



An Coimisiún um
Rialáil Cumarsáide
Commission for
Communications Regulation

Fixed Radio Links

Annual Report for 2023

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1 Introduction

- 1.1 The Commission for Communications Regulation (“ComReg”) is the statutory body responsible for the regulation of the electronic communications telecommunications, radio communications and broadcasting networks), postal and premium rate sectors in Ireland and in accordance with European (“EU”) and Irish law. ComReg also manages Ireland’s radio frequency spectrum (“radio spectrum” or “spectrum”) and the national numbering resource. Under the Communications Regulation Act 2002, as amended, ComReg has a range of functions and objectives in relation to the provision of electronic communications networks (“ECN”), electronic communications services (“ECS”) and post which includes ensuring the efficient and effective use of the national radio spectrum resource.
- 1.2 As noted in ComReg’s Electronic Communications Strategy Statement 2021 to 2023¹, radio spectrum, as a medium over which data can be transmitted, is an essential input in the supply of wireless/radio-based ECN / ECS for a diverse range of uses and end-users. It is a valuable national resource as it underpins nearly all communications services in the State. These communication services include mobile telephony, wireless broadband, radio and television broadcasting and radio communications used by commercial business and by air and maritime transport. Many services rely on wireless connectivity as part of the backbone linking mobile base stations, providing feeds to broadcast transmitters and telemetry links that allow the monitoring of disperse infrastructure, for example water reservoir levels and remote power transformers.
- 1.3 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 this context it is ComReg’s goal² that the management of spectrum facilitates competition, enhances connectivity and promotes efficient investment.
- 1.4 A key service for telecommunication infrastructure development is the fixed service (“FS”) which is a radio communication service between specified fixed geographic points. Some examples of FS applications are transport

¹ ComReg document 23/34 – Electronic Communications Strategy Statement 2023 to 2025 – published 13 April 2023.

² ComReg’s Competition & Investment strategic intention – Goal 1.6: The management of spectrum and numbers facilitates competition, enhances connectivity and promotes efficient investment.

networks (trunking, multi-hop, etc.), mobile backhaul networks, fixed wireless access (“FWA”)³ and temporary networks (electronic news gathering and disaster relief).

- 1.5 This is ComReg’s fifth fixed links annual publication since 2019. The purpose of this report is to set out the most up to date information regarding the licensing of fixed radio links granted under S.I. No. 593 of 2023.⁴ The report also provides an update on the demand and trends in fixed link licensing since the fixed links annual report published in December 2022⁵, information on recent improvements to the fixed radio links application process on ComReg’s eLicensing website⁶, along with information on the European Conference of Postal and Telecommunications Administrations (“CEPT”)⁷ current fixed services work programme.
- 1.6 Separately, ComReg finalised its review of the fixed radio links licensing regime and associated frequency bands with the publications of ComReg Document 23/61 and Decision D04/23⁸ and the making of Statutory Instrument No. 593 of 2023⁹ The objective of the review was to assess the previous fixed radio links licensing regime¹⁰ and consider what, if any, changes are required to ensure that the regime is fit for purpose and capable of facilitating future use of fixed radio links and other electronic communication services.
- 1.7 The new regime introduced a new fee regime, allows use higher bandwidths in certain frequency bands, and a number of changes to technical requirements. Further information can be found on ComReg’s website [here](#) and [ComReg Document 23/112 – Fixed Radio Links Licensing Guidelines](#).

³ Fixed Wireless Access means a radiocommunication services between a base station and fixed subscriber terminals locations.

⁴ <https://www.irishstatutebook.ie/eli/2023/si/593/made/en/pdf>

⁵ ComReg Document 22/104 – Fixed Radio Links: Report Annual Report for 2022.

