

BEREC Work Programme 2021

BEREC aims at fostering the independent, consistent and high-quality regulation of digital markets for the benefit of Europe and its citizens.

I. INTRODUCTION	4
II. BACKGROUND	6
III. BEREC WORK IN 2021	8
1. Strategic priority 1: Promoting full connectivity	8
1.1. Report on a consistent approach to migration and copper switch-off	8
1.2. Report on regulatory treatment for backhaul	9
1.3. Work on the impact of 5G on regulation (carry-over)	10
1.4. Workshop on NRA experiences with 5G	11
1.5. Workshop on EMF: How best can BEREC promote science-based EMF exposure limits recommended by experts?	12
1.6. Report to enable comparable national broadband coverage indicators throughout Europe	13
2. Strategic priority 2: Thriving sustainable and open digital markets	15
2.1. Report on digital platforms - Market & Economic analysis (carry-over)	15
2.2. Report on the harmonised collection of data regarding OTT services relevant to electronic communication markets (carry-over)	16
2.3. Open internet	17
2.3.1 Report on the Internet Value Chain	17
2.3.2 Implementation of Regulation (EU) 2015/2120 and the BEREC Guidelines on the implementation of the Open Internet (OI) Regulation	19
2.4. Collaboration on the Net Neutrality Measurement tools and evolution of the regulatory assessment methodology	20
3. Strategic priority 3: Empowering end-users	22
3.1. BEREC study on consumer behaviour and attitudes towards digital platforms (carry-over)	22
3.2. Report on how to handle third-party payment charges on mobile phone bills (carry-over)	23
4. Cooperation with EU institutions and institutional groups	24
4.1. Institutional cooperation	24
4.2. International cooperation	25
5. BEREC obligatory work	26
5.1 BEREC ad hoc work	26
5.1.1. Ad hoc input to the EU/NRAs	26
5.1.2. BEREC Opinion on the Review of the Broadband Cost Reduction Directive	26
5.1.3. Input to the evaluation and potential review of the EU State Aid Guidelines.....	27
5.1.4. BEREC Opinion on the review of the Access Recommendations.....	28
5.1.5. Peer review process	28
5.1.6. Ad hoc work relating to network security and cybersecurity	29

5.1.7. Ad hoc work relating to the Recommendation on Connectivity	30
5.2. BEREC mandatory tasks in line with EU legislation	31
5.2.1. Mandatory tasks stemming from the European Electronic Communications Code (EECC)	32
5.2.2. Mandatory tasks stemming from the Roaming Regulation and dealing with intra-EEA communications	34
5.3. Monitoring quality, efficiency and sustainability	37
5.3.1. Report on COVID-19 crisis – lessons learned regarding communication networks for a resilient society	37
5.3.2. Stock-taking on the national experiences of the implementation of the EECC	38
5.3.3. Internal Report on the applicability of BEREC’s Guidelines for the elaboration of Opinions in Phase II cases	38
5.3.4. Internal workshop on Art. 32/33 EECC procedures.....	39
5.3.5. Report on Regulatory Accounting in Practice.....	40
5.3.6. Weighted Average Cost of Capital (WACC) parameters’ calculation according to the European Commission Notice	41
5.3.7. Termination rates at European level	41
5.3.8. Sustainability: assessing BEREC’s contribution to limiting the impact on the environment.....	42
6. Stakeholder engagement	44
6.1. Stakeholder Forum.....	44
6.2. BEREC Annual Reports.....	44
6.3. BEREC Communications Plan 2021	45
6.4. Developing the BEREC Work Programme 2022	45
IV. POTENTIAL BEREC WORK FOR 2022 AND BEYOND.....	47
Abbreviations	50

I. INTRODUCTION

The Body of European Regulators for Electronic Communications (BEREC) was established by Regulation (EU) 2018/1971 of the European Parliament and of the Council of 11 December 2018, amending Regulation (EU) 2015/2120 and repealing Regulation (EC) No 1211 (the 'BEREC Regulation') and aims at fostering the independent, consistent and high-quality regulation of digital markets for the benefit of Europe and its citizens.

The BEREC Work Programme 2021 sets out the priority work areas that the Board of Regulators has identified for 2021. These areas may be complemented by other emerging topics of interest during the year. The objectives of the Work Programme are aligned with the BEREC Strategy 2021-2025, with a close focus on the three high-level priorities (promoting full connectivity, supporting sustainable and open digital markets, empowering end-users), and the priorities set for institutional and international cooperation. The Work Programme also aims to reflect the priorities of the European Commission for the 2020-2024 legislative cycle and the policy objectives highlighted in the Commission's Communication on 'Shaping Europe's digital future' of 19 February 2020, including the 'Recovery Plan for Europe' from 27 May 2020.

A key policy objective is to ensure that very high capacity networks and 5G services are available timely. In this respect, BEREC will continue to promote the roll-out of fibre and 5G. BEREC will contribute, through cooperation with other competent institutions and stakeholders, to ensure that future network technologies meet their connectivity targets in line with European values and interests (security, protection of the end-user, environmental challenges, etc.).

2020 was a pivotal year for BEREC. Following its 10th anniversary celebration in 2019, BEREC's activities in 2020 were predominantly focused on meeting its obligations under the European Electronic Communications Code (EECC). As a result, BEREC delivered a set of eleven Guidelines across a broad range of thematic areas, to achieve a consistent application of the regulatory framework.

In 2021, monitoring the impact of the EECC will be at the forefront of BEREC's work. Much of our work will shift from providing Guidelines towards assessing future technological and market developments, related to end-user provisions within the scope of electronic communications and the digital ecosystem. We will work intensively on several essential tasks that have been entrusted to BEREC by the co-legislators.

The ongoing COVID-19 pandemic, which has made us all recognise the crucial aspect of communication networks, is a stark reminder of the necessity of digital connectivity. Our telecommunication networks have been put to the test, through compulsory teleworking and e-learning, among others, but they stood their ground. As of mid-March 2020, BEREC and the NRAs started a monitoring mechanism to keep track of the impact of COVID-19 on the internet capacity. In 2021, BEREC will evaluate the measurements of the NRAs and other market players taken during the pandemic, so as to identify the steps needed to strengthen Europe's digital capabilities and increase the resilience of the electronic communications market for dealing with situations such as the COVID-19 crisis.

In this fast-moving digital environment, BEREC must track developments in the electronic communications sector and related sectors. To do this, we must continue to develop our expertise related to adjacent sectors, e.g. in digital platform regulation or OTTs. We will perform the first monitoring exercise of future technological and market developments, leading to changes in the use of different electronic communications services, and we will examine their impact on end-user rights.

In 2021, BEREC will implement ways of achieving more efficient meetings and sustainable resource-efficient solutions by maximising the potential of virtual meetings, building further on lessons learned from COVID-19. We will work on the issue of sustainability for the ICT-related parts of the upcoming Green Deal and the Agenda 2030 targets by developing an understanding of how to reduce the carbon footprint of providing digital and telecommunication services.

Our Work Programme 2021 reflects BEREC's commitment to serve as a body that is open to thoughtful and proactive debate so as to provide the best advice to the European Parliament, the Council and the Commission in the field of electronic communications. BEREC is fully focused on providing input in relation to several Commission Recommendations, as well as the current review of the Broadband Cost Reduction Directive and the Roaming Regulation. With regard to the upcoming Digital Services Act package, BEREC is ready to share its expertise on any regulatory developments that could mark the current legislative cycle.

Looking to the future, BEREC will continue its vital role in ensuring that the European regulatory framework is consistently applied by promoting harmonised application of the framework among the member NRAs. In addition to that principal objective, BEREC will continue to enhance its own working methodology and engage cooperatively and effectively with stakeholders, in particular by exploring how collaboration can be strengthened with other European institutions so that we are ready to tackle future challenges.

Dan Sjöblom
BEREC Chair 2020

Michel Van Bellinghen
BEREC Chair 2021

II. BACKGROUND

The four objectives of the EECC (Article 3(2)) remain the foundation for the work set out in BEREC's annual work programmes, and the guiding force for the Work Programme 2021. These four objectives are:

- promoting connectivity and access to very high capacity networks,
- promoting competition and efficient investment,
- contributing to the development of the internal market,
- promoting the interests of EU citizens.

The EECC, the BEREC Regulation and the mandatory tasks flowing from these legislative instruments provide the basis for the BEREC Work Programme 2021. In parallel, BEREC has adopted the BEREC Strategy¹ 2021-2025, which is fundamental for steering the BEREC's work in 2021 and the following years. The Work Programme 2021 seeks to address current regulatory challenges, while preparing BEREC for the new challenges that lie ahead resulting from political, economic and technological developments.

This Work Programme 2021 contains items that were launched in 2020 that are to be finalised in 2021, some ad hoc or recurring items, and new workstream proposals that have been identified and prioritised by BEREC members and stakeholders.

According to the BEREC Regulation, when developing its annual work programme, the Board of Regulators of BEREC must seek the views and proposals of the EU institutions and other interested parties. This includes the national regulatory authorities (NRAs) participating in BEREC and BEREC's own Expert Working Groups, and third parties and stakeholders (Article 21(1) of Regulation (EU) 2018/1971). BEREC organises therefore, on a yearly basis, a stakeholders forum (the 'Stakeholder Forum') to enhance transparency and collect the views of interested parties on BEREC's current and future work, in particular, for preparing the work programmes.

An Outline of the Work Programme 2021 was adopted and published by the Board of Regulators on 31 January 2020. On 10 March, BEREC launched an early call for input as the first stage of the consultation process for this Working Programme. In line with the practice of previous years, and in accordance with Article 21 of the BEREC Regulation, the BEREC Work Programme 2021 was subject to a public consultation, which ran for a four-week period from 6 October until 5 November 2020.

In total 14 responses were received and the draft Working Programme has been adapted accordingly, based on the suggestions and reactions from our stakeholders. An overview of all the stakeholder reactions, including the BEREC response, is available in the summary report which is published on the BEREC website.

The Working Programme has been adopted during the 4th BEREC Board of Regulators meeting of 2020 (10-11 December). The Board of Regulators must transmit the annual work

¹ See https://berec.europa.eu/eng/document/register/subject_matter/berec/annual_work_programmes/9281-berec-strategy-2021-2025

programme to the European Parliament, the Council and the Commission as soon as it is adopted.

III. BEREC WORK IN 2021

The objectives of this Work Programme are aligned with the BEREC Strategy 2021-2025, the three high-level priorities (promoting full connectivity, supporting sustainable and open digital markets, empowering end-users), and the priorities set for institutional and international cooperation. The BEREC Strategy 2021-2025 is based on market developments and relates to the strategic objectives of the EECC. In addition to these three priorities, the facilitation of a successful implementation and consistent application in all areas of the EECC, including spectrum, universal service and consumer protection, are important horizontal principles that form an essential part of the high-level priorities.

In the next sections, there is a detailed description of the main projects to be carried out by BEREC in 2021.

1. Strategic priority 1: Promoting full connectivity

Promoting full connectivity will remain a strategic priority in the coming five years for BEREC, in line with the renewed focus on promoting very high capacity networks within the European regulatory framework. This means prioritising work that improves the general conditions for the expansion and take-up of secure, competitive and reliable high-capacity networks (both fixed and wireless) across Europe while ensuring a smooth transition from legacy infrastructures.

1.1. Report on a consistent approach to migration and copper switch-off

The requirements concerning the capabilities of electronic communications networks are constantly increasing and the response towards that demand is to bring optical fibre closer and closer to the user. Therefore, the importance of the copper-based access network decreases and NRAs are increasingly confronted with the situation wherein the SMP operator wants to decommission its legacy copper-based access network and to close MDFs.

The EECC and the European Commission's Recommendation on Next Generation Access of 2010² ³ already foresee rules for the migration from legacy infrastructure and the decommissioning of the copper-based access networks. According to Art. 81 of the EECC, SMP operators must notify the NRA in advance and in a timely manner when they plan to decommission parts of the network. The NRA has to ensure that the decommissioning process includes a transparent timetable and conditions, including an appropriate notice period for transition and the NRA also has to establish the availability of alternative products of at least comparable quality if necessary to safeguard competition and the rights of end-users.

