usage alerts). Bills and transaction history should be accessible for everyone. For internet access services, contracted speeds must be met. Outages should be minimised and dealt with efficiently. Changes to price, speeds or other contractual terms must be notified in advance to consumers in a standard accessible format and where appropriate, customers must be given the right to exit their contract. Consumers must

be informed about the end of their contract and given best tariff advice by their service provider. When a customer upgrades or recontracts for their service, then the rights available at the sign-up stage must be afforded to the customer.

- **Leaving the Contract:** Consumers may decide to terminate their contract/cancel their service or switch to a different service provider for a variety of reasons including that the contract has come to an end and they have found a better offer, or they have been informed of contractual changes that provide a right of exit. If the product or service does not meet expectations, a customer should be able to exit their contract without penalty in specific instances, for example if the broadband speed delivered differs substantially and regularly from the contracted speed.
- 5.7 The information provided and the processes for switching must facilitate easy and efficient switching without barriers or disincentives, without number loss (where appropriate) or breaks in service. Switching processes should be led by the new service provider so that the customer does not have to contact their current service provider to effect the switch. Consumers should be informed about the implications of switching their service in the case of bundles or terminal equipment (such as handsets) that form part of their contract. Where applicable, early termination charges should be fair and transparent. Monies due to customers on termination should be automatically refunded, and pre-pay credits refunds due on switching must be provided in a timely manner upon request.
- 5.8 In the event that issues arise at any stage of the consumer journey, customers must be able to contact their Service Provider to resolve their issue or complaint effectively within a timely manner.
- 5.9 ComReg's objective is to ensure that the Customer Journey is seamless and to help achieve this, ComReg uses its regulatory toolbox to intervene to assist consumers as issues arise and more generally where it identifies actual or potential harms.

Figure 16: The Consumer Journey



Identifying Consumer Harms

5.10 ComReg continues to monitor and address market failures in wholesale markets to develop competition and enable efficient investment and choice for consumers. Consumer protection rules and our responsibilities have been enhanced and have evolved. However, issues still arise for consumers throughout their Consumer Journey, indicating that there continues to be harms which need to be addressed.

5.11 ComReg has several ways of identifying potential and actual harms, including:

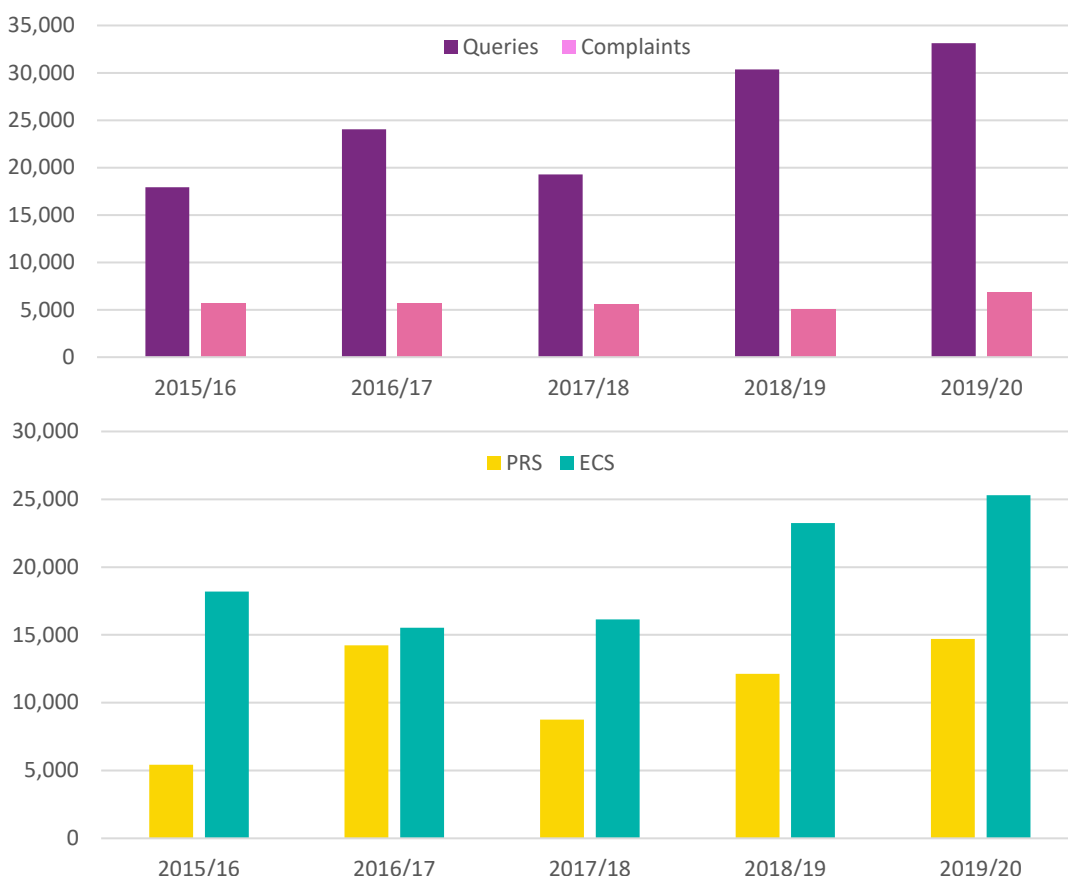
- Consumer queries and complaints;
- Research, Market Information and Behavioural Studies;
- Advisory Panels and Engagement; and
- Information Gathering, Compliance Monitoring and Investigations.

Consumer queries and complaints

5.12 Significant numbers of consumers continue to experience issues when availing of ECS and PRS Premium Rate Services ('PRS'). One of the ways we understand these issues is through our direct contact with consumers who contact us for information and support with their issues.

- 5.13 Our statistics show that consumers continue to contact ComReg’s Consumer Line with issues relating to both ECS and PRS Providers.¹⁰⁵ There are some notable trends. Billing, contractual and service issues have been and remain the main ECS issues raised by consumers (see Figure 18), while number portability and switching concerns have increased significantly more recently. Issues with PRS persist in particular in respect of subscribing, representing a significant percentage of total contacts received by ComReg.
- 5.14 Not all issues raised by consumers give rise to a formal complaint. If a consumer has not raised their issue with a service provider, ComReg advises the consumer to lodge a formal complaint¹⁰⁶ with their service provider and we log this as a query. However, if the complaint is not resolved within 10 working days, the consumer may revert to ComReg and we can begin our complaint process with the service provider, by raising the consumer’s complaint and seeking a resolution. The status of the contact is then changed from a query to a complaint in our internal system. Figure 17, below, shows the relative volumes of ECS and PRS queries and complaints received by ComReg over the past 5 years. Figure 18, below, shows the relative breakdown of ECS complaints by complaint type.

Figure 17: Breakdown of Issues Logged (Queries/Complaints), 2016 - 2020¹⁰⁷



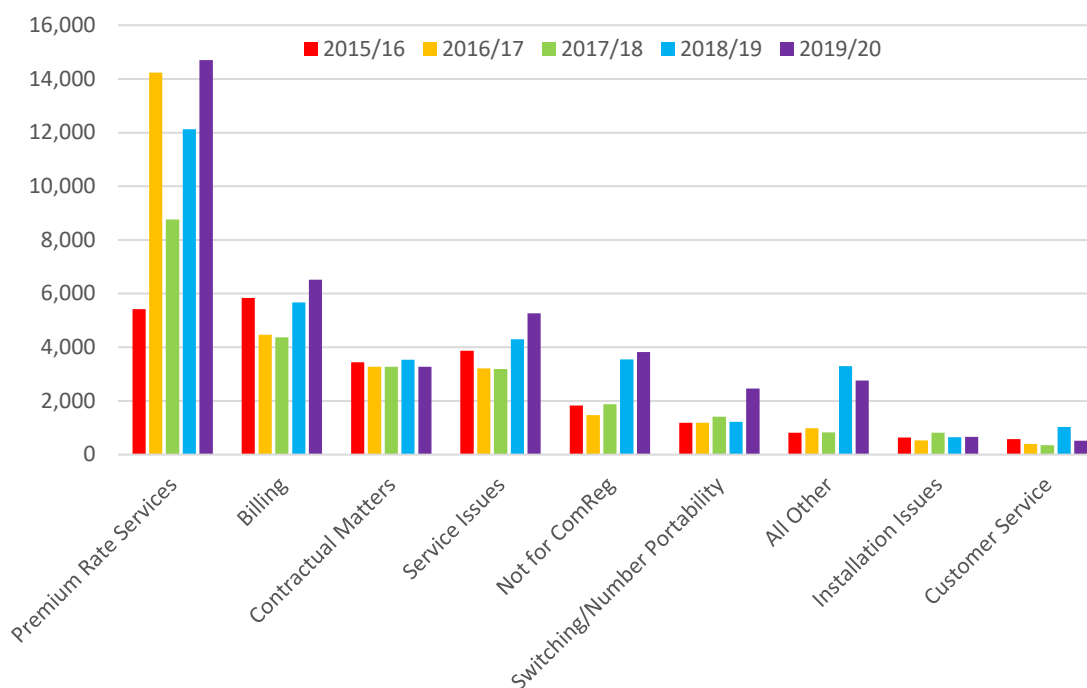
¹⁰⁵ ComReg reports consumer line statistics on a quarterly basis. Available at: www.comreg.ie/publications/

¹⁰⁶ In accordance with the service provider’s Code of Practice for Complaints Handling

¹⁰⁷ ComReg Consumer Line Statistics

- 5.15 Consumers should be able to contact their service provider to resolve their queries and complaints quickly and effectively. However, if this fails, consumers must have access to an alternative dispute resolution process to resolve the unresolved complaints. Several consumers experience issues when contacting their service provider or resolving complaints.
- 5.16 Through the period of this ECS Strategy, ComReg will also examine ways to better understand the level, nature and resolution of complaints raised directly with service providers by customers, prospective or ex-customers.

Figure 18: Queries/Complaints Total ECS and PRS combined, 2016 to 2020¹⁰⁸



Research, Market Information and Behavioural Studies

- 5.17 We recognise that products and services sold in the electronic communications sector are complex. This complexity is increasing as new services are launched, and service providers seek to offer new and varied bundles. In this context, 'rational' decision-making can be difficult for consumers, indicating that markets may not function effectively.
- 5.18 We recognise that consumer decision-making can sometimes be affected by behavioural bias. Such biases can affect consumer preferences (e.g. present bias), consumer beliefs and decision making (e.g. inertia and cognitive limitations). These biases are not new in ECS markets. Service providers frequently use these biases to alter or drive consumer behaviour and to market products and services to consumers (e.g. complex tariff pricing or product comparisons), thereby encouraging consumers to make purchasing decisions that are desired by the service provider including moving up the value chain. We recognise that in competitive markets, service providers will react and

¹⁰⁸ ComReg Consumer Line Statistics

respond to trends and emerging consumer behaviours (e.g. growth in data; zero rating of social media; launch of new handsets or complementary technologies). Therefore we believe it is essential to identify what influences consumer decision-making and to consider such developments in order to make effective regulatory interventions. In this context, it is important that we understand both industry and consumer behaviours, preferences, actions and perceptions.

5.19 The principal ways that we gain insights into consumers' preferences and experiences with evolving electronic communications is through:

- **Market Research:** We conduct regular market surveys to understand the changing preferences, experiences and behaviours, and perceptions of consumers. We also conduct market surveys in the context of regulatory activities. We undertake regular market research to help better understand consumer confidence in choosing and using communication services, in addition to the quantitative and qualitative surveys we commission relating to the broadband and mobile telephony markets. Our market research is further discussed in Chapter 8.
- **Behavioural Research:** Behavioural research is an important tool for us in understanding consumer behaviours and therefore what practices can cause harms, including, for example, information asymmetry or complexity and certain marketing techniques. It is not only important for ComReg to be able to understand harms but to be able to design interventions to assist in overcoming those harms.

5.20 ComReg will continue to conduct and evolve its research to assist it in gaining a deeper understanding of relevant issues as technologies, markets and behaviours evolve.

Advisory Panels and Engagement

5.21 ComReg periodically hosts panels to gain insights into consumer issues including issues for end-users with accessibility requirements. The Consumer Advisory Panel ('CAP') was established by ComReg in accordance with Section 12 of the Communications Act 2002. The purpose of the CAP is to advise us on developments, innovations and areas of consumer concern which are relevant to ComReg's role. The CAP meets three times each year. The CAP consists of representatives from the Consumers' Association of Ireland, National Disability Authority, Northern & Western Regional Assembly and Chambers Ireland who contribute to discussions on consumer related topics. ComReg also periodically conducts disability workshops to explore specific accessibility topics and issues, for example, third party representation for disabled end-users dealing with their service provider and the operation of the Irish Text Relay Service. This gives us an insight into harms that may be arising from an accessibility point of view that we may have a role in addressing.

5.22 ComReg also meets consumers and the public and through outreach events and activities and learns about issues and concerns arising through this channel.

5.23 ComReg has continued to meet its panels virtually during Covid-19 and we will look to ways to enhance and expand our interactions with representative groups.

5.24 ComReg will continue to participate in the Mobile Phone and Broadband Taskforce to assist in providing solutions for the issues that the taskforce identified in relation to broadband and mobile coverage and how to provide better services for consumers.

Information Gathering, Compliance Monitoring and Investigations

5.25 When ComReg monitors service providers practices (e.g. information they provide to customers; contracts; and business processes), ComReg directly obtains an understanding of the consumer harms arising. ComReg may achieve this via mystery shopping, information gathered directly from consumers and the relevant service provider and through compliance monitoring activities and investigations. ComReg is also contacted by service providers who point out practices that they notice in the market that may be non-compliant and causing harm to consumers.

5.26 ComReg analyses data gathered through each of these mechanisms to gain an insight into trends and consumer issues and harms. These insights help inform information campaigns, consideration of policy interventions and enforcement actions by ComReg.

5.27 Over the coming period we will continue to evolve and harness the insights from these sources to inform our understanding of consumer harms and inform associated regulatory interventions to mitigate them.

5.28 A summary of the key harms relates to:

- Insufficient, inaccurate or misleading information
- Deficient contracts, contractual information and contractual rights
- Issues with the supply or quality of the ECS and/or ECN
- Billing and pricing transparency issues
- Switching issues
- Inadequate consumer care and redress provided by service providers
- Service providers failing to uphold consumer rights

Addressing Consumer Harms

5.29 ComReg's consumer role is to protect and inform consumers so that the harms are overcome and they can choose and use communications services with confidence. In this context, our goal is that **ComReg identifies and understands consumer harms.**

Goal 2.1

ComReg identifies and understands consumer harms.

5.30 ComReg's regulatory toolbox for addressing consumer harms consists of:

- Providing consumers with, or requiring service providers to provide, relevant and accurate information to assist consumers at all stages of their Consumer Journey.

- Ensuring that universal services are available and affordable and delivered to an appropriate quality.
- Ensuring equivalence of access and choice for disabled end-users.
- Providing individual consumers with assistance and support and dealing with unaddressed service provider complaints through ComReg Consumer Line and providing consumers with alternative dispute resolution function where complaints are not resolved satisfactorily.
- Implementing new obligations on service providers to address existing or likely harms.
- Publishing information and guidance for service providers on their obligations, identifying practices that may fall short of obligations and publishing details of contraventions.

5.31 Where ComReg identifies harms that it cannot address using the tools and powers available to us, we will seek additional powers in terms of new protections for consumers and enhanced enforcement powers.

The Consumer Journey

Looking for a service offer: Preparing the consumer before entering into a Contract

5.32 The market is complex and the choices that consumers have are varied. Without adequate guidance or support, consumers could feel unable to make an informed choice, and may postpone making a decision, possibly indefinitely. Often, we can see products or services presented in ways that may not accurately represent the service or in ways that can mislead the consumer. We have the ability to set rules around the ways certain information about products and services is presented to the consumer. Having sufficient information presented in a manner that is useful, comparable and accurately represents the product or service will assist consumers to make informed decisions.

5.33 This is particularly important when looking for an offer that best suits a consumers needs. Key information sources for consumers consist of:

- Information which is required to be provided by service providers including the contract summary and best tariff advice; and
- Information that ComReg provides to assist consumers in their comparison of offers and in enhancing consumers' understanding of the electronic communications services and products and their associated rights.

5.34 ComReg as a statutory body is committed to continue to provide 'trusted advice and support'. We will continue to do this through transparent communication that uses easy to understand language throughout our engagement with consumers and the public.

5.35 It is therefore ComReg's goal that all **consumers, including vulnerable and disabled end-users, are supported by clear, accurate and up to date information throughout the Consumer Journey.**

Goal 2.2

Consumers, including vulnerable and disabled end-users, are supported by clear, accurate and up to date information throughout the Consumer Journey.

5.36 Over the coming period our work relating to this goal includes the following items:

- **Consumer Engagement:** ComReg's information, communication and engagement with consumers is critical to ensure consumers know their rights at all stages of the Consumer Journey. ComReg will provide information for consumers rights relating to current issues and on new consumer rights provided under the EECC. Our consumer engagement role is set out later in this chapter.
- **Consumer Care:** Service providers must be able to efficiently address their own customers' queries and issues. We will work to drive service providers to improve the experience they provide to their customers by improving transparency on Quality of Service and ensuring that they are tackling systemic and root cause issues. However, ComReg's Consumer Line will assist consumers with their queries and complaints and we will continue to assist consumers who need advice and support.
- **Consumer website:** We aim to provide timely and easy to understand information for consumers on issues which might impact their choice or use of ECS and on topical issues. We also recognise the importance of consumers being well informed about their rights so that at each stage of the Consumer Journey consumers are adequately informed to be able to address and resolve issues themselves with their service provider. We will continue to evolve our ways of communicating information to make it accessible, understandable and consistent. This includes improvements in terms of branding, presentation, language and content.

Market Information

5.37 The manner in which information about market offers is presented to consumers is important to minimise behavioural biases and to ensure that consumers are aware of the important factors that they should consider when comparing offers and making choices.

- **Comparison Tool(s):** We will ensure that the ComReg Comparison tool offers the required features and functionality, including relevant quality of service factors. Attributes such as total cost, contracted speeds and how much data is included (and whether data included is unlimited) are particularly important factors in selecting an internet access service. We will also develop an accreditation process so that companies offering commercial tools, who fulfil the necessary requirements can apply to be accredited by ComReg. The accreditation process will offer consumers a level confidence for all accredited comparison tools available in the market.

