

BEREC Report on the outcome of the public consultation on the draft BEREC Work Programme 2022

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I. INTRODUCTION

During its 48th Plenary Meeting (30 September - 1 October 2021) BEREC approved for public consultation the draft BEREC Work Programme 2022. The role of the public consultation is to increase transparency and to provide BEREC with valuable feedback from all interested parties. This public consultation on the draft document follows BEREC's initial public consultation for inputs to the Work Programme 2022, which closed in April 2021 and prompted a wide spectrum of stakeholder engagement.

In accordance with BEREC's policy on public consultations, the current report is a summary of how stakeholders' views have been considered. In addition, BEREC also publishes all individual contributions on its website, taking into account stakeholders' requests for confidentiality. The public consultation was open until 5 November 2021.

This document summarises the responses received to the public consultation and presents BEREC's position with regard to suggestions and proposals put forward in those responses, as relevant. In total 15 responses were received, one of them considered as confidential based on the request of the respective respondent.

The non-confidential contributions were received from the following organisations: Intelsat, RIPE NCC, FTTH Council Europe, Huawei, MTX Connect, ecta, BEUC, ComCom, GSMA, ETNO, TIP (Telecom Infra Project), Liberty Global, ESOA, Altitude Infra and MVNO Europe.

BEREC welcomes all contributions and thanks all stakeholders for their submissions. The non-confidential contributions received from stakeholders will be published in their entirety on the BEREC website.

Generally, the responses of the stakeholders are supportive for the work programme of BEREC of 2022. The preparatory process of drafting this work programme involved stakeholders twice, first at an early stage with an initial call for early inputs in March and April and secondly in the public consultation in October on the WP document. BEREC notes that many stakeholders are keen to engage further with BEREC requiring additional consultations beyond those already planned by BEREC in 2022. BEREC will do so on an ongoing basis through BEREC's many interim consultations, webinars, workshops, questionnaires etc. on the work set out in the BEREC WP 2022. BEREC appreciates this willingness of its stakeholders to engage on its work in 2022 and is continually working to improve its transparency and engagement with all stakeholders.

BEREC thanks the stakeholders for the broad support for the objectives and priorities of the Work Programme 2022. A substantial part remaining is the the successful implementation of the Code promoting the EU single market, creating the right conditions for competition and investment and ensuring connectivity while protecting the rights of end-users.

BEREC appreciates the support of stakeholders to BEREC's commitment to tackle the new challenges in 2022, i.e. the transition to digitalisation and sustainability and BEREC's new focus on the issues related to the COVID-19 pandemic regarding the resilience of the European electronic communication and the digital divide.

BEREC appreciates the commitment of the stakeholders responding to BEREC's early calls for input as well as to the draft document of the Work Programme 2022. This process of consulting two separate times proved to be very effective. Because of this early input many of the stakeholders' suggestions and concerns could be taken into account when drafting the WP 2022. As a result, there is a broad support on the content of this Work Programme. Where there were divergent opinions in the contributions, BEREC tried to find a balanced approach while respecting the priorities of the BEREC strategy 2021-2025.

II. BACKGROUND

III. BEREC WORK IN 2022

1. Strategic priority 1: Promoting full connectivity

1.1. Report on a consistent approach to migration and copper switch-off (carry-over)

Altitude Infra welcomes the work on copper switch-off. It is of great importance that the SMP operator notifies its decommissioning plan and shares it with other stakeholders in a timely and completely transparent manner. Especially in markets where other operators are building FTTH networks, the SMP operator should not be the only pilot when it comes to copper switch-off. A timely switch-off is key to maximize FTTH take up and to save the costs of having two networks running in parallel, especially for the SMP operator. It is therefore a positive move for the whole sector. Nevertheless, to ensure that a maximum of households and businesses are indeed capable of joining the FTTH network, the operational and financial conditions to ensure that complex situations can be fixed should be addressed without undue delays.

FTTH Council is pleased that the issue of copper switch off is again listed as a work item. The FTTH Council believes that this is an issue which has increased in urgency (as FTTH availability passes 50%) and importance due to the prioritisation being given to energy efficiency under the Green Deal. FTTH Council believes that specific set of Guidelines is not required, however in practice significant guidance is necessary in order to enable the transition from copper to fibre to happen in a seamless way. Such a transition involves significant co-ordination and complexity, even just factors such as the length of time to switch copper networks services to fibre based service delivery will need to be reviewed. Switch-off also necessitates the removal of legal and regulatory barriers which might unduly delay or prevent switch-off. Some Member States are much further along on dealing with this issue, the leading country for copper switch-off today is Estonia which has incumbent FTTH deployment, absence of regulatory barriers and limited wholesale copper reliance.

GSMA supports BEREC in promoting a consistent and flexible approach to migration and copper switch-off. It is important that proper procedures, transition plans and approaches are

put in place to facilitate the migration from copper networks to fibre networks and ultimately to switch-off copper networks. GSMA believes operators should plan and communicate migration plans sufficiently in advance to ensure that all stakeholders are allowed to address migration or switch-off issues, but it is important to avoid the imposition of long prior notification period that would unjustifiably delay operators' (voluntary) switch-off.

Ecta notes that shutdown of copper must mean shutdown of copper for everyone, including self-supply by operators with Significant Market Power. Ecta appreciates that BEREC will open a public consultation at Plenary 4 2021 prior to adoption of a Report at Plenary 2 2022, but ecta is concerned that this is coming very late, and only in the form of a Report. Ecta asks BEREC to 'upgrade' this workstream to result in the delivery of BEREC Guidelines or a BEREC Common Position. This should be done by Plenary 2 2022 in order for it to be timely and to not miss the window of opportunity to provide a framework that materially and appropriately structures the copper to fibre migration in a harmonized pro-competitive manner.

Ecta notes the importance of its members relying on wholesale copper access to be able to continue to serve their customers in the transition to VHCN, onto the network of the same operator with Significant Market Power or onto their own or another third-party network. Ecta considers BEREC's scope of attention insufficient in terms of safeguarding a pro-competitive and non-discriminatory transition to VHCN. Ecta emphasises in this context that KPIs and SLGs for the new network of the operator with Significant Market Power need to be established, and must be expected to be better than those of the legacy network.

BEREC welcomes the feedback provided by stakeholders and has carefully considered the respondents' views related to the strategic priority of promoting full connectivity. It is important that stakeholders confirm this project, already started in 2021, being of increased urgency and importance. The BEREC report aims to identify a consistent approach and examine the rule set by NRAs to migration and copper switch-off and, therefore, take into account exactly stakeholders' proposals to provide significant guidance without defining a specific set of guidelines. The draft BEREC report, which is planned to be approved for public consultation at Plenary 4 2021, will be based on data provided by NRAs of 32 European countries and, therefore, will also take into account that the migration process might differ between countries.

Regarding the comments from Ecta, it is important to mention that this BEREC report has already provided guidance to NRAs as it aims to identify a consistent approach to migration and copper switch-off. Therefore, it might be considered whether further guidance is needed only after this BEREC report has been published following Plenary 2 2022. Besides, BEREC's scope of attention is not insufficient as this report examines also the rules set by the NRAs with regard to the obligation of the SMP operator to provide KPIs and SLGs.

1.2. Report on regulatory treatment for fixed and mobile backhaul (carry-over)

GSMA recognizes the importance of backhaul for 5G connectivity, however it is premature that BEREC has issued a consultation on this topic given that for the time being, the Recommendation on relevant markets emphasizes that wholesale ex ante regulation should only be applied where competition problems at retail level exist. Furthermore NRAs already have at their disposal different regulatory tools to address potential issues related to backhaul, i.e., market 1 and 2 market susceptible to ex ante regulation and the BCRD framework.

Liberty Global believes that backhaul infrastructure does not represent a bottleneck and that the market will provide for the vast majority of Member States' coverage needs (through privately financed deployment). In this regard, the Code has introduced numerous measures to encourage rollout of VHCN and State Aid rules may also be used to provide backhaul to remote and economically challenging areas where there is no prospect of commercial deployment. Liberty Global supports BEREC's proactive approach to monitoring the regulatory treatment for fixed and mobile backhaul in coming years and to draw up a common position on applicable rules in an early stage.

Ecta asks BEREC to refrain from overly focusing on backhaul for 5G and for the deployment of VHCN in non-densely populated areas therefore a wider perspective is necessary.

BEREC appreciates these comments and would like to add some clarifications to the input from Ecta to avoid possible misunderstanding. The report covers the use of backhaul for all purposes, 5G and VHCN in non-densely populated areas are cases of special interest.

1.3. Report on the 5G Value Chain

ESOA notes that the role of satellite in the global 5G ecosystem cannot be underestimated. Satellite networks constitute an essential but often invisible overlay for terrestrial networks to help realise the EU Gigabit society. Millions of connections between people, devices and things will require interconnectivity and stability at unprecedented levels that terrestrial networks alone cannot deliver for citizens of modern societies.

