GSMA – Connect Europe Response to the Draft RSPG Opinion on a 6G roadmap

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About the GSMA

The GSMA is a global organisation unifying the mobile ecosystem to discover, develop and deliver innovation foundational to positive business environments and societal change. Our vision is to unlock the full power of connectivity so that people, industry, and society thrive. Representing mobile operators and organisations across the mobile ecosystem and adjacent industries, the GSMA delivers for its members across three broad pillars: Connectivity for Good, Industry Services and Solutions, and Outreach. This activity includes advancing policy, tackling today's biggest societal challenges, underpinning the technology and interoperability that make mobile work, and providing the world's largest platform to convene the mobile ecosystem at the MWC and M360 series of events. We invite you to find out more at gsma.com. Follow the GSMA on Twitter: @GSMA and @GSMAEurope

About Connect Europe

Connect Europe is the voice of the leading providers of connectivity networks and services in Europe. Our members are at the forefront of innovation in the telecom and technology ecosystems, connecting over 270 million Europeans with cutting-edge mobile and fixed networks, such as fibre and 5G. They also deliver advanced services, ranging from first-class IT, AI and cybersecurity solutions, to entertainment and content. As the main investors in the industry, our members drive the digital transformation of the Continent , accounting for more than 70% of total telecom sector investment in Europe. Formerly known as ETNO, we stand for an improved policy and regulatory environment that enables citizens and businesses to benefit from digital connectivity and services. We invite you to find out more at connecteurope.org. Follow Connect Europe on X: @Connecteuropex.

Introduction

The GSMA and Connect Europe, representing the European mobile industry, welcome the opportunity to comment on the Draft RSPG Opinion on a 6G spectrum roadmap.

The publication of an EU-level spectrum roadmap marks an important and timely milestone in setting out Europe's approach to 6G. Early guidance on potential future 6G bands, including the upper 6 GHz range, 7-8 GHz, and sub-700 MHz, allows operators to plan investments, support ecosystem development, and engage in international harmonisation discussions. Upper 6 GHz could be considered as the '6G capacity band' and sub-700 MHz as the '6G coverage band'. This roadmap will help shape global 6G developments and strengthen Europe's digital leadership and economic competitiveness.

6G spectrum needs

Mobile data traffic has grown significantly over the past decade and is expected to continue increasing as digital services evolve. Demand is driven not only by the widespread adoption of smartphones and higher data consumption per user, but also by the rapid expansion of bandwidth-intensive services such as video streaming, gaming, social media and cloud-based applications.

Emerging technologies and services (including extended reality (XR), AI-enabled applications, immersive communications and connected systems) are expected to further increase traffic volumes and introduce additional performance requirements for mobile networks in the 5G advanced and 6G era. As a result, European operators project that urban mobile networks could reach capacity constraints by around 2030, when the first 6G deployments are expected in Europe. GSMA's Vision 2040: Spectrum for the Future of Mobile Connectivity (2025)[1] finds that, without additional mid-band spectrum, cities covering more than 50% of the global urban population could become capacity constrained by 2030.

With current traffic growth projections, existing mobile spectrum will be needed to sustain 5G services and would not be available to launch 6G. Additional spectrum assignments are therefore necessary to support future connectivity needs. In this regard, we welcome the RSPG's recognition that identifying additional spectrum bands in the EU could facilitate coordinated timing for the launch of 6G at large scale across EU Member States.

In the longer term, and beyond the initial launch phase of 6G, these spectrum needs will become even more significant as 6G evolves and new capabilities are introduced. Future applications and services are expected to require wider channel bandwidths to support

[1] Please see: https://www.gsma.com/connectivity-for-good/spectrum/gsma_resources/vision-2040-future-spectrum-needs/

very high data rates, ultra-low latency communications and emerging capabilities such as integrated sensing and communication.

