



Strategy on the future use of the frequency band 470-694 MHz beyond 2030 in the EU

Comments on the [Draft] RSPG Opinion

Telefónica

2023-08-25

Introduction – Value of UHF for cellular networks

Access to additional low band spectrum at least by 2030 is key for mobile operators to sustain and extend the enhancements in connectivity that they have been providing to EU citizens and businesses over the last 30 years.

For too long, the telco sector has been facing a decline in profitability that makes it challenging to create a business case for new investments¹. Revenues per pop are the lowest in the developed world due to strong competition created and sustained through regulation, and unit network costs are higher due to fragmentation and lack of scale at national level. Against this background, the perils of artificial spectrum scarcity are particularly worrisome. Densifying to add network capacity requires more energy consumption than using new frequencies and is often neither operationally feasible nor financially viable.

The GSMA has estimated that increasing supply of low band spectrum by 80 MHz in a model EU country of 8.7 million inhabitants would reduce the cost of deploying the 5G networks desired by the EU by 490 million euro². Repurposing all the remaining 224 MHz in the UHF band would amount to 828 million euro in savings. By increasing the supply of low band spectrum suitable for cellular deployments, policymakers would induce gains in capacity that otherwise would not be financially sustainable. The UHF spectrum would thus help to manage the growing data usage – especially in rural areas, in the narrow alleyways of EU cities and deep indoors.

These benefits are, according to the GSMA, roughly five times higher than the costs of upgrading DTT to keep the same number of multiplexes (if only 80 MHz are cleared) or switching to satellite broadcast (if the full UHF band is cleared). While the precise amount of the benefits and costs estimated by GSMA depends on a number of factors, we believe they are a good starting point for thinking about the issue. They signal clearly the significant added value that fostering flexibility in the use of the band across the EU can create, by, for example, facilitating a migration to mobile networks especially in countries with low DTT usage.

We therefore welcome the timely work of the RPSG assessing that possibility and provide some comments in the next sections.

¹ Barclays European Telecom Services (2022). “ROCE: Germany peaking; UK/France Bottoming?”

² See [The Socio-Economic Benefits of 5G Services \(gsma.com\)](https://www.gsma.com/5G/5G-Benefits/) and [The Socio-Economic Benefits of 5G Services \(gsma.com\)](https://www.gsma.com/5G/5G-Benefits/)

Existing technical solutions – Opportunities and limits

Supplementary Downlink (SDL) implementation

In Telefónica's view, SDL in interleaved spectrum is not a feasible solution from the technical perspective, for the following reasons:

- Interference into DTT reception would be unmanageable as different channel filters would need to be implemented in different areas.
- Mobile devices and radio equipment able to use any part of the frequency range 470 – 694 MHz would become more expensive than for a harmonized band.
- Interference from DTT into mobile devices would be difficult to manage as DTT channels can be everywhere in the UHF band

SDL in a block of spectrum, on the other hand, is a feasible option for providing additional downlink capacity for mobile, especially because the downlink capacity is usually the bottleneck.

5G Broadcast

It is a broadcasting technology that, as the draft Opinion rightly notes, still requires significant additional work., This and the extra cost of deployment as compared to a currently deployed DVB-T network for the same use case and revenues means that it, in our view, does not have a clear business case as a substitute of DVB-T.

Dedicated band for mobile service with uplink – 600 MHz band plan implementation

We disagree with the rather negative opinion that RSPG seems to convey regarding this option. While we see the challenges, it is in our view the alternative that would maximise the value of the band for EU citizens. There is already a developed cellular ecosystem (USA, Canada) and this option is feasible technically without switching off DTT in high DTT countries. Clearing the 600 MHz from DTT in border regions can in some cases require a frequency replanning, but it should also be taken into account that low DTT usage countries are geographically adjacent and could implement an FDD 600 MHz plan with a manageable number of border areas requiring coordination between mobile and broadcast.

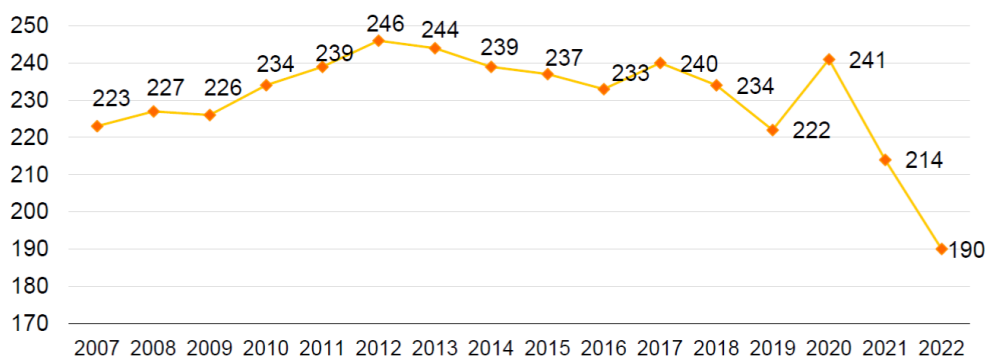
Drivers for future scenarios

Telefónica acknowledges that current uses of the 470-694 MHz band, in essence service-specific spectrum licences linked to DTT concessions, still provide value to end users and possibly will still do so after 2030, albeit to different extents depending on the concrete circumstances of each Member State. Heterogeneity in DTT usage across the EU is wide, with some countries still having close to 70% penetration while others do