ETNO believes that 5G does not trigger a general need for additional regulation. While ETNO acknowledges that 5G is important for the European economy and society as a whole, we firmly believe that market dynamics will ultimately determine the balance between supply and demand as well as any new business models. ETNO cautions BEREC from taking a silo approach to the detriment of providers of ECN and ECS and any action that is not

complementary to the overall direction the EU will take in this space. Voluntary wholesale agreements between mobile operators and new intermediaries are a possible welfare enhancing development that should not be prevented by BEREC or NRAs. Concerning spectrum allocation, ETNO notes that it is necessary to ensure operators get sufficient amount of resources (spectrum) for providing various 5G services, including needs for vertical sector.

BEUC welcomes the planned report on the 5G value chain and BEREC's intention to consult with key stakeholders to further explore the expectations on the transformations of the 5G value chain. BEUC recommends that BEREC continues monitoring developments, corrects misleading practices and ensures the proper development of 5G for all consumers. Several BEUC member organisations have raised concerns about how 5G is being deployed and marketed in their respective countries.

FTTH Council notes that 5G is seen very much as a complement rather than a substitute technology to fibre networks. The implication is that 5G is a significant driver of demand for FTTH and in particular, mobile backhaul can be a significant driver of fibre operators business cases. The principal concern for both fixed and mobile backhaul ought to be around the impact that regulation could have on the incentive to invest. An early move to a regulated fibre in support of mobile markets risks undermining alternative fibre providers' business cases with unknown consequences.

GSMA agrees that 5G is a priority for the EU and therefore welcomes the important role which BEREC can play in this, namely by clarifying certain aspects related to 5G deployment through stakeholder engagement and studies. GSMA notes the work completed by BEREC to date and welcomes BEREC's continued engagement on the 5G ecosystem.

Liberty Global supports BEREC taking a proactive approach to undertake a comprehensive review of the 5G Value Chain, through the adoption of two reports (one, due for public consultation by the end of this year, focusing specifically on 5G supply-chain diversification). Liberty Global suggests BEREC should leverage not just the learnings from the latter report, but also those from the Report on the Internet ecosystem, for the final Report on the 5G Value Chain. The promotion of innovation in network technologies should be broader than mobile only, in line with the principle of technological neutrality.

MVNO Europe welcomes this BEREC workstream, but regrets that MVNO access is not mentioned, and wishes to express its concern that BEREC seems to limit its ambition to reporting, and gives no indications that it is prepared to provide active guidance to NRAs, or that it intends to encourage NRAs to act to resolve issues. MVNO Europe requests BEREC to expand item 1.3 to address generic MVNO access to 5G networks, and to link item 1.3 with item 1.4, the Report on wholesale mobile access connectivity.

Ecta appreciates that BEREC will hold public consultations on the planned reports. It is clearly relevant for BEREC to address the 5G ecosystem and value chain in the wide sense. Ecta suggests that BEREC should specifically consider giving clear guidance on network sharing in the context of 5G (including a revision of the BEREC Common position on infrastructure sharing (BoR (19) 110)) and network slicing and the interoperability of network slices across borders. In addition, BEREC could usefully engage more concretely on mobile B2B markets.

BEREC appreciates and thanks the stakeholders for the support of its work on this aspect and understands the issues raised here as important to consider during the execution of the Work Programme.

1.4. Report on wholesale mobile access connectivity

GSMA supports the view that 5G will be a source of innovative services and opportunities for new services and improved connectivity. GSMA's Mobile economy report for 2021 predicts that by 2030 5G will drive additional contributions to the European Economy underpinned by operator investment of €145 billion by 2025, with 90% of this going to 5G. GSMA believes the approach to be taken needs to be evidenced based and within the telecom's regulatory framework and the SMP process.

MVNO Europe thanks BEREC for including a Section 1.4 in the Work Programme 2022 about wholesale mobile access connectivity, which meets a long-standing request of MVNO Europe to BEREC. According to MVNO Europe MVNOs are faced with refusal to supply, widespread delays to access 4G, delays of VoLTE integration, denial of access to 5G, unfavourable treatment on IoT, margin squeeze and roaming resale access priced at wholesale caps.

MVNO Europe urges BEREC to focus not only on 5G but also take into account the perspective of generalist MVNOs (providing voice/sms/data bundles). Specialist providers of (4G/5G) campus and industrial networks will often need generic MVNO access to enable personnel to remain connected when not within the coverage area of the private networks. In fact, specialist providers may not be able to win private mobile network contracts if they do not couple it with a wide-area mobile connectivity solution. Furthermore MVNO Europe calls upon BEREC to include in the Report on wholesale mobile access connectivity the need to actively promote wholesale access to mobile networks.

According to MVNO Europe BEREC should encourage National Regulatory Authorities and, where applicable, other authorities to ensure that fit-for-purpose wholesale access to mobile networks is available in their Member State, where justified by regulatory means. This means conducting analyses of mobile access markets, imposing pro-competitive conditions/obligations in spectrum assignment proceedings, seeking explicit voluntary wholesale access commitments from spectrum licensees, being open to engaging in dispute-resolution proceedings relating to MVNO access and resolve disputes expediently and with real substantive outcomes and Addressing consolidation between MNOs, where it is expected to lead to welfare loss.

Ecta notes that it is not very clear at this stage what to expect from this BEREC workstream. An important aspect that is missing, from ecta's perspective, is IoT, and its development locally, nationally, and on a multi-country/pan-EU basis.

BEREC has decided to start an external study about this topic and remove this workstream from the work programme. BEREC welcomes the feedback and support provided by stakeholders and will carefully consider the respondents' views during the commissioning of the study.

1.5. Workshop on Open RAN

TIP particularly applauds the recognition in the work programme of the importance of Open RAN. Open network architectures are designed to permit operators to disaggregate traditional components of their networks. This is particularly important as 5G networks are seeing ever-greater amounts of network technology being shifted either from the network core closer to the edge, or vice-versa. result is a more competitive ecosystem that provides operators with flexibility to mix-and-match equipment from different vendors. TIP strongly supports the proposed workshop to identify unanswered or uncertain issues about Open RAN. TIP looks forward to providing information and supporting materials on Open RAN and other open, disaggregated telecoms technologies.

ETNO welcomes BEREC's continued work on Open RAN. While still being evaluated and trialled by operators and vendors alike, Open RAN aims at creating a virtual infrastructure that is interoperable and vendor neutral. The operator community sees the potential benefits of Open RAN, and several industry initiatives are underway to accelerate innovation and commercialization.

Huawei takes note of BEREC's intention to hold a workshop to identify unanswered or uncertain issues about Open RAN. This work stream of BEREC might also focus on related topics such as cybersecurity, resilience and sustainability. Huawei would like to present its

views on Open RAN's energy consumption, cybersecurity-related aspects, technical performance and impact on OPEX of MNOs in this planned workshop.

GSMA fully supports BEREC's aim to promote discussion on Open RAN and welcomes its commitments to a workshop on the topic in 2022.

Liberty Global supports BEREC's hosting of a workshop on Open RAN and encourages BEREC to carefully examine similar nascent technological and market developments. In Liberty Global's view, it is key to ensure a broad attendance of this workshop and to ensure that particularly in case not all relevant stakeholders may be able to attend said workshop therefore the report should be subject to public consultation prior to its adoption.

Ecta supports BEREC in engaging with the topic of Open RAN, taking the neutral perspective of a body bringing together independent national regulatory authorities, that have mandates specified by the EECC.

BEREC appreciates and thanks the stakeholders for the support of its work on this aspect and understands the issues raised here as important to consider.

1.6. Report on satellite connectivity for universal service

Intelsat strongly supports BEREC's focus on a workstream that aims to understand what regulatory steps are needed if member states plan to use Satcom for universal service and how these plans may fit into current as well as projected Satcom capacities (geostationary as well as non geostationary). Intelsat believes that ensuring adequate broadband internet access service requires the global connectivity infrastructure offered by the satellite communications industry.

Intelsat believes that the challenge for the coming decade will not be accomplished by one technology alone. Satellite will play a unique role in ensuring near ubiquitous, high capacity and lower latency communications and it will be a key partner in helping the EU achieve its Digital Decade connectivity goals. Satellite-powered mobile backhaul provides a wider, more flexible choice to achieve this vision. While fiber backhaul is ideal for urban and suburban network deployments, and microwave backhaul best supports suburban-rural edge expansion, satellite backhaul boasts unique advantages that make it a leading choice for rural mobile coverage.

ESOA welcomes BEREC's intention to draft a report on the potential of satellite communication solutions for ubiquitous broadband connectivity, as well as the fact that it intent to do it in an objective and technology neutral way. It is important to support, enhance and promote a wide range of connectivity options, by avoiding the imposition of artificial technical requirement on parameters such as down- and up-link bandwidth or latency that are only required for a limited number of applications and that limit the options for connectivity for many European citizens who could otherwise benefit from health, education, entertainment and many more services. As a result, connectivity solutions should provide meaningful connectivity and be based on actual users' needs; applications' requirements; and geographical situations in order to determine the best technologies to meet the required usage demands and contribute to meet the Universal Service goals.

