



BEREC Call for inputs on views on the impact of 5G on regulation, and to the role of regulation in enabling the 5G ecosystem

Executive summary

Vodafone welcomes the BEREC consultation on the role of regulation in enabling the 5G ecosystem. Europe should be a leader in 5G networks, and 5G enabled services. To achieve this, we need to ensure that all of the various pieces of the regulatory jigsaw support investment, innovation and sustainable competition.

5G offers huge potential for new and innovative services. 5G is based on new radio technologies that speed up transmission times ('latency'), increase radio capacity by ~10x, and support low-power connected devices and new networking technologies that allow operator networks to scale rapidly ('virtualisation') and allocate resources smartly across applications ('network slicing'). The network moves from fixed hardware to a programmable system ('software defined networking'). It can serve a wide variety of needs simultaneously. In turn, this will enable a range of new services; connected cars, smart cities, virtual reality, 4K, agricultural innovations, healthcare solutions to name a few.

Vodafone has invested €59.5 billion in Europe over the last five years. We have 90,000 mobile masts and nearly 400,000 kilometres of cable and fibre across Europe. Every year, 770,000 terabytes of data are transferred over our European networks. Over half of our global revenue is generated in Europe, while 37,000 people earn their living as members of the Vodafone team, including at our R&D centres in Spain and Germany. Vodafone believes strongly in Europe's digital future and we are already investing in the networks and services on which Europe's digital future depends, with 5G launches in all major EU markets where Vodafone operate. We have established our 5G centre of excellence in Milan, which is pioneering 5G trials in robotics and connected ambulances and aims to have full 5G coverage in the city this year. This 5G investment underpins the IoT revolution and the transformative new digital services that this will enable. However, we need a policy environment that helps to encourage investment in Europe's digital infrastructure and enables innovative new services.

In this response, we have set out below the aspects which we believe should be prioritised by BEREC over the next 3 years to remove barriers to the rollout of 5G.

Spectrum and 5G

A review of the award of 5G spectrum licences so far across Member States confirms that diverse and unaligned approaches to licensing policy are resulting in an array of unintended consequences, all of which will negatively impact the development of 5G across Europe. While the RSPG has responsibility for overseeing the technical aspects of spectrum award, there is a lack of



management and control over other aspects, such as the cost burden of excessive licence fees, distortions to the operation of the market as a result of inefficient or discriminatory award procedures and damage to the speed and quality of 5G services that can be offered nationwide, publicly, as a result of arbitrary spectrum reservation for specialist uses or entities.

In particular, we would recommend the following:

- BEREC urgently needs to review the licensing outcomes to date, evaluate the impact on the prospects for a successful 5G single market in the future and determine what interventions are needed to overcome the investment and market challenges that are emerging as a result.
- BEREC should undertake a study on how to better manage spectrum both within and across borders, such as the alignment of spectrum bands in order to facilitate European services.

Rollout and infrastructure

The expected densification of network due to 5G is dependent on access to suitable base station sites and access backhaul fibre and their costs. BEREC should consider the impacts of lack of access to suitable sites and fibre backhaul and their prohibitive costs and consider recommending all policy and regulatory measures to provide sufficient access to base station sites and fibre backhaul and bring down their costs to enable maximised 5G rollout across Europe. Vodafone has produced a Digital Deployment report which sets out all of the different factors that inflate the costs and slow down deployment of next generation networks across Europe to help governments and regulators address these issues¹.

State Aid

It is widely expected that public money will be required to ensure coverage in uneconomic areas. It is imperative that the use of public money should not be at the expense of market-based solutions and should not endanger the competitive process. We recommend the following principles for the use of public money:

1. State funding must not crowd out private investment.
2. There should be a preference for state funding to be focused on assets that can be shared by all operators – specifically towers and fibre backhaul to the towers. This will allow operators to deploy their own active equipment ensuring market and competitive forces are still in play. Inferior infrastructures such as copper upgrades or FWA should not be subject to state support.

¹ <https://www.vodafone.com/content/dam/digitaldeployment-2019.pdf>



3. Only in the most uneconomic areas should state funding extend to fully deployed mobile base stations including active equipment.
4. In all cases, projects for state funding must be open to all operators. Industry-wide solutions whereby the responsibility for deploying in state-funded areas is shared among willing operators should be favoured. Public funding should be allowed to fulfil coverage obligations under spectrum licencing, including jointly under cooperative schemes, such as network sharing and co-investment but also Public Private Partnerships (PPPs). However, there should not be any prescription or privileged treatment of certain models (e.g. wholesale-only), as this would reduce competition for tenders, which have to be transparent, fair and non-discriminatory.