In mid-bands, 6G is designed to operate with 200 MHz carriers or more. Thus, providing at least 200 MHz per operator for 6G launch will support efficient network deployment and maximising service benefits. GSMA's Vision 2040 study[2] shows that next-generation 6G networks will require on average up to three times more mid-band spectrum than is typically available today to keep pace with surging demand for data, AI-powered services and advanced digital applications, and thus Europe may need to consider mid-band spectrum opportunities beyond upper 6 GHz range after the 6G launch phase.

Importance of upper 6 GHz and the 7-8 GHz range for 6G

The GSMA and Connect Europe support RSPG's identification of the upper 6 GHz as the "primary band" for the introduction of 6G in Europe by 2030.

The 6 GHz band already has a mobile allocation in the ITU Radio Regulations and WRC-23 has laid out the conditions for its use by IMT technologies globally, including the identification in Region 1. Assignments in the UAE and Hong Kong, planned auctions in Brazil and India as well as its inclusion in roadmaps of several other countries indicate that the upper 6 GHz will become a global IMT band for 5G advanced and 6G, and Europe has now the opportunity to leverage the global economies of scale for 6G leadership.

The upper 6 GHz remains the only feasible spectrum option in Europe to launch 6G at the end of this decade. It represents the only substantial contiguous block of mid-band spectrum that can support high-power and wide-area mobile services, achieving the minimum of 200 MHz per operator that will be required for efficient 6G rollouts.

To this end, GSMA and Connect Europe see positively RSPG's recognition that each operator will require around 200 MHz of additional mid-band spectrum to meet future demand. Larger channel sizes are a key component for a sustainable growth of mobile services, delivering higher speeds and reliability to the end user in a more cost-effective manner.

However, it is essential that sufficient spectrum is made available in the upper 6 GHz band in a timely manner to enable the high-power macrocell deployments and use of those wider channels, which will be required to support the performance objectives of initial 6G deployments. The RSPG notes that the spectrum available in this band will depend on the outcome of WRC-27 but is expected to comprise at least 665 MHz of contiguous spectrum, as reflected in the RSPG Opinion on the upper 6 GHz band.

GSMA and Connect Europe support RSPG's view that 7125-7250 MHz band (currently under study in Region 1 at WRC-27 for possible IMT identification) could provide

[2] Please see: https://www.gsma.com/connectivity-for-good/spectrum/gsma_resources/vision-2040-future-spectrum-needs/

additional spectrum to complement the upper 6 GHz band for 6G, although it is important that IMT identification does not introduce additional constraints and allows for high-power macrocell deployments. If such constraints are associated to the IMT identification, Europe should prioritise the use of the band 6425-6585MHz for MFCN.

ITU & 3GPP are developing 6G to operate in 200-400 MHz wideband channels. In the longer term, some of the adjacent bands which are currently being studied for IMT under WRC-27 could be also considered for evolved 6G. For example, part of the 7-8 GHz range could potentially help meet the demand driven by applications such as video, generative AI, and extended reality. It is understood that there are important existing users of the 7 GHz range but in the longer term this band could enable 6G to be expanded in cities and with a re-arrangement of operator spectrum holdings, could enable the 400 MHz channels in this range.

Low bands

GSMA and Connect Europe agrees with the RSPG view that 470-694 MHz band could "enhance nationwide and indoor 6G coverage" and increase overall low-band capacity in those European countries where it becomes available. Upper 6 GHz could be considered as the '6G capacity band' and parts of the 470-694 MHz as the '6G coverage band'. Having both bands available enables a nationwide inclusive deployment.

The roadmap rightly highlights the strategic importance of these frequencies for wide-area coverage and improved indoor connectivity, and welcome future RSPG and CEPT work on enabling flexible use of this band. Such work should include consideration of repurposing options where Member States decide to pursue them, while allowing for national circumstances and different market developments across Europe.

In this context, the 6G roadmap could also take into account ongoing discussions within the wider ecosystem on possible harmonisation pathways for the band. This may include exploring post-2030 milestones, such as consideration of a primary mobile allocation at the World Radiocommunication Conference 2031 (WRC-31), alongside the development of harmonised technical conditions should Member States wish to enable mobile use.