ESOA invites BEREC to acknowledge the importance of satellite to extend mobile broadband coverage to more users and things.

GSMA supports BEREC's work in this area and looks forward to the report on SATCOM.

BEREC welcomes the feedback and support provided by stakeholders and has carefully considered the respondents views to this workstream.

1.7. Workshop to share experience on the implementation of Article 22 EECC

BEUC welcomes BEREC's intention to hold a workshop on the implementation of Article 22 of the European Electronic Communications Code (EECC), which tasks national regulatory authorities (NRAs) and/or other competent authorities to conduct a geographical survey of the reach of broadband networks, to foster knowledge and experience sharing with NRAs and other competent authorities and understand the stage of development on this subject. It is important that the focus on consistent implementation of the EECC continues.

GSMA welcomes the work to date by BEREC on Article 22 and welcomes the recent workshop with stakeholders on identifying broadband capacity indicators. GSMA at the workshop highlighted the need for BEREC to support NRAs using existing broadband coverage data and avoiding additional burdens on operators. Also, there is a need for clarity on the extent and use of forecast data and the confidentiality of data supplied to NRAs for this purpose.

Ecta recognizes that it is important and relevant for authorities to learn from each-other, through an experience-sharing forum. However, it is clearly also relevant for network operators and service providers to inform BEREC and NRAs. Therefore ecta requests BEREC to also

organize a workshop with industry stakeholders, attended by NRAs and other relevant authorities.

BEREC welcomes the support of stakeholders and would like to add that a new workshop will be introduced into this item of the Work Programme to gather inputs not only from regulators but from stakeholders as well. BEREC agrees with Ecta that it will be a useful activity for sharing more good experiences on the implementation of Article 22 of EEC.

1.8. BEREC Report on competition amongst multiple operators of NGA-networks in the same geographical region

FTTH Council is pleased to see BEREC proposing to outline how it is likely to apply geographic segmentation in practice, clearly with a deregulatory agenda and looks forward to participating. One area of particular interest is to identify the point at which a nationwide (SMP) operator facing competition would choose to segment the retail market. The FTTH Council notes that often, significant competition in a large part of the geographic market may be sufficient to drive competition across the whole market.

GSMA supports the continued focus by BEREC on geographical market definition and ensuring market analysis is evidence based and focuses SMP and remedies on genuine bottlenecks.

Liberty Global supports BEREC's continued commitment to engaging and consulting with stakeholders on issues that affect them. Liberty Global welcomes the proposed public consultation and urges BEREC to keep stakeholders involved in its development particularly in an early stage pre-notification as input collected in that stage should serve as building blocks for the policy to be consulted on.

Ecta questions whether this workstream is appropriate and will lead to welfare-enhancing outcomes, and urges BEREC to be very cautious in not triggering NRAs into proceeding to misinformed premature deregulation of operators with Significant Market Power, leaving them free to seriously damage the businesses of emerging competitors. Ecta also urges BEREC to caution NRAs against declaring fledgling new entrant operators as holding Significant Market Power in sub-national markets, e.g. where they have led the development of fibre networks and provide fit-for-purpose wholesale access in response to demand.

BEREC thanks the respondents for their input and welcomes the general support expressed for the report on competition among NGA network operators in the same geographical regions.

The project will make an investigation regarding how competition between multiple VHCN/NGA regional operators is handled by the NRAs in the context of SMP-analysis. BEREC, however, does not see a need for stakeholder involvement in an early stage as proposed by Liberty Global. With regard to ECTA's concern, BEREC would like to clarify that

the report will not include any recommendations on best practice which may influence the outcome of the NRAs analysis.

1.9. Business services

1.9.1. BEREC Report on the regulatory treatment of business services

Altitude Infra welcomes the fact that BEREC is taking up the issue, crucial for the competitiveness of companies, and through them, of the EU in general. Altitude Infra is convinced that if companies do not switch to fibre, or at least to VHC networks, in the next few years, their competitiveness will be severely impaired compared to companies outside the EU.

Altitude Infra recommends BEREC to look at and determine the various barriers to migration to the fibre and to switching retail operators. BEREC should then examine how to mitigate or lift them completely.

GSMA notes BEREC work programme and commissioning of an external study on business services. These markets are evolving and wholesale access regulation needs to adapt to evolving wholesale access needs within the context of the existing regulatory framework.

Liberty Global supports BEREC analysing key issues regarding the competitive dynamics at the retail level. Regulated wholesale products are an important input for a series of wholesale products used by alternative operators to compete with incumbents in the market for large companies, SMEs and all type of public administrations.

MVNO Europe supports BEREC developing these workstreams, and will take an active interest in them. MVNO Europe requests that these workstream should not only address fixed networks and services, but also mobile/wireless networks and services.

Ecta thanks to BEREC for including business services in its Work Programme. This meets a long-standing ecta request for BEREC to attach more attention to Business-to-Business (B2B) markets, which in most EU Member States remain characterised by Significant Market Power in the hands of the incumbent telecommunications operator, often with market shares exceeding 60 or even 70%. Ecta considers that alternative operators must be deeply involved in BEREC's work, for instance by adding a Workshop, as well as one or more Workshops associated with the planned external study. A public consultation before finalization of the Report is also warranted.

BEREC thanks for stakeholders' support in this matter and would like to add the following clarifications.

Regarding MVNO Europe's comment on addressing mobile networks and services, BEREC puts the emphasis on fixed services, because these are mostly regulated while mobile services are generally not.

BEREC also agrees with Ecta about the importance of involving stakeholders into the discussions. In case of the workshop, BEREC has already expressed its openness and regarding the external study, data collection will be conducted by surveys and structured interviews with key stakeholders including Ecta members.

2. Strategic priority 2: Thriving sustainable and open digital markets

2.1. Report on the Internet ecosystem (carry-over, before named: Report on the Internet Value Chain)

RIPE NCC notes that the slow adoption of IPv6 and lack of support from certain market participants is of great concern to the RIPE membership and the RIPE community. Of particular concern are the large differences in deployment levels between different national markets within the European Union, as this makes universal deployment of IPv6 throughout the internal market extremely difficult.

RIPE NCC believes that it is an established fact that, for the successful deployment of IPv6, several actors within the value chain need to coordinate and enable IPv6 at the same moment. Such coordination in timing is especially vital between content suppliers and network access providers to ensure a timely return on the investment and for the users to actually access the benefits of being able to use IPv6.

ETNO welcomes BEREC's intention to monitor the evolution of the internet value chain, in terms of contestability and fairness for business and end-users, in a way that citizens can enjoy an Open Internet along the whole internet value chain. Therefore, ETNO thinks it is very useful for BEREC to carry out economic analysis of various aspects of digital markets and formulates recommendations to improve the functioning of those markets for all participants.

BEUC strongly welcomes BEREC's continued work on the internet value chain. BEUC fully agrees that electronic communication services and telecom networks are not the only elements of the internet value chain. Consumer organisations remain at BEREC's disposal on this important topic.

GSMA supports BEREC's aim to build its knowledge and expertise in the digital economy to ensure that technological, economic, legal, and user protection perspectives are integrated in the design and practice of regulation.

Liberty Global supports BEREC taking a proactive approach to undertake a comprehensive view of the complete internet ecosystem, beyond the network layers and the electronic communications services supporting internet access. In particular, Liberty Global considers that it is important to consider how developments have changed the competitive and commercial landscape, including the increasing overlaps between highly regulated, traditional telecoms markets and open, digital markets. This is particularly the case with the rise of OTT service providers.

Ecta notes that BEREC indicates that the public consultation will now be started after Plenary 2 2022 (previously Plenary 1 2022), prior to adoption of the Report at Plenary 4 2022 (previously Plenary 3 2022). This seems incredibly late, and even later than previously planned.

BEREC welcomes the feedback provided by stakeholders. Regarding the comment of RIPE NCC, BEREC would like to add that this report has a wider scope and focuses on presenting the internet ecosystem. Nevertheless BEREC will take it into account if this issue arises in any of the elements of the ecosystem.

BEREC also understands the comment of Ecta and would like to explain the reason behind its decision. The delivery of the draft report for public consultation was shifted from P1 to P2 due to mainly two reasons. First, the high workload on preparing BEREC documents on the DMA along 2021, and second is the complexity of this report.

2.2. BEREC Report(s) for an effective enforcement of the regulatory intervention on digital gatekeepers

GSMA supports BEREC in this work and agrees that BEREC should take a more prominent role in this field. The new power granted by the EECC to collect data from stakeholders not directly bound by the Code's rules is key to feed the NRAs wider analysis of the digital market and assessment of the interplay between different actors. Most importantly, this analysis requires the assessment on how market power is distributed in the digital market, the existence of competition failures and how these can be best addressed, taking into consideration the role of data in the market dynamics.