<https://www.comreg.ie/media/2022/12/ComReg-22104.pdf>

⁶ <https://elicensing.comreg.ie/>

⁷ <https://www.cept.org/>

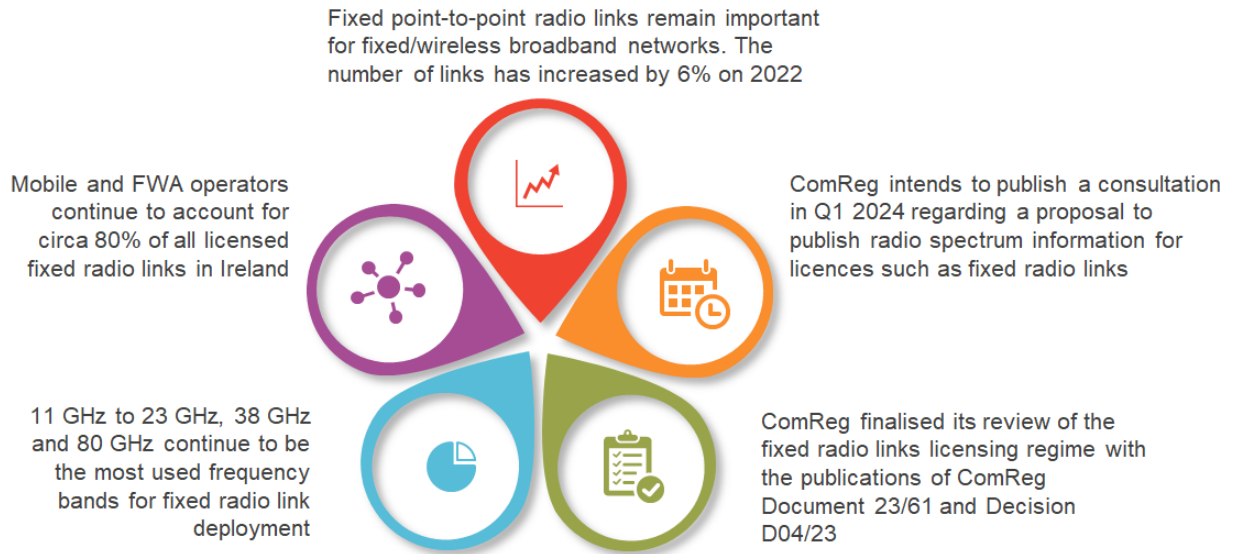
⁸ ComReg Document 23/61 and Decision 04/23 – Review of the Fixed Radio Links Licensing Regime: Response to Consultation and Decision – published 4 July 2023.

https://www.comreg.ie/media/2023/07/ComReg-23_61.pdf

⁹ S.I. No. 593 of 2023 – Wireless Telegraphy (Fixed Radio Link Licence) Regulations 2023.

¹⁰ S.I. No. 370 of 2009 - Wireless Telegraphy (Radio Link Licence) Regulations, 2009

1.8 The key points to note regarding fixed radio links for 2023 are:



1.9 The remainder of this report is structured as follows:

- **Chapter 2** provides the trends on the licensing of fixed radio links in Ireland.
- **Chapter 3** provides information on the frequency bands allocated for fixed radio links up to 30 June 2023.
- **Chapter 4** provides information regarding a proposal to publish further radio licence information on ComReg's Siteviewer tool.
- **Chapter 5** provides information on the CEPT's work program for fixed services.

2 Fixed Links Licensing Trends

- 2.1 During the 2017-2023 period, the demand for fixed radio links in the frequency bands ranging from 1.3 GHz to 80 GHz continued to increase, notably for fixed point-to-point (“P-P”)¹¹ radio links. As of 30 June 2023, 16,111 P-P links¹² (see Figure 1) and 2 fixed point-to-multipoint (“P-MP”)¹³ fixed radio link licences (see Figure 2) were deployed in Ireland. The number of P-P radio links has increased by 6%.
- 2.2 The number of P-MP radio link licences continues to decrease. There has been a 91% reduction in from 2022 to 2023 due to the cancellation of 20 P-MP licences used by Eir for the provision of its Rurtel network and the granting to Eir on 1 February 2023 of a MBSA2 2.3 GHz Band Transition Licence for apparatus for wireless telegraphy for the provision of Point to Multi-Point Radio Links in the 2.3 GHz Band and 2.4 GHz Bands.¹⁴
- 2.3 The increase in number of live P-P links during the 2022-2023 operating year can, in the main, be attributed to continued operator improvement of their backhaul and fixed/wireless broadband networks to address growing consumer demand for increased data capacity. The increase in demand for data capacity can be seen in ComReg’s most recent Quarterly Key Data Report for Q3 2023¹⁵. For example, in Q3 2023, total fixed broadband traffic increased by 13.1% while total mobile data increased 20.2% year-on-year.

