



## Telefónica Group response to the public consultation on the draft RSPG Opinion on Strategic Challenges facing Europe in addressing the Growing Spectrum Demand for Wireless Broadband

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### General Comments

Telefónica would like to thank the Radio Spectrum Policy Group (RSPG) for giving stakeholders the opportunity to comment on their draft Opinion on Spectrum Demand for Wireless Broadband. As we commented in our response to the draft RSPG Opinion on the Review of Spectrum Use, Article 9 of the Radio Spectrum Policy Programme (RSPP), which requires an inventory of existing uses and an analysis of technology trends, future needs and demand for spectrum to be undertaken, is one of the most important elements of the Programme, and we consider that spectrum for wireless broadband will be the most challenging demand to address.

Telefónica notes that Europe will have to continue to ensure that a sufficiently long term view is taken to ensure that the significant infrastructure investments required to support growth can be made. Spectrum is essential for the digital society, fast wireless services, economic recovery, growth, high-quality jobs and long-term EU competitiveness, and wireless industries can and will contribute significantly to the European region's economic recovery. It is important to us that Europe remains competitive when compared to other regions of the world. Telefónica plans to invest billions of € over the next few years and the right approach to implementation of the RSPP will encourage us to retain the current high level of investment in Europe.

It should be noted, however, that our income is finite and limited; although we have seen the demand for services rise by a factor of more than 30 times in recent years, our revenues have decreased. As stated in our previous responses to RSPG and other consultations this explains the increasing focus on cost, on investment, and on the need for regulatory authorities to avoid taking money away from investment programmes through poorly designed regulations such as spectrum auctions. When assigning spectrum, national authorities should not design auctions to raise large amounts of money to address budget deficits as this simply decreases the amount of money available in private enterprises to invest in modern electronic communications networks. There should be a focus on investment, not on tax, and we continue to encourage authorities to consider alternative methods of spreading the cost of spectrum rights over time.

When finalising the roadmap of steps that need to be undertaken to make particular spectrum bands available for wireless broadband, Telefónica also believes that it will be important to take into account the potential of each frequency range to increase growth and

productivity, in line with the Digital Agenda for Europe goal of delivering sustainable economic and social benefits from a digital single market based on fast and ultra fast internet and interoperable applications. We note that some of the frequency ranges considered are quite limited in their potential, and it will be beneficial for the RSPG to take into account the scope for each potential band to deliver real benefits.

### Trends

Although the RSPP will be reviewed by the end of 2015, its implementation needs to take into account trends that extend to at least 2020 and we are pleased to see that the Commission has requested the RSPG to take a longer term view than 2015 when addressing the strategic challenges facing Europe regarding the growing demand for spectrum. The trends that Telefónica has seen in recent months with the phenomenal uptake of Mobile BroadBand (MBB) suggest that more spectrum will be required for mobile services, in both high and low frequency bands, as the bandwidth per user increases. A long-term view (10+ years on end user requirements, technologies and markets) is needed. In particular, the focus should be on the economic benefits that different frequency bands could offer Europe as a whole. The draft RSPG Opinion suggests (§IV p.8) that where additional unpaired (TDD) spectrum is required larger bandwidths than 20MHz should be considered. We would support this suggestion but recommend that new unpaired spectrum blocks should offer at least 100MHz of usable spectrum. Similarly, for paired spectrum, Telefónica recommends that new spectrum bands should offer at least 2x40MHz of usable spectrum, in order that these additional frequency bands both support multiple operators and prove to be attractive enough for manufacturers to develop equipment.

Our customers are demanding an increasingly wide range of services, with a high focus currently on social networks, hyper-connectivity and machine-to-machine communications. These content rich services require a transformation of existing networks from voice enabled communications to high data traffic enabled ones. Telefónica acknowledges the studies that suggest an increase in today's downlink to uplink traffic ratios, but agree with the RSPG view that spectrum efficiency in the downlink will remain much higher than in the uplink, and that this will help to mitigate against traffic asymmetry. We also acknowledge the contribution that small cells and WiFi can make to the delivery of data traffic in a mobile network, and acknowledge that there may be a need to find additional spectrum in the 5GHz band for WiFi applications. Telefónica also believes that the trend in increasing technological efficiency will continue, with ever-increasing bits/s/Hz being delivered, but we agree with the RSPG that the rate of increase will be much slower than the increase in demand for delivery of content rich services. This therefore means that we will still require additional spectrum to be made available in the coming years.

### Spectrum Policy

The RSPG have considered a number of important spectrum policy issues in their draft Opinion. There are significant differences in the spectrum demand for wireless broadband across the European Union, but Telefónica firmly believes that regional scale is needed through harmonisation to ensure that manufacturers develop equipment in a timely manner. We support the approach proposed in the RSPG Report on Improving Broadband Coverage of identifying and harmonising spectrum for wireless broadband in the Union whilst allowing temporary national derogations, providing that they do not constrain the use of designated spectrum for wireless broadband in neighbouring Member States.

Telefónica disagrees with one of the examples of spectrum policy, relating to under-utilisation, quoted from the RSPG Broadband Coverage Report. The draft RSPG Opinion

suggests (§V p.12) that the 2010-2025MHz band has suffered from complex co-existence issues with FDD at 1920MHz; clearly the unpaired band in question here is the 1900-1920MHz band. The 2010-2025MHz band by contrast, especially where it has been awarded in a single block (e.g. Germany), does still have the potential for effective and efficient utilisation, and we believe that the European Commission should not be premature in concluding that it should be redesignated. We consider that the delay in making use of this band since its original designation has primarily been the lengthy delay in its award in most Member States, and that insufficient time has elapsed to allow technologies to be developed to make good use of it.