MVNO Europe agrees that both BEREC and National Regulatory Authorities should play a role in ex-ante regulation of gatekeeper digital platforms in the future. The topic of gatekeeper

digital platforms is highly relevant for MVNO Europe, given that several MVNO Europe members face unjustified technical restrictions at Operating System level. MVNO Europe urges BEREC to affirm a requirement of 'device neutrality', i.e. the principle that inescapable device manufacturers should not, merely for their own business reasons, be allowed to deliberately degrade the selection of functionalities on their own devices.

Ecta looks forward to one or several reports that will provide a comprehensive view of the internet ecosystem, but disagrees that it should concern only those aspects that are beyond the network layers and the ECSs supporting internet access. On the contrary, ecta considers that the network and internet access service layers need to be described, as well as their inter-relationship with the higher layers, which need to be clearly explained, including for policy-makers and legislators to gain a full understanding of these fundamental inter-relations.

BEREC thanks the respondents for their input and welcomes the general support expressed for the report on digital gatekeepers. BEREC agrees with MVNO Europe that it is important to explore any difficulties operators may face in this area and would like to emphasize that the issues mentioned will be addressed in the internet ecosystem report, identifying if there exist any potential bottleneck.

Regarding the comment of Ecta, BEREC would like to clarify that this report will cover the topics of network layer and ECSs as it is mentioned in the draft Work Programme.

2.3. Report on challenges and benefits of Artificial Intelligence (AI) solutions in the telecommunications sector (including use cases)

ETNO welcomes BEREC's assessment of the important benefits which artificial intelligence applications can bring to the telecommunications sector. However, it must be borne in mind that the regulatory framework for the development and use of AI, as well as the updated liability regime for AI, is still early in its development in the EU. Therefore BEREC should rather postpone such an activity at least until the EU has established specific rules on AI.

GSMA believes that AI has the potential to radically alter and improve the way governments, organisations and individuals provide services, access information, and improve their planning and operations. However, AI adoption is still at an early stage at EU level in general and within the telco sector in particular, and discussions on the regulatory approach to be adopted are still ongoing at an institutional level. GSMA believes it is therefore premature for BEREC to undertake specific activities on the topic.

Liberty Global supports BEREC's intention to adopt a Report on AI with the aim of informing the current EU procedure to adopt the Artificial Intelligence Act. Europe's digital connectivity

providers will play a major role in ensuring a fast and uptake of AI, critical for its democratization.

Ecta welcomes this workstream, as it could provide interesting insights for market participants. Ecta notes that the description that BEREC provides is more geared towards BEREC involvement in the EU procedure to adopt the Artificial Intelligence Act, and possible implementation thereof.

BEREC welcomes the feedback and support provided by stakeholders and has carefully considered the respondents' views to this workstream.

2.4. Open internet

2.4.1. Collaboration on the Net Neutrality Measurement tools and evolution of the regulatory assessment methodology (carry-over)

GSMA welcomes the fact that BEREC aims to rely on best practices. It is important that this workstream includes testing and feedback with operators to ensure that the tool is accurate.

Liberty Global supports BEREC's work stream aimed at deployment of the Net Neutrality Measurement tool. Liberty Global encourage BEREC to involve stakeholders in every step of the evolution of the measurement methodology and also to consult ESOs (such as ETSI). In this context, if any changes occur, BEREC should support stakeholders who want to develop their own measurement tools based on the updated methodology and clarify how they can have NRAs certify their tools.

BEREC thanks the stakeholders for their input and agrees with them about the importance of stakeholder involvement in the evolution of the assessment methodology.

2.4.2. Implementation of Regulation (EU) 2015/2120 and the BEREC Guidelines on the implementation of the Open Internet (OI) Regulation

GSMA welcomes the work of BEREC in continuing to monitor the implementation of the open internet regulation.

Liberty Global notes that monitoring and reporting on the implementation of the Open Internet Regulation should be one of BEREC's key priorities, in view of the findings in the European Commission's Report on the implementation of the Regulation (EU) 2015/2120 and the underpinning European Commission Study on Open internet, which recognise that further efforts can be made to ensure the harmonized application of the Regulation by the regulators. An adequate reporting on regulatory practices is key to facilitate exchanges at EU-level which can ensure such a harmonized application.

BEREC thanks for the comments of the respondents and agrees with Liberty Global that monitoring and reporting on the implementation of the Open Internet Regulation will be one of the key priorities of BEREC in the coming year.

2.4.3. Update to the BEREC Guidelines on the Implementation of the Open Internet Regulation

BEUC welcomes the planned review and update of the Guidelines on the Implementation of the Open Internet Regulation, in light of recent rulings the Court of Justice of the EU that clearly stated that zero rating offers are a violation of this regulation. BEUC expects that the updated guidelines fully reflect the Court's rulings and clearly indicate that zero rating is a prohibited practice.

GSMA welcomes BEREC's engagement on this topic and appreciates the call for input BEREC has opened seeking initial views on the ECJ judgments. GSMA also welcomes the commitment to consult further in 2022 on revisions to the guidelines.

Liberty Global welcomes BEREC's updating of the Guidelines on the Implementation of the Open Internet Regulation. In light of the relative silence of the Court in its 2021 rulings on the relationship between Articles 3(2) and 3(3) of the Regulation in these cases, as well as taking into account the fact that the Court possesses the power to annul any provision it finds contrary to Union law. The Court clearly avoids doing so in respect of Article 3(2) therefore Liberty Global urges BEREC to avoid extrapolating a (too) restrictive interpretation of the latter provision on the basis of these latest rulings.

BEREC thanks stakeholders for their input and notes the concern expressed by Liberty Global. BEREC will in this work stream continue to support NRAs with closely monitoring and ensuring compliance with the Regulation.

3. Strategic priority 3: Empowering end-users

3.1. Workshop on the application of rights of end-users in the EECC

BEUC strongly welcomes that the work programme foresees a workshop on the application of the rights of end-users of the EECC in 2022.

GSMA welcomes BEREC's focus on end-user rights in the context of the EECC and the obligations under Article 123 and general objectives under Article 3. BEREC needs to ensure it balances the objectives of connectivity for all users through price choice and quality with the need to promote efficient investment which ultimately ensures connectivity for all users. GSMA asks BEREC to ensure the scope of end users rights also considers the internet value chain and the wide range of products and services which form part of the value chain for end users.

Liberty Global supports BEREC's initiative to host a joint workshop with BEUC, as it is important to involve consumers and consumer organisations when assessing the effectiveness of the Code provisions on end-user rights. Liberty Global also urges BEREC to ensure that service providers and industry associations are given the possibility to participate, at least partly, as the discussion can benefit from their first-hand experience, and to inform them about the outcomes, as well as its intended follow-up on this subject.

MVNO Europe asks BEREC to exercise restraint in formulating its Opinion on Article 123 of the EECC. Given that the EECC transposition was and still is substantially delayed in many Member States, it is clearly too early to contemplate revisions to the EECC, since there has been little or no experience with its application so far. MVNO Europe does ask BEREC to be involved in the Workshop that is planned on end-user rights.

Ecta welcomes this workstream, being aware that BEREC is required by Article 123 of the EECC to provide an Opinion, which will serve as input to the European Commission to publish a Report and potentially submit a legislative proposal. Given the delays in many Member States in transposing the EECC, it seems doubtful that sufficient experience has been gained to give serious consideration to modifying the EECC. The focus should rather be on effectively applying its provisions in a manner which is non-disruptive.

BEREC appreciates and thanks the stakeholders for the support of its work on this aspect and understands the issues raised here as important to consider. BEREC will involve the most appropriate stakeholders regarding this issue and will publish a summary report on the outcome of the workshop.

3.2. Report on best practices for ensuring equivalence of access and choice for disabled end-users

GSMA welcomes this report and the engagement with stakeholders which is planned. GSMA looks forward to contributing to such interactions with BEREC.

Ecta appreciates that this workstream will be subject to public consultation. It will be important to ensure that disabled end users can benefit from up-to-date solutions, many of which are available on the internet, and to exercise restraint, such as avoiding generalizing old-fashioned specific services which are in place in a very small number of Member States.

BEREC welcomes the feedback and support provided by stakeholders and agrees with the importance of sharing ideas and experiences on this topic to improve service qualities and opportunities for disabled consumers.

3.3. Workshop on the the digital divide

ESOA applauds the BEREC initiative to hold an internal workshop in order to exchange views regarding the implementation of the recommendation and best practices on closing the digital divide. ESOA's vision is to help policymakers improve the state of the world by continuously bridging digital, education, health, social, gender and economic divides across diverse geographies and across mature and developing economies.

ETNO welcomes the ongoing effort of BEREC to study the various aspects of the digital divide, spanning not only connectivity questions, but also the social educational issues. ETNO regrets that the workshop will be internal-only, and will not include at this stage the opportunity for stakeholder consultation.

BEUC notes that precisely because bridging the digital gaps has now become one of the top political priorities to achieve a fair economic recovery for all, BEUC regrets that this work item has been foreseen only as an internal workshop. BEUC encourages BEREC to involve relevant stakeholders, such as consumer organisations and other civil society NGOs, and allow them to engage with NRAs on such an important topic.

