GSMA response to the Draft RSPG Opinion on the development of 6G and possible implications for spectrum needs and guidance on the rollout of future wireless

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Introduction

The GSMA welcomes the opportunity to comment on the RSPG's draft Opinion on the development of 6G and possible implications for spectrum needs and guidance on the rollout of future wireless.

6G is expected to become the primary mobile technology in the 2030s and will offer an enhanced user experience compared to previous generations. Mainly, it will enable the UN Sustainable Development Goals (SDGs) through global coverage, sustainability and security; all features that will lead to an era of universal, meaningful connectivity. 6G promises ultra-fast data rates with lower latency, significant energy efficiency, and greater reliability. While 6G applications are yet to be defined, this new generation aims to deliver global connectivity, sensing connectivity, immersive communications, and critical services, among several other potential use cases throughout a hybrid and diverse technology approach.

The mobile industry is already studying how 6G will shape the future of mobile and spectrum policy for 6G is becoming increasingly important. The upcoming World Radiocommunication Conference 2023 (WRC-23) in November will lay the spectrum foundations for 6G, setting the agenda for WRC-27 and thereby defining the likely roadmap for spectrum bands supporting future networks. The WRC-27 agenda will also act as a blueprint for discussions outside the ITU and for regional harmonisation agreements.

In every mobile generation, countries must agree on additional spectrum allocations for mobile services, IMT identifications and harmonisation. Countries should identify their needs, participate in the international regulatory process and plan their 6G roadmaps accordingly, allowing their citizens and economic sectors to benefit from the full value of this new technology. While the RSPG Opinion identifies some of the lessons learned from 5G, the GSMA considers that there is scope to expand on the evolution towards 6G, better linking to the ongoing 6G research and thus providing clear steps for serving 6G use cases and needs from a radio spectrum perspective.

We hope that the following detailed comments can serve as a constructive contribution to the RSPG's deliberations on its draft.

Spectrum needs and licensing

Additional spectrum is needed for both 5G and 6G. The expected demand and connectivity targets cannot be met without new spectrum even if refarming, reasonable densification and shared approaches are considered. In particular and with regard to the refarming of existing spectrum bands with new technologies, this will be done on the basis of operator

needs and strategies and given the traffic levels in different generations. However, refarming and new spectrum are complementary to each other. Densification also has its limits, e.g. technical (inter-site interference), political (challenges of acquiring new sites), economical (extreme densification is costly) as well as ecological (increased material and energy use).

We anticipate that there will already be a need for new spectrum in the EU in advance of 6G. In this regard, we note that all countries have not or cannot award all harmonised mobile spectrum due to national circumstances such as existing incumbents in the band, cross-border challenges with non-EU countries or decisions to set-aside part of the spectrum for other uses (local or vertical or governmental uses). For example and recognising the importance of the pioneer bands in enabling 5G in the EU, it should be noted that the full 400 MHz in the 3.6 GHz band has not made available in all Member States. In this context, it is important to recognise that the 6 GHz band would also be useable with 5G and in addition would help address the limits of densification.

6G also comes with new spectrum considerations. Among these are additional capacity and frequency ranges needed, from low to very high bands, to support these next-generation services. Even if the EU is not actively supporting a new IMT agenda item for WRC-27, we consider that the RSPG Opinion should recognise that studying the spectrum allows all stakeholders to be brought together to consider the sharing opportunities and understand the possibilities. Thus, new spectrum for IMT should be studied for WRC-27. In this regard, spectrum bands that may be feasible for macro and outdoor deployments should be considered. One new frequency range being considered for 6G is 7-24 GHz with a special focus in 7-15 GHz, which is supported by the GSMA and represents a potential solution for the 2023-2027 WRC study cycle at the ITU.

At the EU level, the GSMA considers that an EU 6G Spectrum roadmap should also be considered. In this regard, the harmonisation of frequency bands should concentrate on the timing of availability and the technical usage conditions. The assignment dates should be decided at the Member State level according to the market demand but it should be ensured that each Member State efficiently awards the key harmonised spectrum bands for nationwide mobile networks. In addition, spectrum should always be awarded on a technology neutral basis as mobile demand depends on the services provided and not directly on a specific technology. Furthermore, licensing for 6G and the associated spectrum costs should be fair and equal for all possible different users (e.g. MNOs, satellite, verticals, governmental, TV operators). This ensures efficient use of spectrum resources, and fair competition, especially when different players and solutions serve the same needs.

