Update to the BEREC Net Neutrality Regulatory Assessment Methodology

BEREC Report on the outcome of the public consultation on the draft Net Neutrality Regulatory Assessment Methodology

Véronique Ney (ILR) and Klaus Nieminen (Traficom)
Open Internet Working Group Co-chairs

Body of European Regulators
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- 5 submissions: ECO, ECTA, ETNO/GSMA, NOS, Ookla

- Comments related to
    - General comments
        - e.g. industry standards, existing tools, terminology
    - Measuring Internet access service quality
        - e.g. server selection, measurements within an ISP's network, use of HTTPS
    - Detecting differentiated traffic management practices
    - End-user environment
        - e.g. VPNs, Wi-Fi, devices other than PCs
    - General internet access services quality assessment
        - e.g. speed prediction, specialised services
    - Individual results measurements & Certified monitoring mechanism

- BEREC responses:
  - Strive to reuse existing methodologies & consider the evolving landscape
  - Industry standards do not meet BEREC's requirements
  - Long-standing position: measurements to be taken against a server outside the ISP network
  - Importance of end-user environment: empower end-users to easily measure performance of IAS
  - Disagree with few statements

- Clarifications added, but no substantial changes:
  - Updates broadly compatible with the previous version → case-by-case analysis
  - Server-side monitoring mechanisms should monitor available capacity of measurement servers
  - Possibility to use multiple servers at the same location, generally at or close to the IXP
  - HTTPS: use of TLS is recommended but optional
  - Use of VPNs & Wi-Fi
  - Speed predictions should be accompanied by information
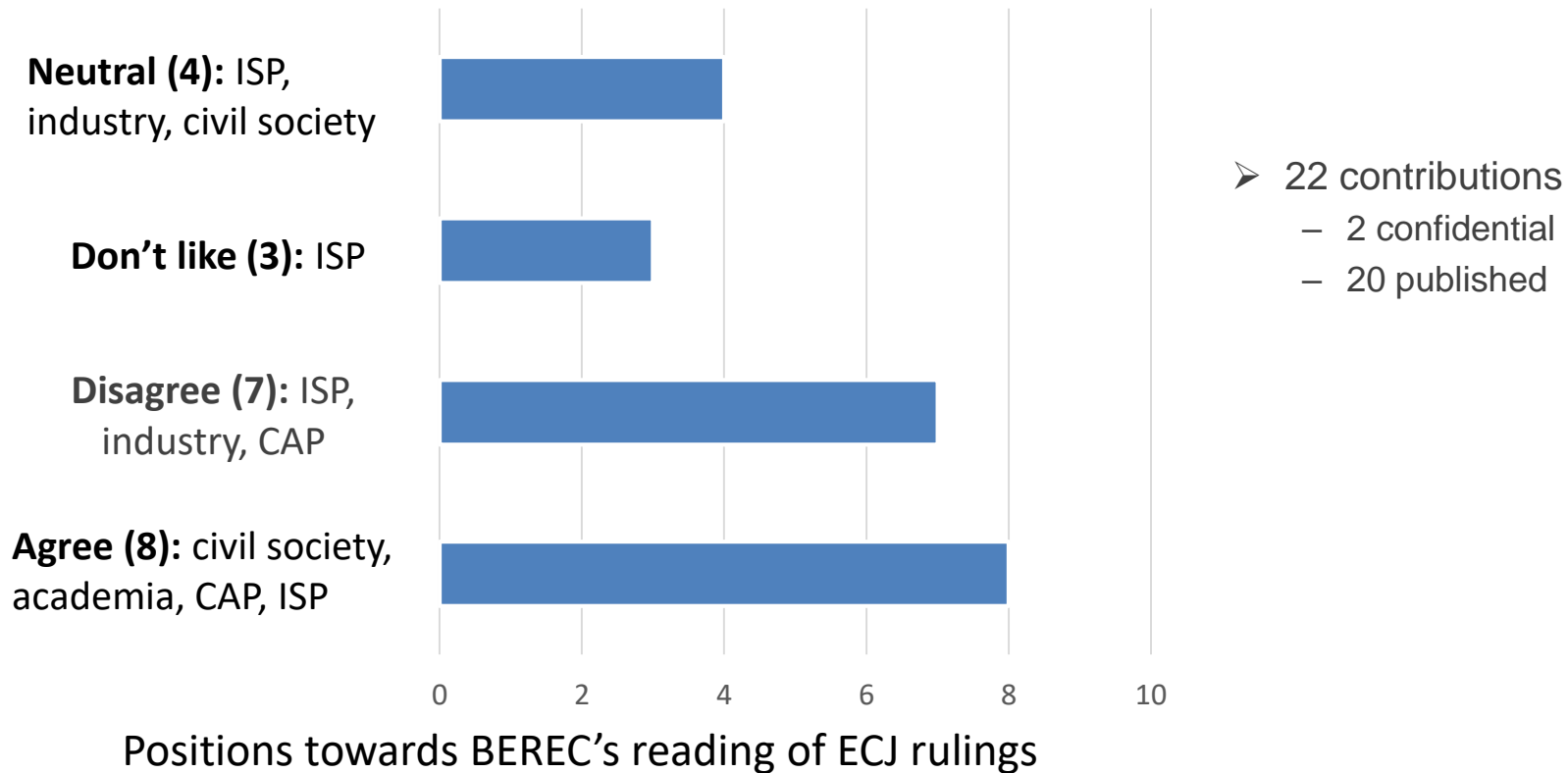 - Wording updated (where appropriate)