GSMA notes the commitments by BEREC to a heads' workshop on this issue and looks forward to the planned report in 2022.

Liberty Global appreciates the work BEREC has carried out in this sphere during the past year, examining the effect of the pandemic on the telecommunications sector and laying out recommendations to help NRAs in designing the right conditions to improve digital inclusion for all citizens. Liberty Global believes that the digital markets are working well and will provide for the vast majority of Member States' coverage needs, especially through privately financed deployment of both fixed and mobile networks. Where there is the risk that this market mechanism would fail to function properly, safeguards are provided under the Code through the Universal Access provisions. Furthermore, having digitally skilled citizens is crucial for Europe to strengthen its competitiveness worldwide and become an inclusive digital society. Liberty Global believes that access to education allowing the acquisition of basic digital skills should be a right for all EU citizens.

Ecta has seen the presentation made at the Stakeholder Forum of 28 October 2021 on this topic, and BEREC has published the study. For ecta it is unclear what the Heads Workshop on the digital divide, which is closed to stakeholders, will lead to. ecta calls on BEREC to conduct any activities on the digital divide in public.

BEREC appreciates and thanks the stakeholders for the support of its work on this aspect and understands the issues raised here as important to consider. In the case of the internal workshop BEREC will inform all stakeholders about the outcomes of the workshop.

3.4. Report on Comparison Tools and Accreditation

GSMA welcomes the report due in 2022 on this topic.

BEREC thanks for the interest of stakeholders on its coming report on comparison tools and accreditation.

3.5. BEREC Report on Member States' best practices to support the defining of adequate broadband internet access service (IAS)

BEUC welcomes BEREC's announcement of the report on Member States' best practices to support the defining of adequate broadband internet access service (IAS).

GSMA welcomes the work completed by BEREC on this subject to date and looks forward to the public consultation in 2023.

Liberty Global recognises the role of universal service obligations in supporting social inclusion and welcomes the increased focus in the Code on closing the gap between availability and take-up of broadband internet services. According to Liberty Global adequate broadband service is not intended and should not be used to achieve Gigabit-society goals or otherwise mandate investment in VHCN. This is more appropriately achieved through incentivising private investment in network infrastructure and infrastructure-based competition.

BEREC welcomes the feedback and support provided by stakeholders and has carefully considered the respondents views to this workstream.

4. Cooperation with EU institutions and institutional groups

4.1. Implementation of BEREC's Medium Term Strategy for relations with other institutions and international cooperation

ComCom welcomes the fact that BEREC's international cooperation agenda is remarkably extending from 2022 year. ComCom suggests that future international cooperation strategy could be put for public consultations for stakeholders, where the NRA networks as well as the individual NRAs would have the possibility to provide their inputs to outline the current needs as well as the ways of making the cooperation more bilaterally beneficial.

ComCom is fully aligned with BEREC's vision that engagements with regional (multilateral) regulatory bodies should be prioritized over individual NRAs. At the same time, ComCom trusts that it should not be preventing to exploring the avenues of individual inputs from NRAs outside the EU and possibility of such individual dialogue. In this context, we encourage such opportunities to be prioritized for NRAs and outlined in the Work Programme.

Huawei would like to encourage BEREC to put China and Chinese institutions on the list of targets for international cooperation. In China there is a very sophisticated and rich system of regulation in place and there is definitely a need for a continuous exchange on regulatory matters on both sides to promote the well-being of both economic areas.

GSMA encourages BEREC to continue following the existing and ongoing work carried out by other competent authorities and to continuously strengthen cooperation with them, to provide useful insights when required. In particular BEREC can become a reference for Regulators across the world on the analysis of the evolution of digital markets and the internet value chain which is critical to understand the competitive dynamics in converged markets.

Liberty Global supports BEREC's continuous effort to engage with other European institutions in order to strengthen cooperation at the European level. This action is crucial to ensure consistency of the regulatory framework, especially in relation to network security, 5G roll-out and the European Digital Market. Liberty Global also welcomes the increased attention BEREC is giving to international cooperation.

Ecta comments that BEREC appears to be seeking to extend its areas of activity well beyond electronic communications, and potentially beyond its own capabilities and resources, including on the international stage. This may result in unjustified de-prioritisation of the activities that are core to BEREC and NRA mandates under the applicable EU legislation, and is therefore of concern to ecta,

BEREC welcomes the positive responses from the stakeholders to this workstream. BEREC shares the view of stakeholders that a strengthened cooperation would contribute to a better and consistent implementation of the regulatory framework.

5. BEREC's other tasks

5.1. BEREC ad hoc work

5.1.1. Ad hoc input to the EU/NRAs

5.1.2. Update of criterion four of the BEREC Guidelines on very high capacity networks

ESOA notes that BEREC chose to consider that satellite networks were very different from terrestrial wireless networks and were not eligible to criterion 2, but only to criterion 4. This is an exclusive approach that gives preference to certain technologies and undermines the benefits of existing and future spacebased services at a time when the European Commission is planning its own next generation satellite network to support both 5G and 6G.

ESOA further insists on recommending that when updating criterion 4 of the BEREC Guidelines on VHCN, BEREC does not only based its decision on data collected from mobile network operators on 5G, but also seriously consider the feedback and information provided from a whole industry that while it is smaller than others, it is still key to the successful achievement of the European digital goals.

Huawei welcomes this initiative and would like to support this work by providing data about potential performance of 5G.

GSMA believes that the proposed review of criterion 4 is premature. BEREC could update criterion 4 taking into account 5G developments in 2025, which is the review deadline provided for in Article 82 EEC.

BEREC indicates that it will initiate work based on data collected from mobile network operators on 5G. Ecta agrees that this will become relevant at some future time, but cautions

against prematurely updating criterion four on too prospective a basis, which could result in unexpected consequences, and possible undue distortions, in various policy areas.

BEREC thanks stakeholders for their inputs and would like to explain its interpretation on criterion 4 regarding satellite and mobile networks.

According to the BEREC Guidelines on Very High Capacity Networks (BoR (20) 165, footnote 24 on page 16), satellite networks can also qualify as a very high capacity network, if they meet criterion 4 of these BEREC Guidelines. This document also explains that end-user services provided by a wireless network are typically based on a mobile network (not e.g. on a public WLAN network or satellite network). Therefore, these BEREC Guidelines determine the performance thresholds of criterion 4 based on mobile networks.

Furthermore, these BEREC Guidelines (paragraph 36) point out that it is necessary to determine the performance thresholds of criterion 4 based on the 'best' technology with regard to the achievable end-user QoS already deployed in networks (at least pilot deployments or field trials). Therefore, these BEREC Guidelines considered LTE Advanced and the update of criterion 4 will be based on 5G.

The BEREC Guidelines on Very High Capacity Networks (BoR (20) 165, paragraph 25) already inform that 'since it was not yet possible to take 5G fully into account for the release of these Guidelines, as it has not yet reached mature deployment and significant penetration, BEREC intends to update criterion 4 (performance thresholds for wireless network) as soon as possible and not later than 2023.' At the time of data collection in 2022, 5G will have reached mature deployment and significant penetration and, therefore, it is necessary to update criterion 4 already in 2023.

5.1.3. BEREC Input to the European Commission regarding the evaluation and potential review of the EU State Aid Guidelines (carry-over)

Ecta strongly supports BEREC involvement in the review of the Broadband State Aid Guidelines. In particular, it would be most valuable if BEREC could prepare a Report giving an overview of which operators received State Aid over the past 10 years or more, for which purpose, the associated active and passive access obligations that were imposed on the beneficiaries of the state aid, and what has been the result of the projects that benefited from State Aid not only in terms of deployment but also in terms of wholesale and retail take-up ratios.

BEREC welcomes the support of stakeholders expressed in their comments and would like to provide here some update as a result of recent developments. On 19 November 2021, the European Commission launched the public consultation on the draft revised EC Guidelines on State aid for broadband networks and, therefore, this project will be updated in the final BEREC WP 2022 and BEREC will provide a response to this public consultation and will not

prepare a report. BEREC's response to the public consultation of the Commission will consist of two parts: one dealing with the body of the text and the other one with the mapping annex. Also the title of this WP item will be modified to BEREC Response to the public consultation on the draft revised EC Guidelines on State aid for broadband networks.

Moreover, BEREC would like to add that a report considering the past would not be appropriate, since the European Commission will publish the final version of the revised EC Guidelines on State aid for broadband networks already in 2022. In addition, the involvement of NRAs in State aid differ between countries and therefore, not all NRAs would have such information and NRAs would not have all the information proposed by Ecta.

5.1.4. BEREC Opinion on the review of the Access Recommendations (carry-over)

GSMA notes the forthcoming opinion of BEREC on the revision to the Access recommendation.

Liberty Global considers that the current guidance provided in the Access Recommendations is sufficient and clear, and that no additional guidance or changes are necessary. More specifically, Liberty Global believes that the NDCM Recommendation adequately promotes deployment and take-up of VHCN by ensuring regulatory certainty. Liberty Global notes that NRAs can be hesitant to apply the price flexibility approach (including the ERT) in the manner proposed by the Recommendation and consider that BEREC has an important role in encouraging NRAs to apply the framework set out in the Recommendation.