BEREC's Common Positions on best practices in remedies on Markets 3a, 3b and 4 published in 2012 include best practices with regard the competition objective "Assurance of efficient migration processes from legacy to NGN/NGA network⁴." BEREC already held an internal workshop on "migration from legacy infrastructures to fibre-based networks" in 2019⁵ to enable

² See <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32010H0572>

³ Will be reviewed in 2021, see work item 5.1.4.

⁴ See BoR (12) 126, BoR (12) 127, BoR (12) 128.

⁵ See summary Report BoR (19) 236 on the migration from legacy infrastructures to fibre-based networks and interact with stakeholders ([link](#)).

NRAs to share their experiences with the migration. Aspects such as timetable, notice period, alternative wholesale access products, procedure used for establishing the migration process etc. were discussed. The workshop illustrated that in a few countries a high share of MDFs have already been closed and in some countries, although the share of closed MDFs is still relatively low, the SMP operator plans to close most or all MDFs in the coming years.

Building further upon the experiences shared in this BEREC internal workshop, BEREC will issue a Report aiming to develop a consistent approach to migration and copper switch-off. Based on detailed data collected from the respective NRAs which will include also the stakeholders' view on migration and their involvement at national level, the aim of the Report is to identify a consistent approach to migration and copper switch-off.

Deliverable: BEREC Report on a consistent approach to migration and copper switch-off

Public consultation: Yes

Adoption of draft Report for public consultation at Plenary 4 2021

Adoption of final Report at Plenary 2 2022 for publication

1.2. Report on regulatory treatment for backhaul

Backhaul infrastructure is key for enabling 5G and facilitating the deployment of very high-speed networks in non-densely populated areas. Moreover, the new Recommendation on relevant markets⁶ addresses the issue of how to take account of backhaul in the process of relevant markets.

BEREC plans to 1) review how backhaul is addressed in market analysis by NRAs, preparing a snapshot on how backhaul is regulated (if so) in each country and 2) provide guidance on how to apply in the market analysis process any relevant provision regarding backhaul in the EECC and related recommendations. Given the current review of the Recommendation on relevant markets by the European Commission the provisions on backhaul will be especially analysed. BEREC will also assess the need of preparing a common position on the regulatory treatment of backhaul.

BEREC has already addressed backhaul issues in some recent Reports. The BEREC Report on the convergence of fixed and mobile networks⁷, published in October 2017, analysed operators' needs in terms of backhaul services in the context of fixed-mobile convergence and provided a comprehensive view on the way that regulation for backhaul for mobile services is addressed. The key findings of the Report were based on a questionnaire aimed at collecting information from operators in each country.

As a starting point to prepare the Report on regulatory treatment for backhaul, BEREC will prepare and again distribute a questionnaire to the NRAs and will organize a workshop with the main stakeholders' associations to collect their views on different aspects related to

⁶ Reference to the new Recommendation (TBD)

⁷ See https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/7311-berec-report-on-the-convergence-of-fixed-and-mobile-networks

backhaul regulation. Based on the information to be provided by NRAs and stakeholders' associations, a draft Report will be published in Q3 2021. This draft Report will be subject to public consultation, giving the opportunity for all actors to provide their feedback. The final Report will be published early in 2022.

Deliverable: BEREC Report on regulatory treatment for backhaul

Public consultation: Yes

Adoption of draft Report for public consultation at Plenary 3 2021

Adoption of final Report at Plenary 1 2022 for publication

Other deliverable: External Workshop, to be held in Q2 2021

1.3. Work on the impact of 5G on regulation (carry-over)

Over the past years, BEREC has identified many aspects of regulation that are involved in the 5G ecosystem. In 2018, BEREC commissioned a study on the implications of 5G deployments on future business models⁸ and published a Report on infrastructure sharing⁹. In 2019, BEREC developed a "BEREC Report on the impact of 5G on regulation and the role of regulation in enabling the 5G ecosystem"¹⁰.

The way in which regulatory challenges are addressed could be critical to the pace at which innovative services are brought to market – especially in a 5G vertical environment expected to create an ecosystem for technical and business innovations¹¹.

Given the strategic importance of 5G for the European market, BEREC is planning further work that should help the NRAs to anticipate the regulatory issues involved, support the pace of innovation to be optimised, and ensure that proper steps are taken on time, by taking into account developments in the market.

As 5G services will be introduced gradually, not all the aspects that BEREC previously identified will need attention at the same time. That is why, in 2020, BEREC drew up a radar to plot the 5G developments according to the anticipated time horizon. This will help the NRAs to prioritise the regulatory aspects that might need attention.

BEREC could do more exploratory work by organising a workshop with stakeholders. In this way, based on the workshop outcomes, it could provide either a high-level overview or details regarding specific verticals. An outcome could include a monitoring mechanism to keep up with developments in the market. This workshop was originally foreseen for Q1 2020 but was

⁸ See https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/8008-study-on-implications-of-5g-deployment-on-future-business-models

⁹ See https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/8164-berec-report-on-infrastructure-sharing

¹⁰ See https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/8910-report-on-the-impact-of-5g-on-regulation-and-the-role-of-regulation-in-enabling-the-5g-ecosystem

¹¹ Source: <https://5g-ppp.eu/verticals>

cancelled due to COVID-19. In any case, we still deem it relevant to organise this stakeholder workshop in 2021 on the impact of 5G on regulation.

BEREC aims to adopt a transversal approach to the regulatory aspects of 5G throughout its work on yet-to-be-established issues, such as fixed/mobile convergence, wholesale access to networks, (permanent) roaming, network sharing, the realisation of network slicing, and other market-related developments. The aim of this exercise is to implement the above-mentioned radar and to promote full connectivity in Europe by anticipating regulatory changes that may be required to keep pace with innovation.

Deliverable: External Workshop on the impact of 5G regulation (carry over)

Adoption of Summary Report at Plenary 3 2020, for publication

Other deliverable: External Workshop, to be held in Q1/Q2 2021

Other deliverable: Internal Co-Chair Workshop, to be held in Q2 2021

Deliverable: Report on the way forward regarding regulatory key issues identified in the first path finder Report in the impact of 5G on regulation and the role of regulation in enabling the 5G ecosystem.

Public consultation: Yes (2020)

Adoption of final Report at Plenary 2 2021, for publication

1.4. Workshop on NRA experiences with 5G

The European 5G Observatory¹², established by the European Commission, has been reporting on a quarterly basis on the progress in Europe and globally in the preparation of 5G network deployment. This includes the regulatory conditions, spectrum allocation and assignments, early investments, 5G trials and pilots, commercial product developments and availability, as well as initial commercial launches on 5G spectrum bands¹³.

In the past two years, BEREC has undertaken various activities directly and indirectly related to 5G service reporting. This includes the launch of a Feasibility study on the development of coverage information for 5G deployments, the publication of BEREC Guidelines detailing Quality of Service Parameters, as well as relevant consideration of mobile service mapping, in addition to fixed infrastructure mapping, in relation to the Draft BEREC Guidelines on Geographical surveys of network deployment¹⁴.

Now that more countries in Europe have auctioned 5G spectrum bands, followed by the launch and roll-out of 5G services, BEREC's reporting is increasingly focused on the actual availability

¹² See <https://5gobservatory.eu/>

¹³ See <https://5gobservatory.eu/observatory-overview/observatory-reports/>

¹⁴ See https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/8848-berec-feasibility-study-on-development-of-coverage-information-for-5g-deployments, https://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/guidelines/8847-berec-guidelines-detailing-quality-of-service-parameter and https://berec.europa.eu/eng/news_consultations/Closed_Public_Consultations/2019/6296-public-consultation-on-the-draft-berec-guidelines-on-geographical-surveys-of-network-deployments

of 5G services and network infrastructure deployment by operators. To ensure an adequate rollout of 5G networks across the EU and to better inform end-users (citizens - including persons with disabilities and older users - and businesses), the NRAs will continue exchanging practices to build the right set of coverage indicators.

BEREC considers that it is the time to start internal discussions, also in cooperation with the RSPG, on practices that would allow the NRAs and other competent authorities to monitor the roll-out of 5G networks and eventually to inform end-users about the availability of 5G networks and services. To that end, BEREC plans to host a workshop so that the NRAs and other competent authorities can share experiences on the subject of 5G monitoring, so as to draw up common indicators and metrics for 5G monitoring.

This workshop would benefit from the collaboration of the RSPG. BEREC considers that this project is aligned with the strategic priorities 2021-25 on promoting full connectivity.

Deliverable: Workshop on experiences regarding 5G rollout and information to end-users.

Adoption of summary Report at Plenary 4 2021 for publication

Other deliverable: Workshop, to be held in Q3 2021

1.5. Workshop on EMF: How best can BEREC promote science-based EMF exposure limits recommended by experts?

In many Member States, members of the public are unaware of their exposure to electromagnetic frequencies (EMF) and that there are guidelines in place to limit their exposure to EMF. Yet, certain sections of society remain fearful of 5G rollout because they fear negative health effects due to exposure to EMF.

Scientists around the world, including the World Health Organisation (WHO), have addressed many claims about the harmful effects of exposure to EMF. However, much of this has only added to the misinformation. During the Covid-19 pandemic, for example, false claims linking the roll-out of 5G to the coronavirus outbreak were shared on social media. This resulted in Twitter, Youtube, Facebook and other companies taking steps to eliminate groups promoting such conspiracy theories on their platforms.

In its bid to fight misinformation about EMF at pan-European level, the European Commission has been working on measures to harmonise and improve communications with EU citizens¹⁵. BEREC promoted these messages among its constituent NRAs, but additional communication could enhance the reach and impact of this important information. For example, during 2020, BEREC and the RSPG issued a joint statement addressing concerns about the potential that misinformation on 5G and EMF may delay the rollout of 5G networks.

In this context, BEREC is considering measures to improve the ability of citizens to distinguish between scientific and non-scientific claims on EMF and 5G. Accessible public information, and/or a central repository of frequently asked questions might help the NRAs address

¹⁵ <https://ec.europa.eu/digital-single-market/en/electromagnetic-fields-and-5g>

information gaps on 5G and EMF among the public. BEREC regards it as very important to engage with civil society organisations and enter a dialogue, with the aim to understand the underlying fears and provide valuable information to the citizens through our communications channels. BEREC intends to have a conversation about how best to promote science-based EMF exposure limits so that NRAs may refer to this material in their relevant collateral/fact sheets/web pages on this topic. The workshop could also contribute to identifying new challenges which could arise from 5G-only technical specificities.

The task of coordinating useful and relevant information on EMF for this purpose is large scale. It could be very complex given that the NRAs are not health experts. Therefore, in 2021, BEREC intends to have a workshop with other invited expert bodies, from the health sector and radiation authorities, to consider possible approaches for the future with regard to public information. The proposed deliverable in 2021 would be a Report on the workshop, which could outline next steps and expected benefits of further work in this area¹⁶.

BEREC considers this project aligns with its strategic priorities 2021-25 on promoting full connectivity.

Deliverable: Workshop on EMF

Adoption of summary Report at Plenary 4 2021 for publication

Other Deliverable: Workshop with other expert bodies, to be held in Q3 2021

1.6. Report to enable comparable national broadband coverage indicators throughout Europe

In 2020, BEREC approved the BEREC Guidelines on Geographical Surveys of network deployments¹⁷, which detailed the information that the NRAs and/or OCAs would need to provide to achieve consistent implementation of Article 22 of the EECC, and in particular the provision on current broadband mapping information. The Guidelines provide definitions of all the indicators and related concepts and include important classifications, for example on the kinds of technologies and speed tiers to consider. Moreover, the Guidelines establish that the information would have to be granular: address level for fixed broadband and small grid level for mobile broadband. Finally, the Guidelines provide some guidance on the aggregation of information, for example on how to qualify a particular grid as covered by a broadband network.

The level of information on broadband coverage enriches the knowledge of the availability of electronic communication networks capable of delivering broadband in Europe. This information is showcased in the annual European Commission's Digital Economy and Society

¹⁶ For example, what might be the expected benefits of creating a searchable database of EMF measurements from an enforcement and monitoring perspective, in order to add to the transparency of the scientific approach to exposure limits and EMF measurements.

¹⁷ See

https://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/guidelines/9027-berec-guidelines-to-assist-nras-on-the-consistent-application-of-geographical-surveys-of-network-deployments

Index (DESI) Reports¹⁸, providing figures on national coverage and broadband indicators, as retrieved from national institutions.