¹¹ A point-to-point – provides a radio communication service by a link between two stations located at specified fixed points.

¹² For dual polarity links the vertical polarisation (V) is counted as one link and the horizontal polarisation (H) is counted as a separate link

¹³ A point-to-multipoint provides a radio communication service by links between a single station located at a specified fixed point and a number of stations located at specified fixed points.

¹⁴ ComReg Document 23/39 – Multi Band Spectrum Award (MBSA2): Rurtel Transition Plan – published 30 May 2023.

¹⁵ ComReg Document ComReg 23/114 – Quarterly Key Data Report Q3 2023 – published 7 December 2023. <https://www.comreg.ie/media/2023/12/ComReg-23114.pdf>

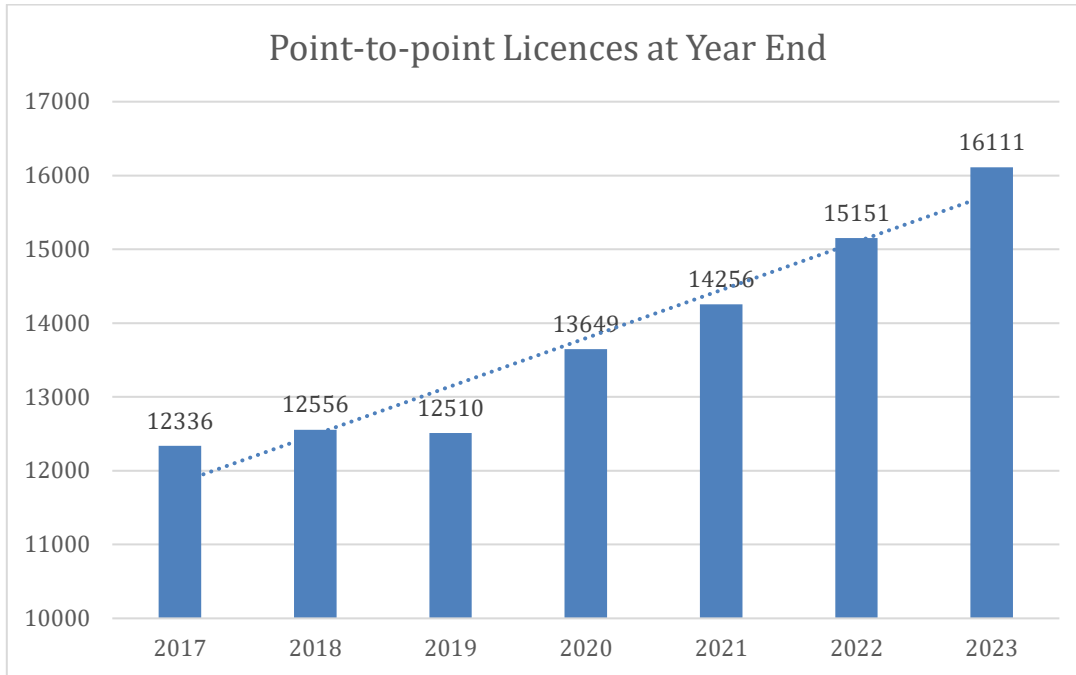