BEREC thanks for stakeholders' feedback. Regarding the comment of Liberty Global, BEREC think that it addresses rather the Commission and not BEREC as it refers to the content of the recommendation, at the same time BEREC is grateful for the support.

5.1.5. Peer review process

GSMA supports BEREC's participation in the Peer Review Forum. The collaboration, cooperation, and critical exchange of good practices between Member States cannot be understated and this is an area where the GSMA believes further progress can be made. GSMA notes, based on peer reviews conducted to date, that the competitions selected have not been ones where specific issues around the management or the outcome of the spectrum assignment has been contentious. GSMA would encourage peer reviews to focus also on

those member states where spectrum assignments have been the subject of debate or criticism or with outcomes not expected.

MVNO Europe notes that the peer review process remains a black box, and that it is impossible for MVNO Europe to know whether BEREC participates in a manner that MVNO Europe would support or may disagree with. In MVNO Europe's opinion, BEREC needs to bring not only the full connectivity dimension to the table, but also the promotion of competition and end-user interests. Furthermore the outcome of peer reviews should also be published.

Ecta thanks BEREC for answering questions about Peer Review at the Stakeholder Forum of 28 October 2021.

Ecta notes that it is essential for stakeholders to understand which general policy line is taken by BEREC in peer review processes, and for BEREC to report at least ex-post on the nature of its intervention, and on the outcome of its intervention, if any.

BEREC welcomes the feedback and support provided by stakeholders and has carefully considered the respondents views and critical comments to this workstream.

5.1.6. Ad hoc work relating to network security and cybersecurity

BEUC appreciates that BEREC has been mandated to assist the NIS Cooperation Group and ENISA in their work to produce a toolbox for 5G Cybersecurity, setting up a Working Group on 5G Cybersecurity. BEUC encourages BEREC to engage with relevant stakeholders on this matter, including consumer organisations.

Huawei invites BEREC to consider additional activities addressing the impact of a timely transition to IPv6 on network security and national resilience. Specifically Huawei recommends to accelerate the uptake of key internet standards including IPv6, not ruling out regulatory measures like a European sunset clause for IPv4. In light of the above, BEREC is invited to identify targeted actions aimed at incentivizing Member States to adopt IPv6 which will contribute to strengthen their network security and national resilience.

GSMA supports BEREC in this work. GSMA is looking forward to future cooperation with BEREC on this important topic and stands ready to continue sharing industry's knowledge and expertise.

Ecta considers that BEREC should systematically bring much-needed technical objectivity to the security discussions, i.e. any cybersecurity measures, including the determination of high-risk suppliers, should be subject to objective assessments and justifications based solely on the objective facts.

BEREC thanks the respondents for their input and welcomes the general support from stakeholders to continue the work on security and Open RAN.

5.2. Other tasks under EU legislation

GSMA acknowledges that BEREC carries out many mandatory tasks under EU legislation and supports its work.

BEREC thanks for the support of stakeholders in this field.

5.2.1. BEREC Opinion on Article 123

Ecta welcomes this workstream, being aware that BEREC is required by Article 123 of the EECC to provide an Opinion. However given the delays in many Member States in transposing the EECC, it seems doubtful that sufficient experience has been gained to give serious consideration to modifying the EECC, so soon after its adoption, and in some cases only shortly after its implementation in the Member States. The focus should rather be on effectively applying its provisions in a manner which is non-disruptive.

BEREC thanks for the interest and support of stakeholders and understands the critical issue here with the different pace of transposition of the EECC in Member States.

5.2.2. Delegated act(s) concerning emergency communications

GSMA notes BEREC will be consulted in relation to '112' delegated act. GSMA will be responding to the initial consultation by the Commission and further consultations on this topic in 2022.

Liberty Global notes that BEREC will play a crucial role when providing its opinion to the Commission and, especially with regards to possible obligations concerning mobile operators, should ensure that the delegated act is future-proof, securing flexibility to enable innovative developments, and abiding by the principles of appropriateness, proportionality and technology neutrality.

Ecta notes that implication of industry stakeholders is essential, in particular to avoid that burdensome, and possibly unrealistic, 'solutions' are imposed on industry across the board. The concern in this regard is very real, given the contents of the Roadmap published by the European Commission for consultation.

BEREC welcomes the feedback and support provided by stakeholders and has carefully considered the respondents views to this workstream.

5.2.3. International roaming benchmark data Report

GSMA welcomes confirmation of the upcoming 28th Roaming benchmark report.

MVNO Europe welcomes this BEREC workstream. BEREC's data gathering and reporting has always yielded highly relevant information for policy-makers, regulators, industry and consumers, notably on the wholesale charges set by MNOs when they negotiate roaming bilaterals compared to the wholesale charges paid by MVNOs as unilateral buyers of wholesale roaming. MVNO Europe notes that more attention is needed to the level of wholesale charges incurred by MVNOs, and to how (and why) these are far higher than charges for domestic wholesale access to mobile networks. Furthermore very large discrepancy between retail tariffs and the wholesale caps still exists.

Ecta requests that the scope of the recurring BEREC report be extended to cover IoT, permanent roaming for IoT, 5G, roaming for industry verticals, and for network slices if applicable.

BEREC appreciates these comments and will take into consideration these aspects when developing the report.

5.2.4. Inputs to any legislative proposals of the European Commission on roaming

GSMA has been closely monitoring and responding to the recast of the roaming regulation. Concerns remain for mobile operators in relation to proposals on quality of service, intra EU communication costs, VAS and emergency services. GSMA supports measures to improve transparency for roamed customers but concerns remain with interventions on quality of service which technically cannot be achieved without significant disruption to roamed customers.

MVNO Europe advocates that BEREC to support reduced wholesale caps, imposing of pass-on of discounts and ensuring 5G and IoT included in the future EU Roaming Regulation.

BEREC welcomes these comments and understands stakeholders' concerns in this field. Therefore BEREC also emphasizes the importance of transparency and stakeholder involvement.

5.2.5. Intra-EU communications Benchmark Report

GSMA welcomes the commitment to a 3rd Benchmark report on intra-EU communications and notes that this continues to be a declining market for the operators due to significant substitution with over the top services. BEREC is no doubt aware that the recent outage from a number of online platforms led to an increase in voice and SMS intra EU traffic which is further evidence of the substitutability and competitiveness of the Intra EU communications markets.

BEREC appreciates stakeholder support and interest in this issue.

5.2.6. Update of BEREC retail Guidelines on the Roaming Regulation

BEUC welcomes the upcoming review of both the wholesale and retail Guidelines on the Roaming Regulation. Given the number of open questions expected on the implementation of the revised rules, which are expected to come into force in July 2022, the update of both of these guidelines will be important to provide a harmonised implementation of the new provisions. In this regard, BEUC welcomes BEREC's intention to proceed with a public consultation which should take place as soon as possible.

MVNO Europe considers this a necessary and important workstreams for 2022. MVNO Europe stands ready to contribute actively, including on any technical work, to ensure the best possible outcomes, for competition, and ultimately for end-users. Clearly, stakeholders should be involved to the maximum extent, through both informal and formal consultations.

BEREC appreciates stakeholder inputs and support and understands that it is a vital issue for all concerned.

5.2.7. Update of BEREC wholesale Guidelines on the Roaming Regulation

Liberty Global supports BEREC's intention to revise the Guidelines on retail and wholesale roaming in light of the new provisions which are still under discussion within the Commission, Council and Parliament. Liberty Global strongly support BEREC's intention to engage with stakeholders on the revision of the Guidelines. Liberty Global agrees with the objective of the Regulation to give customers a genuine roam-like-at-home experience in terms of quality of service (QoS) while roaming.

Liberty Global is concerned that the current proposals may have negative consequences on the flexibility of mobile service providers to enter into roaming agreements with partners of their choice. Mobile network upgrades and investments are occurring constantly, whereas roaming contracts take time to negotiate. Whilst Liberty Global can agree on certain quality levels with preferred roaming partners, these will be limited by the capabilities of their existing networks and any future planned upgrades, which are at their sole discretion. It should be made clear in the BEREC Guidelines that "technical feasibility" also takes into account operational and commercial considerations – they are equally as relevant as technical considerations.

MVNO Europe considers this a necessary and important workstreams for 2022. MVNO Europe stands ready to contribute actively, including on any technical work, to ensure the best possible outcomes, for competition, and ultimately for end-users. Clearly, stakeholders should be involved to the maximum extent, through both informal and formal consultations.

BEREC welcomes stakeholder feedback and understands well the concerns related to the possible difficulties with entering a roaming agreement with other operators. BEREC would like to emphasize here the importance of cooperation and transparency to achieve a competitive and harmonized market for the benefit for both operators and end-users.

5.2.8. VAS database

BEUC supports the establishment and maintenance by BEREC of a single public EU-wide database of value-added services numbering ranges used in each Member State, to be made accessible to NRAs and operators, as well as a database of means for accessing emergency services.