not reach 5%. The uncertainty surrounding the prospects for DTT post-2030 is also high, given unequivocal political and industry support for achieving universal fixed Gigabit broadband connectivity by 2030 and the increasing market penetration of smart TVs. Together, these provide a powerful alternative to DTT, either under a paid subscription, an advertisement-based model, or a hybrid one. Indeed, delivery of audio-visual content over broadband makes it possible to enhance the end user experience with valuable new interactive features that are not possible in DTT, such as on-demand consumption and personalised ads.

It is noteworthy that consumption of linear TV is dropping also in countries where DTT penetration is high, as many households keep the connection to DTT for some content such as news or entertainment but use OTT services for the consumption of films or series, and attention time is diverted also to consumption of non-traditional content such as short videos in social media. The graph below shows as an example how after a peak in usage due to the pandemic, the trend in linear TV consumption in Spain is clearly negative. In 2022, it was the lowest since 1992, when figures began to be available.

Consumption of linear TV in Spain (minutes/pop/day)



Source: CNMC/Kantar³

Beyond the trends in DTT consumption, environmental concerns could in our view be a relevant additional driver impacting the future use of the band. It is questionable whether keeping a DTT network running to broadcast fifty or more channels 24x7 for a small number of viewers makes sense from a sustainability and energy consumption perspective.

These developments show that the need for DVB-T will decrease until 2030 - especially in the Member States with low DVB-T penetration. It is therefore of utmost importance that the RSPG takes the right steps now to ensure that the benefits of spectrum use continue to be maximised in the future and support the European goals

³ CNMC sector report of telco and audiovisual, see page 102. Available at [4807231.pdf](https://www.cnmc.es/4807231.pdf) ([cnmc.es](https://www.cnmc.es))

of digitisation and connectivity. This will notably be important in enabling the objective of 5G for all Europeans to be met in time and at a good quality.

The methodology followed by the RSPG of identifying a small set of possible future national scenarios is useful as a basis for a cost-benefit analysis. We welcome it and encourage the monitoring of the drivers that determine the welfare assessment of the different options. Below we provide some comments on the scenarios that the RSPG has identified, to which we think “predominantly mobile use” should be added as an obvious fourth option for consideration as well. Especially in low DVB-T countries, this appears as a valid option and should therefore not be ignored.

Scenario 1: Prevalent broadcasting

Telefónica acknowledges that there is a possibility that DTT remains relevant for a long period of time in some countries, as part of hybrid well-integrated platforms that combine DTT and broadband access. Content providers could for example use DTT channels funded with public support or advertisement to promote their complementary online offering. We are already witnessing steps in this direction by both private and public media companies.

In our view, however, it is legitimate to question whether that use case would justify reserving the full 224 MHz for broadcast use. It is perfectly possible, even without technological upgrades in DTT, to clear at least the 600 MHz band and continue to use the remaining frequencies to broadcast over DTT a sufficiently large number of channels that content providers could complement with other content delivered by IPTV or OTT over fibre.

A cost-benefit analysis of this scenario should also account for the inefficiency inherent in having continued DTT operations (and spectrum set-aside) in a scenario where an equivalent coverage and penetration of fibre connectivity is available to deliver content to end users. Especially when DTT penetration or viewing times are low, it becomes hard to justify the energy consumption of maintaining DTT transmissions 24x7 when it is possible to carry the same content over fibre with much less energy cost. The same applies to the frequencies reserved for the DTT platform, and to the costs of operating and maintaining the DTT network, which are high and in the case of public networks may be passed on to consumers through financial contribution mechanisms.

Finally, it is important to account as well for the externalities generated on neighbouring countries if the full 224 MHz are used. The incremental value for the citizens of a high DTT country of keeping the 600 MHz band might be much lower than the value of enhancing mobile broadband connectivity for the citizens of a neighbouring country. There should therefore be mechanisms within the EU to ensure an efficient outcome that maximises the aggregated welfare.