Figure 1: Live Point-to-Point Fixed Links at Year End 30 June 2017 - 2023

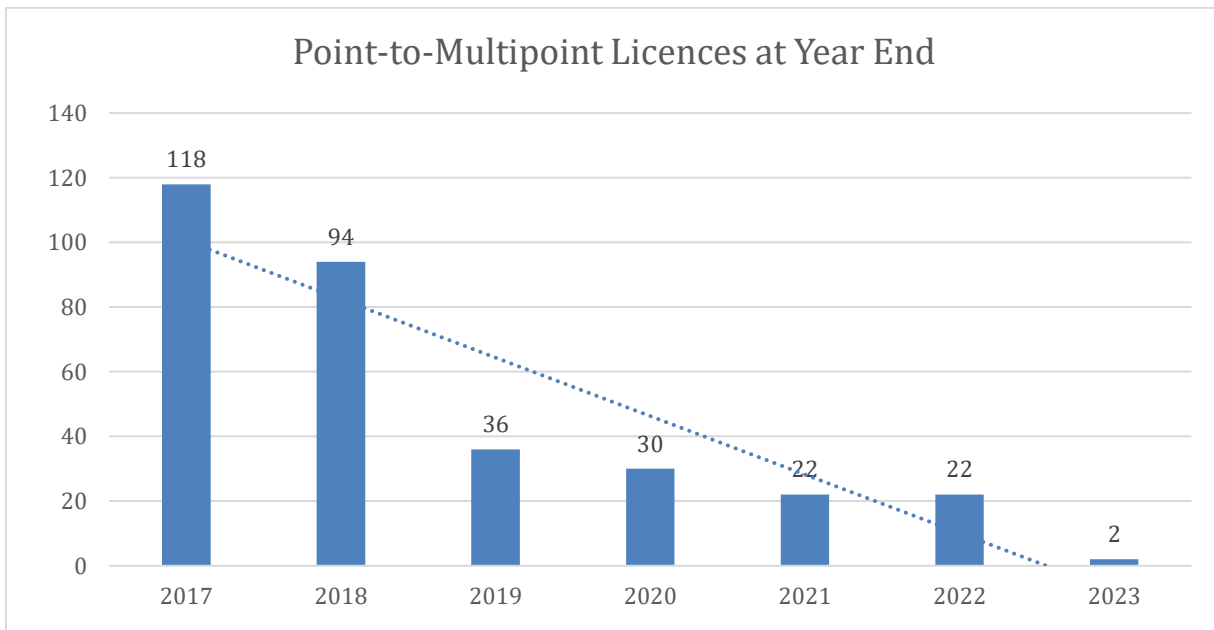


Figure 2: Live Point-to-Multipoint Licences at Year End 30 June 2017-2022

2.4 The number of reports of harmful interference to fixed links continues to decline and reflects the benefit of having a licensing regime that co-ordinates fixed radio links, providing applicants with more information on fixed links deployments, as we outline in Chapter 3 below, and the ongoing and proactive nature of engagements between ComReg’s Spectrum Intelligence

and Investigations (SII)¹⁶ team and licensees.

2.5 Figure 3 below sets out those licensees that held the most fixed P-P radio links at 30 June 2023. The mobile network operators and FWA operators continue to account for circa 80% of all licensed fixed radio links in Ireland.