GSMA welcomes BEREC's approach to the potential obligations from the recast of the roaming regulation and looks forward to working with BEREC on the development of these databases.

BEREC welcomes the feedback and support provided by stakeholders and has carefully considered the respondents views to this workstream.

5.2.9. Emergency communications database

5.3. Monitoring quality, efficiency and sustainability

5.3.1. Implementation of the EECC and the BEREC Regulation

GSMA is monitoring the implementation of the EECC and notes the large number of member states who have yet to transpose the code. GSMA is aware of a number of instances where in transpositions obligations on operators differ from the directive and other member states

and GSMA encourages BEREC to ensure harmonised obligations across the internal market in line with the general objectives of the EECC.

Liberty Global have experienced first-hand fragmentation in the implementation of the Code by the Member States in our footprint, in terms of both timing and substance. The workshop that BEREC intends to organize will be a great opportunity for stakeholders to share their experiences and approaches in the implementation of the Code, ensuring a common understanding of the new rules on all the areas covered by the Code and throughout the EU. Liberty Global notes that in the WP 2022 there is no mention of when the workshop will take place. In this regard, Liberty Global urges BEREC to inform stakeholders in a timely manner and involve them on issues that affect them at all time. Liberty Global urges BEREC to invite service providers and industry associations to participate.

Ecta asks BEREC to involve stakeholders in this workstream, and thanks BEREC in advance for indicating that it intends to organize a workshop to exchange views with all interested stakeholders, meeting an ecta request made last year.

BEREC appreciates and thanks the stakeholders for the support of its work on this aspect and understands the issues raised here as important to consider.

5.3.2. Developing BEREC's basic knowledge about the different aspects of sustainability in the digital sector (carry-over)

ETNO notes that the European telecoms sector has a long-standing commitment to reducing its carbon footprint, while promoting connectivity services and digital tools to reduce emissions across many sectors to benefit the environment and society. ETNO points out that the ICT carbon footprint figures at page 6 of the draft BEREC Strategy 2021-2025 should be reconsidered. First, the ICT sector account for roughly 2-4% of the global as well as EU greenhouse gas emissions only if the percentage also includes media, the entertainment sector and end user equipment. Furthermore, ETNO believes the comparison with the aviation sector is misleading and requires to be adjusted if not removed. The ICT sector is by far the biggest investor in renewable electricity and that makes a fundamental impact on the actual carbon footprint trends.

BEUC welcomes that BEREC will be further exploring its role in promoting sustainability policies. BEUC particularly welcome BEREC's commitment to engage at inter-institutional and stakeholder levels more actively on the issues of circular economy, especially in relation to the life cycle of devices and electronic equipment and their impact on energy consumption

and electronic waste. However, BEUC would like to add a notion of caution with regards to voluntary, non-enforceable pledges from the telecom sector, as experience shows that pledges or self-regulation are frequently insufficient or inefficient.

GSMA congratulates BEREC for initiating the work in this important area. GSMA supports the efforts to achieve the Paris agreement climate objectives. The consistent use of the latest mobile technologies and the decisions of mobile operators to transition to green energy have been a testament to the importance of the industry to reduce its carbon footprint and eliminate it by 2050

Liberty Global strongly welcomes the goals of the European Green Deal and achieving a green and digital transition of the economy and Liberty Global support BEREC's work on this issue. Liberty Global have committed to Net Zero by 2030 and have already invested heavily in upgrading our infrastructure to save energy and reduce emissions. Liberty Global also works to reduce waste through recycling and refurbishment. Assessment of the ICT sector's environmental impact must account for its varied nature and the multitude of actors within the sector. Liberty Global urges BEREC to maintain a nuanced approach, and continue to abide by the principles of appropriateness, proportionality and technology neutrality when assessing environmental impact.

Ecta welcomes this BEREC workstreams, and believes that BEREC is well-placed to give public recognition to the genuinely substantial efforts engaged by the telecommunications industry, and notably many ecta members which have already committed to meeting science-based environmental sustainability targets. A BEREC knowledge base, be it preliminary, will be useful, not so much for awareness-raising but to help communicate to policy-makers and legislators what is already done.

BEREC appreciates the support provided by stakeholders to what BEREC has already done and what is planned to do on this field. BEREC also understands the comments of ETNO, but according to BEREC's understanding, this refers to the BEREC Strategy 2021-25 which was not subject of this public consultation.

5.3.3. Indicators to measure environmental impact of ECNs

ETNO believes that BEREC's long-term objective to identify a possible harmonised methodology measuring the environmental sustainability of ECNs/ECSs is a valuable effort. The same goes for considerations on circular economy, especially in relation to life cycle of

devices and equipment. In principle, having a unified set of indicators might help bringing consistency and harmonization across the EU.

Huawei welcomes this initiative because Huawei firmly believes that we cannot promote digitalisation without promoting the reduction of the carbon footprint of the digital industry including its enabling effect on a wide range of other industries. Therefore, Huawei would like to participate in and contribute to this technical workshop of BEREC. Huawei can contribute in a variety of areas like energy consumption, smart agriculture, or smart mobility (enabled by both C-V2X and Intelligent Automotive Solutions), smart grids, smart healthcare, remote education and industrial automation.

FTTH Council welcomes BEREC's intention to develop more knowledge about the different aspects of sustainability in the digital sector and to develop indicators to measure the environmental impact of ECNs. The FTTH Council contributed to the study that is currently being developed for BEREC on the latter and has also created a working group on sustainability to work on the challenges linked to sustainability in more detail. The Council believes that full fibre can play a role as it is key to align the digital and sustainability agendas.

GSMA welcomes work in this area and will be happy to support BEREC developing indicators in this important area.

Liberty Global notes that ECN and ECS providers are different from e.g. manufacturers. In addition, there are a wide range of factors which affect the overall sustainability of a project, including manufacturing, deployment, use and end-of-life, types of energy source, and the ability to reuse/refurbish/recycle network elements. All of these factors must be accounted for when assessing environmental impact.

BEREC thanks the comments and support of stakeholders. BEREC agrees with the inputs about the importance of the mentioned factors and aims to keep a well-balanced approach.

5.3.4. Study on NRAs' institutional features and relevant BEREC evaluations

GSMA welcomes this study and considers the independence of NRAs in member states an important aspect of the EU telecommunications framework.

BEREC appreciates the interest and support from stakeholders towards this important aspect of regulation.

5.3.5. Article 32/33 Phase II process

Ecta reiterates its earlier request for BEREC to involve stakeholders in this workstream. Experience has shown that the Phase II process leading to a BEREC Opinion is a black box for stakeholders, with BEREC actively resisting stakeholder input. In addition, ecta expects that BEREC's guidelines on how it works on Phase II cases should not be internal and confidential, but instead be public and open to comments from interested stakeholders.

BEREC notes that participation of stakeholders in the Phase II process is not envisaged by the EECC. Stakeholders have the possibility to express their views during national public consultations on draft measures and when called upon with a "Notice for third party statements" by the Commission.

5.3.6. Internal workshop on relevance of maintaining BEREC Common Positions on best practice remedies (WLA, WBA, WLL)

GSMA believes the maintenance of BEREC CPs in this area should be combined with the work stream related to the work on the Access recommendations from the EU Commission. Operators appreciate one source of recommendations which can assist in terms of compliance.

Ecta has serious concern given that this item suggests that BEREC may no longer have a Common Position in the future, or may water down the substantive contents of a long-standing Common Position on the key remedies intended to address Significant Market Power. This cannot be the path that BEREC is embarking on. Ecta asks BEREC to review and modify its draft WP2022, to work towards more best practices, and more Common Positions, not less.

BEREC thanks the respondents for their input and agrees with both comments.

As GSMA explains it is very important that there is indeed a link between the two workstreams and BEREC will handle them related. BEREC is also grateful for Ecta to point out that some more clarifications are needed here to avoid any misunderstanding. BEREC will analyse and consider in its internal report whether any updating is necessary regarding the BEREC Common Positions on best practice remedies (WLA, WBA, WLL). Of course BEREC's

intention is to do the analysis open ended and does not suggest any any way the outcome can only be the withdrawal of the CP

5.3.7. Report on Regulatory Accounting in Practice

Ecta appreciates the value of this recurring report. It should definitely continue to be published annually, and continue to be improved with the following: the rate of return on capital employed and the WACC are two entirely different items, ecta would expect NRAs to apply the WACC Notice but not to have to be a matter of discretion and no ground for any risk premium added to the calculated WACC of an operator with Significant Market Power investing in a fibre network.

BEREC welcomes this feedback and is considering to address this issue in its next report. Although, it is also important to add that it refers to the question what NRAs should or should not do that may be a more complex topic.

5.3.8. Weighted Average Cost of Capital (WACC) parameters' calculation according to the European Commission Notice

Ecta considers that it is absolutely imperative that this Report becomes subject to public consultation. This is the case because BEREC will make choices, for instance in selecting peer countries. Such choices will affect the outcomes of WACC calculations in Member States, and thus should be open to contradictory debate.