However, in order to benchmark these broadband indicators and provide comparisons of the national information in an accessible, comprehensive and accurate way, all indicators should be provided in a harmonised manner. The BEREC Guidelines on Geographical Surveys of network deployments (phase one) do not provide detailed indications on how to aggregate grid/address information so that national figures are comparable, and thus this Report aims to fill an existing gap by looking at possible alternatives to delivering national aggregations and revising existing DESI definitions.

In 2021, BEREC will deliver the Report issuing recommendations to enable comparable national broadband coverage indicators throughout Europe. BEREC considers that OCAs should be part of the discussion and thus, a workshop is foreseen to be held in Q3 2021. BEREC acknowledges that operators may have expertise relevant to the report, and understands that this task is relevant to them, so will organise a separate workshop for operators.

Deliverable: BEREC Report to enable comparable national broadband coverage indicators throughout Europe

Public consultation: No

Adoption of final Report at Plenary 4 2021 for publication

Other deliverable: Internal Workshop with other competent authorities, to be held in Q3 2021

Other deliverable: Operators to be invited for a national coverage indicators workshop in Q3 2021

¹⁸ See <https://ec.europa.eu/digital-single-market/en/desi>

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

BEREC will prioritise work relating to the functioning of digital markets, namely focusing on exploring conditions and addressing issues regarding digital service providers and end-users in the digital market.

BEREC recognises that the digital economy brings both new opportunities and challenges, e.g. the use of big data and algorithms has great potential but it could increase the risk of some companies becoming dominant in a particular market. Tackling potential monopolies, market dominance and bottlenecks in the digital era have been highlighted as core priorities of the European Commission.

The open internet is considered an important building block in the current EU telecom rules. With specific obligations on telecom operators, it guarantees an open internet for the benefit of end-users. This enables innovation without permission by internet users and access to the content and services of their choice. With the current roll-out of 5G services, BEREC will have an important role in contributing to the continued, predictable and consistent application of open internet regulation.

2.1. Report on digital platforms - Market & Economic analysis (carry-over)

This Report will be a continuation of the assessment already carried out by BEREC on digital markets, initially planned for 2020. However, the delivery of the Report on digital platforms had to be re-scheduled due to the public consultation on the Digital Services Act launched by the European Commission in the summer of 2020. Against this background, BEREC had to reassign its resources to formally respond to that consultation process, resulting in the publication of the 'BEREC Response to the Public Consultation on the Digital Services Act (DSA) package and the New Competition Tool¹⁹', in which BEREC highlights how to address regulatory challenges for digital platforms and describes the potential interplay with the New Competition Tool.

After publishing the BEREC response to the DSA public consultation, BEREC resumed work on the initially planned Report (focusing on a very closely-related topic), and adapted its scope to address in more detail relevant issues already addressed in the BEREC Response. These included a more detailed definition of the concept of intermediation power, areas of business, listing of prohibitions/obligations and tailored remedies.

BEREC will continue to build its knowledge and expertise in the digital economy, in close cooperation with other EU bodies and groups, as well as other institutions, and experts to

¹⁹ See https://berec.europa.eu/eng/document_register/subject_matter/berec/press_releases/9414-press-release-berec-recommends-an-ex-ante-regulatory-framework-for-digital-platforms-with-significant-intermediation-power

ensure that technological, economic, legal, and user protection perspectives are integrated in the design and practice of regulation.

In furtherance of this, BEREC will keep interacting with the European Commission and make available to the institutions and co-legislators its expertise and views on the possible design and implementation of the Digital Services Act package²⁰. The present workstream includes any workshop, interaction with the European institutions and stakeholders, to share BEREC views on these topics and gather input from different actors, and provide relevant ad-hoc input from BEREC on the Digital Services Act package.

The economic analysis of digital markets has already been the subject of some recent BEREC Reports, such as the 'BEREC Report on the impact of premium content on ECS markets and the effect of devices on the open use of the internet'²¹ where BEREC addressed issues concerning, among others, app stores, and the 'BEREC Report on the Data Economy'²².

The work to be done in 2021 will depend on the priorities of the European legislators involved in the development of the regulatory framework related to the DSA/DMA. BEREC remains available to become involved in the drafting of the regulation of digital gatekeepers and/or digital platforms with Significant Intermediation Power (SIP).

Workshops with the institutions (European Commission, European Parliament, OECD, etc.), stakeholders and academia are envisaged and a more detailed plan will be published at the latest by the beginning of 2021.

Deliverable: Report on digital platforms - Market & Economic analysis (carry-over)

Public consultation: Yes

Adoption of draft Report for public consultation at Plenary 1 2021

Adoption of final Report at Plenary 3 2021 for publication

Other deliverable: Heads BEREC Workshop - Plenary1 2021

2.2. Report on the harmonised collection of data regarding OTT services relevant to electronic communication markets (carry-over)

Article 2 of the EECC provides a broad definition of interpersonal communications services (hereinafter 'ICS') and gives the NRAs the legal power to collect data from providers of number independent interpersonal communications services (hereinafter 'NI-ICS'). Article 20 EECC provides the legal basis for requesting data from services which are not electronic

²⁰ The "Digital Services Act package" comprises both the Digital Service Act (DSA) as well as the Digital Market Act (DMA). The DMA consists of two parts: gatekeeper rules and a market investigation tool. These are the current working titles within the Commission, which has stopped referring to the "New Competition Tool" (NCT).

²¹ See https://berec.europa.eu/eng/document/register/subject_matter/berec/reports/8013-berec-report-on-the-impact-of-premium-content-on-ecs-markets-and-the-effect-of-devices-on-the-open-use-of-the-internet

²² See https://berec.europa.eu/eng/document/register/subject_matter/berec/reports/8599-berec-report-on-the-data-economy

communication services or networks, insofar as these requests are substantiated and proportionate.

These new data collection powers apply to all National Regulatory Authorities (NRAs) and Other Competent Authorities (OCAs), thus increasing the need for the harmonisation of indicator definitions and metrics. Harmonisation would facilitate data collection in relation to OTT services, relevant to electronic communication markets, by NRAs and make it easier for companies to provide data, thus allowing for a consistent aggregation of data, as well as enabling international comparisons.

In view of all the above, in 2021 BEREC will issue a Report which will identify services that NRAs want to collect data on, specify the particular metrics of interest, and provide definitions therefor.

This workstream is the result of a number of tasks performed by BEREC in 2019 and 2020 and will lead to the presentation of a final list of harmonised indicators, definitions and metrics to be collected by relevant authorities in relation to OTT services. With this (internal) Report, BEREC is not aiming at covering all the data needs of NRAs, as those may vary amongst NRAs and with time, but only at providing a minimal set of indicators for which harmonisation is sought.

This workstream will contribute to expanding the knowledge base of BEREC and the NRAs on the digital economy. The Report on OTT indicators responds to this objective by providing for harmonized definitions of indicators related to NI-ICS services and video-streaming services. These indicators have been identified by the NRAs as important for carrying out their mandates. By providing definitions and harmonised metrics, BEREC seeks to make it easier for companies to provide data and allow for consistent aggregation of the data, and to enable international comparisons.

Deliverable: Report on the harmonised collection of data regarding OTT services, relevant to electronic communication markets (carry-over)

Public consultation: Yes

Adoption of draft Report for public consultation at Plenary 1 2021

Adoption of final Report at Plenary 3 2021 for publication

2.3. Open internet

2.3.1 Report on the Internet Value Chain

BEREC has focused its work always on the part of the internet value chain directly related to electronic communication networks, internet access services and end-user equipment. These regulated components are essential for end-users to use the applications provided via the internet.

However, ECSs and telecommunication networks are just a part of a vast and complex ecosystem that allows end-users and the whole society to benefit from the extraordinary potential of a large variety of services provided via the internet.

As with other ecosystems, all the elements in the internet value chain are interrelated and affect each other. Therefore, internet experience for users is affected by many other elements, such as terminals, operating systems, applications, app stores, or content that condition in many ways user experience when accessing the internet.

The aim of this Report is to focus on obtaining a comprehensive view of the complete internet value chain beyond the network layers and electronic communication services supporting internet access. BEREC will take a general, holistic approach in this exercise.

More specifically, BEREC will identify the key players on different levels, perform an initial analysis of the roles played by these players and examine the effects of their practices on competition, innovation, investments, and users' choice and experience. As a result, BEREC will also identify potential bottlenecks and parts of the value chain affecting each other economically and technically.

BEREC has already done relevant work in different parts of the Internet Value Chain. Regarding the network layer, the Open Internet working group (OI WG) has worked on implementing the open internet regulation in a coherent manner. In support of this the Open Internet Guidelines were updated. Over the years, the OI WG has also examined traffic management practices and Quality of Service (QoS), including how QoS should be measured and how to analyse the results. This includes how the end-user equipment might affect the internet access service in practice, building further upon previous exchanges (two workshops in Q 3/4 2020 on IPv6 and traffic identification (both relevant for the internet ecosystem)). In 2017, BEREC published a report on IP interconnection practices²³.

On other levels of the value chain, BEREC prepared the 'BEREC Report on the impact of premium content on ECS markets and the effect of devices on the open use of the Internet'²⁴ addressing issues concerning, among others, app stores.

BEREC has recently addressed other parts of the Internet Value Chain, other than networks and electronic communication services, in its response to the public consultation on the Digital Services Act package ('BEREC Response to the Public Consultation on the Digital Services Act package and the New Competition Tool'). In this response, BEREC examined potential regulatory approaches for digital platforms, that are key elements of the value chain.

The work to be done will be supported by these earlier Reports and will feed into further BEREC work on digital environments, including the implementation of the Digital Services Act package.

Considering the complexity of the internet value chain and the variety of actors involved in providing internet services, BEREC plans to interact with various stakeholders, gather input via questionnaires, organise workshops and open a public consultation.

²³ See https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/7299-berec-report-on-ip-interconnection-practices-in-the-context-of-net-neutrality

²⁴ See https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/8013-berec-report-on-the-impact-of-premium-content-on-ecs-markets-and-the-effect-of-devices-on-the-open-use-of-the-internet

The work will be carried out between 2021 and 2022. In 2021, BEREC will organise workshops with relevant stakeholders (including those operating in other parts of the value chain above the ECSs), other institutions (as the European Commission, European Parliament, ERGA, ECN, or the OECD), think-tanks (e.g. CERRE) and academia.

As part of the preparatory work, BEREC will organise a Heads Workshop at the end of 2021 where key actors will be invited to participate. Based on this preparatory work, as well as questionnaires to be sent to different relevant actors in the Internet value chain, BEREC will open a draft version of the Report to public consultation in Q1 2022, with the aim of publishing the final Report in Q3 2022.

Deliverable: Report on the Internet Value Chain

Public consultation: Yes

Adoption of draft Report for public consultation at Plenary 1 2022

Adoption of final Report at Plenary 3 2022 for publication

Other deliverable:

- External Workshops with institutions, stakeholders and academics, to be held in Q1/Q2 2021
- Heads workshop on Internet Value Chain, to be held in Q4 2021

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

In 2020, BEREC reviewed the Open Internet guidelines in accordance with its mandate under the Open Internet Regulation 2015/2120. This regulation also prescribes that NRAs shall ‘closely monitor and ensure compliance’ with the Regulation, and that NRAs shall ‘publish reports on an annual basis regarding their monitoring and findings’.

Since 2017, BEREC has annually²⁵ published a Report on the implementation of the OI Regulation, based on the NRAs’ annual reports. Part of this work stream includes a discussion of cases and questions in the OI WG to ensure a predictable and consistent application of the Open Internet Regulation.

In the 2021 workstream, BEREC will monitor the implementation of the open internet provisions among NRAs for the period 1 May 2020 – 30 April 2021. BEREC will collect the annual national Open Internet reports and the answers to an internal questionnaire to prepare the annual European-level Open Internet report.

To support the NRAs’ obligation to ‘closely monitor and ensure compliance’ with the Regulation, a forum will be held to (informally) discuss national cases and questions relating to the consistent application of the OI Regulation. The forum will provide an opportunity to look

²⁵ See

https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/8840-report-on-the-implementation-of-regulation-eu-20152120-and-berec-net-neutrality-guidelines

at cases of zero-rating, and lessons learned from the Covid-19 crisis in relation to the use of exceptions a) and c) of Article 3(3) of the OI Regulation.