In a number of countries, maintaining exclusive DTT use across the entire UHF band beyond 2030 may not represent the most efficient long-term outcome. A gradual reallocation could help improve spectrum efficiency, enhance service quality, and limit the need for extensive site densification. It would also support inclusive connectivity and strengthen the foundations for future 6G deployment. Europe should therefore prepare for possible future use of the 470-694 MHz band in a way that preserves flexibility while enabling long-term coordination.

Harmonised mobile bands

GSMA and Connect Europe note that the RSPG has indicated that 6G can be implemented in all bands already harmonised for mobile in the EU, including low-, mid- and high-band spectrum.

We agree with this view and expect that existing bands will eventually evolve to support 6G – similarly to what has happened in 5G. The continuous migration of legacy mobile spectrum bands towards new, and more efficient technologies, is a natural evolution. Operators will migrate currently available bands towards 6G when it is possible from the traffic perspective, noting that many customers and use cases will rely on earlier generations still years after the launch of 6G.

However, as noted above, given projected traffic growth estimates, existing spectrum holdings alone will not be sufficient to support the launch of 6G. It is also important to recognise that currently harmonised mobile bands will continue to be required to meet ongoing 4G and 5G data demand when 6G is introduced.

Local licensing and sharing

RSPG notes that the 3.8-4.2 GHz band could support low- and medium-power local area networks, including the use of 6G technologies, to facilitate the growth of a range of vertical markets. Local access solutions may play a role in enabling specialised industrial or campus-based connectivity in certain environments. However, approaches to local licensing should be carefully assessed against demonstrated enterprise demand to avoid fragmentation of the band or inefficient spectrum use.

Mobile network operators continue to be the main partners of vertical sectors and key enablers of digitalisation across Europe, providing nationwide coverage, operational expertise, and integrated service platforms that support industrial and public sector connectivity needs also locally.

In this context, considerations of local access frameworks should remain consistent with the need to maintain efficient use across the entire 3.8-4.2 GHz range. The 3.3-4.2 GHz range is the core global band for 5G, and 3.4-3.8 GHz is widely deployed across the EU. The adjacent 3.8-4.2 GHz band could therefore be considered as a natural extension of this existing foundation also for possible higher power use. In the long-term, we support the future review of the harmonisation of the 3.8-4.2 GHz band to enable higher power use, and request Member States to authorise local licenses initially in upper part of the band as indicated in the (EU) 2025/2425[3].

RSPG notes that sharing solutions will be essential in the future. GSMA and Connect Europe agree with that view, but successful spectrum sharing approaches must be

[3] Please see: https://eur-lex.europa.eu/eli/dec_impl/2025/2425/oj/eng

commercially viable, technically feasible, reliable, and ultimately must deliver net benefits for end users.

NTN and D2D

The RSPG notes that 6G should build on closer coordination between terrestrial and non-terrestrial networks (NTN). The GSMA and Connect Europe consider NTN and satellite direct-to-device (D2D) connectivity as a complementary layer to terrestrial mobile networks, particularly for extending coverage to sparsely populated or hard-to-reach areas and providing resilience during network disruptions.

However, while the technology is advancing quickly and attracting considerable interest, it remains constrained by inherent limits[4] in capacity and spectral efficiency. As such, D2D is best suited to support basic services in remote or underserved locations and act as a resilience mechanism, while terrestrial mobile infrastructure will remain the primary means of delivering high-capacity connectivity and supporting advanced digital services.

When developing framework and conditions to enable D2D services in frequency bands that are harmonised in EU for terrestrial wireless systems providing electronic communication services, it will be important to ensure sufficient protection of terrestrial mobile services. Also, the D2D service provision in these bands should be based on the agreement with the Mobile operator holding the spectrum license and any additional allocation to MSS should be on a secondary basis. [5]

[4] Please see: https://www.gsma.com/connectivity-for-good/spectrum/gsma_resources/the-limits-of-d2d/
[5] Please see: GSMA Releases Guidance to Support New Direct-to-Device (D2D) Satellite Services - Newsroom