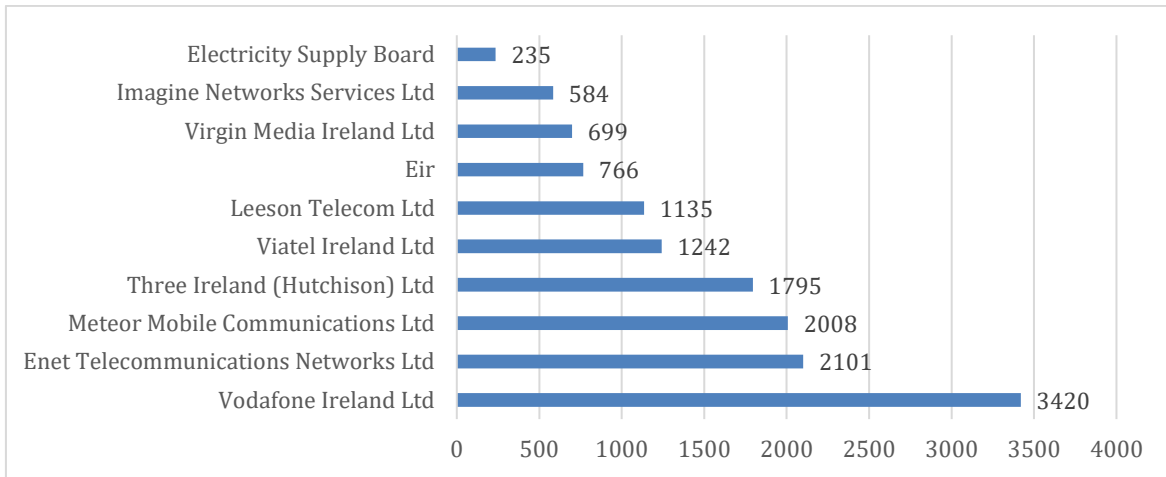


Figure 3: Top 10 Fixed Links Licensees as of 30 June 2023

¹⁶ <https://www.comreg.ie/industry/radio-spectrum/spectrum-compliance/>

3 Fixed Radio Links Frequency Bands

- 3.1 Twenty frequency bands are currently available for P-P and P-MP fixed radio link licensing and the channel arrangements for those bands are based upon internationally agreed allocations made by the ITU and CEPT¹⁷. While the number of fixed radio links deployed in Ireland continues to grow, certain frequency bands are more in demand than others. The demand for frequency bands for fixed radio links is being shaped by three main trends:
- Increasing bandwidth requirements shifting demand to higher frequencies, in particular the 80 GHz band and also the 18 GHz band;
 - an increase in capacity requirements and use of dual polarisation where wider channels are not available; and
 - some replacement of microwave links by fibre.
- 3.2 As outlined in Chapter 2, there are currently 16,111 live P-P fixed radio link licences in Ireland. The continued demand for fixed radio link licences is driven in part by operator's increasing the capacity of their networks to address consumer's current and future demand for data due to the roll-out of new technology standards.
- 3.3 Figure 4 shows the total number of fixed radio links per frequency band (from 1.3/1.5 GHz to 80 GHz) for the end periods 30 June 2019, 2020, 2021, 2022 and 2023. The frequency bands 11 GHz to 23 GHz, 38 GHz and 80 GHz continue to be the most used frequency bands for fixed radio link deployment.