When appropriate, the workstream may be extended to questionnaires, surveys, workshops, etc. to collect information on topics of particular relevance to the Open Internet and to monitor emerging trends as the market continues to develop. This workstream should build on the experiences from earlier years. A public workshop could be organized, in case of significant developments that make a stakeholder dialogue relevant e.g. a judgment of the European Court of Justice.

<p>Deliverable: BEREC Report on the implementation of the Open Internet Regulation</p> <p>Public consultation: No</p> <p>Adoption of final Report at Plenary 3 2021 for publication</p>
--

2.4. Collaboration on the Net Neutrality Measurement tools and evolution of the regulatory assessment methodology

In 2017, BEREC published the BEREC Net Neutrality Regulatory Assessment Methodology²⁶ (BoR (17) 178), and the Net Neutrality measurement tool specification (BoR (17) 179) which lay the groundwork for BEREC to work towards a harmonised measurement framework. This goal remains and work has continued.

This work item is linked to strategic priorities 2 (Supporting sustainable and open digital markets) and 3 (Empowering end-users), as reliable internet access quality measurement systems serve both purposes.

With this workstream BEREC intends to:

- 1) Continue the ongoing work with NRAs related to their national measurement tool deployments to:
 - a. Provide a forum for NRAs to share information and exchange experiences and best practices related to national tool deployment. This workstream will also consider best practices on collaboration to maximise the benefits of existing NRA cooperation on measuring tool development and deployment.
 - b. Support the migration by interested NRAs towards a harmonised measurement tool by working together to improve the measurements and by sharing code or components between NRAs.
- 2) Work towards a common, harmonised measurement framework potentially including an update to the 2017 BEREC Net Neutrality Regulatory Assessment Methodology (BoR (17) 178) and based on learnings from national and European measurement tool development and benchmarking. This work is expected to include a revision of the internet access service QoS measurement methodology, by considering topics such

²⁶ See

https://bereg.europa.eu/eng/document_register/subject_matter/bereg/regulatory_best_practices/methodologies/7295-bereg-net-neutrality-regulatory-assessment-methodology

as how to calibrate the tool; how to measure higher bit rates on 5G and fibre networks more accurately, etc.

- a. In line with the 2018 BEREC Opinion on the Net Neutrality Guidelines, and with the revised 2020 BEREC Open Internet Guidelines, the workstream will seek to further develop the measurement methodology regarding measurement of the general quality of internet access services.
- b. The Net Neutrality Regulatory Assessment Methodology update may also include a review of best practices for the certified monitoring mechanism, as defined in the Open Internet Regulation, and how to best utilise the measurement tools in terms of the NRAs' supervisory roles.

Deliverable: Update to the BEREC Net Neutrality Regulatory Assessment Methodology

Public consultation: Yes

Adoption of draft Report for public consultation at Plenary 4 2021

Adoption of final Report at Plenary 2 2022 for publication

Other deliverable if applicable:

3. Strategic priority 3: Empowering end-users

Engaging end-users in the fast-evolving digital ecosystem is becoming more complex. While digital innovation and competition among digital service providers has improved users' empowerment, there is still an important role for regulators to play in ensuring consumer transparency and digital skills.

The promotion of full connectivity will trigger the demand for high-quality services on the part of consumers, provided by very high capacity networks whose development is a key priority in creating positive interactions.

BEREC will continue its work in promoting choice and empowerment for end-users, to enable and result in better-informed choices by consumers.

3.1. BEREC study on consumer behaviour and attitudes towards digital platforms (carry-over)

BEREC recognised the need to get a better understanding of digital platforms and consumers' views on digital platforms, and of the platforms' role as providers and distributors of digital services.

The objective of this envisaged study is to provide BEREC and NRAs with an evidence-based understanding of the interaction between consumers and digital platforms. The study should provide empirical insights on consumer perception, behaviour and attitudes towards digital platforms in their role as enablers of digital services, with an emphasis on interpersonal communication services and services providing interactive exchange of information. The findings of the study will feed into BEREC's other work on digital platforms and other related areas, and will contribute to the wider discourse and policy debate on, for example, market failures in connection to digital platforms, or the evaluation provided for in Article 123 of the EECC.

The study is divided into three parts, each with different deliverables. The three parts consist in designing the data collection (Part 1 – Q3 2020), conducting the data collection (Part 2), and in the compilation and analysis of the results (Part 3).

The BEREC office launched a tender on 24 February 2020, inviting third parties to carry out a 'Study on Consumer Behaviour Towards Digital Platforms as a Means for Communication'. The aim of the study is to describe and examine European consumer perceptions, behaviour and attitudes towards digital platforms as enablers of digital services. A contract was awarded in June 2020 to commence the study.

Deliverable: BEREC study on consumer behaviour and attitudes towards Digital Platforms

Public consultation: No

Adoption of final Report at Plenary 2 2021 for publication

3.2. Report on how to handle third-party payment charges on mobile phone bills (carry-over)

The purpose of this project is to collect useful information – by means of ad hoc questionnaires and earlier reports from BEREC and the European Commission, and other relevant sources – to understand:

- what charges on behalf of third-party providers are being collected through mobile phone bills, considering both pre-paid and post-paid contracts, and related issues;
- provisions that exist in advance of introducing the EECC and after implementation of the regulatory framework.

The Report will assess the status quo through a benchmarking of current practices in third-party billing and will show how the provisions of the EECC are being implemented in the Member States.

In many European countries, mobile operators allow charges on behalf of third-party providers to be included in their customers' mobile phone bills. According to Article 115 of the EECC, competent authorities are able to require all providers of internet access services, or publicly available number-based interpersonal communications services, to make available free of charge all or part of the additional facilities listed in Part B of Annex VI, subject to technical feasibility, and all or part of the additional facilities listed in Part A of Annex VI.

Among these additional facilities, Annex VI of the EECC has a specific provision set out in Part A (h) 'facility to deactivate third party billing' – namely, the facility for end-users to deactivate the ability for third party service providers to use the bill of a provider of an internet access service, or a provider of a publicly available interpersonal communications service, to charge for their products or services.

In 2020, BEREC designed a questionnaire on this issue for circulation to all the Member States. BEREC will deliver a report based on the data received from replies to the questionnaire and it will be subject to public consultation.

Deliverable: Report on how to handle third-party payment charges on mobile phone bills (carry-over)

Public consultation: Yes

Adoption of draft Report for public consultation at Plenary 1 2021

Adoption of final Report at Plenary 3 2021 for publication

4. Cooperation with EU institutions and institutional groups

4.1. Institutional cooperation

BEREC wants to explore ways to have closer collaboration and dialogue with European institutions and European authorities and agencies. By joining forces on certain topics synergies could be created with other European regulatory cooperation platforms and bodies operating both in adjacent and different economic sectors. BEREC has already established links with a number of European institutions and European authorities and agencies, such as the European Data Protection Board (EDPB), the European Regulators Group for Audio-visual Media Services (ERGA), the European Union Agency for Cybersecurity (ENISA), and the European Regulators Group for Postal Services (ERGP). It would be beneficial to have more exchange with other regulatory bodies and networks, such as the European Competition Network (ECN), Eurostat (definition of indicators for data collection), the ESA (European Space Agency), and the EEA (European Environment Agency).

The involvement of multiple institutions and authorities and agencies - early in the process - will be increasingly valuable and necessary, especially in the context of regulatory issues with a horizontal impact related to, for example, the internet value chain, the development of 5G, network security and adapting competition rules to a digital platform economy. In addition, while monitoring the sector, it is crucial to keep an eye on the big picture, which implies expanding our knowledge to other terrains.

As legislative negotiations on platform regulation and the and Digital Services Act package will commence in 2021, BEREC stands ready to engage with the co-legislators and share its technical expertise in ex ante regulation. Furthermore, BEREC will investigate ways of exchanging views about practical issues of platform regulation with other regulatory bodies and networks that have complementary expertise.

In addition to that, BEREC will continue to work together with the Radio Spectrum Policy Group (RSPG), based on the established working arrangement in 2019, with the intention of strengthening collaboration between the two bodies in general and in particular on the implementation of Article 35 of the EECR (the peer review forum). BEREC will continue to play a supporting role regarding 5G and cybersecurity, as well as continuing its close cooperation with the NIS Cooperation Group and the European Union Agency for Cybersecurity (ENISA) by contributing to the implementation of the toolbox.

In an internal workshop, BEREC will examine ways of promoting close collaboration and dialogue with other relevant European institutions and European authorities and agencies with the aim of making a valuable contribution to the European digital market. Based on relevant issues addressed in the course of BEREC's work and related to the upcoming Work Programme for 2022, the Board of Regulators will identify the priorities to be pursued in BEREC's workstreams which would benefit from a more holistic approach with European institutions and European authorities and agencies, and then propose collaboration on a working level - to pursue a comprehensive assessment of the issues BEREC would like to address. This orientation debate would lead towards the adoption of a medium-term Strategy for relations with other institutions, authorities and agencies in which BEREC will provide an overview of BEREC's priorities regarding institutional cooperation, with a focus on

connectivity/5G and platform regulation. The Strategy will also strive for a futureproof, qualitative and overarching way of investigating upcoming issues and challenges.

Deliverable: BEREC's medium-term Strategy for relations with other institutions

Public consultation: No

Adoption of final Report at Plenary 3 2021 for publication

Other Deliverable:

Heads Workshop on promoting EU institutional cooperation to be held at Plenary 2 2021

Adoption of final workshop summary Report at Plenary 3 2021 for publication

4.2. International cooperation

The increasing volume of electronic communications between the EU and the rest of the world shows the global nature of such services and means that policies, legislation and regulation must take a more global perspective. BEREC benefits from cooperation with NRAs, international regulator networks, policymakers and institutions involved in communications matters also outside the EU.

In 2021, BEREC will continue to engage in a dialogue with NRAs based outside the EU, and with international regulatory networks, policymakers and institutions in the field of electronic communications. To that end, BEREC will develop a medium-term Strategy and a multi-annual Working Programme related to its international activities, in which it evaluates its current international commitments and defines what type of cooperation and engagement could be envisaged with each of its international partners, in a transparent manner. To optimise the use of BEREC's resources, alternative and more targeted means of cooperation could be explored, with the aim of achieving efficiency gains. A more structural approach towards BEREC's international cooperation would facilitate the implementation of existing and future agreements and working arrangements.

BEREC's international activities complement the policies of the European Union in terms of cooperation topics and the priority regions for cooperation.

The implementation and permanent evaluation of existing and future agreements and working arrangements is essential for realising BEREC's ambitions to enhance international cooperation in order to deal with issues across BEREC's regulatory borders.

Deliverable: BEREC's medium-term strategy for international cooperation

Public consultation: No

Adoption of final Report at Plenary 3 2021 for publication

5. BEREC obligatory work

5.1 BEREC ad hoc work

5.1.1. Ad hoc input to the EU/NRAs

In addition to input to the European Commission, as required under the EECC (i.e. the Opinion on the delegated act for the termination rates, and the Opinion on the review of the Commission's Recommendation on relevant markets) as well as Opinions on other draft recommendations in line with its duties according to the 2018 BEREC Regulation, BEREC provides ad hoc input, on request, to the EU institutions (the European Commission, European Parliament and Council of the European Union) and the national regulatory authorities (NRAs), particularly during the implementation of the EECC and other potential legislative initiatives.

5.1.2. BEREC Opinion on the Review of the Broadband Cost Reduction Directive

The Broadband Cost Reduction Directive (BCRD)²⁷ aims to facilitate and incentivise the roll-out of high-speed electronic communications networks by promoting the combined use of existing physical infrastructures and by enabling more efficient deployment of new physical infrastructures so that such networks can be rolled out at lower cost. The BCRD in particular contains rules with regard to access to existing physical infrastructures (Article 3), coordination of civil works (Article 5) and access to in-building physical infrastructure (Article 9) and defines tasks for a dispute settlement body (DSB) and a single information point (SIP).