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

BEREC Report on the outcome of the public consultation on the draft BEREC Guidelines on the Implementation of the Open Internet Regulation

Véronique Ney (ILR) and Klaus Nieminen (Traficom)
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Neutral (4): ISP, industry, civil society

Don't like (3): ISP

Disagree (7): ISP, industry, CAP

Agree (8): civil society, academia, CAP, ISP

➢ 22 contributions
  – 2 confidential
  – 20 published

Positions towards BEREC's reading of ECJ rulings

- Main topics raised by stakeholders
  - reading of the ECJ rulings
  - customer care & toping up after the data cap
  - public good services
  - transitional period
  - right to withdraw contracts without penalties
  - supervision & enforcement

- Many stakeholders also requested further clarifications
  - And some proposed substantial phrasing proposals (compatible with our reading)

- Various additional topics
  - fair share, end-user definition, IPv6, network termination point, critical properties of the Internet

- No substantial changes – just clarifying the message in **8** paragraphs
  - 19, 34a, 35, 37, 37a, 40b, 48, 81

- any differentiated non-application-agnostic pricing practices **are inadmissible**
- Article 3(3) **must** be taken into account when assessing commercial practice
- Article 3(3) infringement examples covers now also non-technical practices like charging
- application-agnostic treatment concept covers also **commercial treatment of traffic**
- minor clarifications to typically admissible practice examples
- deletion of a bullet point that may be taken into account when assessing Art. 3(2) practices
- **emergency communication** and **Roaming Regulation** examples added to **exception a)**

- Updated Open Internet Guidelines are now published
  - **any non-application-agnostic pricing practices are inadmissible**
  - ➢ *ISPs need to cease their non-application-agnostic zero-rating practices*

- NRAs monitor compliance with the OIR and take the necessary enforcement actions
  - BEREC will continue supervision & enforcement collaboration
  - Topic will be covered by 2022 and 2023 implementation reports

- Any potential transitional periods are to be based on national circumstances
  - ➢ *BEREC will not set a European-wide timeline*

BEREC Opinion on the Open Internet Regulation review

New work item assessing the IP interconnection ecosystem and impact of the sending-party-pays principle ("OTT fair share") on this ecosystem and on end-users

Véronique Ney (ILR) and Klaus Nieminen (Traficom)
Open Internet Working Group Co-chairs

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30 April 2023	• EC's review of the OIR and submission of its report to the Parliament and Council
December 2022	• Submission to the EC and publication of the BEREC Opinion • No public consultation

- BEREC already analysed a similar proposal in 2012
  - ➤ implementing "sending party pays" might be of significant harm to the internet ecosystem
  - – Interconnection market studied in 2012 and 2017 and in the Internet Ecosystem Report