- **Coverage Map and information:** As part of our objective to provide useful and reliable information to consumers, we provide an outdoor mobile coverage map on our website and via a mobile application (app) for consumers to check service providers' outdoor mobile phone coverage predictions at locations throughout the country. This is available at: <https://coveragemap.comreg.ie/>. We will continue to evolve the map as new technologies are rolled out, for example 5G, and we will enhance functionality to assist consumers. We also provide information for consumers on factors affecting their mobile experience such as handset performance and building materials, number of users and distance from masts. Our information helps consumers identify and understand such issues and helps them to resolve issues for example by installing a licenced repeater or using Wi-Fi calling. We will also consider the merits of an internet access service (broadband) coverage map.
- **Publishing of Consumer Line Statistics:** Since 2015, ComReg has been publishing quarterly reports showing statistics and trends of issues raised by consumers who contacted the ComReg Consumer Line. These publications assist consumers and other stakeholders in understanding the kinds of issues being experienced in general and by service provider, including associated trends, and they may assist in informing choice. Over the coming period, we will consider extending the scope of these reports and providing further granularity that may benefit consumers.

Contract Summary and Best Tariff Advice

5.38 To enable consumers to make informed choices the Contract Summary provides consumers with a clear, concise, transparent and standardised document to facilitate easy comparison between multiple service providers or offers, prior to finalising a contract. The Contract Summary provides consumers with the main elements of the service and should help give consumers the confidence to fully consider different offers made to them by service providers.

- **Contract Summary:** We will monitor to ensure that the Contract Summary information is provided at the appropriate stage to consumers as required, including on-premises/instore, off-premises and distance contracts (telesales by phone, online sales) and as it is applied to bundled offers. We will also ensure that the Contract Summary is available in an accessible format for disabled end-users. For those already in a contract, Best Tariff Advice which is provided by service providers during the contract, will also be a useful tool to assist consumers in their choice of offers available.

Switching Information

5.39 The availability of transparent, accurate and timely information on the switching process should increase end-user confidence in switching and make them more willing to engage actively in the process of looking for offers.

- **Pre-Contractual Information:** ComReg will ensure consumers are provided with Pre-Contractual Information relating to: contract duration, any switching charges, compensation and refund arrangements for delay or abuse of switching, information about how to switch, information on how

to obtain a refund of prepaid credit when switching, and details of any early termination fees (including handset unlocking costs). Providers may also include information on switching in the Contract Summary.

Information about Compliance Actions

5.40 Information about compliance actions is published to keep consumers informed of compliance actions so that, amongst other things, consumers can understand their rights. It will also inform service providers of practices that are in contravention with the Regulations. We will continue to enhance and evolve these publications.

Signing Up

5.41 Having considered the relevant information about the offers available, consumers may decide to sign-up or enter a contract for their chosen service. They may also upgrade their current contract with their existing service provider.

5.42 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, and the ability and willingness of customers to switch in response to a better deal in the marketplace, whether to another supplier or to another offer or bundle provided by their existing supplier. It is therefore our goal that **there are low barriers to consumers exercising their choice**.

Goal 2.3

There are low barriers to consumers exercising their choice.

5.43 Consumers may find it hard to remember and fully understand offers described by sales agents in shops or over the phone, especially if they are complex or include multiple discounts and bundled services. The Contract Summary helps consumers to consider offers in their own time and prior to entering into a contract.

5.44 Having considered the Contract Summary, consumers who wish to switch their service or sign up with a new service provider should contact their new service provider. When the consumer agrees to enter into a new contract, which may be online, over the phone or in-person (in-store or door to door sales), the new provider will arrange the switch and the consumer's existing contract will be terminated. There should be no break in service and phone numbers can be transferred (ported) from one service provider to another. For distance sales, the contract must be provided to the customer in a durable form and the customer has a cooling off period should they wish to change their mind.

5.45 However, currently, the switching process can be difficult and for consumers, in particular, for internet access services and fixed voice services together or separately. For example, consumers often have to deal with both the provider they are leaving and the provider they are moving to. There can be misinformation about notice periods, switching processes and cancellation. There are instances of service or number loss or use of temporary numbers.

5.46 In the case of mobile services, handsets may be locked to a network and not unlocked promptly when consumers pay any remaining residual value, as

specified in the contract. Locked handsets are not usable on other mobile networks until they are unlocked.

- 5.47 Consumers may seek out better offers from their existing provider and this is one way that consumers can get better deals. However, consumers who contact their existing service provider to cancel or switch may have to undergo a forced save activity and may be misinformed about competitors. In addition, services paid for in advance may not be automatically refunded when switching.
- 5.48 In some cases consumers may not be provided with the required contractual information on a durable form or afforded a cooling-off period and their other cooling-off rights may not be properly provided.
- 5.49 These above practices and issues create barriers to switching by making the process unnecessarily difficult for consumers and act as disincentives to switching.
- 5.50 ComReg monitors the level of switching in the ECS Markets through the data we gather from industry and market research. Through our compliance and enforcement actions, we have sought to ensure consumers are not disadvantaged by unfair or illegal practices that serve to limit consumer switching rights or create disincentives to switching.
- 5.51 In some circumstances market offers may not be available to certain consumers depending on their geographic location. ComReg has a role in ensuring that universal services are available, affordable and delivered at an appropriate quality so that consumers have access to at least one service provider who will provide them with either or both of these services. This is further discussed later in this chapter.
- 5.52 In addition to their communications service, consumers may decide to sign-up to other PRS which are billed through their phone account, such as by third party billing or direct carrier billing. These services may incur once-off charges or recurring subscription charges.
- 5.53 Over the coming period our work relating to this goal is as follows:
- **Signup:** We will work to ensure that processes are easy and consumers have accurate information to fully understand the process and the contract that they are signing up to and that contracts are fair. We have powers in respect of unfair contract terms and have sought to have co-enforcement powers under the Unfair Commercial Practices Directive so that we may play a role in eradicating misleading sales and other unfair commercial practices in our sector.
 - **Durable Contracts:** We will work to ensure that consumers receive their contracts when they sign up and upgrade, in particular over the phone or on-line and that they are afforded their cooling-off rights. We will monitor

to ensure that contracts and contract summaries are consistent across service providers and in accordance with the legislation.¹⁰⁹

- **Switching Process:** We will focus on ensuring industry switching processes, in particular switching internet access services processes, are working effectively for consumers. To ensure that consumers are protected throughout the switching and porting of numbers, ComReg may consider whether it would be appropriate to specify particular requirements to ensure the efficiency and simplicity of the process for the consumer. ComReg may undertake appropriate measures to ensure that consumers have adequate information on switching, including, relating to all elements of the bundle, before and during the switching process and are not switched to another provider without their consent.
- **Bundled Offers:** Bundles are important for competition and have benefits for consumers. On the other hand, bundles may make switching more difficult or costly and raise the risk of contractual “lock-in”. For example, if there are different services and terminal equipment within a bundle, and end-users are subject to different rules on contract termination, switching or in relation to contractual commitments for terminal equipment, consumers may be “effectively hampered” in switching to competitive offers for the entire bundle or part of it. The EECC requires providers extend certain end-user rights provisions to all elements of a bundle (including terminal equipment), such as digital content or digital services, and ECS that are not otherwise directly covered by the scope of those end-user rights provisions. These provisions will help facilitate consumers in switching provider more easily and taking up competitive offers for the entire bundle if it is in their interests to do so. ComReg will monitor bundled offer requirements under the EECC.
- **Disincentives to switching:** ComReg will continue to identify disincentives to switching and will take action to ensure that practices that may be obstacles to consumer switching are removed.
- **Delayed Installations:** ComReg will develop its approach to remedies for missed service and install appointments as provided for under the EECC.
- **Signing-up to Universal Service:** We will continue to examine the need for Universal Service providers and obligations under the new EECC and we will implement appropriate obligations to ensure that universal services are available and affordable and delivered at an appropriate quality. We will continue our work on universal service funding.
- **Premium Rate Services (PRS):** ComReg will continue to monitor developments in the premium rate services markets, including new direct carrier billing services, to ensure that consumers are not subscribed as a result of their first engagement with the PRS and that they are presented with the appropriate information about the subscription service, including on pricing, prior to confirming their subscription and throughout their use

¹⁰⁹ ComReg has published Regulatory Guidance (<https://www.comreg.ie/publication/regulatory-guidance-on-title-iii-end-user-rights-of-the-european-electronic-communications-code-2>).

of PRS, as required by ComReg's PRS Code of Practice. ComReg has already introduced a measure to allow consumers to block mobile PRS if they do not wish to avail of them. ComReg may review if further protections related to third party billing are appropriate.

Using the Service

- 5.54 Having signed up to a service (and completed installation, as relevant) and switched, consumers can now use their service. Ideally no issues occur and the service continues to be provided to the standard expected, billed correctly by the service provider and paid for by the customer. However, issues may arise at any stage, including while using the service, despite the consumer protections that are in place. In this context, it is ComReg's goal that **consumer rights throughout their journey are upheld by their service providers.**
- 5.55 Examples of consumer protections that are in place while using the service include access to emergency services, rights regarding internet access speeds, mobile roaming rights, billing, contractual notifications and rights, complaints handling (code of practice for complaint handling) and redress.
- 5.56 As discussed in Chapter 7, ComReg's Compliance and Enforcement Strategic Intent is that regulated entities comply with regulatory requirements. This is a cornerstone of ensuring that consumer rights throughout the Consumer Journey are upheld by their service provider. Where rights are not upheld, service providers risk enforcement action. Further details on Retail enforcement activities are set out in Chapter 7.
- 5.57 To assist service providers, in November 2020 ComReg published Regulatory Guidance on the End-User Rights of the EECC. The first update was published on 23 December 2020. ComReg will consider its approach to this guidance on new rights together with enhanced publication of enforcement actions.
- 5.58 Consumers should be treated fairly in accordance with their consumer rights. However, issues arise regarding incorrect billing, lack of pricing transparency, bill shock, service issues, inadequate or no contract change notifications and consumers unwittingly upgrading their service (agreeing to a new contract) or extending their contract.
- 5.59 Consumers must be notified, in a manner specified by ComReg, of any changes to the contractual terms and conditions and given the right to exit without penalty where appropriate. We have found that this right is not upheld consistently and we will continue to inform consumers of their rights and take enforcement action.
- 5.60 Consumers must give informed consent to any new contracts with their service provider and must be provided with the relevant pre-contractual information, and, having provided their consent, they must be provided with the requisite contractual information and cooling-off rights.
- 5.61 While it is important that contracts fairly represent the product or service, it is just as important that consumers have appropriate rights when the product or

Goal 2.4

Consumer rights throughout their journey are upheld by their service providers.

service does not meet expectations. For example, when internet access contractual speeds are not met, there are remedies available to consumers.

- 5.62 Another component of the consumer usage experience concerns the bill. The bill that a consumer receives should be accessible, transparent and should accurately represent the products and services that the consumer agreed to contract for and purchase. Often, a consumer can be billed for services that they are not receiving or were unaware of at the time of entering the contract. Consumers can also receive incorrect charges and where there is poor tariff transparency can experience bill shock.
- 5.63 Service issues such as outages may occur. New rights provided for in the EECC that will enhance the protection for consumers when they are in contract and using the service include compensation for missed service appointments, availability of a usage monitoring facility and notifications, end of contract notices and best tariff advice.
- 5.64 Enhanced transparency of Quality of Service may also drive improvements.
- 5.65 When consumers come to the end of their minimum term, they will be provided with an end of contract notice. This will help consumers understand when it would be timely to consider new service offers or if they wish to switch to a new provider, or to be aware when initial contracted rates come to an end. Service providers also must provide consumers with best tariff advice periodically so that they can identify if there is a more suitable tariff plan that meets their needs while considering staying with the current service provider.
- 5.66 Disabled end-users may experience difficulties due to inaccessible information or services. ComReg has put in place several measures to overcome issues and to ensure that there is equal access and choice. Such measures include an accessibility statement, accessible information and complaints procedures, and accessible top-ups for prepaid phones.
- 5.67 Over the coming period, relating to this goal and this part of the Consumer Journey, ComReg will undertake the following activities:
- **Consumer Information:** ComReg will continue to identify information gaps for consumers and provide helpful information so that they are aware of their rights and can deal effectively with their service provider in relation to their contract and their service. ComReg will continue to provide information on topical issues that may affect consumers experience or choices.
 - **ComReg will actively monitor compliance with obligations:** ComReg will continue to actively monitor compliance of service providers with obligations in relation to contracts, contract notifications and billing as well as other aspects.
 - **Net-neutrality monitoring:** ComReg will continue to actively monitor compliance in respect of elements including traffic management practices and consumer contracts as well as monitoring of zero-rated practices.
 - **Roaming:** ComReg will continue to monitor compliance of mobile service providers with the implementation of the EU Roaming Regulations and EU Regulation of intra EU communications.

- **ECAS:** ComReg will continue its work in the ECAS industry forum to improve location information and to assist where appropriate with new provisions in the EECC. ComReg will enforce compliance with connectivity to the ECAS.

5.68 ComReg may consider the need for review of existing or new protections for consumers during the ‘using’ phase or other phases of their Consumer Journey and where ComReg has the responsibility for putting these in place. These measures related to the ‘using’ phase are set out below.

Further Protections for Consumers

5.69 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. Firms may not always follow a course of action of full benefit to consumers. Consumers have a role in increasing market competition, principally, through the ability and willingness of customers to switch suppliers in response to a better deal in the marketplace.

Goal 2.5

Consumer rights and protections, including for vulnerable and disabled consumers, are adequate to mitigate consumer harm.

5.70 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 vulnerable and disabled end-users, ComReg can use its powers to further specify an intervention to ensure that markets work effectively for all consumers. It is therefore ComReg’s goal that **consumer rights and protections, including for vulnerable and disabled consumers, are adequate to mitigate consumer detriment.**

5.71 Related to the above goal, over the coming period, ComReg will consider whether it is appropriate to implement, enhance or evolve measures to mitigate against ECS and PRS consumer harms. This is dependent on the scope of our powers. Our principle focus will be on the protection areas where we do have the power to intervene and will include:

- Consumption monitoring and information and other facilities
- End of Contract Notification and best tariff advice
- Contract Change Notification
- Review of Battery Back-up measure
- Specific provisions for disabled end-users

Consumption monitoring and information and other facilities:

- 5.72 To protect end-users against “bill shocks”,¹¹⁰ including in relation to PRS and other services subject to particular pricing conditions, ComReg will monitor that information required to be provided in a “clear and comprehensible” manner, in a durable medium, prior to concluding the contract is presented to consumers. ComReg will monitor that service providers offer consumers, that are billed either on the basis of time (e.g. calls on a per minute/second basis) or volume (e.g. units of SMS/MMS or data) consumption, a monitoring and usage control facility and notify consumers when any service in their tariff plan is fully used up. This will enable consumers make informed decisions, such as to continue to use their service(s) and thus incur out-of-bundle charges, to stop using services, or to take time to consider changing or upgrading their individual tariff plan if it is in their interest to do so. Following transposition of the EECC, ComReg will consider the appropriateness of any consumption limits, to be set by ComReg. ComReg may introduce provisions on consumption limits and the timing, format and content of any notifications required, pursuant to the EECC.
- 5.73 ComReg may also specify that consumers should have access to certain other additional facilities, free of charge, such as email forwarding, itemised billing, call barring, cost control measures and deactivation of third-party billing.

End of Contract Notification and best tariff advice:

- 5.74 Before a contract is automatically prolonged, providers are required to inform a consumer in a prominent, timely manner, and on a durable medium, of the end date of the fixed term contract and the means by which to terminate the contract (the “End of Contract notice”) and at the same time, best tariff advice relating to their services. After a contract has been prolonged and during the prolonged period of the contract, providers are required to provide consumers with best tariff information, at least annually. ComReg will monitor providers’ approach to compliance with Regulatory Notifications required to be sent to end-users on foot of Article 105 (3) of the Code. ComReg will monitor that best tariff advice is provided to consumers before the expiry of the fixed term, and before any auto-prolongation of the contract and, that best tariff information, required annually, is presented. ComReg has set out its initial policy considerations and views on best practice as regards how to provide Best Tariff Advice/ Information regulatory guidance in respect of certain end-user rights on the basis of the Code¹¹¹ and will consider if further intervention is needed to ensure the objectives of the EECC are met.

Contract Change Notification:

- 5.75 ComReg will monitor providers’ approaches to issuing Contract Changes Notifications for any changes to terms and conditions they propose, while advising consumers whether or not the right to terminate arises, given the change(s) proposed and the exceptions outlined in the EECC. Consumers must be notified individually regarding service providers’ proposed changes to their

¹¹⁰ The term “bill shock” refers to the negative reaction a consumer can experience if they incur unexpectedly high charges from their usage of electronic communications services, such that bills may not match expectations from that usage.

¹¹¹ 20/111R

contractual conditions at least one month in advance of any change (as is the case under ComReg Decision D13/12).¹¹² This ensures that each consumer is informed and is able to record the sequence of changes to their contract, and to know the full extent of contractual terms and conditions governing their contract. Providers are also required to, at the same time, inform consumers of their right to terminate the contract, without incurring any further costs, if they do not accept the new conditions. Following transposition of the EECC, ComReg may further specify requirements to ensure contract change notifications are made in a clear and comprehensible manner, and on a durable medium.

Review of Battery Back-up measure¹¹³

- 5.76 As the availability of high speed broadband using Voice over Internet Protocol technology as well as OTT services continues to increase and expand to all geographical areas, it is recognised that power outages could have a more pervasive impact. ComReg will consider whether it is necessary and appropriate to continue to specify requirements for dissemination of information regarding battery back-up or other measures for fixed voice services over non-public switched telephone networks, such as fibre, cable and fixed wireless access networks and any additional obligations in respect of vulnerable users.

Specific provisions for disabled end-users:

- 5.77 ComReg is undertaking a review of existing obligations on Service Providers, including the Irish Text Relay Service, to ensure that the measures put in place for disabled end-users reflect market evolutions and continue to meet consumer needs. ComReg may consult on any issues identified to be addressed as part of its wider review and in light of the EECC provisions relating to accessible information, notably, on the Contract Summary, on the quality of their services, and on measures taken to ensure equivalence in access for end-users with disabilities. ComReg will ensure those end-user access needs are met and support the equivalence of access provisions for end-users with disabilities envisaged by Article 111 of the EECC.

Leaving the Contract

- 5.78 Consumers may decide to exit their contract for a variety of reasons, including:
- They have come to the end of the contract (minimum term) and have decided to leave.
 - Their service provider has increased the price or altered another part of their contract and they have been given the right to exit and decided to exercise this right.

¹¹² Under Regulation 14 (4) of the Universal Service Regulations 2011; as further specified by ComReg, pursuant to powers under Regulation 14 (5), in ComReg Decision D13/12, Response to consultation and decision: Contract Change Notifications, ComReg document 12/128, dated 30 November 2012 ("Decision D13/12").