In June 2020, the European Commission published a roadmap on the review of the BCRD. The review of the BCRD is one of the actions announced in the European Commission's Communication 'Shaping Europe's Digital Future'²⁸ according to which for digital infrastructure and networks alone, the EU has an investment gap of EUR 65 billion per year. Adequate investments at the EU, national and regional levels are necessary to achieve the EU 2025 connectivity objectives and a Gigabit Society²⁹ in Europe. The EECC will improve regulatory conditions to incentivise private investments for the deployment and take-up of very high capacity networks. Despite the mobilised national and EU funding resources, it is fundamental to further reduce the cost of network deployment, also for fibre and 5G networks. At the end of October 2019, the European Commission asked BEREC to provide an Opinion on the review of the BCRD to be delivered by the first Plenary 2021.

BEREC has been actively working on the BCRD implementation and has published respectively in 2017 and in 2019, the 'Report on the implementation of the BCRD'³⁰ and the 'Report on pricing for access to infrastructure and civil works according to the BCRD'³¹.

²⁷ Directive 2014/61/EU of the European Parliament and of the Council of 15 May 2014 on measures to reduce the cost of deploying high-speed electronic communications networks.

²⁸ See <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0067&from=EN>

²⁹ See <https://ec.europa.eu/transparency/regdoc/rep/1/2016/EN/1-2016-587-EN-F1-1.PDF>

³⁰ See https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/7534-berec-report-on-the-implementation-of-the-broadband-cost-reduction-directive

³¹ See https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/8466-pricing-for-access-to-infrastructure-and-civil-works-according-to-the-bcrd

In light of the planned review of the BCRD by the European Commission, BEREC will provide an Opinion. BEREC's Opinion will be based on previous work related to this topic, in particular on the two Reports mentioned above, as well as the experience of NRAs with the BCRD, in particular as a dispute settlement body and single information point at national level.

Deliverable: BEREC Opinion on the Review of the Broadband Cost Reduction Directive

Public consultation: No

Adoption of the BEREC Opinion at Plenary 1 2021 for publication

5.1.3. Input to the evaluation and potential review of the EU State Aid Guidelines

In June 2020, the European Commission launched an evaluation of the EU State Aid Guidelines³² aimed at examining how these Guidelines and the relevant provisions in the general block exemption Regulation (GBER³³) have functioned. The purpose of the evaluation is also to check to what extent the current rules respond to technological developments as well as socio-economic needs and are appropriate to meet the new EU strategic objectives in terms of connectivity and digital transformation from the perspective of telecommunications infrastructure as described in the Shaping Europe's Digital Future Communication³⁴. The evaluation aims thus to assess the effectiveness, efficiency, relevance, coherence and EU added value of the current EU State Aid Guidelines. The evaluation will provide a basis for a decision about whether a revision of the current EU State Aid Guidelines is necessary. As part of this evaluation, the European Commission launched a targeted public consultation on 8th September 2020 (until 5th January 2021)³⁵, aimed at examining the functioning of the State aid rules for the deployment of broadband infrastructure to verify to what extent they have stimulated the deployment of the telecommunications infrastructure and contributed to competitiveness in the sector.

BEREC will participate in the evaluation and potential review related with the process launched by the Commission in 2020, in particular with regard to the role of NRAs in the EU State Aid Guidelines, and provide input and its opinions as required.

BEREC's input will be based on its previous work, in particular the BEREC Report on the 'Analysis of individual NRAs' role around access conditions to State aid funded infrastructure'³⁶, published in 2017. In that report, BEREC examined how access conditions based on the EU State Aid Guidelines have been implemented in different Member States, focusing on the role of the NRAs.

³² See <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2013:025:0001:0026:EN:PDF>

³³ The Commission Regulation (EU) N°651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty, see <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02014R0651-20170710&from=EN>

³⁴ See <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0067&from=EN>

³⁵ See <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12398-Evaluation-of-State-Aid-rules-for-broadband-infrastructure-deployment/public-consultation>

³⁶ See https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/7531-berec-analysis-of-individual-nras8217-role-around-access-conditions-to-state-aid-funded-infrastructure

BEREC's focus will be on the topics requested by the European Commission, in particular of relevance for BEREC and the NRAs (e.g. access conditions). The deliverables will be adopted according to the process finally chosen and implemented by the European Commission.

Deliverable: BEREC Input to the European Commission regarding the evaluation and potential review of the EU State Aid Guidelines (as required)

Public consultation: No

Adoption of final deliverable: As required

5.1.4. BEREC Opinion on the review of the Access Recommendations

With the EECC being applied in the Member States by the end of 2020, the European Commission is currently reviewing several existing recommendations in the field of access regulation. They include the 2010 Next Generation Access Recommendation and the 2013 Non-discrimination and costing methodologies Recommendation, with a view to update their content in light of the legislative, regulatory, economic and technological changes that have occurred since these recommendations were made and to align them with the EECC. This initiative will complement other sources of guidance on the EECC that are currently under review as well as upcoming BEREC guidelines.

In July 2020, the European Commission started a consultation on the review of the Commission's Access Recommendations, namely the NGA Recommendation of 2010 and the Recommendation on non-discrimination obligations and costing methodologies of 2013. The review of the two 'Access Recommendations' includes updating them to the EECC provisions, and to the 2014 Recommendation on relevant markets (currently under review).

In 2020, BEREC gave a response to the targeted consultation of the European Commission on both the draft NGA Recommendation and the draft NDCM Recommendation. Furthermore, BEREC gave guidance on the Economic Replicability Test (ERT) and reporting on the application of the recommendations on the costing methodologies for access to legacy infrastructures with its yearly Regulatory Accounting in Practice Reports (see above).

For 2021, the European Commission has announced its intention to ask BEREC for an Opinion on a draft text of an access recommendation to be delivered in Plenary 4 2021.

Deliverable: BEREC Opinion on the Review of the Access recommendations

Public consultation: No

Adoption of final BEREC Opinion at Plenary 4 2021 for publication

5.1.5. Peer review process

BEREC and the RSPG agreed on working arrangements³⁷ on 13 June 2019 and set out the cooperation methods for the purpose of BEREC's participation in the Peer Review Forum, in

³⁷ https://bereg.europa.eu/eng/document/register/subject_matter/bereg/others/8602-working-arrangement-between-bereg-and-rspg

accordance with the requirements of Article 35 of the EEC. The cooperation methods are as follows:

- to use the Peer Review Forum as an instrument of peer learning;
- to promote the benefits of the Peer Review Forum, as it convenes national NRAs and other Competent Authorities with expertise on comparative or competitive selection procedures in the electronic communications' regulatory framework;
- to cooperate on the implementation of the Peer Review Forum;
- to appoint 'liaison officers' in both BEREC and the RSPG to strengthen the relationship between the two bodies and to facilitate the implementation of this arrangement. The Wireless Network Evolution Co-chairs are BEREC's 'liaison officers'.

BEREC's participation in the Peer Review Forum contributes to the objective of promoting full connectivity by enabling relevant exchanges with the RSPG on the market-shaping aspects of spectrum assignment. This activity is therefore aligned with the first Strategic Priority set out in BEREC's Strategy 2021-2025.

BEREC experts have participated in several Peer Review Forums, including the first virtual forum held about Ireland's proposed Multi Band Spectrum Award (June 2020).

The Peer Review Forum is convened by the RSPG only when required. Aside from the strategic level work of experts participating at the Forum, there is some ongoing programming work to be completed by the liaison officers, such as reviewing and updating the schedule for the year. In addition, the liaison officers will give input into what is required and expected of BEREC experts who are attending the Peer Review Forum, especially about the expectation that more meetings will have to be held virtually.

5.1.6. Ad hoc work relating to network security and cybersecurity

The European Commission reaffirmed that cybersecurity will remain a key pillar in its European policy framework. It underlines the need for operational cooperation between the Member States and the EU institutions and enhanced mechanisms for proactive information-sharing, for ensuring that law enforcement and judicial authorities can work effectively. The revision of the NIS Directive as part of the Cybersecurity Package announced by the Commission in December 2020 shows the importance of network security and cybersecurity.

BEREC has been involved in this work assisting the NIS Cooperation Group (NIS CG) and ENISA in their work towards producing report about the EU Toolbox for cybersecurity of 5G networks³⁸ implementation. This specific assignment has been mandated to BEREC in the Commission Recommendation on the Cybersecurity of 5G networks³⁹. BEREC's contribution is following also the new BEREC strategy, in which cybersecurity is being identified to be of importance for electronic communication networks. In relation the review of the NIS Directive, BEREC will be providing its expertise during the legislative process once the legislative proposals are published. BEREC stands ready to discuss with the EU institutions and European authorities and agencies.

³⁸ Cybersecurity of 5G networks: EU Toolbox of risk mitigating measures: <https://ec.europa.eu/digital-single-market/en/news/cybersecurity-5g-networks-eu-toolbox-risk-mitigating-measures>

³⁹ See <https://ec.europa.eu/digital-single-market/en/news/cybersecurity-5g-networks>

BEREC will continue to contribute to ensuring network security and security in cyberspace by:

- Sharing information and expertise on security issues related to electronic communication networks between NRAs, the NIS Cooperation Group and ENISA. This would encompass topics such as the national means for 5G Toolbox implementation, discussing best practices regarding the smooth implementation and evaluation of the 5G Toolbox, and discussing the provision on network security and integrity in the EECC.
- Supporting further work within the NIS Cooperation Group and the Commission, by assisting in the process of the 5G Toolbox implementation:
 - Elaborating further on the risk scenarios evolving from multivendor strategies
 - Assessing whether open standards can ensure the prompt implementation of interoperability and following the evolution of initiatives like OpenRAN
 - Providing ad-hoc measurable impact assessment of proposed initiatives
- Providing expertise and input on request such as to the EU institutions on the EECC (Articles 40 and 41), the 5G Toolbox, and the NIS Directive.
- Capacity building (e.g. themed webinars) in the field of electronic communications and network security.
- When appropriate, the workstream may be extended to questionnaires, surveys, workshops, etc. to collect information on topics of particular relevance to the Cyber security and to investigate developments in the market due to further actions taken by the relevant authorities/European bodies. A public workshop could be organized also in cooperation with other European institutions to promote and sustain a stakeholder dialogue and to retrieve feedback and/or input about.

- **Deliverable: BEREC Internal Report on economic/further aspects of the 5G Toolbox multi-vendor strategy implementation**
- Public consultation: No
- Adoption of final Report at Plenary 4 2021

5.1.7. Ad hoc work relating to the Recommendation on Connectivity

On 18 September, the Commission has adopted a Recommendation on Connectivity⁴⁰ calling on Member States to boost investment in very high-capacity broadband connectivity infrastructure, including 5G, which is the most fundamental block of the digital transformation and an essential pillar of the recovery. In this Recommendation the Commission invites

⁴⁰ See <https://ec.europa.eu/digital-single-market/en/news/commission-recommendation-common-union-toolbox-reducing-cost-deploying-very-high-capacity>

Member States to come together to develop, by 30 March 2021, a common approach, in the form of a toolbox of best practices, for the timely rollout of fixed and mobile very high-capacity networks, including 5G networks. Such measures should aim to:

- Reduce the cost and increase the speed of deployment of very high capacity networks, notably by removing unnecessary administrative hurdles;
- Provide timely access to 5G radio spectrum and encourage operators' investments in expanding network infrastructure;
- Establish more cross-border coordination for radio spectrum assignments, to support innovative 5G services, particularly in the industry and transport fields.

The Commission urges Member States to work together in order to develop the toolbox. BEREC and the NRAs should be involved where appropriate in the development of this toolbox, together with other competent authorities in charge, in particular in the areas covered in Sections 3 of this Recommendation, which calls for an enhanced coordination at Union level on reducing the cost and increasing the speed of deploying very high capacity networks. More specifically, Member States are requested to

- Streamline permit granting procedures;
- Improve transparency concerning physical infrastructure through the single information point;
- Expand the right of access to existing physical infrastructures;
- To improve the effectiveness and efficacy of the dispute resolution mechanism;
- To reduce the environmental footprint of networks;
- To exchange best practices on how to perform and take account of the results of environmental assessments in the context of projects entailing concrete installation or deployment of networks.

The Commission has set up a Special Group for developing the common Union toolbox on Connectivity based on the Recommendation that the Commission adopted on 18 September 2020. BEREC stands ready to provide advice and expertise to the Member States and the Commission in the process of the development of the toolbox, when appropriate. A joint workshop of the BEREC FNE WG and the sub-group "Cost Reduction" of the Connectivity Special Group of COCOM is foreseen in February 2021.

