

GSMA Position Paper on the European Commission Spectrum Inventory Report

The GSMA welcomes the Spectrum Inventory Report and the opportunity to comment and identify the frequency bands where spectrum efficiency could be improved to accommodate the future demand, promote innovation, and enhance competition. The report is an interesting step forward, however several aspects should be considered to help understand its findings and choose the appropriate solutions. The time delays in the spectrum process and the spectrum requirements of the industry to reach the Digital Agenda 2020 objectives are not taken into account while spectrum sharing is portrayed as the best solution. At a more technical level, there are bands – the 2.7-2.9GHz band, the 2.1GHz MSS and TDD, and the lower part of the C-Band (3.4-3.8GHz) – that have tremendous potential and where the current assessment as well as conclusions do not necessarily reflect the current status or future expectations.

The report presents a snapshot at a particular point in time of the current state of spectrum affairs in Europe. Although it could be an appropriate tool to help identify potential improvements in terms of efficient use of the spectrum across Europe, the spectrum inventory report does not take into account the time dimension and the current evolution across certain frequency bands. In some cases, it can take several years to agree on the allocations, the assignment, and finally the launch of services. Because of this time delay, the conclusions on certain bands can be very different depending on when the assessment was done. For that reason, the Commission and the Member States need to consider the spectrum requirements several years ahead and have a medium to long-term outlook concerning the needs for the industry. Moreover, the report does not properly take into account the current trend for migration of the broadcast services to other technical platforms such as cable, satellite, and IPTV. With the emergence of new technologies and the associated shift in content demand over alternative means in the medium to long-term, the UHF band could be subject of significant underuse in the coming years.

Spectrum requirements

Considering that over the period from 2008 to 2013 the global mobile data traffic grew 45-fold, the industry was able to cope with this tremendous growth largely through the introduction of more efficient technologies in already assigned bands, in particular the 900 MHz band and the 1800 MHz band. The GSMA expects that the new bands made available for mobile broadband in Europe between 2011 and 2015, together with further upgrades of existing technologies, will provide capacity for further growth until 2018 or 2020. We note however that the relationship between end user demand and spectrum demand is not as simple as the inventory report suggests. As more spectrum is made available to operators, new capacity is made available to customers at affordable prices, inducing more usage. Given the demands exerted on the mobile industry to deliver access, speed and content, an increase in the spectrum allocated to mobile below 6GHz would provide clear benefits. We therefore urge the Commission to focus beyond the absolute minimum spectrum needed for wireless broadband communication and towards the adequate amount required that would foster the innovation as well as the investment needed that once made Europe a global leader of mobile technology.

As it stands, the 1200MHz target set for 2015 is satisfactory, but will not be sufficient to achieve the Digital Agenda objectives by 2020. Currently, Europe has nearly reached this target with approximately 950MHz to 1100MHz being used across the EU. In most cases, the remaining spectrum is delayed and/or in the process of being allocated for its use in the coming year. One such example is the 800MHz band where despite the launch and completion of the auction process several governments requested derogations to their obligation and operators are still not permitted to use this spectrum. However, in all cases where the award and allocation process has been completed, such as in Germany, the Netherlands, or France for example, mobile operators have very rapidly made the deployments and started using the spectrum.

With 2015 fast approaching, it is important for Europe to have a forward-looking vision. In the context of the ever-increasing demands on the mobile industry, the GSMA provided input to several forums on a study it recently published, which projected that a total of 1600-1800MHz below 6GHz will be needed for mobile broadband communication. Our average spectrum estimates demonstrated that by 2020 there would be a shortfall of 300MHz to 800MHz of spectrum. In addition, several countries also published their analysis and while these have differences in the timescale considered, methodology used, and assumptions made, they all fall in the same order of magnitude. This underlines the near universal agreement that more spectrum is needed for mobile in the coming years.

Several options would allow an increase of 300 to 800MHz in Europe, the 2.7-2.9GHz and 3.4-3.8GHz bands being the key frequencies for this expansion as well as the 2.1GHz MSS and TDD bands. Taking into account how other regions are considering increasing the spectrum available for mobile broadband communication for 2020 and beyond, a failure of Europe to take the lead or at the very least do the same would further hamper development and put it at a significant disadvantage for years to come.