¹¹³ 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-backinformation-fixed-voice-services-non-public-switched-telephone-networks/>

- They are moving to a new house or have just decided they no longer require the service.
 - They have been given Best Tariff Advice or an upgrade offer and they wish to enter into a new contract for the offer with their existing service provider.
- 5.79 A fundamental aspect of ensuring that this part of the journey is seamless for consumers is information, for example:
- Information about terminal equipment and unlocking costs and procedures;
 - Information about early termination fees ;
 - Information about refunds;
 - Information about cancelling the contract and ceasing the service;
 - Information about switching to a new service provider;
 - Information about final bills and associated charges;
 - What happens if you are in a bundled contract; and
 - How to resolve issues and complaints when you are no longer a customer.
- 5.80 It is critical that this information is provided to consumers at the relevant stages of their journey, as set out above, in their contract summary/contract, during the switching process and when they are cancelling their services.
- 5.81 Misinformation can cause uncertainty for consumers as to what steps they have to take to cancel a contract, what fees could be charged if they terminate early, when the service will cease and what if anything they still need to pay for terminal equipment such as handsets or modems. Consumers should also be informed as to what should happen in the case of standing orders and direct debits used to pay bills. In addition, consumers should know when to expect to receive a final bill and this should include a refund (not a credit to a closed account) of any amount due to the consumer. Furthermore, consumers should have their handsets unlocked promptly when final balances are paid.
- 5.82 Further details on switching have been set out in the 'signing-up' phase and details on billing in the 'Using the Service' phase.
- 5.83 During the coming period, ComReg will focus on ensuring that accurate information is available to consumers and that cancellation processes (as well as switching processes) are being implemented appropriately by service providers, including through enforcement.

Universal Service - Affordable access to basic services

- 5.84 Universal service guarantees the provision of a defined minimum set of services to all consumers at an appropriate quality and an affordable price.
- 5.85 The purpose of Universal Service under the EECC is to ensure consumers have access at an affordable price to an available adequate broadband internet

access service and to voice communications services, including the underlying connection, at a fixed location. This is only required when the market fails to deliver and public policy interventions have been exhausted. The universal service, which assures reasonable access to an ECN and currently, primarily, a voice service at a fixed location, is a safety net ensuring access to basic ECS.

5.86 There is ongoing liaison between ComReg and DECC on Adequate Broadband internet access under the EECC and ComReg will keep stakeholders informed as appropriate on this matter in the context of ComReg's role as determined by DECC upon transposition.

5.87 The EECC universal service requirements reflect advances in technology, with a view to ensuring that the USO can be adapted to meet the circumstances in Ireland, and to meet future demands for data and voice communication services.

5.88 Currently Eircom Ltd is the designated 'Universal Service Provider' ('**USP**') and has obligations regarding the provision of certain services including:

- **Provision of a voice connection and service:** Eircom must meet every 'reasonable' request for a phone connection at a fixed location. The service provided must be capable of local, national, and international phone calls; fax communications; and data communications at rates that are sufficient to permit functional internet access. Eircom must deliver access at a fixed location at a uniform price and at a specified quality.
- **Retail price cap:** The existing price cap was imposed on Eircom from October 2007 and provides a safeguard on PSTN and ISDN BR line rental and connections fees. The price cap ensures that Eircom cannot increase the prices by more than the rate of inflation as published by the Central Statistics Office. The necessity and appropriateness of this measure is considered as part of the market analysis of the fixed access call origination ('**FACO**') market.

Goal 2.6

All end-users have affordable access to adequate broadband and voice services at a fixed location.

5.89 In addition to the Universal Service, consumers are also entitled to access emergency call answering services. All providers of publicly available ECS must provide free access and connection to emergency services.

5.90 ComReg regularly publishes information on Eircom's USO Quality of Service performance on its website¹¹⁴.

5.91 In respect of funding for the universal service, in 2019 Eircom legally challenged each of ComReg's five 2010-2015 USO funding application decisions. ComReg will defend each of its 2010-2015 USO funding application Decisions. ComReg is progressing Eircom's 2015-2016 USO funding application.

¹¹⁴ Published as Universal Service Requirements – Provision of Access at a Fixed Location (AFL) by Eircom Limited – Quality of Service Performance Data. See ComReg Doc 20/120 for information from Q2 2020 and 2019/2020

5.92 Following ComReg's review of the access to an affordable voice only service from Q3 2021, ComReg will proceed to carry out its role in respect of universal service for Adequate Broadband internet access.

Consumer Complaints and Redress

5.93 For consumers to have confidence in choosing and using telecommunications services, they need to have a resolution process that addresses the imbalance in power between that of a service provider and the consumer. In this context it is ComReg's goal that **consumers have effective redress mechanisms, including access to timely query and complaints handling processes.** In all instances the consumer must raise the matter with their Service Provider in advance of contacting ComReg. All ECS 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 and text. We intervene to achieve a resolution that we consider acceptable for the consumer.

Goal 2.7

Consumers have effective redress mechanisms, including access to timely query and complaints handling processes.

5.94 In addition to ComReg's complaint handling service (ComReg Consumer Line), we have introduced Formal Dispute Resolution Procedures for ECS complaints that have been unresolved for 40 working days or more after lodging a complaint with a service provider. In this case, a consumer may apply to ComReg to adjudicate on a dispute.

5.95 Over the period our work in this area will include the following:

- **Code of Practice for Complaint Handling:** ComReg's goal is that the complaint handling process implemented by service providers works for consumers so that their complaints are resolved quickly and effectively. In order to achieve this, over the coming period we plan to undertake the following complimentary activities:
 - a) Enhance consumer awareness of the Code of Practice for Complaint Handling to ensure that consumers know what they should do and how they should be treated if they have a complaint with their service provider and when they should come to ComReg if they experience issues.
 - b) We will monitor compliance with the minimum standards defined for service providers' Code of Practice for Complaint Handling.
 - c) We will also make the necessary enhancements and interventions in relation to the minimum standards for the Code of Practice for Complaint Handling to improve service provider resolution timeframes and consumers' dispute resolution experiences.
 - d) We will seek additional powers where relevant in relation to consumer protections and the enforcement of those protections.

- Formal Dispute Resolution:** It is the responsibility of Service Providers to resolve complaints from their customers and they are required to have in place a code of practice for handling consumer complaints which they must implement. In 2018, in addition to its service for consumer complaints, ComReg also introduced Formal Dispute Resolution Procedures for certain complaints that have gone unresolved for 40 working days or more after lodging a complaint with a Service Provider. Consumers can complete an application form detailing the interactions with the Service Provider and ask that ComReg adjudicate on a dispute¹¹⁵. A complaint must relate to an issue that ComReg has the power to resolve. ComReg plans to continue its work in this area.

Communication and Engagement

5.96 Communication and Engagement with consumers is critical to ensure consumers know their rights at all stages of the consumer journey and particularly the new consumer rights that apply under the EECC.

Goal 2.8

ComReg is an effective advocate for consumers.

5.97 Our communication and engagement activities include direct contact with individual end-users by phone and email, through outreach events, the provision of information through our website and on social media, and indirect engagement through the media. We also engage through contacts with representative bodies, and we gather information about end-user needs through market research. We keep this mix of engagement channels under review to ensure continuing effectiveness.

5.98 To promote the interests of end-users, we can rely on our regulatory powers and also seek to use our influence with other regulatory bodies and with industry. We aim to be **an effective advocate for consumers**.

5.99 Consumer engagement is critical to ensure consumers know their rights, including new consumer rights set out in the EECC. Our engagement includes direct contact with individual end-users by phone and email, the provision of information through our website and on social media, and engagement with consumers through the media.

5.100 **ComReg Connects** is the consumer brand introduced in 2020 to ensure consumers and the general public to identify with ComReg as a brand that is at the forefront of consumer protection.

ComReg Connects
Trusted Advice and Support

ComReg acts as a conduit between the service providers and the end-user. Our relationship with both the end-user and the service provider continues to focus on the provision of communications services that consumers can choose and use with confidence and the brand captures the essence of who we are and what we stand for.

5.101 Our consumer website **ComReg.ie/consumer** is one of the channels through

¹¹⁵ see ComReg Document 18/104 for full details

which we communicate with consumers and the general public. The site offers consumer information and news to better inform consumers of issues and developments in the market. Over the coming period we plan to enhance this website to make it more informative and to provide a topics-based approach, ensuring that the information that is provided is succinct and consumer friendly.

5.102 In addition to the information available to consumers on our website, we also offer several consumer tools, including:

- an independent service for consumers to check the coverage of mobile service providers (**coveragemap.comreg.ie**)
- a comparison tool to compare prices and other aspects of communication products and offers (**comreg.ie/compare**)
- a Premium Rate Service checker (**servicechecker.comreg.ie**)

5.103 We keep the mix of engagement channels under review to ensure continued effectiveness. Our future vision for communication and engagement is to have consumer-focused webinars and consumer conferences on a periodic basis to afford users of communications services the opportunity to engage with ComReg and ensure we remain an effective advocate for consumers.

5.104 We also engage through contacts with representative bodies as follows:

- **Advisory panels** - ComReg periodically hosts panels to gain insights into consumer issues including issues for end-users with accessibility requirements. The Consumer Advisory Panel ('**CAP**') was established by us in accordance with Section 12 of the Communications Act 2002. The purpose of the CAP is to advise us on developments, innovations and areas of consumer concern which are relevant to ComReg's role. The CAP meets three times each year. The CAP consists of representatives from the Consumers' Association of Ireland, National Disability Authority, Northern & Western Regional Assembly and Chambers Ireland who contribute to discussions on consumer-related topics.
- **Other Engagement** – We will continue to engage with the Mobile Phone and Broadband Taskforce to identify issues and to provide solutions consumers. We also engage with DECC, other public bodies and sectoral regulators regarding matters relevant to consumers (including vulnerable and disabled consumers) through bilateral meetings and relevant committees.
- **Consumer Webinars** - In 2020 we held our first consumer webinar '*The evolving Customer Care Challenge*', which considered the challenges through the experiences shared by a Board Member from the Customer Contact Management Association, the views from the Consumer Association of Ireland and ComReg's own consumer care experiences during Covid-19.

5.105 ComReg as a statutory body is committed to continue to provide 'trusted advice and support'. We will continue to do this through transparent communication that uses easy to understand language throughout our engagement with consumers and the public. Over the coming period, whilst continuing to meet our advisory panel and other engagement as set out above, we also intend to

undertake initiatives relating to this goal:

- **Consumer Communications strategy:** ComReg takes a strategic approach to communicating with consumers and the public, and uses a range of tools and techniques, including campaigns, that are topic specific that address findings of market-based surveys and other sources in relation to information gaps. ComReg will continue to develop the range of communication channels to meet the changing demands and needs of consumers and the electronic communications sector. We are cognisant of behavioural bias and other related issues which serve to misinform or lead consumers to make poor decisions. We will use our competency in this area to assist in making the information we provide helpful for consumers.
- **Consumer Outreach Events:** When it is safe to do, we intend to recommence participating at outreach events and meet consumers face to face, most likely in early 2022. In the meantime, we intend to host webinars that will address consumer topics of interest.
- **Website:** We will continue to improve comreg.ie/consumer and offer a range of tools that offer independent information to users.
- **Brand Roll out:** We will evolve our communication language and style and assets used on the consumer website and direct correspondence with consumers to reflect our ComReg Connects brand values.

6. Connectivity & Network Resilience

Introduction

- 6.1 This Chapter sets out ComReg’s strategic goals associated with connectivity and network resilience and the high-level objective of ensuring that **end-users have widespread access to high-quality and secure communications networks, services and applications**. By ‘connectivity’ ComReg means having access to the necessary ECN to allow for the use of the various services and applications required. For ComReg, the connectivity of end-users is not about pitting one network technology against another, but rather the widespread, continuous and high-quality connectivity of end-users, regardless of how they are connected to ECS/N.
- 6.2 As noted in Chapter 1, it is ComReg’s vision that end-users have widespread access to ECS and ECN. The onset of the Covid-19 pandemic has accelerated the evolving role being played by ECS and ECN in our economy and society. Today, the connectivity of end-users has become essential to ensuring social and digital inclusion. It is ComReg’s view that consumers can only fully participate in society and the wider economy when their connectivity needs are met. As we become increasingly reliant on digital platforms, online media and remote working, the importance of widespread, continuous and high-quality connectivity increases.

Strategic Intent 3:	End-Users have widespread access to high-quality and secure communications networks, services and applications.
What does this look like?	<ul style="list-style-type: none"> • Widespread availability of ECS and ECN’s allows for digital inclusion by all consumers: <ul style="list-style-type: none"> - By 2026, universal coverage of fixed VHCNs is within sight. - By 2024, outdoor mobile voice coverage exceeds 99% of the population and outdoor mobile data coverage at speeds greater than 30 Mbps exceeds 85% of the population rising to greater than 95% of the population by the end of 2028¹¹⁶. • Connectivity challenges are addressed using appropriate tools. In particular: <ul style="list-style-type: none"> - Almost all the population has the option to access mobile voice services indoors by mobile connections or WiFi calling. - Fixed and wireless connectivity is available to support the use of IoT devices where there is demand. • Networks are secure and can withstand shocks

- 6.3 ComReg considers that effective competition drives the rollout of networks and the connectivity of end-users. However, ComReg recognises that even in the presence of regulations designed to ensure effective competition, facilitate investment and protect consumers from harm, not all end-users will be adequately served by high-quality and secure communications networks,

¹¹⁶ This assumes licences are issued with a commencement date of 1 December 2021

services and applications.

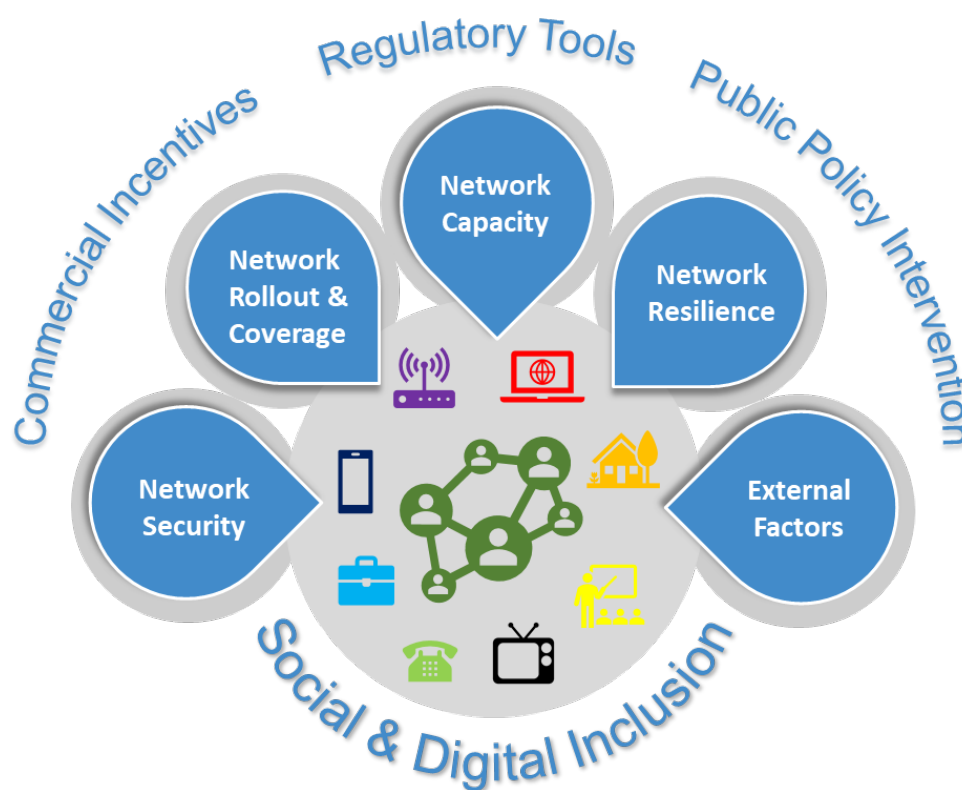
- 6.4 As our reliance on ECS and ECN has grown we have also become more dependent on the availability and proper functioning of telecommunications networks and services. As our reliance has grown, so too has our expectations of what our networks can and should be able to do. In addition, our acceptance or tolerance of network outages or inadequate services has diminished. Where networks have failed to keep up with the rapidly evolving expectations and use-cases of consumers, consumer frustration has grown. ComReg recognises that some end-users are poorly served and cannot use the range of digital services many people take for granted. These end-users may suffer from a lack of a reliable fixed network, mobile network, wireless network or other communications solution at home, at work or on the move. ComReg recognises that some of these end-users may suffer from a lack of multiple different reliable networks at the same time (e.g. poor fixed broadband and poor mobile telephony). In addition, some end-users may suffer from poorer services intermittently, due to a range of factors beyond their control.
- 6.5 As noted previously, while connectivity is largely delivered through the commercial rollout of networks and services, in some parts of Ireland the population density and economics of network rollout have made commercial investments unrealistic. In some parts of Ireland, neither the fixed or mobile networks may be considered high-quality or reliable, especially for internet access and remote working.
- 6.6 By 2022, the volume of internet traffic generated globally is expected to be more than three times what was generated in 2017¹¹⁷. Due to the well documented increase in data growth arising from Covid-19 (set out in Chapters 2 and 3), ComReg expects that this forecast will be surpassed such that the annual mobile data traffic will have grown circa five times by end of 2022.
- 6.7 To meet the growing needs of consumers and enterprise, our networks must be able to support this rise in traffic, with improved network coverage, sufficient capacity and reliable download speeds. Ensuring everyone can access online and digital services, regardless of where they live or how connect to these services, will be key to driving participation in the digital economy and society.
- 6.8 Until recently, much of the focus around connectivity and end-user experience centred around the availability of networks and advertised download speed. The onset of the Covid-19 pandemic and the growth in remote working and remote schooling has shifted the focus towards other important dimensions of the end-user experience, such as overall Quality of Service, latency, network capacity and network security. Our networks and services are also vulnerable to issues such as equipment malfunction, human error, malicious and cyber-attacks, severe weather events and incidents in other sectors (e.g. electricity outages). Accordingly, network resilience, reliability and security (**'NRRS'**) is an area that is becoming more important.
- 6.9 ComReg's role in this area is to have a holistic understanding of the nature of the various connectivity deficits facing the country. ComReg aims to analyse and understand the evolving requirements of consumers, map the progress of

¹¹⁷ Cisco Visual Networking Index (VNI)

network rollout and investments and highlight areas unserved and underserved by ECN.

- 6.10 Where ComReg has regulatory powers and tools to address these issues, ComReg seeks to use these in a manner that complements its other regulatory powers, in particular those aimed at promoting effective competition and facilitating investment (Strategic Intent 1) and protect consumers from harm (Strategic Intent 2). Where others (e.g. DECC) have powers, ComReg seeks to support them in that role and act as a knowledgeable regulator, making informed contributions to policy discussions and debate. In some cases, a multi-agency approach is required to address issues relating to connectivity and network resilience (e.g. cyber security, the Mobile and Broadband Taskforce). Figure 19 below sets out the strategic framework relating to this strategic intent.