Network sharing

There needs to be a greater emphasis on encouraging co-investment and infrastructure sharing models – and more generally, finding a way to achieve sustainable competition which allows for long-term investment. We welcome that this spirit is reflected in the new European regulatory framework (the European Electronic Communications Code or ‘Code’), but further work needs to be done by BEREC to make the sometimes complex rulebook work in practice. For 5G it is important that regulators follow a pro-network sharing approach unless certain red lines are crossed. These red lines would be when a mobile network sharing has most of the following characteristics:

- i. Comprehensiveness in scope (covering >80% of the population) and technology (2-5G).
- ii. Deep active sharing including spectrum pooling and backhaul.
- iii. The market share of the operators involved covers the vast majority of the market.
- iv. The sharing agreement is closed to third parties (including the possibility to offer national roaming).
- v. No alternative sharing options for third parties.

BEREC could do more by undertaking a study on network sharing with a view to assisting the European Commission in producing Guidance for Network Sharing that would encourage more consistency.

Barriers to innovation

As part of this information gathering exercise, BEREC has stated that it is particularly interested to ensure that regulation does not impede the pace at which innovative services are brought to market – especially vertical solutions. Consistent with our recent response to BEREC’s consultation on IoT Indicators², we believe that EU fragmentation related to IoT is amongst the biggest inhibitors

² Vodafone response to BEREC public consultation on Internet of Things indicators , 23 January, 2019



to the innovation and growth in the communications sector. We also consider that BEREC should be more pro-active in its consideration of regulatory activities in vertical markets (such as automotive, aviation, agriculture and smart buildings), where digital policy relevant to 5G deployment is currently being developed by sector specific authorities. Indeed, the 2018 study commissioned by BEREC on the implications of 5G deployments on future business models highlighted the relevance of verticals such as automotive and aviation, however it does not appear that BEREC took an active role in subsequent regulatory proposals in these areas, which had a direct bearing on connectivity and 5G³. This is one of the reasons why Vodafone believes that a [new cross-cutting regulatory approach to IoT is required](#), which envisages a more active role for BEREC in assessing the competitive implications of vertical-specific regulatory initiatives relevant to connectivity in vertical sectors.

Net neutrality

We welcome the review of the BEREC Guidelines on net neutrality, as the current version is not fit for purpose, having been written before the advent of 5G and could become a barrier to the rollout of new services which are powered by mobile edge computing and virtualised networks. The new BEREC Guidelines should make it easy for both operators and European businesses to set up services requiring a specific level of quality. They should also ensure that operators can dynamically share resources across network slices in the most efficient way, to ensure the best possible quality for consumers. We also believe it would be premature to implement a study to examine Member States experiences with respect to issues around systems deployed using network slices, given that commercial practices are only just emerging.

While the new BEREC Guidelines will be helpful, given that the 5G networks are at a nascent stage, there should be an ongoing review of this area, with new studies on services requiring specific quality. Given the speed of change, the BEREC Guidelines should be reviewed on a bi-annual basis to take these changes into account.

EMF

As part of the information gathering exercise, BEREC has highlighted that there is misinformation in the public domain about alleged health effects of EMF from mobile technology. This could lead to delays, or even calls for halting of 5G rollout – as has been seen already in Brussels. Vodafone welcomes BEREC's proposal to improve the quality and availability of information to customers.

The rollout of advanced radio antennas for 5G services existence may be delayed in some member states due to the existence of EMF limits that differ from those set by [ICNIRP, and the 1999/519/EC Council Recommendation on the limitation of exposure of the general public to electromagnetic](#)

³ For example, European Commission consultations on cooperative intelligent transport systems and rules and procedures for the operation of unmanned aircraft



[fields \(0 Hz to 300 GHz\)](#). ICNIRP are reviewing their guidelines and we see this as an opportunity for countries to align their EMF limits with the latest science-based guidelines.

Security

Effective cybersecurity requires measures that produce the same effect right across the digital ecosystem. To increase resilience, all actors in the value chain must become part of the solution and continue to raise their security standards through a new cross-cutting regulatory approach to security.

Vodafone strongly supports the EU initiative for a common 5G security risk assessment and the plan to draw up EU wide measures to mitigate risks. Setting the right standards and establishing robust evaluation regimes will be critical to success. We would therefore support the proposal by BEREC to evaluate the measures taken by member states after the EC has published the 5G security toolbox (expected end of 2019) as mentioned in the Commission Recommendation of 26 March 2019 on Cybersecurity of 5G networks to ensure a consistent approach.

We encourage the evaluation to take a broad view, including the economic arguments for investment in cyber security. Too often cyber security is seen purely as a technical issue. The economics of cyber security play an essential role in determining the suitability and sustainability of measures that form part of the security toolbox.

Other

We appreciate the comprehensive review by BEREC of items which could be studied further to enable 5G. However, we would also like to emphasise the importance of prioritising the areas where the most impact can be achieved in terms of enabling 5G. Horizontal issues which are not specific to 5G such as data privacy, numbering, interoperability, quality of service, competition and consumer protection should be dealt with separately as these are applicable to all services provided by electronic communications services providers.