Telefónica agrees that the convergence of broadcasting and broadband services should be studied at the European level, in order to define a long-term vision for the use of the UHF band in Europe, and we note that a number of activities and consultations have already been launched on this topic. However, we do not believe that this should delay the clearance and release of the 700MHz band (see below).

### Meeting Future Spectrum Demand

Telefónica agrees with the RSPG recommendation that a strategic plan should be developed by the European Commission to make the necessary spectrum available to meet the future spectrum demand for wireless broadband services. In particular, we note that the analysis of each potential frequency band should consider economic and social factors<sup>1</sup> in line with the Digital Agenda for Europe goal of delivering sustainable economic and social benefits from a digital single market based on fast and ultra fast internet and interoperable applications. Regarding the key frequency bands discussed in the draft Opinion:

- 700MHz: Telefónica believes that the 694-790MHz band should be allocated to the mobile service from 2015, in line with the provisional allocation made at WRC-12, and should subsequently be designated and made available for wireless broadband in a harmonised way in the European Union. Currently, we have no firm opinion about the implementation timescale for the 700MHz band, but believe that every effort should be made to maximise the amount of usable spectrum for wireless broadband within the band. We also note that there could be additional benefit in ensuring that the lower boundary aligns and is fully compatible with the lower edge of 3GPP Band 28, both in terms of its frequency (698MHz) and its out-of-band emission mask, since that Band plan is to be used in many countries in Latin America and the Asia-Pacific region. This would open up the possibility of near-global harmonisation of any additional spectrum released for the mobile service following the future study of convergence noted above.
- L-Band: The 1300-1400MHz and 1427-1527MHz bands have the potential to offer more than 2x40MHz of usable spectrum. Telefónica considers that efforts should be made to ensure that any interim decisions made in Europe, for example regarding the 1452-1492MHz sub-band, do not result in the fragmentation of the long term L-Band spectrum opportunity that could result from the rationalisation of the two additional sub-bands already subject to CEPT harmonisation in Recommendation T/R 13-01. We acknowledge the need to protect the passive service in the 1400-1427MHz band.
- 2GHz MSS: Telefónica notes that the 1980-2010/2170-2200MHz bands have yet to prove to be a commercial success and agree that there is the potential for this spectrum to be of value given its adjacency to the 3GPP Band 1 spectrum. We agree

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<sup>1</sup> e.g. Will the potential service provide economic and/or societal benefits? Will the service introduce new growth and recovery opportunities, productivity benefits and/or create high-quality jobs? Is there a benefit in terms of long-term EU competitiveness?

with the RSPG recommendation that, if future actions taken by Member States relating to Decision 2011/667/EU result in the withdrawal of licences, the European Commission should consider re-allocation of the bands to the terrestrial mobile service.

- 2300MHz: The 2300-2400MHz band is already standardised by 3GPP as Band 40 and has been licensed in several countries in the Asia-Pacific region. Wireless broadband equipment is already available and this makes the spectrum potentially attractive in Europe. However, given the strategic governmental usage of this band in some European territories, Telefónica believes that this band will only prove to be useful in the long term if the shared access mechanisms prove to be predictable, certain and not too onerous. As we have noted in response to previous RPSG consultations, we consider that most services currently being provided over radio spectrum need individual rights to be granted in order to ensure an appropriate quality of service by avoiding the threat of harmful interference, and that this puts limits on the applicability of the Licensed Shared Access (LSA) approach to sharing spectrum. In the meantime we continue to follow the ongoing work in the relevant CEPT project team and RSPG working group.
- 4GHz: The 3.8-4.2GHz band may be of interest in the very long term, but Telefónica considers that further work is needed first to promote the use of the 3.4-3.8GHz band for wireless broadband applications. The current situation in Europe is fragmented in terms of the amount of spectrum available across both of the 3.5GHz sub-bands and the applications currently supported. We believe that additional work will be necessary in addition to the ongoing technical studies in CEPT to ensure that the band is brought fully into use for wireless broadband, and that this should be studied in addition to the potential extension to 4GHz.

#### Quantifying the Future Supply of Spectrum

When developing the strategic plan to make the necessary spectrum available to meet the future spectrum demand for wireless broadband services in Europe, Telefónica agrees with the RSPG that the European Commission should take into account the current varied use of potential future wireless broadband spectrum bands. Our comments on the roadmap for the future supply of spectrum are:

<b>Description</b>	<b>Frequency Band</b>	<b>Comments</b>
700MHz	694-790MHz	Allocate to the mobile service from 2015 Subsequently designate and make available for wireless broadband in a harmonised way Maximise the amount of usable spectrum Align and ensure full compatibility with 3GPP Band 28 No firm implementation date currently
L-Band	1300-1400MHz and 1427-1527MHz	Ensure that any interim decisions made do not result in fragmentation of long term spectrum opportunity Protect the passive service in the 1400-1427MHz band
2GHz MSS	1980-2010 / 2170-2200MHz	Potentially valuable as adjacent to 3GPP Band 1 If future actions result in the withdrawal of licences, consider re-allocation of the bands to terrestrial
2300MHz	2300-2400MHz	Standardised and licensed in several countries Useful in the long term if shared access mechanisms prove to be predictable, certain and not too onerous
4GHz	3.8-4.2GHz	May be of interest in the very long term Further work is needed to promote use of 3.4-3.8GHz