Figure 19: Strategic Framework



The Essential Nature of Connectivity

- 6.11 As our economy and society evolves, connectivity to high-quality, reliable and resilient ECS and ECN has become essential to ensuring social and digital inclusion. It is ComReg’s view that consumers can only fully participate in society and the wider economy when their connectivity needs are met. Indeed, to fully participate in the economy and society in an efficient way, it is now often essential for an end-user to use digital services (e.g. e-banking, paperless billing, public services, taxation matters).

- 6.12 In some areas, where the commercial and economic drivers are not strong

enough to drive the investment in high-quality, reliable and resilient networks, end-users are left relying on networks that cannot fulfil their needs. The impact of the Covid-19 pandemic and the rise of working from home has placed a greater emphasis on the need for high-quality, reliable and resilient ECN. Over the coming period ComReg expects this emphasis will continue to grow, as our expectations of our networks evolve and industry invests in network resilience and security, though it is uncertain how persistent the effects of changes in behaviour brought on by Covid-19 will be.

- 6.13 In March 2021, the EC presented a vision for Europe's digital transformation by 2030, called Europe's Digital Decade¹¹⁸, which builds on the Commission's digital strategy of February 2020, as set out in Explanatory Box 11 below. The EU's digital strategy aims to make this transformation work for consumers, while recovering from the Covid-19 pandemic and helping to achieve a climate-neutral Europe by 2050.

Explanatory Box 11: European Commission – Europe's Digital Decade

This vision for the EU's Digital Decade evolves four pillars, each including targets for 2030 with key milestones:

- **Secure, performant and sustainable digital infrastructures:** By 2030, all EU households should have gigabit connectivity and all populated areas should be covered by 5G; the production of cutting-edge and sustainable semiconductors in Europe should be 20% of world production; 10,000 climate neutral highly secure edge nodes should be deployed in the EU; and Europe should have its first quantum computer.
- **Digital transformation of businesses:** By 2030, three out of four companies should use cloud computing services, big data and Artificial Intelligence; more than 90% SMEs should reach at least basic level of digital intensity; and the number of EU unicorns should double.
- **Digitalisation of public services:** By 2030, all key public services should be available online; all citizens will have access to their e-medical records; and 80% citizens should use an e-ID solution.
- **Digitally skilled citizens and highly skilled digital professionals:** By 2030, at least 80% of all adults should have basic digital skills, and there should be 20 million employed ICT specialists in the EU – while more women should take up such jobs.

The EC note that digital technologies will be the key differentiating factor in a successful transition to a sustainable economy and society after the Covid-19 pandemic ends.

The EC's plan sets out a joint governance structure with Member States based on a monitoring system with annual reporting in the form of traffic lights. The EC will publish annually the European State of the Digital Decade Report.

- 6.14 In March 2021 the Irish Government launched 'Our Rural Future' – its plan for the development of rural Ireland over the next five years. The Plan takes into account the change in living and working patterns that emerged during the Covid-19 pandemic. The Plan includes a number of commitments aimed at ensuring the connectivity of all end-users, the rollout of the National Broadband Plan and the establishment of 400 remote working hubs to connect rural towns and villages. The Plan highlights the important role that widespread and high-quality connectivity will play in areas such as eHealth, remote learning, online trading and new technologies. In addition, such connectivity will assist rural

¹¹⁸ Europe's Digital Decade: Digitally empowered Europe by 2030 – https://ec.europa.eu/commission/presscorner/detail/en/ip_21_983

economies to diversify into new sectors and markets.

Connectivity as a necessity

- 6.15 The onset of the Covid-19 pandemic in early 2020 and the subsequent growth in remote working and remote schooling has given added impetus to end-user expectations and need for high-quality, reliable and resilient ECN. As set out in Chapters 2 and 3, there has been a significant increases in data traffic volumes across fixed and mobile networks since the onset of the Covid-19 pandemic. Fixed data traffic volumes grew by 64% in 2020, compared to an average annual growth rate of 24% between 2017 and 2019. As noted in Explanatory Box 12 (below), fixed and mobile data traffic volumes are now significantly greater than pre-Covid-19 base levels.
- 6.16 ComReg has been studying¹¹⁹ the impact of Covid-19 restrictions on consumer uses, expectations and experiences of ECS and ECN. ComReg's quarterly surveys highlight the growing importance of ECS in our everyday lives and our reliance on ECS/ECN to allow us to work from home, school from home and remotely communicate with family, friends and colleagues. Highlights from this research include:
- 90% value being able to access and use their mobile phone and broadband at home during the pandemic.
 - A growing number (up to 76% in Q4 2020) of survey respondents noted their usage of their home broadband service had increased since the onset of the pandemic. Respondents noted increases in remote working, web browsing, watching online tv services, video calling, remote schooling and online shopping.
 - Three-quarters agree that their home broadband is adequate to meet the needs of their household. However, a growing proportion (up to 56% in Q4 2020) of survey respondents would be willing to spend more for a better broadband service.
- 6.17 ComReg will continue to study how the Covid-19 pandemic has impacted the use and reliance on ECS/ECN during 2021.
- 6.18 As the Covid-19 pandemic begins to wind down, it is likely that many people and businesses will continue to work remotely (even on a part-time basis) as the benefits of a better work-life balance become an important tool in staff recruitment, retention and productivity. In January 2021 the Government published its Remote Working Strategy, recognising the economic, social and environmental benefits of remote working and focusing on the development and investment needed in infrastructure to maximise the benefits of remote working. Widespread access to high-quality and secure communications networks, services and applications will be key to unlocking the potential of the Remote Working Strategy and the widespread take-up of new technologies.

¹¹⁹ ComReg Documents (20/35, 20/61, 20/107, 21/06)

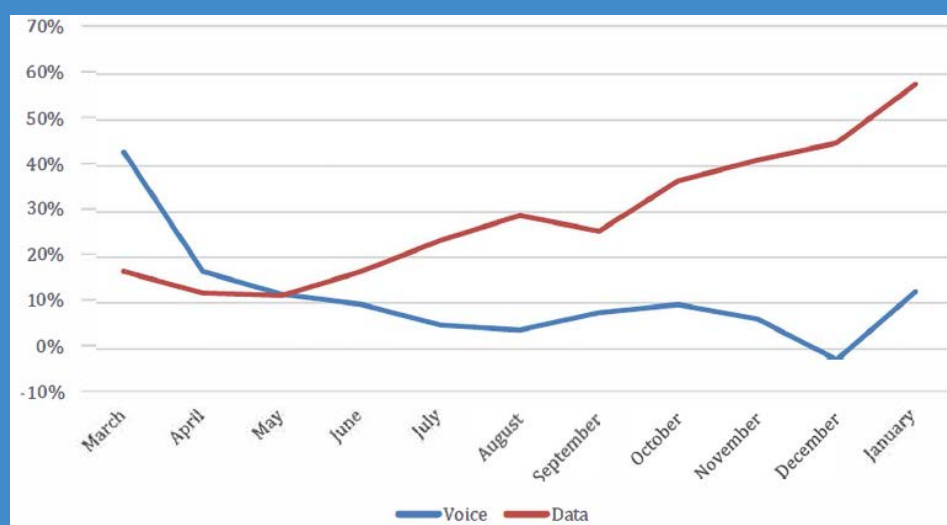
Explanatory Box 12: The Impact of Covid-19 on ECS and ECN

In early 2020, governments around the world introduced a suite of public health measures to tackle the spread of COVID-19. In Ireland, as people began to work and school from home, there were significant changes to the normal traffic levels and patterns on the electronic communications networks ('ECNs'), with operators taking various steps to optimise their networks. Despite the increased voice and data traffic demand over the pandemic, the ECN's have remained stable.

ComReg worked with the industry to best manage the situation, and since the onset of the Covid-19 pandemic, has taken a number of steps to ease network congestion, including the implementation of a temporary licensing framework and assignment of additional spectrum rights in the 700 MHz and 2.6GHz Bands and liberalised spectrum rights in the 2.1 GHz Band. The temporary spectrum rights have been crucial in giving the operators flexibility to mitigate significant congestion in voice and data networks and support the increased traffic at performance measures similar to those achieved pre-Covid.

Figure A below presents the aggregated monthly change in voice and data traffic volume on the mobile networks from April 2020 to January 2021 compared to a pre Covid-19 baseline. Mobile voice and data traffic volumes remain significantly greater than the pre-Covid-19 base levels.

Figure A – Mobile Network Aggregate Traffic Volume Increase (taken from ComReg Doc 21/05)



i - See ComReg Document 20/88 and Document 21/05

Network Coverage and QoS

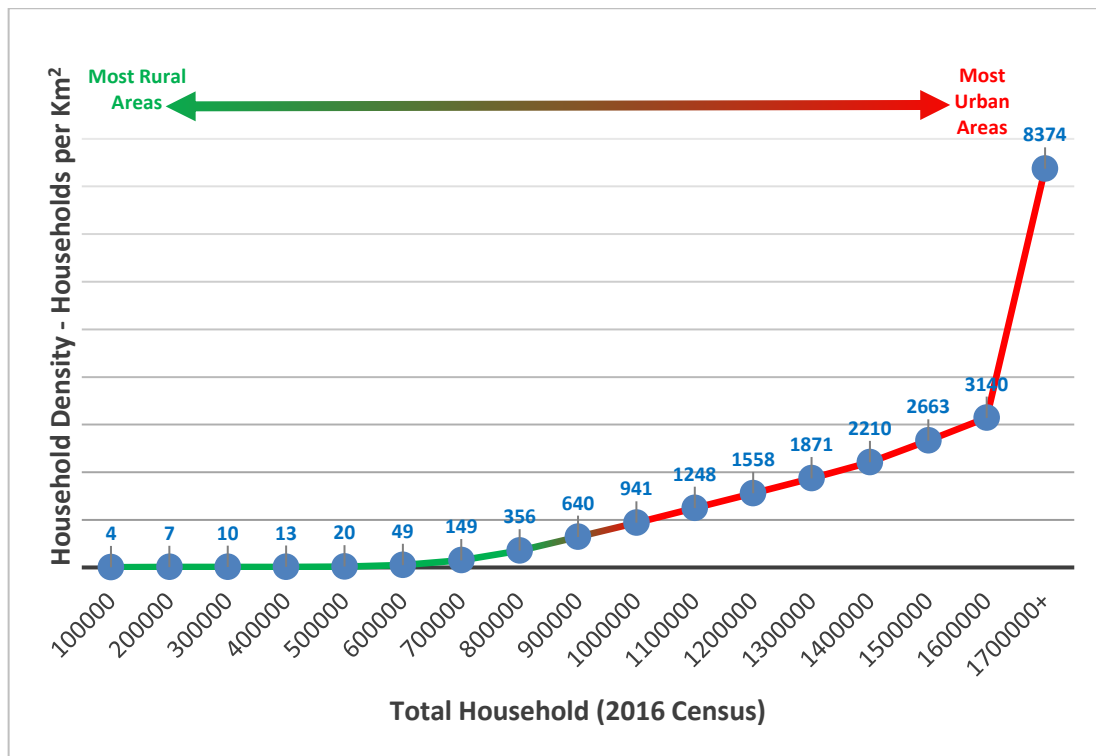
6.19 Ireland has one of the most widely distributed and rural populations in Europe. Ireland's population density of 70.9 people per km² is considerably lower than the EU average of 118 people per km² (Eurostat¹²⁰). However in rural areas, the density of population is only 27 people per km². As population and premises density decreases, the distance between premises increases, making the deployment of ECN more costly. This presents a significant challenge for the deployment of ECN, as people are spread further apart and greater amounts of network infrastructure are required.

6.20 Figure 20 below shows Ireland's 1.7 million households (2016 Census), arranged according to household density (households per Sq. Km.). At a high level, Figure 20 illustrates that a significant proportion of the population live in rural areas with a low population density. Many of the people living in these areas may not be served by high-quality ECN as the investment required are

¹²⁰ See <https://ec.europa.eu/eurostat/databrowser/view/tps00003/default/table?lang=en>

likely beyond the reach of commercial operators.

Figure 20 – Ireland’s Household Density



- 6.21 To date, the commercial and regulatory levers have driven the rollout of VHCN to 1.47 million premises (households and businesses) across the country. Over the next decade, these commercial and regulatory drivers will likely drive the rollout of VHCN further into rural areas, covering 1.7 million premises. The rollout by National Broadband Ireland, covering 540k premises, will supply VHCN services to the most remote parts of Ireland.
- 6.22 In 2018, ComReg published the results of a connectivity study which considered how best to meet consumers’ mobile connectivity needs¹²¹, estimating future mobile connectivity network costings and the implications for spectrum awards and coverage obligations. These reports provided informative analysis on the challenges, solutions and actions to improve connectivity in Ireland, including:
- We live in a period of rapid innovation where consumers are demanding more connectivity and increasingly expect their devices to work in an ‘always on’ manner wherever they are;
 - The NBP is fundamental to making high-speed broadband fixed connectivity available to all premises in Ireland;
 - Good solutions for indoor connectivity include the use of Wi-Fi and native Wi-Fi calling on a fixed broadband connection;

¹²¹ ComReg Documents 18/103, 18/103a, 18/103b, 18/103c, 18/103d

- 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; and
- 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.

6.23 For ComReg, the connectivity of end-users is not about pitting one network technology against another, but rather the widespread, continuous and high-quality connectivity of end-users, regardless of how they are connected to ECS/N. For example, indoor WiFi calling, over a home broadband network, can allow mobile users to make and receive calls when their mobile signal is not strong. Similarly, mobile broadband solutions can allow for internet access where high-quality fixed broadband networks are not available.

Network Resilience, Reliability and Security (NRRS)

- 6.24 One of the key benefits of competition is that end-users can enjoy greater choice of operators providing a wider range of services. However, at a more fundamental level it is also critical that end-users can have a reasonable level of assurance as to the continuity and security of the services and networks being provided, regardless of whether they are provided over a fixed or wireless network. Network outages from events such as cyber-attacks, under-investment or weather-related events can cause significant disruption to end-users resulting in economic, financial and societal losses.
- 6.25 The growing importance and reliance on ECS and ECN means that it is essential that adequate precautions and necessary investments are made to ensure continuity and availability of networks and the services provided over these networks. Network and service outages can cause significant disruption to end-users resulting in economic, financial and societal losses. While ComReg recognises that ‘force majeure’ events can and will happen, resulting in a temporary loss of service that is unavoidable, it is essential that all reasonable precautions and processes are in place to ensure continuity of supply.
- 6.26 Seventeen NRRS related incidents were reported to ComReg in 2020, compared to eleven in 2019. The overall number of User Hours lost due to incidents reported in 2020 was 50,726,256; which is approximately 10 times that of 2019. Of the 2020 meteorological events, Storms Brendan, Ciara and Dennis, caused outages above ‘business as usual’ levels, totalling 1,481,688 User Hours lost. During Storms Ellen, Francis, Jorge and Aiden the networks operated normally. Further details on such incidents can be found in the NOU Annual Report 2020¹²².

¹²² ComReg Document 21/29

Essential Digital Infrastructure

- 6.27 As noted above, ComReg views connectivity in a holistic way, recognising that there are a variety of networks, technologies and solutions available to people to help fulfil their connectivity needs. In addition to fixed and mobile networks, there are other networks, such as wireless networks and satellite broadband networks, that can help offer connectivity to end-users. Where consumers have had issues with indoor mobile connectivity, ComReg has advocated for the use of Wi-Fi and Native Wi-Fi calling¹²³ over a fixed broadband network¹²⁴. To date Wi-Fi calling has been made available by Vodafone and Eircom. Three Ireland has also planned to introduce Wi-Fi calling on its network in the near future.
- 6.28 ComReg also recognises that some end-users suffer from a lack of a reliable fixed network, mobile network, wireless network or other communications solution at home, at work or on the move. ComReg recognises that some of these end-users may suffer from a lack of multiple different reliable networks at the same time (e.g. poor fixed broadband and poor mobile telephony), making the challenge of having access to high-quality and reliable connectivity even greater. In addition, some end-users may suffer from poorer services intermittently, due to a range of factors beyond their control.
- 6.29 It is ComReg's view that for consumers and businesses around the country, it is the quality and reliability of their service that matters, rather than the means of delivery. Ensuring the widespread availability of these high-quality and reliable services is the focus of ComReg's strategy in this area. In this context it is ComReg's goal that **telecommunications networks, technologies and solutions allow end-users to fully participate in all aspects of society**.
- 6.30 The EECC includes a new objective that ComReg, Government and BEREC shall pursue: promote connectivity and access to, and take-up of, very high capacity networks, including fixed, mobile and wireless networks, by all citizens and businesses of the Union. In pursuit of this objective, the EECC also restates the need for a balance between providing adequate incentives to invest in VHCN and the need for regulation.
- 6.31 To aid economic recovery in the EU following the Covid-19 pandemic, the EC published a Recommendation¹²⁵ calling on Member States to boost investment in VHCN and 5G. The recommendation sets out guidance for developing best practices (or a 'Toolbox') aimed at reducing the cost of deploying VHCN and

Goal 3.1

Telecommunications networks, technologies and solutions allow end-users to fully participate in all aspects of society.

¹²³ 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.

¹²⁴ In the proposed second multi-band spectrum award (MBSA2) ComReg is putting additional licensing conditions to improve indoor voice and text coverage and quality of service. These obligations will require that licensees deploy and maintain Voice over LTE (VoLTE) and Native Wi-Fi technologies within 2 years. Further info can be found here: See <https://www.comreg.ie/industry/radio-spectrum/spectrum-awards/proposed-multi-band-spectrum-award/>

¹²⁵ EC Recommendation C(2020) 6270 of the 18th of September 2020.

ensuring timely and investment-friendly access to 5G radio spectrum, in order to help foster connectivity as a crucial asset for European competitiveness, sustainability and future digital services. The recommendation calls on NRA, BEREC, RSPG and the EC to work together on the development of the Toolbox and its implementation, as a matter of urgency. The Recommendation also sets out a number of key areas for consideration:

- Streamlining permit granting procedures,
- Improving transparency through the single information point,
- Expanding the right of access to existing physical infrastructure,
- Dispute resolution mechanisms,
- Reducing the environmental footprint of networks, and
- Incentives for 5G investment.