5.2. BEREC mandatory tasks in line with EU legislation

BEREC carries out a large number of mandatory tasks under EU legislation. These are described below:

5.2.1. Mandatory tasks stemming from the European Electronic Communications Code (EECC)

5.2.1.1 Review on End user rights – BEREC Opinion

According to Article 123 of the EECC, BEREC must publish an Opinion by 21 December 2021 on the market and technological developments and on their impact on the application of rights of end-users in the EECC (Title III of Part III). In 2021 and in preparation for this, BEREC will monitor the technological and market developments in the use of the different types of electronic communications services and analyse their impact on the application of the end-user rights.

In addition to the provisions included in Article 122 concerning the review procedures of EECC, with Article 123 the EECC introduces a specific review procedure on end-user rights, tasking BEREC with publishing an Opinion on the market and technological developments regarding the different types of electronic communications services. Taking utmost account of the BEREC Opinion, the European Commission shall publish a Report on the application of Title III of Part III ('End-user rights') and shall submit a legislative proposal to amend that Title, where it considers necessary, to ensure that the objectives in Article 3 of the EECC ('General objectives') continue to be met.

In its Opinion, BEREC shall assess to what extent Title III of Part III of the EECC meet the objectives in Article 3. The Opinion shall in particular take into account the scope of Title III of Part III as regards the types of electronic communications services covered. According to Article 123, BEREC shall in its Opinion examine:

- a) to what extent end-users of all electronic communications services are able to make free and informed choices, also on the basis of complete contractual information, and are able to switch easily their provider of electronic communications services;
- b) to what extent any lack of free will, referred to in point (a), has resulted in market distortions or end-user harm;
- c) to what extent effective access to emergency services is appreciably threatened, in particular due to an increased use of number-independent interpersonal communications services, by a lack of interoperability or technological developments;
- d) the likely cost of any potential readjustments of obligations in Title III of Part III, or impact on innovation for providers of electronic communications services.

In order to complete this BEREC Opinion, studies, workshops and bilateral exchanges with other European bodies and relevant stakeholders could be envisaged where relevant.

Deliverable: BEREC Opinion on the market and technological developments and on their impact on the application of rights of end-users in the EECC

Public consultation: No

Adoption of final Opinion at Plenary 4 2021 for publication

5.2.1.2 Review on General authorisation – BEREC Opinion

According to Article 122(3) of the EECC, BEREC must, by 21 December 2021, publish an Opinion on the national implementation and functioning of the general authorisation, and on their impact on the functioning of the internal market. The European Commission, taking utmost account of this Report, may also publish a Report on the application of Chapter II of Title II of Part I and of Annex I, and may submit a legislative proposal.

In line with Article 12(4) of the EECC, BEREC has to develop a European database for notifications of general authorisations. The database will be operational from 21 December 2020 for new notifications. BEREC will collect the experiences of the NRAs with the database in the first half of 2021 by means of a survey. The final BEREC Opinion is planned to be adopted in Plenary 4.

Deliverable: BEREC Opinion on the national implementation and functioning of the general authorisation, and on their impact on the functioning of the internal market

Public consultation: No

Adoption of final Opinion at Plenary 4 2021 for publication

5.2.1.3 BEREC Guidelines to assist NRAs on the consistent application of geographical surveys of network deployments (carry-over)

Article 22 of the EECC establishes that NRAs and/or other competent authorities shall conduct a geographical survey of the reach of electronic communications networks capable of delivering broadband ('broadband networks') within three years from the deadline for transposition of the EECC, and shall update it at least every three years. This geographical survey may also include a forecast on the reach of broadband networks, including very high capacity networks ('VHCN'), for a period determined by the relevant authority.

In 2020, BEREC approved the 'BEREC Guidelines on Geographical surveys of network deployments'⁴¹ providing the information that NRAs and/or OCAs would need to give to ensure consistent implementation of this obligation.

In 2021, BEREC will issue two complementary sets of guidelines to the set of guidelines mentioned above:

- The first set of guidelines deals with the consistent implementation of the obligations in Article 22(2), 22(3) and 22(4), (hereinafter 'Art. 22 (2-4) Guidelines'). This concerns the designation of areas where no undertaking or public authority has deployed or is planning to deploy a very high capacity network or significantly upgrade or extend its network to a performance of at least 100 Mbps download speeds, and the invitations

⁴¹

See https://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/guidelines/9027-berec-guidelines-to-assist-nras-on-the-consistent-application-of-geographical-surveys-of-network-deployments

for agents to declare their intentions to deploy VHCN networks in these areas. These provisions enable a new policy that may be used by NRAs/OCAs to provide the market with relevant information for investment opportunities, and gain information on future deployments.

- The second set of guidelines deals with the verification of quality and coverage information that the Guidelines adopted in 2020 provides for (hereinafter ‘Verification Guidelines’). BEREC will issue guidance on ways of ensuring the quality of these data. The reliability and quality of this information is important for many regulatory and policy functions, such as the provision of public funds to deploy broadband networks, the delivery of national broadband plans, and market definition procedures.

These guidelines are important for seeking to promote full connectivity, in particular for the expansion of VHCN networks. As Article 22 of the EECC provides for a series of optional policies that NRAs/OCAs may undertake to inform private and public agents of the non-availability of VHCN networks in areas with precise boundaries (‘designated areas’), and to invite agents to declare their intentions to deploy VHCNs in these areas.

The guidelines will provide a description of methods for ensuring the quality of the information. BEREC will provide these guidelines after consulting with stakeholders and in close cooperation with the European Commission and relevant national authorities.

Deliverable: BEREC Guidelines on the consistent implementation of the obligations established in Art. 22(2), 22(3) and 22(4) of the EECC.

Public consultation: Yes (in 2020)

Adoption of final Guidelines for publication at

- a) Plenary 1 2021- Public Consultation Report and Final Guidelines on the consistent implementation of Art 22 (2) to 22 (4) and
- b) Plenary 2 2021 – Public Consultation Report and Final Guidelines on verification

5.2.2. Mandatory tasks stemming from the Roaming Regulation and dealing with intra-EEA communications

5.2.2.1 International roaming benchmark data Report

According to the Roaming Regulation, BEREC has to produce two benchmark reports on the evolution of prices and volumes. For 2021, it is planned to publish:

- the 26th benchmark Report (including the 2nd and 3rd quarter 2020); and
- the 27th benchmark Report (including the 4th quarter 2020 and the 1st quarter 2021)

According to the Roaming Regulation, BEREC will report on technical matters within its competence, in particular on (among others) the evolution of pricing and consumer patterns both for domestic and roaming services, the evolution of actual wholesale roaming rates for unbalanced traffic, the relationship between retail prices, and wholesale charges and wholesale costs for roaming services. BEREC, and formerly ERG, has been drafting these kinds of reports since the entry into force of the Roaming Regulation.

The data to be collected by BEREC shall be notified to the European Commission at least twice per year. On the basis of the collected data, BEREC shall also report regularly on the evolution of pricing and consumption patterns in the Member States, both for domestic and roaming services, and on the evolution of actual wholesale roaming rates for balanced and unbalanced traffic. BEREC shall assess how closely those elements relate to each other.

The BEREC Benchmark Report will include an Annex reporting on the evolution of roaming prices and volumes for the Western Balkan region.

Data collection for the 26th Report will be launched already at the end of September 2020. The data will be submitted by NRAs to the BEREC Office by mid-November. Once the data is checked and analysed, the draft Report will be shared with the Full WG for comments in January. The report will be submitted to the CN within the deadline.

Data collection for the 27th Report will be launched at the end of March 2021. The data will be submitted by NRAs to the BEREC Office by mid-May. Once the data is checked and analysed, the draft Report will be shared with the Full WG for comments in July/August. The report will be submitted to the CN within the deadline.

Deliverable: 26th BEREC international Roaming Benchmark Data Report

Public consultation: No

Adoption of final Report at Plenary 1 2021 for publication

Deliverable: 27th BEREC international Roaming Benchmark Data Report

Public consultation: No

Adoption of final Report at Plenary 3 2021 for publication

5.2.2.2 Transparency and comparability of international roaming tariffs

According to Article 19(4) of the Roaming Regulation, BEREC is obliged to collect information from NRAs annually on the transparency and comparability of different roaming tariffs offered by operators to their customers. The 9th of these reports is due at the fourth Plenary of 2021.

Data collection for this report will be launched at the end of June 2021 with a deadline of end of August. After examining the data, a draft Report will be prepared and shared with the Full WG for comments in October before submitting the report within the deadline to CN 4.

Deliverable: 9th BEREC Report on transparency and comparability of international roaming tariffs

Public consultation: No

Adoption of final Report at Plenary 4 2021 for publication

5.2.2.3 Inputs to any legislative proposals of the European Commission on roaming

The European Commission plans to review the Roaming Regulation and, according to its work programme, will publish a new legislative proposal in Q1 2021. BEREC expects that soon after this publication, the European Council and Parliament will start discussing the proposed provisions to commence legislative negotiations. BEREC will continue to actively participate in this process and provide its inputs and Opinions. The deliverables will be adapted according to the process and timing chosen by the legislators.

BEREC provided its Opinion and inputs to the European Commission in 2019 and 2020. This will be a good basis for the ongoing discussions with the legislators.

5.2.2.4 BEREC input on the weighted average of maximum mobile termination rates across the EU

According to Article 6e(2) of the Roaming Regulation as amended by Regulation 2015/2120, the European Commission has to review the Implementing Acts setting out the weighted average of maximum mobile termination rates every year, with the same procedure. BEREC provides an annual input to the European Commission on this matter, feeding into the Implementing Act. The input to the Commission will be drafted based on the data collected as of 1 July 2021.

Deliverable: BEREC Input to the European Commission regarding the implementing acts setting out the weighted average of maximum mobile termination rates across the Union

Public consultation: No

Adoption of Input to the European Commission: October 2021 for publication

5.2.2.5 Intra-EU communications Benchmark Report

According to Article 5a(6) of the TSM Regulation as amended by Regulation (EU) 2018/1971, NRAs shall monitor the price developments of regulated intra-EU communications services. For this purpose, BEREC provides a template to contribute to harmonised data collection in the EU/EEA. NRAs are therefore collecting data from both fixed and mobile operators on a yearly basis and submit the data to BEREC.

In 2022, BEREC is planning to publish the 2nd Benchmark Report (including data from 2020) on the findings of the data collection.

The data collection for this Report will be launched in March with a deadline for NRAs to forward the data to the BEREC office in mid-May. After analysing the data, a report will be drafted and shared with the full WG in July/August 2021, subject to adoption and publication in Plenary 3 2021. Using the collected data, BEREC will also publish and annex to the report, with the updated BEREC benchmarking for the derogation assessments.

Deliverable: 2nd Intra-EU Communications Benchmark Report

Public consultation: No

Adoption of the final Report at Plenary 3 2021 for publication
--

5.3. Monitoring quality, efficiency and sustainability

5.3.1. Report on COVID-19 crisis – lessons learned regarding communication networks for a resilient society

The COVID-19 pandemic has had a significant impact on European electronic communication markets. As lockdown measures were introduced across the European Union, the demand rose for electronic communication services and, consequently, the requested capacity for electronic communication networks spiked significantly. The crisis has confirmed that connectivity is essential and a *must have* for all part of society. As there are no clear signs of the pandemic ending soon and it seems that increased use of networks is the new norm, there are good reasons for BEREC to monitor this situation.

The BEREC Strategy 2021-2025 focuses on three main strategic priorities, namely promoting full connectivity, supporting sustainable and open digital markets, and empowering end-users. The work on this report is in line with these priorities as it will provide a publicly available report on issues related to connectivity during the pandemic, and the open digital markets, and thereby empowering end-users.

As of mid-March 2020, BEREC and the NRAs started a monitoring mechanism to keep track of the impact of COVID-19 on the internet capacity and we summarized the findings in frequently updated Reports, published on our website. The first report was released on 25 March 2020 and until the end of April, two reports were issued per week. From May onwards, BEREC switched to a weekly reporting period. In addition to the status of internet capacity, other regulatory measures were also included in the report. Since July, BEREC has been publishing a special monitoring report every month.