¹⁷ ECO Documentation - <https://docdb.cept.org/>

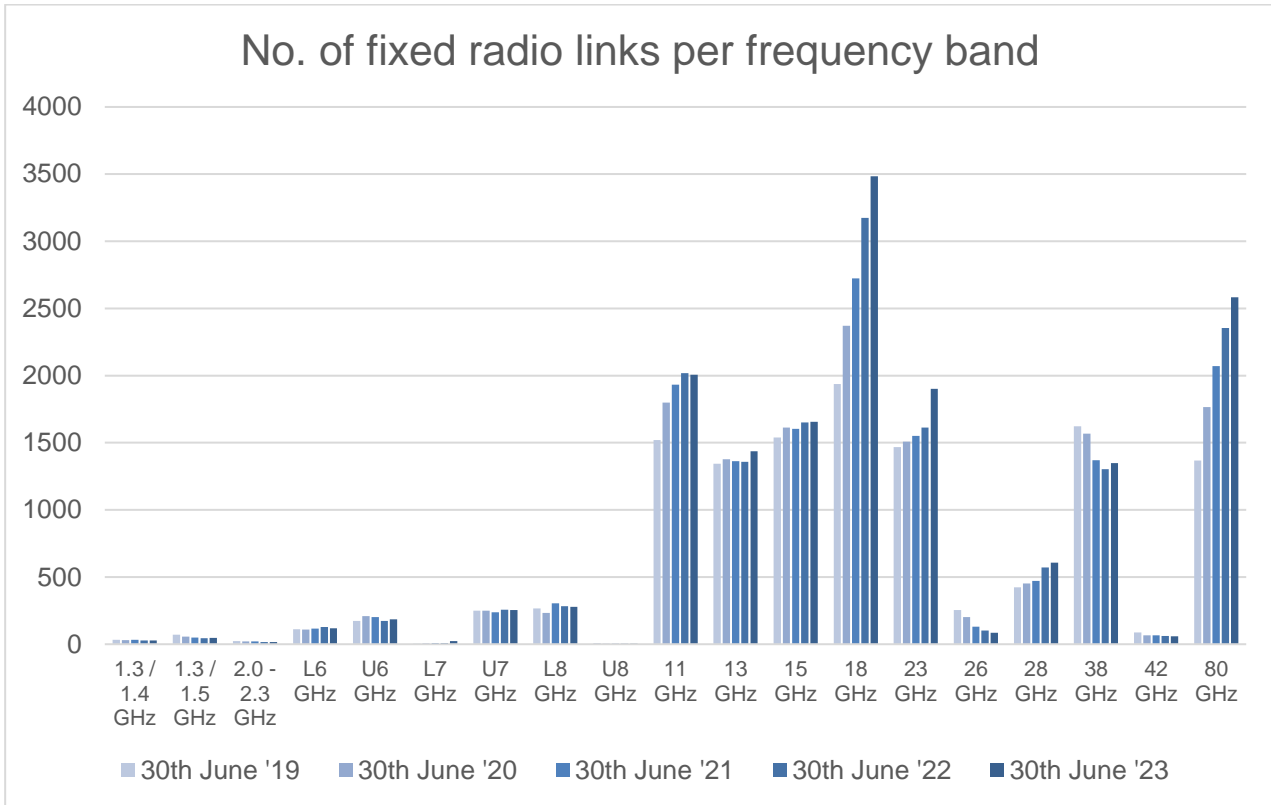


Figure 4: Number of fixed radio links per band (2019 – 2023)

- 3.4 The number of radio links in the frequency bands 11 GHz to 23 GHz and 80 GHz has steadily increased over the last three years. The increase in these bands can be attributed to the roll out of the “Bands and Carrier Aggregation” concept. Bands and Carrier Aggregation (“BCA”) is a technology that combines multiple frequency bands over the same radio link to increase the capacity of a link. An example of BCA is using the 15 GHz band with 80 GHz band on the same radio link over a 6-8 km path length.¹⁸
- 3.5 The sustained reduction of fixed radio links in the 26 GHz and 42 GHz bands can likely be attributed to the mobile network operators migrating links to their 26 GHz national block licences which were awarded in 2018¹⁹, given the similar propagation characteristics.
- 3.6 The decrease in use experienced in the 1.3 – 1.5 GHz band is due to non-renewal of licences as some licensees have migrated to other technologies such as satellite or to other frequency bands or fibre due to bandwidth limitations in the 1.3 – 1.5 GHz band. ComReg notes that the 1.4 GHz Band²⁰

¹⁸ See ECC Report 320 - <https://docdb.cept.org/download/55908dee-b5e4/ECC%20Report%20320.pdf>

¹⁹ See ComReg Document 18/31 at www.comreg.ie

²⁰ The 1.4 GHz Band (1427 – 1517 MHz) consists of the 1.4 GHz Centre Band (1427-1452 MHz) and the 1.4 GHz Extension Bands (1427-1452 MHz and 1492 – 1517 MHz).

is harmonised at an EC level²¹ for WB ECS and Licensees may be migrating from the band in advance of any future award by ComReg of some or all of the 1.4 GHz Band to facilitate the introduction of Wireless Broadband (“WBB”) and/or Mobile/Fixed Communications Network (“MFCN”) in the band.

²¹ The 1.4 GHz Band is harmonised in Commission Implementing Decision 2015/750 as amended by Commission Implementing Decision EU 2018/661 of 26 April 2018.