- BEREC has started a work item to
  - – examine to what extent earlier findings are still valid
  - – whether the "fair share" claims are justified or not
  - – analyse the potential impact such a proposal would have on end-users and competition
  - – considering the market developments and investments that have occurred in the last years
  - – reflect the empirical findings and observations from South Korea
  - – consider possible implications for the functioning of the IP interconnection ecosystem

July/Sept/Oct 2022	• Workshops with invited stakeholders
October 2022	• Paper 1
November 2022	• Paper 2
June 2023	• Launch of the public consultation on the draft IP-IC report
December 2023	• Publication of the final IP-IC report

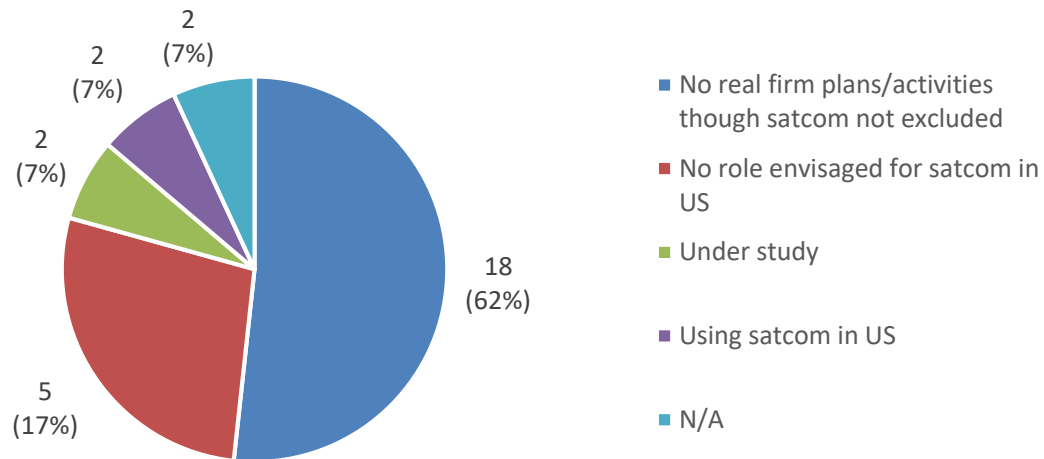# Draft BEREC Report on Satellite connectivity for Universal Service

Bo Andersson (PTS) and Joe Lynch (ComReg)
Wireless Network Evolution Working Group Co-Chairs

Body of European Regulators
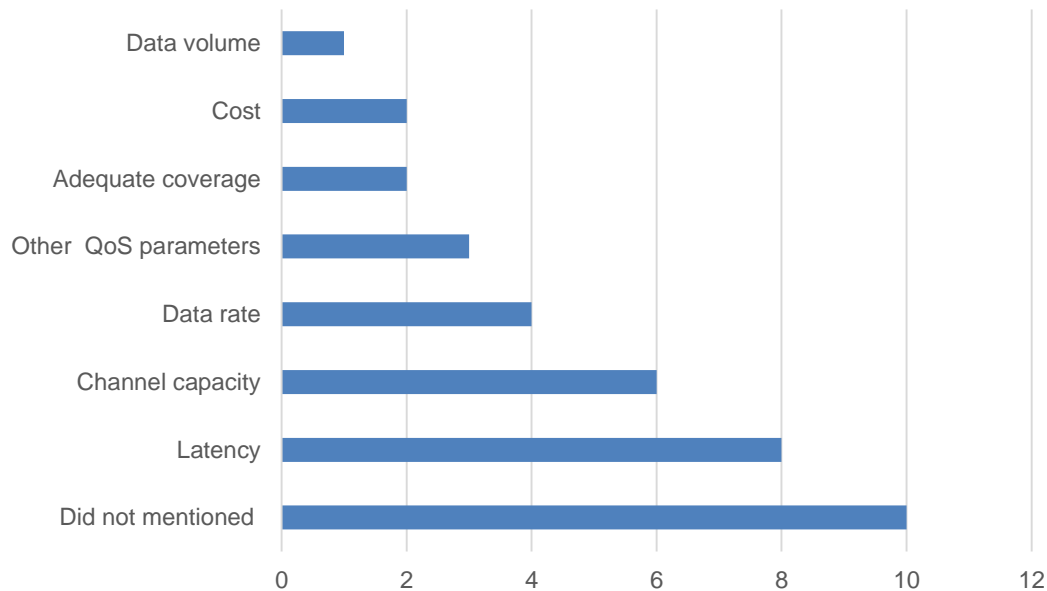for Electronic Communications
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- Several geo-stationary or non-geostationary satellite services are or will become available between now and 2025