6.32 Member States are required to report on implementation of the Toolbox by April 2022.

6.33 Relating to this goal, over the coming period ComReg will undertake the following tasks:

- **EC Toolbox for VHCN and 5G Rollout:** ComReg will assist in preparing a report on the implementation of the Toolkit by 30th April 2022.
- **Geographic Mapping of Networks:** In accordance with Article 22 of the EECC, ComReg will compile and publish a map of each broadband network in Ireland, including forecast coverage. These maps can then be used by consumers, industry and policy formulation by Government. Internally, these maps will help inform ongoing ComReg projects (e.g. Market Analyses, USO Designations etc.)
- **Monitor network and technology developments:** Over the coming period it is expected there will continue to be developments and innovations¹²⁶ in network technologies that will enhance the end-user experience. It is ComReg's aim to monitor these innovations and facilitate their use where appropriate.
- **Digital Divide:** ComReg will continue to monitor the emergence of digital divides in various ECS markets and in adjacent markets. These insights will help give us a holistic understanding of the connectivity challenges facing end-users and help inform various policy and regulatory decisions made by ComReg.

Supporting Interventions

6.34 As discussed previously in Chapter 4, ComReg recognises that competitive forces, left to their own devices, will deliver ECS and ECN to a certain level and quality. However, achieving high-quality connectivity beyond this level towards ubiquitous connectivity is unlikely to be provided due to the uncommercial

¹²⁶ Such developments and innovations are likely to include the rollout of 5G, Low Earth Orbiting satellite broadband, ViLTE (Video over LTE), DOCSIS 4.0 and Small Cells

nature of network rollout in some geographic areas.

- 6.35 ComReg and Government have certain regulatory tools available that could be used to incentivise infrastructure deployment into areas currently unserved by commercial networks. ComReg uses these tools, along with its various tools discussed elsewhere in this Strategy to deliver on its Mission and Vision for the ECS sector and end-users. In this context it is ComReg's goal that **utilising the regulatory toolkit, ComReg's activities promote connectivity and/or incentivise infrastructure rollout.**
- 6.36 ComReg recognises that while its toolkit does include a number of useful and effective tools to enhance connectivity, it also has its limitations in addressing the connectivity problems facing some end-users. Where other public bodies have policy or legislative roles relating to the ECS sector and adjacent markets, ComReg seeks to engage positively with such bodies and contribute to the wider policy setting with DECC and other Government departments.

Goal 3.2

Utilising the regulatory toolkit, ComReg's activities promote connectivity and/or incentivise infrastructure rollout.

NBP, State Aid and Universal Service

- 6.37 Where the commercial and regulatory levers are insufficient to deploy networks, public funding is bridging the gap to serve remote areas. The EU State Aid guidelines ensure that such funding does not distort competition and provide a competitive advantage to those receiving the funding. Over the last 15 years the Irish Government has invested in ECN through various schemes (See Explanatory Box 13 below), most recently through the awarding of the National Broadband Plan to National Broadband Ireland.
- 6.38 While ComReg is not responsible for the NBP, as the sector specific NRA, ComReg makes itself available to assist policymakers to design state interventions that complement the market and regulation. In addition, ComReg provides technical advice to DECC on the NBP and in this regard it has seconded a number of staff members to DECC in order to provide such assistance.
- 6.39 ComReg recognises that the NBI rollout, over time, may have implications for regulation (e.g. market analyses). At all times ComReg will consider the impact of the NBI rollout on the state of competition in the relevant retail and wholesale markets.
- 6.40 The purpose of universal service is to ensure consumers have access at an affordable price to an available internet access service and to voice communications services, including the underlying connection, at a fixed location. Under the EECC, intervening to provide access is only appropriate if there is an unserved need when the market fails to deliver and public policy interventions have been exhausted. The scope of universal service is defined by the EECC. Universal Service therefore acts as a safety net ensuring that all Irish citizens have access to basic ECS. Ireland's current Universal Service for fixed voice communications services is further discussed in Chapter 5.
- 6.41 As new networks get rolled out and the NBI rollout advances, the role of a

Universal Service and having access to adequate broadband comes into focus. There is ongoing liaison between ComReg and DECC on Adequate Broadband internet access under the EECC and ComReg will keep stakeholders informed as appropriate on this matter.

Explanatory Box 13: Public Investment in Networks

Metropolitan area network (MAN)

The MANs are publicly owned fibre optic networks that allow wholesale and open access to all telecommunication operators. A MAN consists of telecoms ducting and fibre optic cable laid in a ring formation in a metropolitan area and is capable of delivering virtually unlimited bandwidth to 94 towns and cities throughout regional Ireland.

The MANs were funded with support from EU structural funds. In 2009, enet were awarded a 15 year contract to run the MANs on behalf of the Government.

National broadband scheme (NBS)

The NBS was co-funded by the European Regional Development Fund (ERDF), and designed to deliver basic, affordable broadband to target areas across the country in which services were insufficient.

Three won the contract and rolled out the NBS scheme on behalf of the DECC. Under EU State Aid rules, this intervention was for a limited duration. The NBS ended following a 68 month operational period in August 2014. Three continue to provide broadband coverage throughout NBS areas on a commercial basis. The Government contributed €79.8 million towards the NBS.

National Broadband Plan (NBP) and National Broadband Ireland

The National Broadband Plan is a Government initiative with the aim to connect all of Ireland's communities by dealing with the broadband connectivity challenge in rural areas. Rollout of the NBP was awarded to National Broadband Ireland in 2019. The NBP aims to achieve a minimum of 30Mbps download to all premises that will not be able to access such services through commercial investment alone. Approximately 540,000 premises are included in the Governments plan.

Mobile Coverage

- 6.42 As noted previously, ComReg is in the process of completing the second multi-band spectrum award which will see the release of 470 MHz of harmonised spectrum rights in the 700 MHz Duplex, 2.1 GHz, 2.3 GHz and 2.6 GHz Bands¹²⁷. This includes licences conditions to ensure that by 2024, outdoor mobile voice coverage exceeds 99% of the population and outdoor mobile data coverage at speeds greater than 30 Mbps exceeds 85% of the population rising to greater than 95% of the population by the end of 2028.¹²⁸
- 6.43 ComReg has also indicated that there may be a case, in the public interest, for more interventionist measures to provide coverage in locations which would not be commercially viable. However ComReg considers that there are significant policy issues to be addressed, including whether such measures are value for money, how target locations might be chosen, and how any initiative would comply with state aid rules. While it would not be appropriate for ComReg to make policy choices, it can provide expert input to inform consideration of possible mechanisms to secure coverage outcomes beyond market-driven levels.
- 6.44 In 2019, ComReg published an outdoor mobile coverage map to allow

¹²⁷ See <https://www.comreg.ie/industry/radio-spectrum/spectrum-awards/proposed-multi-band-spectrum-award/>

¹²⁸ This assumes licences are issued with a commencement date of 1 December 2021

consumers to check operator coverage and expected signal levels at locations around the country. The map enables users to identify providers that can best meet their individual needs depending on where users live, work, study and spend their leisure time.

- 6.45 Meeting the future needs of Irish consumers accessing data hungry applications from mobile devices will likely require not only the improved coverage of mobile networks, but also the ability of consumers and services to move seamlessly between mobile and fixed broadband networks when making a call or using data services. The rollout of fixed networks by commercial operators and NBI and the availability of additional spectrum through future spectrum awards are key enablers to meet this challenge.
- 6.46 The Mobile Phone and Broadband Taskforce was setup in 2016 to provide solutions to the broadband/phone coverage deficit, and to investigate how to provide better services for consumers including better use of State assets. The mandate for the Taskforce was renewed in the 2020 Programme for Government and ComReg looks forward to continuing to engage with the Taskforce and assisting in fulfilling its mandate where possible.

Fixed Network rollout

- 6.47 The Broadband Cost Reduction Regulations came into effect in 2016 with the primary purpose of facilitating and reducing the cost of deploying high-speed public ECN, ultimately to the benefit of businesses and consumers. The Broadband Cost Reduction Regulations are of relevance to public ECN (such as broadband network providers) and utilities networks operators (i.e. those operating in the gas, electricity, water, rail, road, ports and airports sectors). The Broadband Cost Reduction Regulations have not been used by operators to any great extent. The EC is currently reviewing the effectiveness of the Regulations.
- 6.48 ComReg has three functions under the Broadband Cost Regulations, namely:
- The function of ensuring compliance with the Broadband Cost Regulations;
 - The functions of the national dispute settlement body in the event of disputes arising between network operators in relation to the Broadband Cost Reduction Regulations. ComReg has published its process to handle disputes arising in relation to the Broadband Cost Reduction Regulations¹²⁹; and
 - The functions of a “Single Information Point” (SIP) to facilitate access to information regarding statutory permits for civil works required to develop elements of a high-speed public ECN. The SIP is published on the ComReg website.¹³⁰
- 6.49 ComReg is currently considering whether an enhanced SIP would promote a greater use of the Broadband Cost Reduction Regulations. However ComReg notes that the experience of other Member States (via information gathered

¹²⁹ ComReg, 2016, Broadband Cost Reduction Regulations - Dispute Process, 16/77r, September.

¹³⁰ See <https://www.comreg.ie/industry/electronic-communications/single-information-point-bcrr/single-information-point-sip/>

through BEREC) indicates a fully integrated SIP can involve considerable outlay (both financial and manpower). To date ComReg has not been made aware of any particular interest from operators for such an enhanced SIP. We are therefore unsure if the extra effort would justify the cost and are interested in views on this matter.

- 6.50 The EECC also sets out new provisions relating to co-investment in VHCN. Articles 76 and 79 of the EECC set out arrangements for co-investment agreements between an SMP operator and another operator to build a VHCN or mobile base station, exempting such investments from SMP-type access remedies. ComReg will consider any such proposals from industry regarding such co-investment should they arise. The EECC sets down further conditions to be considered by ComReg (e.g. risk sharing and continued access for access seekers) before allowing such co-investment arrangements. Article 79 sets out new powers for the NRA to make access and co-investment offers made by an SMP provider binding, in-lieu of imposing SMP obligations.

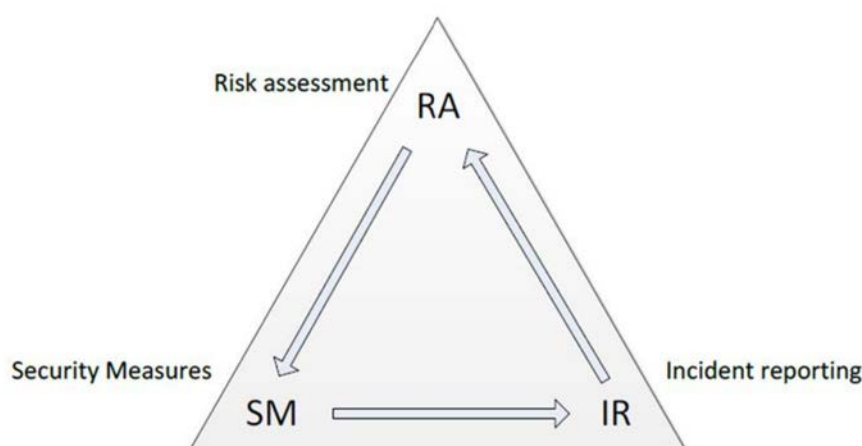
Network Security & Resilience

- 6.51 The resilience of an electronic communications network or service¹³¹ relates to the ability of the network or service to return to its normal state following a disruptive incident. The resilience of an electronic communications network can be affected in its core and in its distribution and access sections, all of which can then impact the network operator, its customers, and other providers of ECS and/or ECN who rely on wholesale access or interconnection.
- 6.52 The interconnectivity and interoperability of networks has become increasingly important, particularly having regard to the overall resilience of networks and assurances around the continuity of services. Resilience is therefore an issue not just for individual networks and services but also because of the increased potential for problems arising from the interdependence of networks and services. This includes, for example, the interrelationship between mobile and fixed networks.
- 6.53 As an economic regulator, ComReg considers whether there is a risk of market failure which could cause operators to underinvest in the security and resilience of networks and services. One potential failure is that end-users do not have the information or technical skills to differentiate between operators according to the way that the operators manage risks around security and resilience of the networks and services they provide. Thus investments in the security and resilience of networks and services may not improve the competitiveness of individual operators' offerings. There is also a potential market failure with respect to systemic risks – risks that could affect the whole industry. Investments in mitigating systemic risk would benefit all end-users, not just the customers of the operator making the investment. On the other hand, if all operators are exposed to the same systemic risk, then there will be no competitive disadvantage if the risk crystallises – so there is a reduced commercial incentive to mitigate it.

¹³¹ ComReg's activities in respect of the resilience of electronic communications networks and electronic communications networks is limited to Regulation 23 and 24 of the Framework Directive and Article. 40 & 41 the EECC

- 6.54 Public communications networks or publicly available electronic communications services are required¹³² to manage the integrity and security of their networks and services. In addition, they are required to take appropriate technical and organisational measures to appropriately manage risks to the security of such network or service, having regard to the state of the art and ensuring a level of security appropriate to the risk. Such a risk-based approach should lead operators to prevent, resist, mitigate and recover from any threat to security and resilience of networks and services they provide.
- 6.55 Operators are therefore required to notify ComReg in the event of a breach of security or loss of integrity that has a significant impact on the operation of their networks or services¹³³. Where ComReg receives such reports, it is required to inform DECC and, where appropriate, the European Network and Information Security Agency ('ENISA') and public.
- 6.56 ENISA provides a useful methodology (Figure 22 below) for service providers to adopt when reporting incidents, highlighting the relationships between security measures, incident reporting and risk assessment. Following an incident, a risk could be lessened by adopting suitable mitigation measures.

Figure 21: ENISA Methodology



- 6.57 To ensure that network security and resilience is effectively managed, operators should have a comprehensive understanding of all relevant risks to which they are exposed and analyse those risks. In this context, it is ComReg's goal that operators have **appropriate risk-based procedures in place to manage network security and resilience**.
- 6.58 One of the threats to the security and resilience of ECS and ECN is a cyber-attack. As a consequence of the threat of cyber-attacks in Ireland, ComReg collaborates with Ireland's National Cyber Security Centre ('NCSC'), part of DECC, which is the lead agency for Ireland within the Cyber domain.

Goal 3.3

Operators have appropriate risk-based procedures in place to manage network security and resilience.

¹³² Under Regulation 23 of the Framework Regulations

¹³³ See ComReg Document 14/02a and ComReg Document 19/98

- 6.59 There are many aspects to network security and resilience which do not fall within ComReg's remit, including data privacy and the protection of IT systems from cyber-attack. A variety of public bodies currently have a role in network security and resilience (see Explanatory Box 14 below).

Explanatory Box 14: Multi-agency involvement in network security and resilience

A range of agencies beyond ComReg have responsibility in relation to network resilience and security. The relevant stakeholders vary according to the issue at hand and its potential impact. Effective engagement with these stakeholders is necessary to ensure appropriate oversight and consistency and to avoid the duplication of activities. Details of the current agencies are below:

ComReg

- Gathers information needed to assess the security and integrity of a service provider's network or services
- Issues directions to a service provider to undertake an independent security audit
- Receives reports from operators on network failures above a certain threshold
- Reports severe incidents to European Union Agency for Network and Information Security

European Union Agency for Network and Information (ENISA)

- Provides supports to the EU and the Member States in enhancing and strengthening their capability and preparedness to prevent, detect and respond to network and information security problems and incidents

Department of the Environment, Climate and Communications (DECC)

- Operates as lead Government Department for emergency situations relating to ICT
- Runs the National Cyber Security Centre (NCSC), which contains the Computer Security Incident Response Team. This is focused initially on the State sector and also acts as a national point of contact.
- Carries out emergency response planning with Gardaí, HSE and Local Authorities
- Published the National Cyber Security Strategy which identifies Critical Network Infrastructure and Critical Information Infrastructure as key components requiring ongoing protection.

Office of the Data Protection Commissioner (ODPC)

- The ODPC is responsible for upholding the rights of individuals as set out in the Acts, and enforcing the obligations upon data controllers.

Gardaí

- Criminal Investigation through Garda Bureau of Fraud Investigation

Defence Forces

- Its primary role is to defend the State. Part of that role includes providing aid to the Civil Power/Aid to the Civil Authority as part of Ireland's National Security, including where network resilience and security can be a threat to Ireland's National Security.

- 6.60 In the context of this goal, over the coming period, ComReg intends to undertake the following projects:

- **Collaboration:** ComReg will continue to work with other sectors and agencies of State where matters of network resilience and security have an impact. ComReg will continue its collaboration with the NCSC on matters related to network resilience and security where appropriate, in addition to assisting with the implementation of measures of the NCSC's

National Cyber Security Strategy 2019 – 2024¹³⁴ where ComReg were asked to assist.

- **Network Resilience Project:** ComReg is currently engaging in an assessment of the risk management practices of ECS/ECN providers. This multi-year project entails a number of phases. The project focuses on the different components of ECS/ECN network elements, for both fixed and mobile networks and services, including network core for fixed and mobile networks, fixed and mobile network access, international access and operator supplied customer premises equipment ('CPE'). The project is now well underway and ComReg will continue to engage with ECN/ECS providers over the coming strategy period.
- **Network Resilience Forum:** The overall resilience of networks and assurances around the continuity of services to ensure the interconnectivity and interoperability of networks has become increasingly important. It is ComReg's goal to continue to promote improving the overall resilience of networks through the Network Resilience Project. Further to this, ComReg will seek to establish a Network Resilience Forum among the ECN providers, to share and discuss best practice and the "state-of-the-art" in respect of Network Resilience. The work of the Network Resilience Project will be used in the analysis of network incidents to identify if there are any systemic risks.
- **Network Operations Annual Report:** ComReg will continue to publish an annual report relating to its activities, particularly in the area of network resilience and security. The Network Operations Annual Report for 2020 was published in March 2021¹³⁵.
- **ENISA Report:** ComReg will continue to report incidents to ENISA on an annual basis, in line with its statutory obligations.

¹³⁴ The National Cyber Security Strategy 2019 – 2024 - https://www.ncsc.gov.ie/pdfs/National_Cyber_Security_Strategy.pdf

¹³⁵ ComReg Doc 21/29

7. Compliance and Enforcement

- 7.1 Regulation is only effective when regulated entities comply with their regulatory obligations. In this regard, ComReg's strategic intention relating to compliance and enforcement supports and underpins the effectiveness of the previous three strategic intentions.
- 7.2 ComReg's statutory functions in respect of compliance and enforcement can, broadly speaking, be divided into two categories: to ensure regulated entities comply with their regulatory obligations and to ensure that the radio spectrum is managed in an efficient and effective manner.
- 7.3 In regard to the former, regulatory obligations may stem directly from legislation or from measures imposed by ComReg in exercise of its statutory functions. In relation to this function ComReg actively monitors compliance with obligations and may carry out investigations and pursue, depending on the circumstances, different enforcement options.
- 7.4 In regard to ComReg's statutory obligations in respect of the management of the radio spectrum, ComReg conducts a programme of measurements to ensure licensees comply with their licence obligations.
- 7.5 This Chapter sets out ComReg's strategic goals associated with enforcing compliance with regulatory obligations with the high-level objective of ensuring that **regulated entities comply with regulatory requirements**.