BEREC plans to compile a report on the measures that NRAs implemented during the COVID-19 pandemic and assess the impact of the crisis on the sector and on end-users (e.g. consumer rights). The report collects best practices and draws regulatory lessons to ensure that European electronic communication networks are future-proof. In the report, additional necessary measures that NRAs could take are identified to increase preparedness for future similar events and develop the long-term readiness of networks for crisis scenarios.

Particular attention is being given to post-Covid measures to close the digital gap. BEREC is considering launching a study with a forward-looking approach which could help NRAs in designing optimal conditions for the digital inclusion of all citizens.

This assessment could also touch on the question of whether the NRA competences were sufficient to address the issues faced during the first wave of the pandemic. Input on which areas should be further examined by BEREC could be sought from stakeholders and/or associations, through a survey or bilateral meetings/interviews with them.

Deliverable: Report on the COVID-19 crisis – lessons learned regarding communications networks for a resilient society

Public consultation: Yes

Adoption of draft Report for public consultation at Plenary 3 2021

Adoption of final Report at Plenary 4 2021 for publication

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

The national implementation process of the EECC should be finalised by the end of 2020. By 2021, NRAs would have early experiences of applying the new regulatory framework and could give assessments on how the new electronic communication framework contributes to achieving the objectives of the EECC.

In an internal workshop, NRAs will be invited to share their experiences, which in 2022 could contribute to further work with the need for more detailed national assessments of the EECC, and of the application of the BEREC Guidelines. The outcome of this workshop can also be used for further work feeding into a more general monitoring of the key elements of the functioning of the EECC.

Deliverable: Internal Workshop , to be held in Q4 2021

5.3.3. Internal Report on the applicability of BEREC's Guidelines for the elaboration of Opinions in Phase II cases

Every year since 2014, BEREC has examined Phase II cases under Articles 32 and 33 of the EECC, to gain a better understanding of both the procedural and substantive aspects of these cases and inform the review of the BEREC Common Positions. In 2015, a comprehensive database of Phase II cases was developed. The database includes the main elements of the cases, and in particular the reasoning put forward by the European Commission, the BEREC Opinion conclusions, and the final outcomes of the cases. In 2020 in the context of the EECC, BEREC will evaluate the applicability of the BEREC Guidelines for the elaboration of Opinions on Phase II cases and will consider whether an update is necessary.

A review of Commission Recommendation 2008/850/EC on notifications, time limits and consultations provided for in Article 7 of Directive 2002/21/EC ('Procedural Recommendation for Internal Market Notifications under the EECC') is envisaged for the end of 2020 on which a BEREC Opinion will be requested by the Commission. Subsequently, this may result in a review of the BEREC Guidelines in 2021 to align them with the Recommendation.

BEREC will continue to add new Phase II cases to the database, as and when they arise. The objective is to make the database accessible to BEREC members, and in particular to experts in Phase II cases, both for referencing a particular case and for studying key themes across cases over time.

The Project Team will focus on changes introduced under Articles 32 and 33 of the EECC and on the new Procedural Recommendation for Internal Market Notifications under the EECC and their implications for the Internal Guidelines for the elaboration of BEREC Opinions in Article 7 and 7a Phase II cases (BoR(16)225).

As a result of this activity, an internal report will be delivered with a possible review of the BEREC Guidelines in 2021.

Deliverable: Internal Report on the applicability of BEREC's Guidelines for the elaboration of Opinions in Phase II cases

Public consultation: No

Adoption of final Internal Report at Plenary 2 2021

Other deliverable (if applicable): BEREC Guidelines

5.3.4. Internal workshop on Art. 32/33 EECC procedures

BEREC has been constantly examining the procedure in Article 7/7a to assess how it has been working and assess if there is any need for improving it. Within this context, in 2015, BEREC developed a database of all Phase II cases and conducted a survey among Phase II case team participants in order to gain a better understanding of all the procedural and substantive aspects of the procedure in Article 7/7a. The survey showed that there was some room for improvement in both the procedures and the quality of the Opinions. The Internal Audit Service (IAS) of the European Commission, when reviewing activities under Article 7/7a performed at the BEREC Office, arrived at conclusions which partially coincide with those of BEREC.

In 2016, BEREC revised the Guidelines for the elaboration of Opinions in Article 7/7a Phase II cases (and the procedures for the composition of Phase II case teams) by addressing the issues raised in the BEREC and the IAS assessments.

In order to promote collaboration among rapporteurs, BEREC has started to organise an annual workshop, since 2017, open to the participation of members of the backup pool of rapporteurs and prospective rapporteurs.

In the context of the EECC, it is time for an evaluation of the applicability of BEREC's Guidelines for the elaboration of Opinions in Article 7/7a (now Articles 32/33) and BEREC will consider whether an update is required. In this regard, BEREC will focus its annual internal workshop on the Articles 32/33 Phase II process and on whether there is a need to update the internal handling of such cases in the context of the EECC. The workshop would include experience sharing on the updated 'Procedural Recommendation' in the first year of its application. After the workshop, BEREC will adopt an internal Summary Report outlining the main points raised during the workshop and relevant conclusions.

Furthermore, BEREC plans to constantly update the database of Article 7/7a Phase II Cases with information from the most recent cases, now known as Articles 32/33 Phase II cases. BEREC will send surveys to rapporteurs and NRAs to monitor the procedural and substantive

aspects of the procedure under Articles 32/33. This will feed into the update of the qualitative report.

Deliverable: Internal workshop on Art. 32/33 EECC procedures

Public consultation: No

Adoption of internal Summary Report at Plenary 4 2021

Other Deliverable: Internal Workshop, to be held at Q3 2021

5.3.5. Report on Regulatory Accounting in Practice

The Report on Regulatory Accounting in Practice 2021 will provide an up-to-date factual overview of the regulatory accounting frameworks used in Europe and an assessment of the level of consistency achieved by NRAs. The report is prepared annually and updates the previous versions that have been published since 2005. In 2021, emphasis will continue to be placed on consistency in regulatory accounting with respect to key access products (e.g. fibre) and will maintain the detail and in-depth analysis of the methods covered to identify commonalities and reasons for differences. The focus of the RA Report may be adapted in the light of the EECC. For the report data will continue to be collected on the methodology and input parameters actually used by NRAs to calculate the rate of return on capital employed, and the impact of both on the result will be considered.

The focus of the 2021 Report will continue to develop a deeper analysis that concentrates on the following key wholesale markets: Wholesale Local Access (Market 3a/2014), Wholesale Central Access (Market 3b/2014) and Wholesale High Quality Access (Market 4/2014). Moreover, the cost base and allocation methodologies used for fixed (Market 1/2014) and mobile (Market 2/2014) termination markets will be examined. For those markets, the report will contain a comparison of the most popular combinations of cost base and cost allocation methodologies.

As in previous reports, the 2021 Report will contain a chapter on structural data such as population, topography, market situation etc. as these different starting points influence the regulatory strategy of NRAs for choosing a particular form of price control remedy (e.g. cost-orientation, ERT, others, etc.) for different wholesale access products (in particular, FTTP and FTTC network elements).

Furthermore, the 2021 Report will as usually provide evidence for WACC calculation practices among NRAs. Data on the actual calculation of the cost of capital (WACC) will be collected and analysed (methodologies and input parameters used). The report will include data on whether and how NRAs account for the higher risk of investing in very high capacity networks (for example, through the application of a risk premium which is added to the calculated WACC).

Deliverable: Regulatory Accounting in practice Report 2021

Public consultation: No

Adoption of final Report at Plenary 4 2021 for publication

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

Following the European Commission's Notice on the WACC⁴², published in 2019, BEREC has the task of calculating various parameters of the WACC formula, according to the methodology laid down in the EU WACC Notice.

In 2021 (and the following years), BEREC will continue to calculate the WACC parameters, as started in 2020, according to the methodology laid down in the WACC Notice of 2019. The WACC parameters will be calculated at the beginning of each year and published before 1st July 2021 to allow NRAs to base their national WACC decisions on this up-to-date information. BEREC will also select the companies that are eligible for the peer group.

<p>Deliverable: BEREC Report on WACC parameters 2021</p> <p>Public consultation: No</p> <p>Adoption at Plenary 2 2021 for publication</p>
--

5.3.7. Termination rates at European level

Since 2015, the BEREC Statistics and Indicators working group carries out and publishes a half-yearly collection of European fixed termination rates and mobile termination rates, with the volumes of minutes of use and number of mobile subscribers per country, and other indicators. Every year, the annual report includes an overview of SMS termination rates and revenues from fixed and mobile termination rates. Data on Termination Rates (TRs) is collected from BEREC members and observer states in an effort to monitor the evolution of TRs and the cost model/methodology adopted for the definition of TRs. In 2021, BEREC will continue to perform this task.

The BEREC Reports on termination rates have been of interest and relevance to NRAs, a number of different WGs (Remedies WG, Regulatory Accounting WG), and to the European Commission. Article 75 of the EECC states that by '31 December 2020 the Commission shall, taking utmost account of the Opinion of BEREC, adopt a delegated act setting a single maximum EU-wide mobile voice termination rate and a single maximum EU-wide fixed voice termination rate, which is imposed on any operator active on each of the markets of mobile voice termination and fixed voice termination respectively in any Member State.' The rates fixed by the European Commission will be in place in 2021, although as provided for by the delegated act, for some time there may be differences in the maximum rates that apply in each MS. For this reason, during 2021, BEREC will continue to collect national data.

In 2021, BEREC will carry out data collections on mobile and fixed termination rates in January and June. Moreover, the respective reports will be approved for publication in Plenary 2 2021 and Plenary 4 2021.

<p>Deliverable: Report on termination rates at European level</p>
--

⁴² See <https://ec.europa.eu/digital-single-market/en/news/commission-publishes-notice-calculation-cost-capital-legacy-infrastructure>

Public consultation: No

Adoption of final Report at Plenary 2 and Plenary 4 2021, for publication

5.3.8. Sustainability: assessing BEREC's contribution to limiting the impact on the environment

In line with the political guidelines⁴³ of Commission President von der Leyen, setting out the need for a green and digital transformation of Europe, BEREC will engage in working on the sustainability of the ICT-related parts of the upcoming Green Deal, and the Agenda 2030 targets.

In this context, in 2020, BEREC has set up an Expert Network Group (ENG) on Sustainability as well as an ad hoc group on Sustainability, composed of experts of the various NRAs.. In 2021, BEREC will continue to develop the work on the topic of sustainability. An internal and external workstream will be developed to assess how to contribute to increased sustainability by adding an environmental focus to BEREC work and the running of BEREC as an organisation. This assessment will take into account the objectives of the European Commission being proposed in the Green Deal.

In 2021, BEREC will introduce ways of achieving more efficient meetings and sustainable solutions, which are also resource-efficient, by continuing to maximise the potential of virtual meetings. This is a trend that has been accelerated throughout the COVID-19 pandemic. BEREC's work must consider issues of sustainability in the BEREC Office itself, in terms of its own operation as an organisation, such as the use of paper, plastic, or CO2 emissions and how to reduce its carbon footprint.

In addition to addressing sustainability issues related to the technical operations of BEREC and the BEREC Office, BEREC will promote sustainability in the digital sector under the EECC, to position itself in relation to the Commission's expectations in this area.

This work will be divided into two parts:

- 1) Exchanging internal information to further develop BEREC's fundamental knowledge about different aspects of sustainability in the telecom sector. This includes methodological (or lack thereof) elements that are available to characterize the impact of the digital sector on the environment (in coordination with the work being done by the European Commission). Specific emphasis will be given to energy efficient and circular economy solutions, and to indicators to monitor environmental impacts and assess improvements made by the sector. By exchanging best practices and learning from country-specific initiatives, NRAs can increase awareness and interest in the question of sustainability within the digital sector, and the environmental impacts that regulators have.