- The report sets out
  - results of a questionnaire to all BEREC members and participants without voting rights
  - describes how satcom solutions may contribute to Universal Service
  - provides an overview of satcom solutions
  - highlights some key aspects (pricing, expected role in market, capacity availability, and demand)

- BEREC's preliminary view that there are several regulatory issues having a national dimension, which supports a case-by-case approach to Satcom solutions for Universal Service

- Stakeholders are invited to comment on the report, including by identifying any emerging issues or trends that might be added to the information presented
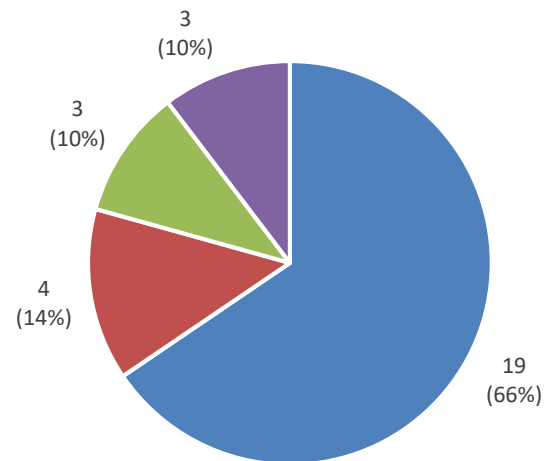
29 Responses

Pie chart legend:
- No real firm plans/activities though satcom not excluded — 18 (62%)
- No role envisaged for satcom in US — 5 (17%)
- Under study — 2 (7%)
- Using satcom in US — 2 (7%)
- N/A — 2 (7%)

Satcom features underpinning broadband US

- Data volume: 1
- Cost: 2
- Adequate coverage: 2
- Other QoS parameters: 3
- Data rate: 4
- Channel capacity: 6
- Latency: 8
- Did not mentioned: 10

Regulatory changes needed

- No changes in regulation: 19 (66%)
- Specific technology pre-conditions (frequency use, satellite network, etc.): 4 (14%)
- Satcom is not needed/not relevant option: 3 (10%)
- N/A: 3 (10%)

BEREC Report on Sustainability:
Assessing BEREC's contribution to limiting the impact of the digital sector on the environment

Sandrine Elmi Hersi (ARCEP) and Kateřina Děkanovská (CTU)
Sustainability Working Group Co-chairs

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BEREC's strategy 2021-2025:

- BEREC stated its ambition to work on sustainability considering the ICT-related parts of the Green Deal and the Agenda 2030 targets to identify the SDGs that could be relevant for BEREC
- More precisely, BEREC identified in its strategy its potential contribution to assess and reduce the digital sector's impact on the environment and also identified raising awareness of the environmental impact of electronic networks as a relevant lever for end-users' empowerment.

Two first deliverables on ICT sustainability approved at P1 2022 **:**

1. **External study on the evaluation and impact assessment of the effect of electronic communications on the environment (with WIK and RAMBOLL)** [*Disclaimer*: NOT REPRESENTING BEREC'S VIEWS]
2. **BEREC Draft report on Sustainability: assessing BEREC's contribution to limiting the impact of the digital sector on the environment:**
   - Summarizes main results of BEREC's activities on ICT sustainability since 2020 (including the above-mentioned external study as well as regulatory framework analysis, case studies, stakeholders' interview, technical workshops);
   - Maps existing initiatives to avoid duplicating of the work;
   - Provides a first outline of BEREC's possible activities on the new topic that constitutes sustainability.