BEREC thanks for this comment. This report will follow strictly the WACC Notice , therefore BEREC do not see the need for a further consultation.

5.3.9. Report on the monitoring of the termination rates for mobile and fixed voice calls

Liberty Global strongly supports the publication of a report on the information received from NRAs under their reporting obligations contained in Article 75 of the Code. Publication of this

report increases transparency and provides a useful tool for stakeholders to assess the implementation of the Delegated Regulation.

MVNO Europe strongly supports continued data collection and publication by BEREC. The existence of the Delegated Regulation on 'Eurorates' does not justify BEREC ceasing or reducing monitoring activity. It will in particular be of key importance for BEREC data to reveal whether some large operators or operator groups trade below the 'Eurorates' with each-other, while discriminating others. Attention to non-price aspects of wholesale call termination, and especially non-discrimination, will likely need to increase.

Ecta considers that publishing this periodic report will retain its value, and as such this should continue to be done on an annual basis. This is the case notably because the Delegated Regulation entails the possibility that operators in some countries are able to increase wholesale call termination rates. Monitoring SMS TRs has shown its value, notably to expose that in a deregulated environment rates differ by orders of magnitude, without relationship with cost.

BEREC welcomes the feedback and support provided by stakeholders and has carefully considered the respondents views to this workstream.

5.3.10. Report on the business and revenue models of NI-ICS and update on NRAs data collection practices on NI-ICS

GSMA believes this is important work for BEREC to conclude and aligns with work being conducted on the internet value chain. GSMA believe more focus should be given to the substitution effect of OTT on traditional voice, data and SMS activities. Revenue from these services provide the profits from the industry to support investment in infrastructure both in fixed and mobile networks. The sooner policy makers recognise the challenge increasing are already under challenge creates a perfect storm which challenges the return on investment for operators.

BEREC appreciates the support of GSMA and agrees that the substitution effect of OTT services has a growing relevance when analyzing telecommunication markets. This report will give new insights on the differences and similarities between NRAs' approach.

6. Stakeholder engagement

GSMA notes BEREC continuing work in relation to stakeholder engagement and thanks BEREC for hosting plenary debriefings, stakeholder forums and numerous workshops throughout the pandemic. GSMA thanks BEREC for the opportunity to comment on its draft Work Programme for 2022 and looks forward to working with BEREC on these important topics.

Liberty Global particularly appreciates BEREC's early calls of input, (virtual) stakeholders workshops, the two-stage process for consultation and its efforts to facilitate direct engagement between Expert Working Groups and individual stakeholders during the Annual Stakeholder Forum.

MVNO Europe thanks for the invitation to ask questions at BEREC's 2022 Stakeholder Forum and is grateful for the responses received from the incoming chairpersons for 2022 and 2023. MVNO Europe is especially encouraged by the statement on the importance of MVNO access going forward by the future BEREC chairperson for 2023. MVNO Europe encourages BEREC to enable MVNO Europe to also participate in panels at these recurring BEREC events in the future.

BEREC welcomes the feedback and the continuous support provided by stakeholders.

6.1. Stakeholder Forum

6.2. BEREC Annual Reports

6.3. BEREC Communications Plan 2022

6.4. Developing the BEREC Work Programme 2023

IV. POTENTIAL BEREC WORK FOR 2023 AND BEYOND

7. Potential work

Ecta thanks BEREC for identifying work with a longer-term horizon, and would advocate the addition of a further item: active monitoring of IoT markets, including the pan-EU dimension of parts thereof, and the identification of problems that impede pan-EU development of IoT. Ecta is disappointed that non-discrimination on quality of service is removed altogether. To Ecta it seems that BEREC absolutely underestimates the importance of non-discrimination on wholesale services by operators with Significant Market Power. This should be a priority item. It should be restored, and it should be an actionable workstream for 2022.

BEREC thanks for the feedback from Ecta and will consider the possibility to take this suggestions into future workstreams.

7.1. Update of the report on third party payment charges

MVNO Europe expresses its reservations about this work item, prior to it being launched, and in response to the public consultation in 2021. MVNO Europe remains of the view that BEREC should handle this topic prudently, in order to avoid introducing new overly bureaucratic rules, which might end-up harming competition rather than promoting it. It is not a topic readily suitable for harmonization, since the national practices differ widely and have complex roots and implementation structures.

Ecta is puzzled as to why BEREC keeps this workstream. This is not a priority, and it is not an area readily suitable for harmonization given the very different national situations and market trajectories.

BEREC appreciates and thanks the stakeholders for the support of its work on this aspect and understands the issues raised here as important to consider.

7.2. Report on key elements of the functioning of the EECC

Ecta advocates that there should be also an assessment as to whether the EECC provisions have increased or decreased competition, in which direction end user prices and quality have evolved, what the impact has been on take-up (affordability).

BEREC agrees with the opinion of Ecta that these market trends are of much importance to be monitored and understood by analysts and policy-makers, and regulators.

7.3. Experience sharing on Implementation of Guidelines

Liberty Global supports BEREC's monitoring activities in this area and its intention to create opportunities for NRAs and Competent Authorities to share their experience in the application of the guidelines. This will provide BEREC with useful insights on how its guidelines have been working so far and whether further work in this field is needed throughout 2023. Liberty global has been particularly disappointed by the low level of engagement offered by BEREC with regard to the development of its guidelines and the (often resource-intensive) input provided by stakeholders. The VHCN and Symmetric Access Guidelines are two examples where no opportunities were given to engage with BEREC between the first Call for Input stage and publication of the draft guidelines.

Ecta notes that the BEREC Guidelines should be evaluated not only from an institutional (BEREC/NRA/competent authority) perspective, but also from the perspective of industry stakeholders affected by BEREC Guidelines. Evaluation is needed in particular of whether the said Guidelines have been implemented efficiently by the NRAs, and whether the Guidelines effectively contribute to regulatory certainty for stakeholders.

BEREC welcomes the feedback and support provided by stakeholders and has carefully considered the respondents views to this workstream.

7.4. BEREC Review of the Guidelines detailing Quality of Service Parameters

7.5. Internal workshop to assess the need for updating BEREC Guidelines on the minimum criteria for a reference offer (EECC related)

7.6. Stock-taking on national experiences of the implementation of the EECC

Liberty Global notes that by the end of 2022, NRAs will have accumulated early experiences with the implementation of the Code at the national level and will be able to share them during the workshop that BEREC intends to organize. The outcome of the workshop will provide BEREC with useful insights on how its guidelines have been working so far and whether further work in this field is needed in the coming years. Therefore, Liberty Global supports BEREC's monitoring activities in this area and urges BEREC to involve stakeholders on issues that affect them at all times.

BEREC welcomes that Liberty Global supports BEREC's engagement with stakeholders and Member States on the topic.

7.7. Report on best practices for termination of contracts and switching provider

ETNO believes that operators would benefit from guidance to clarify the flexibility for telecoms operators with regard to this provision of the EECC, and ensuring a balance of the interests of the parties and ensuring that the value of the contract is respected.

BEUC welcomes that BEREC proposes a project building on its previous report on best practices for termination of contracts and switching providers. The report contained valuable information from NRAs on the approaches to switching across different communications services, focusing on the national implementation of the measures provided by Article 106 at both wholesale and retail level. BEUC expects that the upcoming project addresses the complexities of switching processes across the EU Member States and how these affect consumers.

Liberty Global notes that end-user rights are an area where there is significant fragmentation across the EU. Liberty Global have experienced such fragmentation first-hand in our footprint. Especially with regards to the Code provisions about switching, Liberty Global have noticed that NRAs are adopting different approaches in regulating the switching process at the national level, leading to increased uncertainty and fragmentation. Liberty Global believes that the work stream that BEREC intends to undertake in this area is particularly relevant, promoting regulatory best practices and consistent application of these Code provisions across the EU.

BEREC welcomes the feedback and support provided by stakeholders and has carefully considered the respondents views to this workstream.

Other comments

MTX Connect notes that National regulatory authorities (NRA) in some member states insist on presenting by the MVNO applicants of an MVNO agreement at the stage of general authorization and provision of rights to use the national numbering plan. Neither the Authorization Directive, nor the EECC contain any incentive for the NRAs to require from the applicant to prove its ability to render the electronic communications services. In MTX Connect's opinion, demanding the presentation of an MVNO agreement goes far beyond the criteria of proportionality and objectiveness.

MTX Connect invites BEREC to randomly check the public availability of reference offers of operators that are obliged to do it, with and without any publishing restrictions allowed by their NRAs. In the majority of cases, it would be highly difficult if not impossible to find these offers. Furthermore access providers refuse to consider reasonable negotiation period as a part of good faith negotiation requirement. The law does not contain any reference to reasonability of period of negotiations. MTX Connect argues that it is unclear how the requirement not to withdraw the already granted access correlates to a contractual right to terminate the agreement. A similar problem that happened under the regulated roaming regime.

BEREC notes the comments and will consider this issue when drafting future workstreams.