4 Siteviewer

- 4.1 In its Proposed Strategy for Managing the Radio Spectrum 2022 to 2024²², ComReg committed to making fixed radio links information publicly available on <https://siteviewer.comreg.ie/>.
- 4.2 In that regard, ComReg intends to publish a consultation in Q1 2024 regarding its proposal to publish radio spectrum licence information in a transparent and accessible manner. The proposal would provide further information, in an open and transparent way, for the benefit of an array of interested parties and would be in-line with Government’s strategic objective of making data held by public bodies accessible by citizens, businesses, and the Public Service.
- 4.3 In addition, the publication of radio spectrum licence information would be beneficial to Electronic Communication Network/Service providers (“ECN/ECS”) providers as it would assist them in the better planning and deployment of networks and services across a range of frequency bands. This could in turn result in more informed licence applications being submitted and reduce ComReg’s licencing assessment and processing time.

²² Proposed Strategy for Managing the Radio Spectrum 2022 to 2024 ComReg Document 21/90 - <https://www.comreg.ie/media/2021/09/ComReg-2190.pdf>

5 CEPT's Fixed Services Programme

- 5.1 The CEPT and ITU, in consultation with administrations, determine which frequency bands should be allocated for fixed services, and publish recommendations on the channel arrangements for those bands. As part of that role, CEPT also has a Spectrum Engineering project team (SE 19)²³ which considers matters regarding fixed services and regularly publishes reports and recommendations on the use of P-P and P-MP fixed radio links.
- 5.2 On 9 June 2023, the ECC published Report 173²⁴ which provides a:
- (a) comprehensive overview of the development of fixed service from 1997 up to 2021;
 - (b) useful reference for administrations, manufacturers and telecom operators on issues surrounding the developments of civil fixed services in Europe; and
 - (c) rationale for the general trends with information gathered for the whole CEPT highlighting the basis for these observations.
- 5.3 In summary, ECC Report 173 observes that, amongst other thing:
- (a) Developments in the technologies, such as higher modulation schemes (up to 4096 levels) wide bandwidth channels (e.g. 112, 224 MHz, adaptive modulation equipment, Hybrid/Ethernet technology, have improved the efficiency and flexibility of FS use to accommodate different Quality of Service (QoS) levels;
 - (b) very high capacity links are able to provide a viable alternative to deploying fibre optic especially in rural areas but equally in high density urban areas; and
 - (c) Some frequency bands show a growth in terms of number of links (13 GHz, 15 GHz, 18 GHz, 23 GHz, 38 GHz and 70/80 GHz).
- 5.4 SE 19 has several current work items on the future use of the fixed service and ComReg will take these into account as part of the fixed radio links review.

²³ <https://www.cept.org/ecc/groups/ecc/wg-se/se-19/client/introduction/>

²⁴ ECC Report 173 - Fixed Service in Europe Current use and future trends post 2022, approved March 2012 and latest amended 9 June 2023. <https://docdb.cept.org/download/4391>

- 5.5 ComReg actively monitors SE 19 meetings and welcomes any views that interested parties may have regarding the SE 19 work items listed below. Any such views may be sent to licensing@comreg.ie or as part of submissions in response to the ongoing consultation on the fixed radio links review.

Subject	Scope	Start / Target dates	Deliverable
Coordinated inputs to ITU-R WP5C	Coordination of contributions related to FS channel arrangements to ITU-R F series recommendations.	Permanent Work item.	Coordinated inputs to ITU-R WP5C.
To derive a methodology for protection criteria for FS except long term	To derive a general methodology for "short term" criteria for Fixed service and evaluate the relationship between "long term" and "short term" protection criteria and FDP (Fractional Degradation of Performance).	S: 02-10-2019 T: 31-10-2024	ECC Report.
Representative FS parameters for sharing and compatibility studies	To collect up to date technical FS parameters from CEPT countries and compile thereof a set of representative technical FS parameters for each FS band to be used in sharing and compatibility studies.	S: 11-01-2021 T: 31-01-2024	ECC Report
Revision of ECC/ ERC Recommendations related to FS.	Possible revision of ECC/ ERC Recommendations related to FS, if appropriate.	S: 03-02-2023 T: 30-09-2025	Rev. ECC Recommendation.

Table 1: SE 19 Work Programme