   PUBLIC CONSULTATION FROM MARCH 14TH TO APRIL 14TH (INCLUDING A STAKEHOLDER WORKSHOP ON APRIL 4th)

Two new deliverables on ICT sustainability adopted at P2 2022 **:**

   ➡ **BEREC Report on the outcomes of Public Consultation on the Draft BEREC Report on Sustainability Assessing BEREC's contribution to limiting the impact on the environment**
   ➡ **BEREC Report on Sustainability: assessing BEREC's contribution to limiting the impact of the digital sector on the environment:**

4-weeks public consultation from March 14th to April 14th
- One **Stakeholder Workshop** to animate the PC on April 4th gathering DG Connect, MEP David Cormand, GeSI (Global enabling sustainability initiative), Green IT, ETNO, the European Environmental Agency among others (150 participants). REPLAY AVAILABLE HERE : **https://www.youtube.com/watch?v=jikYVoN8_Fo**
- In total**, 17 responses were received in time from** (including one confidential contribution based on the request of the respective respondent) : BREKO, ECTA, Ericsson Research/Ericsson AB, ETNO, the Free Modem Alliance, the Free Software Foundation Europe, Green IT, GSMA, Huawei Technologies, Liberty Global, Nokia, OVHcloud, Mr. Rudolf van der Berg, The European VOD Coalition, the University of Oulu (Finland), Vodafone Group.

- Majority of stakeholders welcomed **BEREC's growing attention to ICT sustainability**, **especially its interest on transparency, methodologies and data regarding ICT environmental footprint**.
- Agreement on BEREC's recognising the importance of **digitalisation's role in achieving climate goals** while noting potential rebound effects and some calls to insist further on **second order/ indirect environmental effects** in future work.
- Suggestion to use **existing standards** in future analysis, notably from ITU and ETSI.
- Agreement on BEREC position in favour of "**multi-criteria" approach, going beyond GHG emissions and including other environmental impacts** such as raw materials depletion or fossil fuels exploitation. Also support on the holistic view on the whole ICT value chains' components.
- Discussions on some of the **studies and figures referred in the external study** and thus within BEREC's draft report.
- Critics regarding one analysis from the consultants WIK/Ramboll regarding the potential **role of regulators in the frame of copper switch off.**
- Support on the great place given to **stakeholders' initiatives in the report** and call to keep **diversify the range of stakeholders reached** and to include further academic stakeholders and alternative industry players.
- Overall **positive feedbacks on the toolbox for future actions proposed by BEREC.** No main disagreement on the current conclusions. Strong support of BEREC's role on transparency mechanisms for ICT/telecom sector and call to consider indirect/second order effects notably positive ones. Call from to tackle **digital ecosystem's openness** and device neutrality as potential sustainability lever.
- Strong call for **coordination and harmonisation with other authorities**.

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Forewords and executive summary

Chapter 1: Introduction
ICT-related goals at EU and international level, key figures, BEREC's first approach

Chapter 2: Case studies
Analysis of NRAs' first initiatives (case studies on Arcep, ComReg, Traficom)

Chapter 3: BEREC initial findings
2020 Workshops, BEREC's opinion on BCRD and State Aid Guidelines recast

Chapter 4: Summary of stakeholders' initiatives
Bilateral meetings' main outputs

Chapter 5: External study key results
Relevant findings from BEREC's external study

Chapter 6: Conclusions
Key learnings of the different parts from the report and outline for BEREC's future work on sustainability to create the necessary conditions for a common ambition on the topic.

Annexes : glossary (I) and bilateral meetings summary (II)

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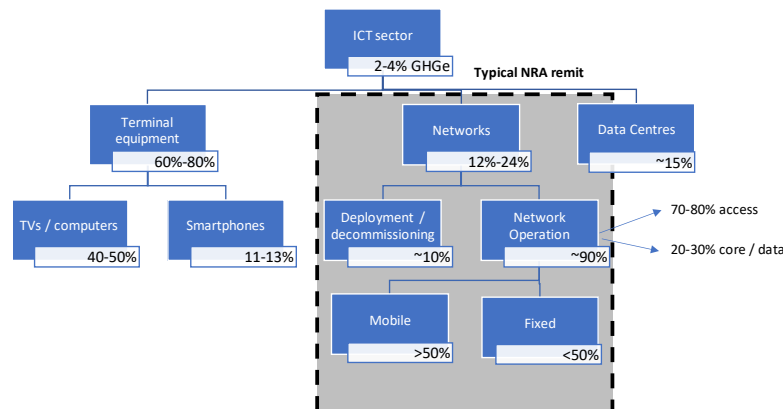for Electronic Communications
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The digital sector's footprint represents 2-4% of GHG global emissions (in comparison, global aviation, including domestic and international, passenger and freight transport, accounts for 1.9% of GHG emissions) but ICTs' can have positive enabling effects on other sectors.