LSA and spectrum sharing

The inventory report concludes that increasing efficiency in frequencies across Europe would be possible with spectrum sharing. The GSMA strongly believes that the way to create sustainable consumer benefits and increased competition should begin by creating regulatory and legal certainty in the market. LSA may be an alternative approach that increases spectrum efficiency in clearly defined circumstances. However, it should be regarded as complementary, and not as a panacea for spectrum scarcity, replacing the need for exclusive, commercially licensed spectrum for mobile services. To meet this explosion in demand, sufficient, internationally harmonised spectrum is essential to ensuring the quality of service that consumers and businesses have come to expect, and rely on, from mobile networks.

For mobile broadband spectrum, especially when it has been identified for International Mobile Telecommunication, a licensing regime based on well-defined exclusive access rights should be prioritised to ensure well-known benefits, such as a guarantee of quality of service, good interference management, and a high degree of market certainty necessary to create adequate incentives for investment and innovation. In the context of the second, third and fourth generations of mobile networks (e.g., GSM or UMTS, LTE), the exclusive access regime has already demonstrated an ability to foster the development of innovative services such as mobile internet, among others services, while creating positive effects on investment, competitiveness, economic growth, job creation and social welfare.

In broader terms, we urge that regulation of spectrum should be designed to be durable and consistent over time in order to enhance the ability of the market players to engage in long-term and less risky investments. Taking the shortcut to quick wins in a non-sustainable competition and prices environment in mobile broadband will have a negative impact on investments incentives for all the industry.

The 2.7-2.9GHz band

We agree with the assessment of the Commission in its inventory report describing the 2.7-2.9GHz band as being "substantially underutilised in most Member States". The band is allocated to the aeronautical radionavigation service on a primary basis, and radiolocation service on a secondary basis. Frequencies within this band are primarily used by air traffic control radars, both civil and military, as well as for meteorological radars. In some Member States the band is very lightly used (e.g. only 1 or 2 radars) whereas in most others, only a relatively small number (at most a few tens) of radars at fixed locations occupy only parts of the band. It is clear that spectrum in the band is not being used efficiently.

Recent studies indicate that it would be feasible to operate both radars and IMT in the 2.7-2.9GHz band, under certain conditions. For example, the radars could be repacked into the upper portion of the band

(over a period of time), with the lower portion used for IMT (and a suitable frequency separation between them), or frequencies in the band could be used for IMT with a suitable exclusion zone around any radars. The studies, which have been conducted in ITU-R (see document 4-5-6-7/715 Annex 30) and by countries such as UK and Sweden, describe scenarios under which use of both IMT and radars in the band are compatible. Co-channel separation distances, which may appear very large under worst-case assumptions can be reduced to a few tens of kilometres through intelligent rollout of the IMT network (e.g. antenna pointing and downtilt) in areas where this is required, and cross-border coordination can be used. Non-co-channel operation is feasible if suitable mitigation measures are implemented, including frequency separation and suitable IMT deployment practices, and in some cases improvements in equipment characteristics such as filtering.

Also, being adjacent to the already assigned and harmonised 2.5-2.69GHz band where a number of LTE networks are already being deployed for mobile broadband services has a number of potential benefits. The 2.7-2.9GHz band could provide a capacity extension to that band of at least 100MHz, if the radars currently in use are relocated in the high end of the spectrum leaving the lower frequencies to mobile operators. The two bands would bring significant synergies to the market and allow for greater spectrum efficiency – for example, the potential for larger spectrum blocks, and the similar propagation conditions of the bands would allow the same cell sites to be used to provide similar coverage in a cost-effective manner. We believe it would be beneficial for further investigations to be undertaken into how spectrum in the band could be used more efficiently, including ways to improve spectrum efficiency of radar systems in the medium-long term.