Strategic Intent 4:	Regulated entities comply with regulatory requirements.
<p>What does this look like?</p>	<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.

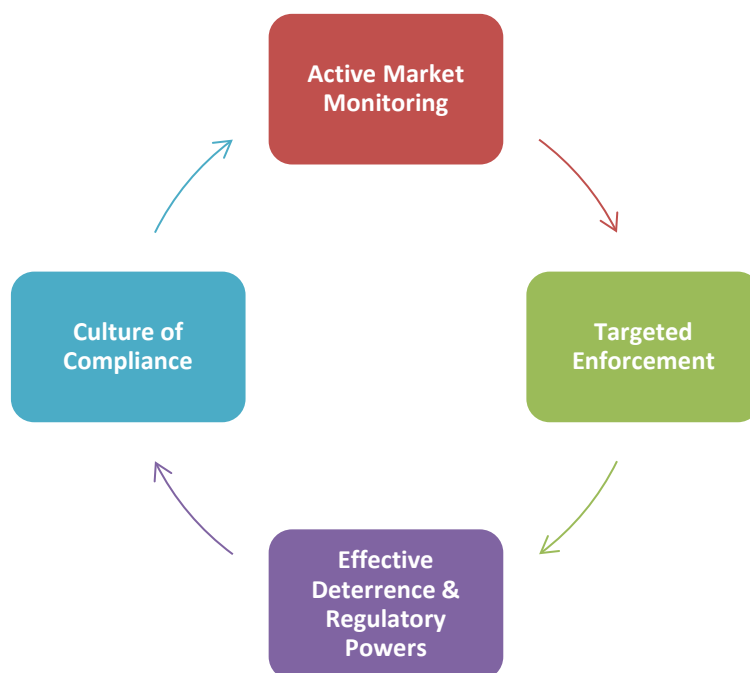
- 7.6 A key consideration informing ComReg's strategy is the fact that there is a variety of different compliance environments in which ComReg is active. ComReg performs a variety of monitoring and enforcement roles such as compliance with spectrum licensing conditions, and compliance by operators with obligations imposed by ComReg and/or statute, in both a retail and wholesale context. In general however, it is useful to think of the elements of an enforcement strategy in the following terms:
- **Culture of Compliance:** The first best situation is where regulated entities comply voluntarily with their obligations and have an internal culture of compliance;
 - **Active Monitoring:** Using information and data from a variety of sources, the monitoring of the application of regulatory obligations ensures markets can develop properly;

- **Targeted Enforcement:** Targeted compliance and enforcement activities involve directing resources toward activities - such as investigations, and in the event of a finding of non-compliance, the pursuit of an appropriate enforcement action – in a way that maximises the effectiveness of the regime in totality; and,
- **Effective Deterrence:** The effectiveness of the regime depends not only on bringing non-compliant conduct to an end but also on its impact in terms of deterring future non-compliance.

7.7 An effective strategy involving targeted compliance and enforcement activities having effective deterrence properties promotes a culture of compliance within regulated entities. A strong and effective deterrence regime and regulatory powers should move regulated entities to ensure their systems and processes are fit for purpose, they comply with necessary regulatory obligations and that they address any instances of non-compliance in a timely manner. Regulated entities can expect to see a corresponding reduction in complaints (arising from customers or industry) when a positive culture of compliance is in place.

7.8 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 22: Optimal Enforcement



Different Enforcement Settings

7.9 In relation to the electronic communications sector, ComReg has three principal areas of responsibility in respect of compliance and enforcement:

- Spectrum management,

- Wholesale (SMP) regulation, and
- Consumer protection.

Compliance and enforcement in the context of spectrum management

7.10 ComReg has a statutory function to manage the radio frequency spectrum in Ireland. This includes:

- 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.

7.11 With respect to unauthorised use of spectrum, typical issues that arise include the unlicensed use of the radio spectrum for broadcasting, non-renewal of wireless telegraphy licences, and the use of equipment that is not compliant with the obligations set out in the relevant legislation for which ComReg is the designated Market Surveillance Authority^{136,137}.

7.12 ComReg undertakes a proactive series of monitoring activities, including but not limited to, drive testing of the mobile networks to assess coverage requirements as well as conducting surveys to ensure licensee compliance with non-ionising radiation limits.

Compliance and enforcement in the context of wholesale regulation

7.13 As set out in Chapter 4, ComReg may impose *ex-ante* obligations on undertakings where they are found to have Significant Market Power (SMP). The *ex-ante* obligations are wholesale remedies to competition problems identified in the regulated markets and are aimed at promoting efficient, sustainable competition, efficient investment and innovation and to give the maximum benefit to end-users. These *ex-ante* obligations include:

- Obligations to provide access to, and use of network elements and associated facilities
- Obligations to have in place price controls such as cost orientation and cost accounting
- Obligations to have separated accounts
- Obligations regarding EU-wide call termination rates (mobile and fixed)
- Obligations to act in a transparent and non-discriminatory manner, and
- Obligations to publish certain information

7.14 It is only when the SMP operators, particularly Eircom, comply with the full suite

¹³⁶ The European Union (Radio Equipment) Regulations 2017 S.I 248 of 2017.

¹³⁷ European Communities (Electromagnetic Compatibility) Regulations 2017, S.I 69 of 2017.

of *ex-ante* obligations that the identified competition problems are mitigated. While partial compliance may be sufficient to encourage market entry, access seekers' confidence to continue to invest can be undermined if, for instance, they discover later that they have been treated in a discriminatory fashion or that there has not been full transparency as required by the regulatory regime, or that their access requests have been unnecessarily delayed. For this reason every instance of non-compliance has the potential to seriously damage competition – especially if it is an instance that has not been prevented, detected or remedied by the SMP operator's own internal compliance processes.

- 7.15 ComReg is responsible for monitoring and enforcing compliance with such SMP regulatory obligations. In addition to the SMP obligations there are various obligations monitored and enforced by ComReg arising under the EU regulatory framework for electronic communications and under national legislation. ComReg also has a role in relation to disputes between undertakings in the electronic communications sector.¹³⁸
- 7.16 There are several reasons why ComReg might open an investigation. These include own initiative monitoring of undertakings compliance with existing obligations (discussed below), and investigations based on information coming to the attention of ComReg through such mechanisms as complaints from undertakings. There may also be formal requests from undertakings for ComReg to use its dispute resolution powers.
- 7.17 In February 2021, ComReg published guidance on its approach to the calculation of financial penalties for the purpose of enforcement of breaches of the the Access Regulations (ComReg 21/20). As ComReg's enforcement practices and methodologies evolve, we will consider whether it is appropriate to publish further guidance on its activities relating to breaches of the the Access Regulations.

Compliance and enforcement in the context of consumer protection

- 7.18 ComReg is responsible for monitoring and enforcing compliance by undertakings in the electronic communications sector as well as premium rate service providers with a variety of consumer protection provisions. The principal consumer protection laws arise from the EU regulatory framework for electronic communications, which protect end-users and subscribers, noting particularly the end-user provisions of the EECC, the Privacy Regulations regarding unsolicited calls and related matters, as well as the 2002 Act, the PRS Act¹³⁹ and obligations on all undertakings pursuant to their General Authorisation, in addition to the Consumer Rights Regulations¹⁴⁰ and the Unfair Contract Terms Regulations.¹⁴¹
- 7.19 Consumer protection provisions are intended to protect consumers at each

¹³⁸ Disputes may arise under Regulation 31 of the Framework Regulations, Section 57 of the 2002 Act, and Regulations 4, 5, 6, 7, 8 and 9 of the Broadband Cost Regulations.

¹³⁹ Communications Regulation (Premium Rate Services and Electronic Communications Infrastructure) Act 2010

¹⁴⁰ European Union (Consumer Information, Cancellation and Other Rights) Regulations 2013 (S.I. No. 484/2013).

¹⁴¹ The European Communities (Unfair Terms in Consumer Contracts) Regulations 1995 (S.I. No. 37 of 1995), as amended. Note, in particular amendments by European Communities (Unfair Terms in Consumer Contracts) (Amendment) Regulations 2014 (S.I. No. 336 of 2014).

stage of the Customer Journey. Broadly speaking these are (i) Looking, (ii) Signing Up, (iii) Using the service and (iv) Leaving the contract.

- 7.20 Within the period of this strategy, as well as the considerable changes which the EECC introduces, ComReg will continue to focus on precontractual protections provided in the Net Neutrality Regulations. For the in-contract stage, focus will continue on billing matters and the integrity of information and processes surrounding contracts. Contract change notifications have continued to present problems for consumers. ComReg will also observe the workings of Codes of Practice and whether operators are abiding by them. In addition, switching protections at the end of customer contracts have long been a concern of ComReg and these will continue to be monitored. The effect on switching of “unlocking” procedures for mobile devices is likely to attract increased attention within the period as is the expected consumer benefit introduced by the “best tariff advice” provisions of the EECC. The return of accumulated credits in pre-pay contracts as required by the EECC will be an additional post-contractual focus in the period.
- 7.21 There are several reasons for opening investigations relating to consumer protection. ComReg monitors trends in complaints received from the general public made via ComReg’s consumer care team and ComReg’s website. ComReg investigates these complaints and emerging trends, and makes an assessment to determine their validity. ComReg may also open own initiative investigations to monitor and assess the general conformance to obligations falling within ComReg’s remit. Some of the key issues that arise in this context, and as discussed in Chapter 5, relate to billing issues, contract terms, and informed consent to bill/provide PRS service. In addition to the new provisions of the EECC, the Net Neutrality Regulations, Roaming Regulations¹⁴² and Intra-EU Calls Regulations are important tools enabling ComReg to protect consumers.

Culture of Compliance

- 7.22 ComReg’s view is that the optimum situation is where regulated entities are fully cognisant of their obligations, comply with them and have an internal culture of compliance. In this context it is ComReg’s goal that **regulated entities are pro-active in ensuring their own compliance**. ComReg strongly encourages operators to have robust internal controls and policies intended to prevent and detect non-compliance.
- 7.23 Regulated entities, particularly those subject to obligations aimed at ensuring non-discrimination, may choose to put in place operational and governance measures with the specific purpose of promoting principles of compliance at all organisational levels. When implemented effectively, such measures can ensure compliance, and reduce the need for regulatory intervention and thereby

Goal 4.1

Regulated entities are pro-active in ensuring their own compliance.

promote effective and sustainable competition.

7.24 The following industry practices are essential for promoting a culture of compliance:

- Support and commitment from senior management for internal compliance programs;
- A clear and enforced policy on compliance, including appropriate disciplinary procedures, prohibiting non-compliant behaviours at all levels;
- Oversight of compliance programs by a separate monitoring body such as an internal audit committee, represented at a senior level with adequate resources, independence and authority;
- Risk-based internal controls, designed to ensure compliance that are regularly reviewed and maintained;
- Systematic, effective and documented monitoring of internal controls;
- Regular communication, guidance and training on compliance programs at all levels of an organisation.

7.25 ComReg considers that having an effective, proportionate and dissuasive regulatory enforcement regime will help foster an awareness of the need for an appropriate culture of compliance within industry. Where appropriate, ComReg offers guidance on its enforcement powers and practices to ensure industry have a comprehensive understanding of their regulatory obligations and adhere accordingly. In addition, ComReg will utilise engagement and dialogue to help foster the desired behaviours within industry, where necessary.

7.26 The EECC introduces new regulations and also brings new operators into the scope of ComReg's jurisdiction. On a case-by-case basis it may be necessary to engage directly with undertakings to ensure they are fully aware of the relevant obligations. ComReg will publish any guidelines explicitly required under the EECC.

Eircom's Regulatory Governance Model

7.27 In 2018, ComReg entered into a settlement agreement with Eircom. As part of that Settlement Agreement, ComReg and Eircom agreed to a set of commitments which, when fully implemented, will result in the establishment and operation of an enhanced Regulatory Governance Model ('**RGM**') in Eircom.

7.28 Since the 2018 Agreement, ComReg has continued to observe and evaluate the functioning and effectiveness of the RGM. ComReg continues to have some concerns around the state of competition and the culture of compliance within Eircom in the presence of the enhanced RGM. Over the coming period ComReg will continue to review the effectiveness of the RGM and consider if more regulatory action is required.

7.29 As the various milestones included in the Settlement Agreement were underpinned by financial amounts (set out in the Settlement Agreement) to have been achieved by 31 March 2021, ComReg believes it is timely to consider whether the Settlement Agreement is likely to meet its objectives and may communicate further in this regard.

Active Monitoring

7.30 As a knowledgeable and informed regulator, ComReg actively monitors the markets it regulates to ensure they function in a way that is consistent with the legal and regulatory obligations imposed in those markets (e.g. SMP obligations). ComReg does this in a number of ways:

- regular and timely collection of data and information relating to each market
- direct monitoring of regulatory obligations (e.g. wholesale pricing tariffs)
- the review of price lists and product documentation
- engagement with industry, either directly or through various fora
- the monitoring of queries and complaints to ComReg’s consumer care line
- the monitoring of online fora and social media
- engagement with other regulatory bodies (e.g. the CCPC) and public bodies (e.g. DECC)

7.31 ComReg continuously observes and monitors operator activities in the market. Where an area of potential concern is identified, ComReg will investigate.

Targeted Enforcement

7.32 ComReg’s compliance and enforcement activities in the different enforcement settings are underpinned by internal processes (including evidence gathering, report writing and legal review) and firmly rooted in the legal and regulatory regime. At all times, ComReg’s decisions and actions are evidence based, supported by expert legal review and the knowledge of ComReg’s skilled staff. ComReg’s investigations are often complicated or multifaceted and must be conducted in a manner that is impartial and procedurally correct. This combination of complexity and a desire to respect due process means that investigations may take time to complete. In this context, it is ComReg’s goal that **ComReg’s compliance and enforcement activities are conducted using fair and objective processes and are targeted and prioritised appropriately.**

Goal 4.2

ComReg’s compliance and enforcement activities are conducted using fair and objective processes and are targeted and prioritised appropriately.

7.33 In anticipation of ComReg getting the necessary enforcement powers (e.g. powers to impose administrative financial sanctions), ComReg will continue to evolve its enforcement practices and methodologies. In addition, ComReg will consider whether it is appropriate to publish further information and guidance on certain aspects of its compliance investigation practices and methodologies, where appropriate.

7.34 The different enforcement settings in which ComReg operates means that a prioritisation approach needs to be tailored to the relevant circumstances.

7.35 In the spectrum management context, in 2020 ComReg introduced a revised

radio frequency interference ('RFI') complaint classification process^{143,144}. The new classification approach for RFI related complaints endeavours to direct ComReg resources to the cases of harmful interference that have the greatest impact on the complainant's ability to provide services. ComReg aims to respond to cases which are exceptional in nature immediately and prioritise RFI related complaints accordingly, with clearly defined complaint response times.¹⁴⁵

- 7.36 In wholesale regulation, enforcement is prioritised in cases where an SMP operator's behaviour has greatest potential to harm competition – both directly and by reducing the confidence of other operators in the effectiveness and predictability of the regulatory regime. Breaches which come to light as a result of a SMP operator's own internal control system may be of a lower priority for enforcement if they are transparently reported, proactively and effectively remedied, and the failure of controls which led to the breach is also addressed, in a context of a continually improving control environment. However, ComReg will also take into account the severity of the breach when deciding whether to prioritise enforcement action.
- 7.37 In the consumer protection context, cases may be prioritised using an assessment of the importance of the obligation concerned in ensuring that end-users are able to exercise choice and use communications services with confidence. This assessment may be informed by trends in complaints received from the general public made via ComReg's consumer team and ComReg's website. There is a focus on the consumer journey to ensure price, choice and quality with a focus on monitoring compliance with contract obligations, billing, switching, net neutrality and seeking redress. ComReg regards with particular severity any breaches of obligations intended to ensure access to emergency call answering service because of the obvious importance of emergency calling. In the context of PRS, ensuring clear informed consent is provided is a key concern.

Effective Deterrence

- 7.38 ComReg uses its existing enforcement powers to bring criminal and civil actions against non-compliant ECS and PRS service providers. Regulatory breaches harm consumers, firms, industry and competition generally. The availability of robust enforcement powers is, therefore, crucial to the effectiveness of regulation. Effective enforcement powers and sanctions ensure that regulatory actions act as a genuine deterrent, both to the party being punished and to other regulated

Goal 4.3

ComReg has an effective set of powers to incentivise compliance and effectively monitor and enforce.

¹⁴³ ComReg Consultation 19/108 <https://www.comreg.ie/publication/consultation-on-the-management-of-radio-spectrum-interference-complaints>

¹⁴⁴ ComReg Response to Consultation 20/62 <https://www.comreg.ie/publication/response-to-consultation-on-the-management-of-radio-spectrum-interference-complaints>

¹⁴⁵ Further detail on Radio Interference Investigations can be found on our website here: <https://www.comreg.ie/industry/radio-spectrum/spectrum-compliance/radio-interference/>

parties in the market. In this context it is ComReg's goal that **ComReg has an effective set of powers to incentivise compliance and effectively monitor and enforce.**

- 7.39 ComReg will continue to evolve its enforcement practices and methodologies within the scope of its existing powers. On 10 February 2021, ComReg published guidance on its approach to the calculation of financial penalties for the purpose of enforcement of breaches of the the Access Regulations (ComReg 21/20). Where ComReg finds that an operator with SMP has failed to comply with an SMP obligation, ComReg will notify the operator of the findings and give the operator an opportunity to respond or to remedy the non-compliance. If ComReg remains of the opinion that the operator has not complied with its obligations, ComReg may apply to the High Court for orders including that the operator pay a financial penalty. ComReg may make a recommendation to the High Court on the appropriate financial penalty. ComReg 21/20 sets out the guidelines on how ComReg will decide on the amount of penalty that should be recommended to the High Court for its consideration.
- 7.40 ComReg's current enforcement legislation requires ComReg to apply to court for orders to impose civil financial sanctions. For ComReg to be an effective regulator, it must have proper and sufficient enforcement powers that have the necessary deterrent effect. Improvements to ComReg's enforcement powers (both criminal and civil) would facilitate effective deterrence and, where appropriate, allow ComReg to take effective action. As the sector evolves, ComReg continues to seek enhanced powers to meet current and future challenges in delivering on its statutory and regulatory remit. ComReg's enforcement regime could be improved in three main areas:
- **Administrative Financial Sanctions:** ComReg noted that the ability for ComReg itself to impose Administrative Financial Sanctions in appropriate circumstances would greatly facilitate effective regulation of the electronic communications sector.
 - **Criminal Fines:** ComReg plans 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 criminal 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. In particular, all economic regulators should have access to a standard enforcement "toolkit", consisting of a range of investigatory and enforcement powers.
- 7.41 Since 2012, ComReg has made a number of submissions to the Law Reform Commission on the necessity for the enforcement regime to embody effective deterrence mechanisms. Over the coming period, ComReg will continue to advocate for the legislative changes that are essential to ensure the enforcement regimes in the ECS and PRS sectors embodies the effective deterrence mechanisms necessary for ComReg to delivery on its mandate. It is

recognised by Government that for ComReg to be an effective and robust regulator it must have greater enforcement powers and be able to impose Administrative Financial Sanctions to sanction rogue operators, in line with enforcement regimes in other EU Member States.¹⁴⁶ This is an issue that continues to be identified as a high priority in the 2020 Programme for Government and by the Oireachtas Joint Committee on Transport and Communications Networks. ComReg understands that the DECC 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. ComReg has also identified the need to ensure that it has the full tool kit of enforcement powers in addition to seeking improvements in respect of appeals and information gathering powers.