On the issue of spectrum sharing and in particular point 2 of the Opinion, the GSMA considers that sharing should be based on commercial agreements only.

Verticals

The GSMA notes that many countries have already set-aside spectrum for local/vertical use in key harmonised bands. In addition, CEPT is currently studying the 3.8-4.2 GHz band as per the EC mandate, and many countries have enabled or are considering local licenses in mmWave bands. The spectrum that has been made available for verticals can also be used for 6G and vertical spectrum use should be monitored to ensure it is used efficiently.

Making further spectrum available for industry users has to be balanced against demand from other users, including mobile operators who have increased spectrum needs as mobile data traffic grows. As a result, the benefits that regulators expect from an assignment of IMT spectrum to private or local networks have to be carefully weighed against the cost resulting from potentially denying other users access to the same resources.

While we recognise the need for spectrum resources for verticals, further reservations in bands being harmonised for public mobile networks adversely affect the EU telecoms industry by creating regulatory scarcity, which leads to higher spectrum prices. This is turn reduces the investment capability of the MNOs for public networks. There are also other approaches to service vertical needs and we appreciate that the RSPG Opinion includes and elaborates on these in Section 3 of Annex 1. In this regard, we note that there are different categories of vertical users and demands and such demands can be served efficiently within mobile networks. In fact, a recent report by GSMA[1] found that market-driven approaches that foster cooperative solutions can bring the best outcome for spectrum users and consumers alike. Finally, it should be noted that an EU-wide reservation of spectrum for particular uses or technologies (e.g. non Public networks or low power local networks) would be unnecessarily restrictive in the face of different national circumstances. A preferred option is a common methodology to assess departures from the neutrality principle and minimise the risk of artificial spectrum scarcity for macro cellular networks.

Other issues

Offloading

In relation to Point 6 of the Opinion, the GSMA recognises that offloading plays an important role. However, it should also be noted that that WAS/RLAN system typically provides wireless distribution of fixed broadband access and does not provide any additional broadband capacity.

[1] The Impact of Spectrum Set-Asides on 5G, GSMA, June 2023

Non-terrestrial networks

Regarding Point 7, while NTN will play a role for 6G this will mainly be through the provision of complementary services to terrestrial mobile networks. It should be noted, that mobile coverage in Europe is already relatively widespread and as such the demand and use cases for NTNs within the EU territory may be more limited or marginal than elsewhere. In addition and as a more general comment, satellite licences need to be limited to spectrum that is specifically allocated to the Satellite services (FSS or MSS) and that satellite use cases need to ensure the protection of terrestrial services.

EMF

The GSMA notes that stricter limits than those defined by ICNIRP can lead to reduced network capacity and even difficulties fulfilling coverage obligations and deploying new technologies. They limit cell range as well as the possibility to deploy new bands per site. This can lead to much denser networks, which may be challenging due to deployment restrictions. Moreover, a higher amount of network equipment leads to higher energy consumption and carbon emissions in manufacturing and in operation. The need to keep single antenna site exposures below stricter limits may also slow down the migration from a "stable" technology to an emerging one, due to the need to ensure the continuity of legacy services.

The GSMA therefore considers that harmonised limits in line with the EMF limits defined by ICNIRP should be applied throughout the EU. The GSMA welcomes the Scientific Committee on Health, Environmental and Emerging Risks (SCHEER) opinion[2] advising positively on the need for a technical revision of the annexes in Council Recommendation 1999/519/EC and Directive 2013/35/EU to adopt ICNIRP (2020) limits. The GSMA appreciates the work of the RSPG and BEREC in relation to the 2020 position paper and the sharing of information about the different levels of cooperation between competent bodies in countries and about national policies around monitoring, communicating and implementing EMF-related issues.

[2] SCHEER Opinion on the need of a revision of the annexes in the Council Recommendation 1999/519/EC and Directive 2013/35/EU, in view of the latest scientific evidence available with regard to radiofrequency (100kHz - 300GHz), SCHEER, April 2023