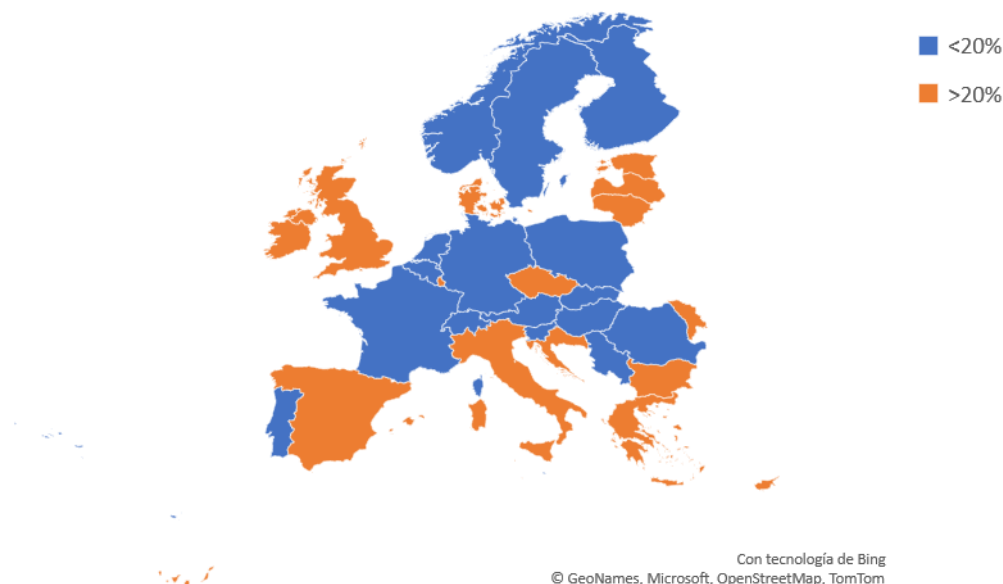
Scenario 3: Broadcasting limited, Mobile (Full FDD band plan)

This scenario is only considered when *“there is less (up to no) need for broadcasting in the 470-694 MHz in a given country”*. We would here re-emphasize that implementing this band plan does not require DTT to be switched off, as the cases of the USA and Canada illustrate. Implementing the 600 MHz FDD band plan would still leave 140 MHz for DTT allowing 17 channels of 8 MHz, which in our view is more than enough if DTT frequency planning is efficient. Depending on the DTT frequency plan, it would allow the continued operation of several multiplexes, in theory up to 17 for a single frequency network.

RSPG Recommendations

Considerations on existing flexibility until 2030

According to RSPG recommendation 1, *“...Possible national initiatives, such as 600 MHz band plan, appear complex to implement due to constraints to be addressed/solved in cross border coordination (see section 3)”*. This statement appears unduly negative in our view, and it would indeed be worth noting in the RSPG opinion that the countries interested in mobile implementation are a geographical cluster that will still have to coordinate with others, but the coordination would be simpler. Low DTT usage countries are generally clustered together, reducing the number of challenging borders and creating scope for a more efficient use of spectrum in Central and Northern Europe before 2030 (see map below with DTT penetration per country)



Source: Omdia

In line with that fact, we agree with RSPG on the value of Member States exploring opportunities in partnership before 2030 (recommendation 2).

Recommendations on possible technically feasible scenarios for post 2030

In Recommendation 3, *“RSPG recognises the possibility that, for the use of the 470-694 MHz band, a single scenario may not be applicable to all Member States.”* We agree with RSPG that a single scenario may not be applicable across the EU, given the heterogeneous demands. There would be value in the RSPG proposing a way forward to ensure that countries wishing to implement mobile including the 600 MHz FDD band plan can do so, facilitated by border countries changing the DTT frequency plan at the borders.

The current balance of rights between low DTT and high DTT countries is set in article 4 of the UHF Decision. In essence, it determines that low DTT countries can introduce services different from broadcasting only if they do not cause harmful interference, or claim protection from, broadcasting services in neighbouring countries. That framework is in place “at least until 2030”, and its review (Recommendation 10) is a very relevant milestone that will shape expectations on the future availability of UHF for mobile broadband services. We encourage the RSPG and the European Commission to establish appropriate milestones as soon as possible to avoid unnecessary delays in the future.

The RSPG should also be proposing means of harmonization towards a transition to mobile services, PPDR and military services across Europe, even if implementation is phased. This could be done for example by proposing that countries wishing to

introduce mobile services should be using the 600 MHz FDD band plan for band 71, and by mandating that border countries should facilitate the introduction of mobile, as far as possible, by freeing up at least the mobile uplink.

We further encourage the RSPG to consider options that will allow high DTT countries to keep broadcast services in UHF beyond 2030, if they so wish, but without undermining the case for the introduction of mobile broadband in neighbouring countries. One possibility would be to change the balance of rights in article 4 and grant some protection to low DTT countries that wish to introduce services other than broadcasting. In order to minimise the costs to high DTT countries, the protection could potentially be limited to parts of the UHF band (e.g. only 600 MHz).

Finally, Recommendation 4 states that *“RSPG recognises that, in the border areas of EU, successful coordination negotiations could rely on spectrum regulation at ITU-R level.”* Telefónica agrees with the RSPG on the relevance of the ITU Radio Regulations for successful coordination negotiations in EU border areas. Therefore, we believe that the final RSPG opinion should contain a more concrete statement to provide an appropriate basis for future developments: a co-primary allocation for Mobile at WRC-23, or WRC-27, would provide the EU border countries with the tools to negotiate and thereby provide the most appropriate foundation for protecting efficient spectrum use in all of the EU.