¹⁴⁶ As set out in the 2020 Programme for Government, '*Our Shared Future*'.

8. ComReg's Organisation

- 8.1 ComReg operates in a challenging and rapidly evolving environment, both in terms of the markets ComReg regulates and the policy context. ComReg strives to be an active and agile organisation, capable of responding to the rapidly changing environment and addressing issues that affect ComReg's ability to fulfil its Mission in a timely manner.

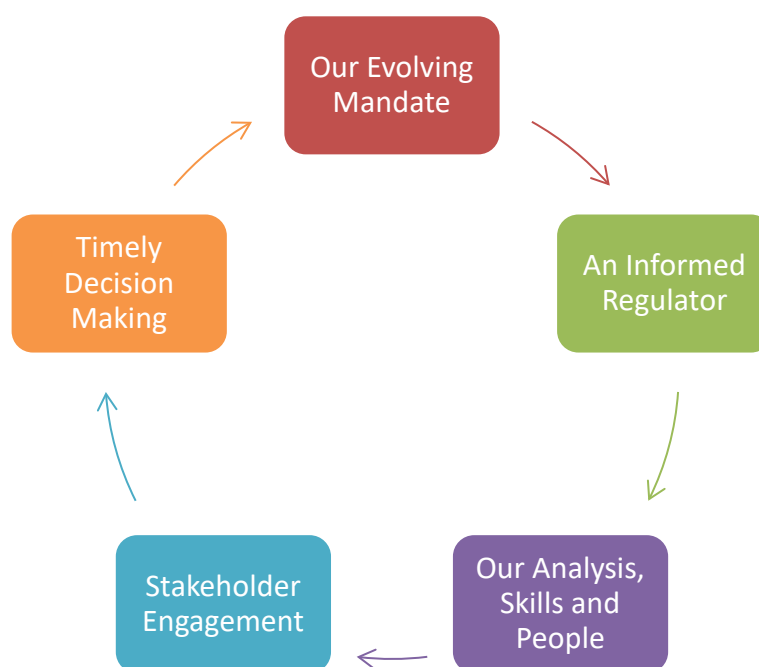
Strategic Intent 5:	ComReg is an effective, agile and relevant regulator
What does this look like?	<ul style="list-style-type: none"> ComReg is regarded as a thought leader and ComReg's views are valued by others, both domestically and internationally. ComReg provides a high level of public value.

- 8.2 This Chapter sets out goals associated with being **an effective, agile and relevant regulator**. ComReg's ability to deliver on its Mission is determined by four key drivers of organisational success:

- **An Informed Regulator:** ComReg requires access to high-quality, timely and appropriate data and analytical techniques so that it can develop a deep understanding of the sector and take informed action,
- **Stakeholder Engagement and thought leadership:** ComReg needs to engage proactively, expertly and persuasively with stakeholders, both domestic and international,
- **Our Mandate:** ComReg should be able to leverage its expertise in the sector to engage with the evolution of the market and ensure its mandate evolves to deliver effectively, and
- **People and processes:** Ensure ComReg is adequately staffed by an agile, skilled and motivated workforce who are expert in their fields and are supported by efficient organisational processes.

- 8.3 Success under these 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 23: Ensuring effective and relevant regulation



8.4 As the regulatory authority for a sector that is in a constant state of flux, with new technologies and innovations emerging every year, ComReg’s role has to evolve and adapt to meet the challenge of ensuring these markets operate in the best interest of consumers. ComReg continuously reviews its processes and resources to ensure it can act as an effective, agile and relevant regulator. ComReg’s efforts in this area underpin everything else it does as a regulator.

ComReg as an informed regulator

8.5 For ComReg to be an informed regulator and to make timely decisions, it must have access to high-quality and reliable data in a timely manner and a skilled staff who can undertake timely analysis to produce high-quality research and insights. Each of these aspects is important in ensuring ComReg can be an informed and effective regulator.

8.6 ComReg gathers data and information from a wide range of sources, using regulatory powers where appropriate. This data is supplemented with information from other sources including market research, third-party data portals (e.g. CSO) and consumer insights.

8.7 ComReg uses data and information in a number of ways. For example:

- **Regulatory decision-making:** ComReg has a responsibility to ensure that regulatory decisions arise from timely, objectively justified analysis based on high-quality and accurate data. ComReg collects and analyses data in the context of regulatory decision-making and analysis. For example, ComReg collects data for the purposes of carrying out market reviews and regulatory impact assessments.
- **Monitoring, compliance and enforcement:** ComReg performs a variety of monitoring and enforcement roles such as compliance with spectrum licensing conditions, with obligations imposed by ComReg and with obligations imposed by statute. Data is collected for these (and other)

purposes in a number of ways. For example, ComReg has deployed remote monitoring systems which gather spectrum usage data to help inform its spectrum management activities. In the consumer protection area, ComReg monitors trends in complaints and queries from the general public. This information is used to assist in the prioritisation and allocation of resources.

- **Informing industry and end-users:** ComReg collects data for the purposes of providing information to consumers and industry. For example, ComReg collects information from operators on the prices of broadband, mobile and fixed line services, as well as bundles of such services. ComReg also collects statistical information on the Irish electronic communications sector and benchmark data from other countries. This statistical data, and other data collected by ComReg, is made available on ComReg's website.

8.8 To be an effective and relevant regulator, ComReg requires timely access to up-to-date information on trends and developments in the electronic communications sector and related sectors. In particular, ComReg needs to understand how end-users and industry are likely to respond to the challenges posed by emerging technologies, new product offerings and developments in related markets.

8.9 ComReg recognises that qualitative aspects of the consumer experience are increasingly important. Consumers and other end-users are no longer solely concerned with price, they are also concerned with other qualitative aspects of their connectivity experience, such as download speed, network coverage and performance.

8.10 Similarly, ComReg needs to have a comprehensive understanding of the incentives facing industry operators. In this context, collecting and analysing appropriate information helps to identify future challenges, opportunities and threats, and likely sources of market failure to help formulate and implement responses which will best facilitate the achievement of ComReg's strategic intentions. In this respect, it is ComReg's goal that **ComReg has a deep understanding of the markets ComReg regulates and related markets.**

Goal 5.1

ComReg has a deep understanding of the markets ComReg regulates and related markets.

8.11 Where timely and accurate data can be collected from industry, ComReg aims to do so in a manner that supports its work, while minimising the burden on industry who must source and gather such data. Where necessary ComReg may use its legal powers under the Act and/or statutory instruments to gather data and information from industry. Insofar as is possible, ComReg tries to tailor its use of these legal powers and work with industry to collect data on a voluntary basis.

8.12 ComReg's second goal related to data is therefore that **the regular and timely delivery of reliable and accurate data supports robust evidence-based decision-making, effective market monitoring and informed action.**

8.13 Although most of the data collection and analysis that ComReg undertakes

relates directly to markets within the electronic communications sector, ComReg recognises that the sector does not operate within a vacuum and, as

8.14 such, that it must be cognisant of the wider socio-economic environment within which it operates. Maintaining an awareness of, and insight into, the broader environment is necessary for ComReg to operate effectively and efficiently over time; in particular, it is necessary to allow for appropriate preparation for both opportunities and challenges.

Goal 5.2

The regular and timely delivery of reliable and accurate data supports robust evidence-based decision-making, effective market monitoring and informed action.

8.15 In addition to data gathered directly from industry, ComReg seeks to supplement its data requirements using insights gathered from a variety of sources, including:

- Consumer research through market research, including face-to-face surveys, online survey panels and focus groups.
- Research undertaken by others that has been supported by ComReg, for example research undertaken by the Economic and Social Research Institute (ESRI). ComReg is also a member of the Centre on Regulation in Europe (CERRE).
- Research and data acquired by ComReg from specialist third parties.

8.16 ComReg's research cycle includes the collection of insights relating to retail broadband, mobile phone and technology markets. Since 2017, ComReg has undertaken a series of large surveys of Irish consumers across the country to better understand ECS markets and the challenges being faced by consumers. In addition, ComReg undertakes ad-hoc research relating to emerging trends and challenges faced by the ECS markets. In 2020, ComReg started a Covid-19 tracker survey to better understand how consumers and ECS were adapting to the challenges posed by Covid-19 and the ability of broadband networks to meet the rising demand posed by remote working, remote schooling and video calling. In the coming period it will be important to understand the extent to which trends accelerated by Covid-19 experiences will persist and their implications for ECS and related markets.

8.17 In line with Ireland's Open Data Strategy 2017 – 2022 ("Public Service Open Data Strategy") ComReg is engaging in a process to assess and identify appropriate non-confidential data sets for publication in Open Data format. The benefits of adopting an Open Data approach include:

- Greater transparency and trust in ComReg as an effective Regulator;
- Economic benefits arising from the adoption and use of industry data by external parties for public and commercial services;
- Increased opportunities for public participation and inclusion;
- Contributing more generally to a culture of open, available and accessible data across public services.

8.18 Specifically, for ComReg, the ability to make data sets available in an

accessible format can lead to innovative marketplace solutions which can provide benefits for consumers, service providers and other stakeholders who may have an interest in the markets ComReg regulates.

- 8.19 ComReg has recently adopted an “*Open by Default*” approach to data, ensuring that new data collected as part of its regulatory duties will be considered for publication as Open Data subject to any necessary restrictions due to business confidentiality, protection of personal data or other valid restrictions or exemptions related to Freedom of Information. Over the period of this ECS Strategy, ComReg will review its internal catalogue with a view to making more of its data sets open.
- 8.20 ComReg’s Data Portal hosts data relating to its Quarterly Key Data Report (QKDR). ComReg has re-balanced its publication of data such that an increased volume of raw data and charts are now presented on the Data Portal itself, with the QKDR also revised to only present key metrics. This enables stakeholders to greater utilise the data for their own monitoring and decision-making purposes. Over the coming period, as the volume of data published openly grows, ComReg’s data portal will become a greater resource for those seeking to access data relating to the Irish ECS sector. In addition, ComReg also hosts a variety of other data sources on its website to meet the needs of consumers and industry. These include:
- **Our Compare tool** - a free, up-to-date, and easy to use independent comparison tool that can be used via the ComReg website. It also allows consumers to compare home phone, broadband and TV packages. Available at: www.comreg.ie/compare
 - **Outdoor Coverage Map** - allows consumers to check operators’ mobile phone coverage and signal levels at locations throughout the country. Available at: www.comreg.ie/coveragemap
 - **ComReg Consumer Line Statistics Report** – this publication highlights issued raised by service providers’ customers and recorded by ComReg each quarter.
 - **Site Viewer** - an interactive map of Ireland containing information on the location of mobile telephone masts, the mast owner and the types of mobile services provided at each mast. Available at siteviewer.comreg.ie
- 8.21 In addition to the publication of data, ComReg also cooperates with other public bodies (including the CSO, the European Commission, BEREC, etc.) in relation to data. ComReg regularly supplies data to such bodies and verifies and confirms data held by those bodies relating to the Irish market. Ensuring verified and accurate data is available from credible sources allows data users to make timely inference and analysis.
- 8.22 As the national regulatory authority for the ECS sector, ComReg employs a range of skilled staff to interpret, analyse and interrogate the data and information we collect and use. ComReg uses a combination of analytical techniques, including statistical analysis, data analytics and econometric analysis where appropriate to inform its various regulatory decisions and activities. As new methodologies and technologies become available, ComReg seeks to learn how these techniques can be used in a regulatory context and

upskill staff to deploy these techniques. As new methodologies and technologies become available, ComReg seeks to learn how these techniques can be used in a regulatory context and to upskill staff to deploy these techniques.

8.23 Related to these two goals, over the coming period ComReg plans a number of key initiatives:

- **Data strategy:** ComReg will continue to develop its data governance strategies and data analysis capabilities in order to be able to engage with the scale and complexity of data needed to perform its functions and attain its goals. This will include the enhancement of data analysis tools and skills to support ComReg's professionals in delivering on this strategy and their potential.
- **Open Data and Publicly Available Data:** ComReg will continue to review the data it publishes, through the QKDR, Data Portal or otherwise to identify further opportunities to share information on key metrics. ComReg will review the data it holds to ensure that relevant and informative data is released under its '*Open by Default*' standard in a timely manner.
- **Market Intelligence Data Project:** In recent years, ComReg has engaged with industry on the type of data it gathers and how it collects, processes and stores this data. The aim of this project is to have a stable data request for operators, minimise additional ad hoc data requests and also to ensure the timely availability of granular information. The first two phases of this project concentrated on Broadband and Fixed Voice data and have resulted in a detailed set of information available for decisions and analysis. Upcoming datasets to be reviewed under this project include data on the Leased Lines market and the Mobile Market.
- **Geographic Survey of Network Deployments:** Under Article 22 of the EECC, ComReg will be required to compile a map of each broadband network in Ireland, including forecast coverage. These maps can then be used by industry and internally to inform ongoing ComReg projects (e.g. Market Analyses, USO Designations etc.)
- **ComReg Research:** In 2021 ComReg will undertake market research relating to the experience of consumers using their mobile phone. In 2022 ComReg will undertake a similar project relating to retail broadband market and the impact of the rollout by National Broadband Ireland. In addition, ComReg will continue to study the impact of the Covid-19 pandemic on ECS markets, and specifically, the persistent effects of the experience on the composition of demand for ECS services.
- **Third Party Independent research:** Recognising the value of independent research in the Irish electronic communications sector, ComReg will continue to support the work of others, such as the ESRI. Engaging with these researchers gives ComReg access to original data sources and techniques not otherwise available to the organisation.
- **New Skills and Techniques:** ComReg will continue to develop the skill-base of its staff to ensure they are kept abreast of the most up-to-date

research skills and analytical techniques, including quantitative analysis skills, market research skills and data analytics.

Stakeholder Engagement

8.24 ComReg has a wide range of stakeholders ranging from individual consumers and their representative groups, through electronic and postal communication operators and their industry representative groups, to domestic government stakeholders and international bodies such as the ITU, RSPG, the European Regulators Group for Postal Services ('**ERGP**'), BEREC and the European Commission. One of ComReg's organisational values is transparency, and it sees honest engagement with all stakeholders as highly beneficial. In this context, it is ComReg's goal that **ComReg is proactive on engagement with a range of stakeholders.**

Goal 5.3

ComReg is proactive on engagement with a range of stakeholders.

8.25 The onset of the Covid-19 pandemic has challenged ComReg to rethink how to engage with its stakeholders. While formal and informal meetings and gatherings were not possible over the last year, new ways to engage remotely have allowed ComReg's staff to continue to engage with industry, consumers, other public bodies and interest groups. As the pandemic eases, ComReg will aim to re-engage with stakeholders in the traditional way, while also harnessing the advantages of the many new engagement tools that have emerged during the pandemic.

8.26 ComReg works to continue to nurture and enhance its reputation as a centre of excellence and as a credible source of unbiased, high-quality information. ComReg's staff are subject matter experts, and we aim to be seen as thought leaders and to use our knowledge and expertise to contribute to public discourse and to policy discussions. However, the independence and objectivity of ComReg is always assured.

Engagement with Industry

8.27 ComReg recognises the need to tailor its communication to different stakeholder groups. Thus engagement takes a number of forms, including:

- **Formal consultation:** In the context of regulatory decision-making, stakeholders have the opportunity to provide evidence and feedback and express opinions on developing regulatory measures and proposed regulatory decisions through the formal consultation process. By allowing time for stakeholders to formally express their opinions, this process facilitates more rigorous evidence-based decision-making, knowledge sharing and a greater buy-in from all industry members.
- **Industry forums:** ComReg hosts a number of industry stakeholder forums. The main objective of these forums is to facilitate the development of new regulated wholesale products and of changes to existing products. These forums also provide the industry with the opportunity to communicate on topical issues.

- **Website:** As previously noted, ComReg's view is that its website (www.comreg.ie/industry) is a key tool for engaging with industry. In addition, the website offers a vast amount of corporate information about who we are, what do we, our legal basis and the structure of ComReg, along with an archive of publications, decisions and consultations. ComReg aims to ensure that the content on its website is up-to-date and may easily be used by all its stakeholders. The increased accessibility of the website has simplified interaction with ComReg and improved services to stakeholders. ComReg will continue to use its website to inform stakeholders. ComReg's website will be augmented and modified to provide data and information in a usable and accessible format for all its stakeholders.
- **Oireachtas Committees:** ComReg is obliged to appear before Oireachtas Committees when requested. ComReg believes that such appearances are an important part of its engagement strategy with one of its key stakeholders, Oireachtas Éireann.

8.28 Over the coming period, ComReg plans a number of key industry initiatives:

- **Communications strategy:** ComReg takes a strategic approach to communicating with its stakeholders and uses a range of tools and techniques including its website and social media feeds. ComReg will ensure that its Communications Strategy is flexible and adaptable to meet the changing demands and needs of all its stakeholders in the electronic communications sector.
- **Mobile and Broadband Taskforce:** The 2020 Programme for Government includes a commitment to continue to support the work of the Mobile and Broadband Taskforce. ComReg has supported the Taskforce since its inception and has undertaken a number of projects to assist the work of the Taskforce. Over the coming period ComReg will continue to support the work of the Taskforce.
- **Public Stakeholder Events:** When it is safe to do, ComReg intends to recommence holding its national conference and other stakeholder engagement events, most likely in early 2022.

Engagement with Consumers and the general public

8.29 Consumer engagement is critical to ensure consumers know their rights, including new consumer rights set out in the EECC. Our engagement with consumers includes contact by phone and email, through the provision of information on our website and on social media, and wider engagement through the media and press releases.