This objective will be pursued by:

⁴³ See https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf

- a. Organising two virtual workshops, prior to the Heads of NRAs' workshop on sustainability (2nd half of 2020). A summary report of the workshops will be published at Plenary 1 2021.
 - b. Organising an online training session for NRA experts in Q1/Q2 2021.
 - c. Carrying out a literature review regarding the environmental impact of the telecommunication sector in one of the main areas highlighted by the Commission, i.e. networks' environmental footprint (energy and resources consumption, carbon emissions, etc.).
 - d. Develop a bibliography with relevant studies available in the domain, in order to enhance knowledge within NRAs.
- 2) Contracting a consultant to provide a study, identifying the key areas in which NRAs have the potential to impact sustainability, via their regulatory decisions/actions. The central question of the study should address whether there is scope within the regulatory actions of NRAs under the EECC to positively impact or minimise the negative impact of the sector on the environment. The study should produce a neutral list of main decisions that NRAs could take in their day-to-day areas of activity and evaluate the environmental impact of these decisions, highlighting actions/decisions of NRAs with the greatest potential to impact sustainability. The study will also suggest options that NRAs may wish to consider for ensuring that this impact is positive.

The conclusions of the study will be integrated in a BEREC Report that will include an overview of NRA initiatives with positive impacts on the environment. This report will be subject to a public consultation and will be adopted at Plenary 2 2022.

In the coming years, BEREC could identify new questions to address or assess initiatives and commitments taken by the telecom sector to build an overview of the pledges that stakeholders have made in relation to the UN's Sustainable Development Goals. Depending on future developments, further work can be expected in this area, such as interaction with other institutions and stakeholders to provide NRA experts with specific and operational knowledge of environmental issues for stakeholders.

Deliverable: BEREC Report summarising conclusions from the internal workshop on sustainability

Public consultation: No

Adoption of final internal Report at Plenary 1 2021

Deliverable:

BEREC study regarding NRA's potential to impact sustainability – to be delivered by Q3 2021

BEREC Report identifying areas of regulatory intervention available to NRAs to maximise their positive contribution on the environment

Public consultation: Yes

Adoption of draft Report for public consultation at Plenary 4 2021
Adoption of final Report at Plenary 2 2022 for publication
Other deliverable: internal webinar (training session), to be held in Q1/Q2 2021

6. Stakeholder engagement

BEREC remains committed to continuously improving its interaction with all stakeholders to ensure that its output stays relevant. BEREC aims to ensure that its work processes remain transparent and that it reaches the relevant audience. Stakeholders will be involved both at an early stage and later when the work is more mature. The BEREC Work Programme 2021 includes the following activities for achieving these objectives.

In a context of rising concerns about technology in general, BEREC will reinforce its dialogue with civil society so as to ensure that legitimate apprehensions are dealt with accordingly. BEREC aims to maintain a high level of public trust from citizens and position itself as a trusted third party in stakeholder dialogues and in its engagement with the EU institutions. This is of particular importance for work related to the internet value chain (including digital platforms) and to sustainability.

6.1. Stakeholder Forum

In 2021, BEREC will be planning two occasions for our stakeholders to directly engage with the Board of Regulators, in addition to the usual cycle of public debriefings. The focus of the first (virtual) Stakeholder Forum in (foreseen on 1 April 2021) will be the BEREC Work Programme for the following year (2022). A second Stakeholder Forum is foreseen to take place on 28 October 2021 in Brussels and will provide a platform for stakeholders and BEREC to engage in a dialogue about BEREC's future work. The feedback received at the Stakeholder Forum will continue to be an important addition to the written inputs received during the public consultation for the BEREC Work Programme.

6.2. BEREC Annual Reports

According to the BEREC Regulation, BEREC must provide its annual activity Report to the European Parliament, the Council of the European, the European Commission and the European Economic and Social Committee by 15 June of the year after the year reported on in the annual activity Report. BEREC must report annually on technical matters within its competence, in particular on market developments in the electronic communications sector.

BEREC will continue to publish its Annual Report on its activities and an Annual Report on developments in the sector as part of a single document. The Annual Report on BEREC activities focuses on the outcome of the work of its Expert Working Groups and ad hoc teams based on the Work Programme, whereas the Annual Report on developments in the electronic communications sector summarises BEREC's view of the past year and provides an outlook on future developments and challenges in the sector.

6.3. BEREC Communications Plan 2021

In 2016, BEREC developed its first external Communications Strategy, which was afterwards complemented by annual communications plans. In the previous communications plan, BEREC decided to go further than the regular awareness-raising, by opting for a multiplier approach in which the BEREC key target audiences are informed of the potential of connectivity as one of the goals of the EECC. With the implementation of the EECC, BEREC will in 2021 continue to focus on the connectivity objective, aimed at the development of very high capacity networks allowing participation in the digital economy and society for all. The BEREC information materials will be distributed to facilitate multiplication of information across media and other communication channels, with the aim to promote the future of Connectivity in particular very high capacity networks.

BEREC has already started a targeted communications campaign on the connectivity objective, that goes beyond regular awareness-raising. The BEREC Communications Expert Networking Group continues to develop multiple information items (such as a brochure, background information, publications on the website, a presentation kit, etc.) to be shared with key target audiences for information.

Several communications projects will support and promote specific workstreams in the Work Programme related to this topic. The projects are usually linked to regular BEREC events, such as public debriefings and the Stakeholder Forum. They include several specific communications activities such as the organisation of events, press releases, information for the website, production of audio-visual and digital content, running social media campaigns, and keeping up media relations.

The overall framework of BEREC communications is presented in the multiannual BEREC External Communications Strategy. Every annual communications plan sets out the exact activities that BEREC is performing to deliver on these objectives. In addition to the objectives set out in the Communications Plan, BEREC will, with direction from the BEREC chair's team and the co-chairs of relevant groups, continue to communicate around the day-to-day activities of BEREC's work, especially regarding the most relevant topics for BEREC and its members, such as BEREC's work on digital platforms, sustainability, and 5G related issues.

BEREC's Communications Plan 2021 will be finalised for internal use in December 2020 and will set out the communications activities that BEREC is committed to undertake in 2021.

6.4. Developing the BEREC Work Programme 2022

Having regard to BEREC's requirement to adopt the outline of the subsequent year's annual work programme by 31 January each year, and the BEREC decision to plan its work programmes on a multi-annual rather than an annual basis, there is a requirement to adhere to a process, which describes how work programmes should be developed in a consistent and recurring manner.

In accordance with the guidelines, the 'Planning and Future Trends (PFT) WG' will be involved in the development of the WP. A project team will be formed under the PFT WG to work in

conjunction with the 'incoming' Chair's team to develop BEREC's annual WP and outline the WP for the following year. In doing so, the PFT WG shall propose and co-ordinate new work items, including following the outcome of the pathfinder exercise carried out by the PFT WG.

Deliverable: Work Programme 2022

Public consultation: Yes

Adoption of draft Work Programme 2022 at for public consultation at Plenary 3 2021

Adoption of final Work Programme 2022 at Plenary 4 2021 for publication

Other deliverable: **Outline of the draft Work Programme 2022** to be submitted to the European Commission, the European Parliament and the European Council by 31 January 2021.

IV. POTENTIAL BEREC WORK FOR 2022 AND BEYOND

Given the number of workstreams for BEREC resulting from the implementation of the EECC, several important proposals could not be initiated. In order not to lose track of these potential workstreams, this section includes items which BEREC may include in the BEREC Work Programme 2022 and beyond, in relation to future work programmes. The list of items mentioned below is therefore informative and is not a final list. The input provided by the stakeholders on these items during the public consultation in 2020 for the Work Programme 2021 will be considered when adopting a final list. Furthermore, BEREC may consider other new workstreams for 2022.

Multiple regional operators of NGA-networks

A factual investigation of the level of competition between multiple VHCN/NGA regional operators' dependent on degree of network overlap, business strategies and other relevant factors related to competition. Regional operators of NGA-networks play an increasingly important role on broadband markets in many countries. This factual investigation will look into how competition play out dependent on different market characteristics.

Operators may partly overlap. In areas where operators do not overlap, they could still be very close to each other (within the same region, area, city, neighbourhood) and could more easily start to cover each other's coverage area. Some operators might have 'scattered' networks across the country and compete with many other operators throughout the country (e.g. coax vs. fibre). Operators might use different business strategies – to differentiate prices across their networks dependent on presence of other operators or not to differentiate prices.

A factual investigation could be a starting point for looking at how this is handled in the context of SMP-analysis.

Compensation in the case of early termination of contracts

Compensation in the case of early termination of contracts with a specific focus on recoverable costs, and invoicing methods prescribed domestically for retail pricing (such as the possibility for the customer to pay one-off fees, e.g. activation fees, split over different monthly invoices).

Workshop on BEUC and BEREC implementation and end-user provisions

This workshop would benefit from waiting for transposition plus some additional time to be able to assess the impact of the new provisions.

Non-discrimination on quality of service (QoS)

Alternative operators relying on wholesale access do not control most of the essential elements of the quality of the service provided. Ensuring non-discrimination with regard to

quality of service (QoS) between wholesale access providers and access takers is therefore a topic of interest.

Monitoring and encouraging transition to IPv6

With the current exhaustion of IPv4 addresses, it is becoming crucial for the future of IP communications that a fast and efficient transition to IPv6 is achieved. BEREC will continue to encourage and monitor the roll-out of this future-proof protocol.

Report on key elements of the functioning of the EECC

In line with BEREC's responsibility for monitoring the functioning of the EECC, one additional element would be to monitor the impact and effectiveness of the newly inserted provisions, with a view to collecting enough quantitative and qualitative data for future EECC reviews (as required under Articles 122-123).

Experience-sharing on the Implementation of Guidelines

The BEREC Guidelines on the EECC need to be taken into utmost account by NRAs and competent authorities. There could be a specific workstream for dealing with experience-sharing on the implementation of Guidelines.

Exchange on the impact of the Open Data and Public Sector Information Directive

In light of the adoption of the Open Data and Public Sector Information (PSI) Directive in June 2019, BEREC will consider to what extent it can support the goals of the Directive to support the provision of data for general business opportunities and other purposes, such as algorithm training.

State of Mobile roaming: 5G including cross network slicing

This request could be addressed by including specific questions on 5G in the benchmarking delivered by the roaming WP, and the BEREC Opinions on the roaming review. Nevertheless, we would have to wait until the deployment of 5G is more advanced to be able to gather significant data.

Workshops on wholesale replicability test, IP peering

Workshop or exchange of experiences relating to wholesale replicability tests in order to compare and share European practices or proposals.

Workshop and exchange of information on NRAs' first experiences with regard to 5G city networks.

Workshop in cooperation with the Organisation for Economic Co-operation and Development (OECD) to examine ongoing trends in IP interconnection policies and practices.

Abbreviations

BCRD	Broadband Cost Reduction Directive
BEREC	Body of European Regulators for Electronic Communications
CERRE	Centre on Regulation in Europe
CN	Contact Network
CRTC	Canadian Radio-television and Telecommunications Commission
DESI	Digital Economy and Society Index
DMA	Digital Market Act
DSA	Digital Services Act
EaPeReg	Eastern Partnership Electronic Communications Regulators Network
ECN	European Competition Network
ECS	Electronic Communication Service
EEA	European Environment Agency
EEA	European Economic Area
EECC	European Electronic Communications Code
EDPB	European Data Protection Board
EMERG	Euro-Mediterranean Regulators Group
EMF	Electromagnetic Frequencies
ENISA	European Union Agency for Network and Information Security
ERGA	European Regulators Group for Audiovisual Media
ERGP	European Regulators Group for Postal Services
ERT	Economic Replicability Test
ESA	European Space Agency
EU	European Union
FCC	Federal Communications Commission
FTR	Fixed Termination Rate
FFTP/FTTC/ FTTH	Fibre to the Premises / Fibre to the Cabinet / Fibre to the Home
ICS	Interpersonal Communications Services
ITU	International Telecommunications Union
MDF	Main Distribution Frame
MS	Member State
MTR	Mobile Termination Rate
NDCM	Non-Discrimination and Costing Methodology
NGN/NGA	New Generation Network / Access
NIS CG	Network and Information Systems Cooperation Group
NRA	National Regulatory Authority
OCA	Other Competent Authority
OECD	Organisation for Economic Cooperation and Development
OTT	Over The Top provider
P	Plenary
QoS	Quality of Service
SIP	Single Information Point
SIP	Significant Intermediation Power
SMP	Significant Market Power
Regutel	Latin American Forum of Telecommunications Regulators
RSPG	Radio Spectrum Policy Group

TRAI	Telecom Regulatory Authority of India
TSM	Telecoms Single Market
VHCN	Very High Capacity Networks
WACC	Weighted Average Cost of Capital
WG	Working Group