The 2.1 GHz MSS bands

The GSMA also sees a great potential for a terrestrial use of the band 1980-2010MHz paired with 2170-2200 MHz, 2*30MHz wide, (the so-called “mobile satellite service” or MSS-bands). These bands are adjacent to the “terrestrial” spectrum 1920-1980 MHz paired with 2110-2170MHz, 2*60 MHz wide, which is the power horse of 3G and as such part of the mostly used spectrum worldwide. The MSS-bands benefit from the same duplex spacing and duplex direction, which makes the extension of 3GPP band plan n°1 particularly easy. There are different regulatory options to make this spectrum available for terrestrial mobile network operators: 1) via the enforcement measures on the current license-holders mentioned in the inventory document and also the RSPG opinion on strategic challenges facing Europe in addressing the growing spectrum demand for wireless broadband (doc. RSPG13-521rev1) or 2) via a removal of the current technical restrictions associated with the possibility to transfer or lease the individual rights of use in this band.

The 2.1 GHz TDD bands

The lack of use of the bands 1900-1920MHz and 2010-2025MHz (the so-called “2.1 GHz TDD” bands) in the past is mainly due to the lack of consumer mobile broadband devices capable of using this band. This situation is about to change and attractive mass-market consumer devices using these bands (at least 1900-1920MHz) have appeared in the recent months. Those recent devices are capable of using up to twenty different LTE bands (sixteen of them are FDD, and four TDD bands). This was not the case for previous generations of mass-market consumer devices.

Other reasons for the lack of use include fragmented spectrum holdings, and the proximity of the FDD uplink above 1920MHz, which needs to be protected. The GSMA believes that there is scope to improve the efficiency of the use of the 1900-1920MHz by defragmenting the band, and taking a holistic approach on TDD spectrum including other bands such as 2300-2400 MHz and 2500-2620MHz.

Future harmonization of these bands should not focus exclusively on non-ECS options, as it is the case in the Commission mandate to CEPT (doc. RSCOM12-17rev3).

The C-Band: 3.4GHz-3.8GHz

The current underutilisation of the 3.4-3.8GHz band noted in the report is due to a variety of reasons, the first being the present regulatory environment prioritising the incumbent wireless operators such as WiMAX, LMDS and Satellite operators. At this moment, nearly all EU Member States have still assigned this band for “broadband wireless access (BWA)” use and only in some limited cases extended for mobile. Because those BWA licenses, for the most part, do not belong to mobile network operators, the use and deployment in this band has been very limited.

Another factor, and perhaps the most crucial one, is the lack of devices that support the 3.4 to 3.8GHz band. Thus, the current underutilisation of those bands is largely due to the missing handset ecosystem in the market, which is in turn due to lack of mobile operators with licences in this band. This is in stark contrast to the bands below 1GHz where there is no lack of use or demand since this spectrum was assigned as well as allocated to mobile operators at national level and harmonised at European. Moreover, the EU, by its geographical nature, does not face the same technical difficulties tropical regions do, e.g. heavy rainfall. With the exception of intercontinental satellite links, many of the C-Band satellite application can be shifted to high frequencies granting the space needed for mobile broadband to deliver the services needed to grow the digital single market.

Currently, the prioritisation of incumbents and the satellite operators in this band does not provide the right incentives for the mobile industry to invest and develop. In addition, the conclusions on the 3.4-3.8GHz band do not take into consideration the spectrum needed to develop and sustain 5G. With the advent of LTE Advanced as well as the development of the next generation network in the coming years, the need for greater carrier bandwidths and aggregation will be substantial and necessitate the potential the 3.4-3.8GHz band can offer for mobile broadband services.

At this stage, we urge the Commission to develop a clear strategy around future spectrum usage and allocation in the 3.4 to 3.8GHz bands and provide regulatory certainty that would be conducive to investment. As a critical band identified to facilitate the achievement of the Digital Agenda for Europe, the 3.4 to 3.8GHz band can offer important spectrum capacity for the mobile industry to deliver on those demands and make Europe a leader that it once was.

Other Bands

Although the 2.1 GHz, the 2.7 to 2.9GHz and the 3.4 to 3.8GHz bands have been the focus of this paper, there are a number of other underutilised bands identified in the report that must be considered as well. In most of those cases, the Commission and Member States can remedy this situation through further harmonisation, and assignment to mobile operators. Bands where such measures can be taken are the 1800MHz, which is still not fully assigned to mobile operators in all Member States, the 2.3GHz band, which should be made available as it already supported by the handset ecosystem. Also, identifying the lower frequency bands like the L-band and sub-700MHz UHF for mobile broadband can, among others, enable the industry to ensure future mobile broadband requirements can be met across wider geographic regions including rural areas.