8.30 Our consumer brand, **ComReg Connects** was introduced in 2020 to ensure the public identify ComReg as a brand that is at the forefront of consumer protection, information and empowerment. Our

consumer website **ComReg.ie/consumer** offers information and news to better inform consumers of issues and developments in the market. In addition to this information, we also offer several consumer tools, including:

ComReg Connects
Trusted Advice and Support

- an independent service for consumers to check the coverage of mobile service providers (**coveragemap.comreg.ie**)
 - a comparison tool to compare prices and other aspects of communication products and offers (**comreg.ie/compare**)
 - a Premium Rate Service checker (**servicechecker.comreg.ie**)
- 8.31 ComReg also periodically hosts its Consumer Advisory Panel ('**CAP**') to gain insights into consumer issues and to advise us on developments, innovations and areas of consumer concern which are relevant to ComReg's role.
- 8.32 Further details on our Consumer engagement and outreach activities can be found in Chapter 5.

International Activities

- 8.33 The nature of the electronic communications sector requires international collaboration and harmonised approaches. This international collaboration facilitates the development of an open and competitive environment in which innovation, creativity and competition can thrive. ComReg contributes to regulatory policy discussions and inputs to regulatory decision making in an international setting. ComReg manages and develops Irish regulatory input to the development of European and international policy, standards, and legislation.
- Goal 5.4**

ComReg contributes to and learns from international best practice.
- 8.34 ComReg continuously engages with and participates in the activities of a range of international bodies, including BEREC, the Organisation for Economic Co-operation and Development (OECD), the RSPG, the European Conference of Postal and Telecommunications Administration (CEPT) and the ITU. In some instances ComReg has taken leadership roles in these bodies, in recognition of its standing as an expert-led and knowledge-driven regulator. ComReg seeks to contribute to and learn from the best practices of others and devotes considerable resources to understanding the regulatory analyses and decisions made by its international colleagues. As a small island nation in the EU, Ireland and ComReg can learn a lot from colleagues in other countries, but also share expertise with others when ComReg has greater knowledge or experience in the area of interest. In this context, it is ComReg's goal that **ComReg contributes to and learns from international best practice.**

Our Mandate and Role

8.35 As a statutory body, ComReg operates within a defined legislative framework, as discussed in Chapter 2. For ComReg to be an effective and relevant regulator, it must operate in an appropriate legal context and have proper and sufficient powers to regulate effectively.

8.36 In this context it is ComReg's goal to ensure that **it actively engages with the evolution of the market, including adjacent and related markets, and to ensure that ComReg's legislative mandate evolves to enable it to deliver effectively.**

This may involve advocating domestically for changes in legislation and, as discussed in Chapter 7, for changes in compliance and enforcement powers where ComReg believes that reform and revision, in respect of existing powers and the development of new tools, are required for the achievement of its objectives.

8.37 ComReg has been engaging with DECC regarding transposition of the new EEC into domestic law in Ireland. While transposition in all Member States has yet to be accomplished and infringement proceedings have been commenced by the EU, transposition is nearing completion in Ireland.

8.38 ComReg has also been engaging with the Department regarding the evolution of its functions and powers so that they remain fit for purpose. Changing technological, economic and social factors have driven changes in EU legislation. Irish law is evolving, and, as a result, so too is ComReg's mandate in respect of areas such as competition, consumer protection and digital services. As the electronic communications and related markets evolve, ComReg expects that further changes to the legal / regulatory environment will be adopted during the lifetime of this medium-term strategy.

8.39 Since 2012, ComReg has made a number of submissions to the Law Reform Commission regarding the necessity for the enforcement regime to include effective deterrence mechanisms. Over the coming period, ComReg will continue to advocate for the legislative changes that are essential to ensure the enforcement regime in the electronic communications sector includes the effective deterrence mechanisms necessary for ComReg to effectively deliver on its mandate. It is recognised by Government that for ComReg to be an effective and robust regulator it must have enhanced enforcement powers including, where appropriate, the power to impose administrative financial sanctions (as do many other regulators, both domestically in other sectors, and in other EU Member States). This is an issue that continues to be identified as a high priority in the recent Programme for Government and by the Joint Oireachtas Committee for Communications.

8.40 The Competition Amendment Bill transposing the ECN+ Directive published by DETE will enhance ComReg's competition enforcement powers. The Bill proposes to ensure that competition authorities have appropriate powers of enforcement, including the ability to impose administrative financial sanctions.

Goal 5.5

ComReg actively engages with the evolution of the market, including adjacent and related markets, and ensures the legislative mandate evolves to enable ComReg to deliver effectively.

ComReg also understands that DECC is also committed to ensuring that ComReg has the best, most appropriate and most effective powers available to it in respect of its regulatory remit. Any final decisions/actions in this regard will, of course, be a matter for the Minister and, ultimately, the Oireachtas. ComReg has also identified the need to ensure that it has the full tool kit of investigatory and enforcement powers in addition to seeking improvements in respect of appeals and information gathering powers.

- 8.41 The EU's New Consumer Agenda is contributing to the development of ComReg's mandate under Irish Law. The Consumer Rights Bill transposes a number of relevant EU Directives and updates and consolidates the statutory provisions on consumer rights and remedies in relation to contracts for the supply of non-digital services, unfair contract terms, and information and cancellation rights. National legislation is also being developed for ComReg in respect of the Consumer Protection Cooperation Regulation.

Regulating for the Digital Age

- 8.42 In recent years, digitalisation has radically transformed the way we live, bringing about significant benefits for consumers and for businesses. Digitalisation has been a vehicle for innovation, creating services for consumers which were not possible in previous decades and has significantly reduced transactions costs, impacting nearly all aspects of our lives.
- 8.43 In recent years the growing focus of regulation has been on digital services and the need for digital platform regulation. Digital services and platforms are a closely aligned market to the ECS sector and one ComReg takes a particular interest in.
- 8.44 Although not a new phenomenon, digitalisation has facilitated the growth of platforms and two/multi-sided markets. In many cases, platforms do not create their own content or products, but simply act as the digital catalyst to facilitate value creating interactions between two or more groups. Platforms in the digital economy generally rely on the generation, collection, processing, analysis and exploitation of data to operate and improve their service offerings. The European Commission has put forward a series of proposals to address issues arising in digital markets and digital platforms (discussed in Explanatory Box 15 below)
- 8.45 ComReg has an evolving role under the EU Cybersecurity Strategy for the Digital Decade including: the proposed Directives on Security of Network and Information Systems (NIS and NIS 2 Directives) and for Critical Infrastructure Protection in respect of the inclusion of electronic communications as an essential service and the related digital infrastructure sector. ComReg seeks to ensure effective and efficient legislative development to enable compliance by electronic communications operators and digital businesses to protect the infrastructure for delivery of their essential services.
- 8.46 ComReg's role in respect of electronic privacy is evolving with the development of the proposed EU e-Privacy Regulation, while in the interim ComReg's monitoring and enforcement role continues under the 2002 Privacy and Electronic Communications Directive.
- 8.47 ComReg's market surveillance function has been transformed by the rapid

emergence of IoT and 5G with as many as 57 million connected devices expected to be in the Irish market as early as 2022, all of which fall under ComReg's broadened remit to be further addressed by the EU "Goods Package" anticipated in 2022.

8.48 ComReg has a number of activities planned relating to Goal 5.5:

- **eIDAS:** The EU Electronic Identification and Trust Services for Electronic Transactions in the Internal Market Regulations (the 'eIDAS' Regulation) sets out rules for electronic identification and creates a European internal market for electronic Trust Services. DECC is engaging with ComReg regarding the assignment to ComReg of the role of Supervisory Body to oversee providers of trust services in Ireland. ComReg is also to undertake the obligation to maintain and publish 'trusted lists' which include information related to the qualified trust service providers established in Ireland, a role currently undertaken by DECC. The objective is to ensure that Ireland meets its obligations regarding the regulation of trust service providers under the eIDAS Regulation and, in so doing, to ensure comprehensive and robust regulatory oversight of the perhaps early presence but potentially growing market for providers/provision of trust services in Ireland.
- **Free Flow of Data Regulation:** The EU Regulations on a framework for the free flow of non-personal data in the European Union is a regulation to remove unjustified barriers to the movement of non-personal data in the EU and thus to assist in unlocking the potential of Europe's Data Economy. ComReg is engaging with DECC regarding taking a number of roles under this Regulation in Ireland.

Explanatory Box 15: Emerging European Commission Proposals

The European Commission has put forward a series of proposals to address issues arising in digital markets and platforms.

DSA / DMA Proposals

In December 2020, the EC proposed a new Digital Services Act ('DSA') and Digital Markets Act ('DMA'), with two main goals:

- To create a safer digital space in which the fundamental rights of all users of digital services are protected; and
- To establish a level playing field to foster innovation, growth, and competitiveness, both in the European Single Market and globally.

New rules set out in the DSA and DMA concern online intermediaries, platforms and gatekeepers. These platforms can function as bottlenecks between businesses and consumers for important digital services in the internal market. As our society and economy become more digitalised, a situation where a few large platforms control important ecosystems in the digital economy has emerged, with the power to act as private rule-makers. These rules, however, sometimes result in unfair conditions for businesses using these platforms and less choice for consumers. The proposals set out in the DSA and DMA create a legal framework to ensure the safety of users online and create a fair and open online platform environment.

Given the need for strong collaboration in Ireland between sectoral regulators in the digital sphere, we have engaged with the Economic Regulators Network ('ERN')ⁱ, in particular with colleagues from the Competition and Consumer Protection Commission ('CCPC') and the Broadcasting Authority of Ireland ('BAI') on the topics of digital regulation.

ComReg has also continued to contribute to the work of BEREC, in particular, contributing to the drafting of BEREC's Response to the European Commission's Public Consultations on the Digital Services Act Package.ⁱⁱ Engagement with BEREC on these matters has continued since the publication of the legislative proposals.

EU Commission data strategy – DGA

The proposal for a Data Governance Act ('DGA'), announced on 25 November 2020 is the first of a series of regulatory initiatives laid out in the EC's February 2020 data strategy. The DGA aims to facilitate the voluntary sharing of both personal and non-personal data between data holders and data users across the EU. The act also intends to enable the creation of neutral providers of data sharing services (data intermediaries).

ⁱ *The Economic Regulators Network is composed of the Competition and Consumer Protection Commission ('CCPC'), Commission for Regulation of Utilities ('CRU'), Broadcasting Authority of Ireland ('BAI'), Central Bank of Ireland, National Transport Authority ('NTA') and ComReg.*

ⁱⁱ https://berec.europa.eu/eng/document_register/subject_matter/berec/others/9411-berec-response-to-the-public-consultation-on-the-digital-services-act-package-and-the-new-competition-tool

Our Organisation

8.49 Unless ComReg have the people, expertise and processes to carry out its functions, it cannot deliver for consumers. The quality of ComReg's people is a key part of the organisation's ability to achieve its Mission over the next five years. ComReg employs a professional workforce, comprising accountants, economists, engineers, lawyers, and public policy specialists. ComReg's staff work in multi-disciplinary teams, which promote knowledge spill overs and stimulate innovative ways of viewing issues and developing ideas.

8.50 Over the period of this strategy, it is expected that the domestic and global economy will recover from the effects of the Covid-19 pandemic and the impact of Brexit. As economic growth returns and unemployment falls, maintaining ComReg's position as an attractive place to work will continue to be key. ComReg competes for talent with large private sector organisations – including firms in telecoms and digital markets - who are less constrained regarding remuneration and staff propositions. In this environment, ComReg will continue to focus on supporting and retaining its existing talent pool as it recruits additional staff to fulfil its Mission and evolving mandate. As new functions are added to its mandate, ComReg will continue to strike an appropriate balance between in-house resources and outsourcing. To sustain an environment where talent is nurtured and potential realised, ComReg invests in measures to enhance staff engagement, diversity and wellbeing. Combined with an emphasis on development and empowerment ComReg strives to create a values-based culture where people thrive and do their best work. In this context, it is ComReg's goal that **ComReg has sufficient resources to fulfil its organisational strategy.**

Goal 5.6

ComReg has sufficient resources to fulfil its organisational strategy.

8.51 As part of ComReg's resource planning process, it analysed the staff numbers and skills required to enable ComReg to deliver its current remit as well as an additional range of emerging responsibilities. ComReg has a number of new items to deliver, including NBP-related regulatory demands; the data management requirements, safety and compatibility of a growing number of wireless connected devices; and oversight of the security of networks and services. ComReg also factored the obligations that changes introduced by the EECC will place on the organisation. Based on planning and projections, ComReg has sought and received permission to recruit an additional 30 staff to fulfil current resourcing needs up to the end of 2022. These additional resources will help ensure ComReg can deliver its current mandate and the additional responsibilities given. As ComReg's role and mandate evolves over the coming years and new functions are added to ComReg's remit, further additional resources will likely be required. ComReg is currently discussing its role regarding the eIDAS and Free Flow of Data Regulation with DECC, including resourcing and financing matters.

8.52 It is important in a sector as dynamic as electronic communications that ComReg continually seeks to enhance the skills, knowledge and capacity of its staff, to ensure that the organisation remains up-to-date and relevant. This also contributes to staff satisfaction and staff retention, which can be a challenge for a public sector organisation like ComReg. In this context, it is ComReg's goal that **ComReg maintains an agile, skilled and motivated organisation.**

8.53 The ability to deliver on ComReg's objective to be an agile, skilled and motivated organisation is largely contingent on the competence and ability of our staff and leaders. ComReg is a knowledge-based organisation committed to attracting candidates with the competencies and commitment to deliver impactful work. Through its robust selection process and streamlined on-boarding, ComReg sets the standard for what is expected. By way of learning and development initiatives, ComReg equips its staff with the tools to keep abreast of the dynamic telecoms environment. ComReg invests in enabling people to develop their technical and professional skills through bespoke development initiatives, coaching, peer to peer learning, technical and professional training and the option to partake in formal education. In this way, the people who work at ComReg are encouraged to be proactive in developing themselves and the organisation, thus ensuring they can contribute to the internal dialogue on how to get the best results for ComReg's customers and the sector.

Goal 5.7

ComReg maintains an agile, skilled and motivated organisation.

8.54 ComReg's success as an organisation also depends on the structures within which its staff work as well as the systems and processes that support them. ComReg recognises the necessity of being responsive and having the flexibility as an organisation to react to unanticipated situations. ComReg must be structured so that decisions are made in a timely, transparent, replicable, and robust manner and that all processes run effectively, efficiently and reliably. However, ComReg must be flexible enough to adapt to a continuously changing sector. In this context it is ComReg's goal that **in line with best practice, ComReg has efficient and effective policies, processes and systems.**

Goal 5.8

In line with best practice, ComReg has efficient and effective policies, processes and systems.

8.55 Since the onset of the Covid-19 pandemic, ComReg has taken a number of steps to continue to deliver its work programme, including:

- The implementation of a temporary licensing framework and assignment of additional spectrum rights in the 700 MHz and 2.6GHz Bands and liberalised spectrum rights in the 2.1 GHz Band.
- Sought and received commitments from various operators to ensure telecoms consumers and their services are not adversely impacted, arising from financial difficulties associated with Covid-19.
- Undertaking research on the impact of Covid-19 on home broadband and mobile phone networks.

- Deploying new internal processes, IT equipment and software to ensure the day-to-day operations of ComReg and its staff could continue.
- 8.56 Since mid-March 2020 and in line with Government restrictions, the vast majority of ComReg's staff have worked from home, attending in person in our offices only where essential. ComReg has put standards in place to create a safe work environment in line with business continuity planning, risk analysis and its new Covid-19 Policy. ComReg provided the tools and equipment necessary to seamlessly conduct work in a virtual manner while equipping staff with skills in managing and being productive remotely. In line with Government advice on Covid-19, staff will begin to return to work in the Docklands offices when it is safe to do so. During the time working remotely, ComReg provided options to help staff manage their mental, physical and emotional wellbeing. ComReg conducted staff surveys to measure engagement and wellness. Feedback indicated that while some people look forward to returning to the office on a daily basis, a significant majority would like the opportunity to blend work in the office with working from home. ComReg has committed to collaboratively working on putting practices in place to offer these options without impact on delivery of work programmes. ComReg envisages a future where flexibility will be a key component in both how and where we work.
- 8.57 As a named public body under the Official Languages Act 2003, ComReg is obliged to provide a range of services as Gaeilge. ComReg's second Irish Language Scheme commenced on 21 December 2020 and includes a number of commitments to ensure services as Gaeilge are provided to anyone who wishes to carry out their business with ComReg through Irish. The Scheme has been confirmed by the Minister for Tourism, Culture, Arts, Gaeltacht, Sport and Media. It shall remain in force for a period of 3 years.
- 8.58 At all times, ComReg seeks to be an organisation that values environmental sustainability. ComReg has undertaken a number of green initiatives in recent years to lower the carbon footprint of its offices and activities, in line with best practice. In addition, in 2019 ComReg issued a Call for Inputs to better understand the relationship between connectivity and decarbonisation. The learnings from that Call for Inputs helps to shape a number of key projects and commitments in this strategy.
- 8.59 ComReg has a number of obligations under the Disability Act 2005. In line with these obligations, ComReg ensures that the public areas of its building are accessible to people with disabilities and that its public services are accessible to people with disabilities.
- 8.60 ComReg also has obligations under the Irish Human Rights and Equality Commission Act 2014. ComReg is committed to meeting its statutory obligations under the Human Rights and Equality Commission Act 2014. The Act establishes a positive duty on public bodies to promote equality, prevent discrimination and protect the human rights of its staff and all of those with whom it engages including staff, service users and stakeholders alike.
- 8.61 Over the coming period, ComReg plans a number of key initiatives:
- **Carbon Footprint:** ComReg will continue to put in place necessary measures, where possible, in order to reduce its Carbon Footprint, in line with the government Climate Action Plan and other initiatives.

- **Flexible and Remote Working:** The pandemic has acted as a catalyst in accelerating the change required to deliver on ComReg's commitment regarding Flexible working. Collaboratively, ComReg has overcome challenges to quickly adapt to remote working. ComReg believes productivity increased during this time, delivering its work programme without interruption. ComReg sees many benefits in offering a blended approach involving working from home and from the office. These benefits extend beyond enhanced staff engagement and employee value proposition to a positive impact on emissions and the overall environment. ComReg is in the process of delivering a change project which will identify the best way to deliver this blended approach to work. ComReg's guiding principles include ensuring the design enables the organisation to overcome potential challenges and realise the benefits.
- **Irish Language Scheme 2020 - 2023:** ComReg will ensure the availability of staff who can speak Irish in its consumer services division to assist with all consumer queries and complaints as Gaeilge.
- **Internal processes:** As a general matter, ComReg will seek to further automate its processes to improve efficiencies within the organisation and assist in delivering a better service to stakeholders. Where new policies and processes are put forward by Government, ComReg aims to implement such policies in a timely and efficient manner.