- Devices account for 60-80% of ICT carbon footprint, datacenters for 15-20%, networks between 12-24%. The range of figures is explained by the lack of standardized data and common assessment methodologies.

- The future trajectory of ICT's carbon footprint is subject to debate. One of the most common estimations evaluates that in 2040, the digital sector could account for 14% of global GHG emissions (taking into account energy efficiency gains but not indirect impacts such as enablement and rebound or enabling effects).

BEREC also acknowledges other types of environmental impacts to mitigate, such as raw materials and minerals consumption, waste production and the lack of available data and analysis.

➡ **NEW : Detailed explanations regarding the range of figures and limits of certain estimations.**

ICT sector
2-4% GHGe

Typical NRA remit

Terminal equipment
60%-80%

Networks
12%-24%

Data Centres
~15%

TVs / computers
40-50%

Smartphones
11-13%

Deployment / decommissioning
~10%

Network Operation
~90%

➡ 70-80% access

➡ 20-30% core / data

Mobile
>50%

Fixed
<50%

Breakdown of contributions to GHG emissions within the ICT sector (Source: WIK/Ramboll external study)

- Sustainability is a new area of expertise for BEREC and national authorities but some NRAs within BEREC pioneered actions on this topic notably due to their national context.
- Case studies from Arcep, ComReg and Traficom are presented in the report as examples.

ARCEP: reports, national strategy, data collection and additional competencies

COMREG: 2 calls for inputs, one horizontal legislation, consumer survey

TRAFICOM: national strategy, external studies, first data collection

- Other NRAs mentioning specific sustainability-related initiatives: NMHH; ACM, MCA, CNMC, UKE, PTS, Ofcom
- Majority of NRAs : no direct mandate but potential regulatory actions with positive effects to reduce the sector's adverse effects on the environment (such as EECC art. 44, BCRD)

1

Workshops and summary report (2020): Two sets of workshops were organized for BEREC experts under the title 'Sustainability within the digital sector. What is the role of BEREC?'

- Among the participants: DG Connect, Joint Research Centre (JRC), Council of European Energy Regulators (CEER), RSPG, IEA, GESI, and Ericsson.
- Main conclusions : enabling role in the continuous digitalization of the society, which can lead to significantly lower energy consumption in other sectors. However, we should be aware of the rebound effects as the efficiency gains might not keep track with the rapid growth of the sector and associated emissions.

2

Opinion on BCRD recast (2021): The Commission asked in 2020 for BEREC's opinion in order to understand the positions of NRAs regarding different areas that might be covered by BCRD directive revision, including the sustainability of ECNs. Among the main analysis of BEREC on sustainability:

- Lack of data and common methodologies and the need to consider the different type of impacts on ECNs' lifecycle;
- Potential solutions: environmental criteria, sharing of best practices and experience, data-driven regulation

3

**Opinion on State Aid Guidelines revision (2022):** In its response to the Commission's public consultation regarding the draft revised EC Guidelines on State Aids for broadband networks, BEREC welcomed that environmental aspects are considered in the proposal:

- BEREC supported that the Draft Guidelines encourages re-use of existing infrastructure is to limit the environmental footprint of network deployment.
- BEREC also welcomed the promotion of environmental criteria introduction for MS in order to favor most environmentally efficient technologies and stressed the importance of common targets and indicators to do so.

ICT sustainability (and environmental issues) is gaining importance in stakeholders' agenda. To gain knowledge and avoid duplicating of the work, BEREC organized 25 bilateral meetings:

- There was a general consensus on the positive effects of digitalization on other sectors' decarbonisation as well as on the significant environmental footprint of digital technologies, especially devices, and on the manufacturing phase.
- The main levers of actions mentioned by stakeholders for BEREC's potential contribution were related to data collection, incentives for the sector, and consumer awareness mechanisms.

BEREC's bilateral meetings on sustainability (2021-2022)
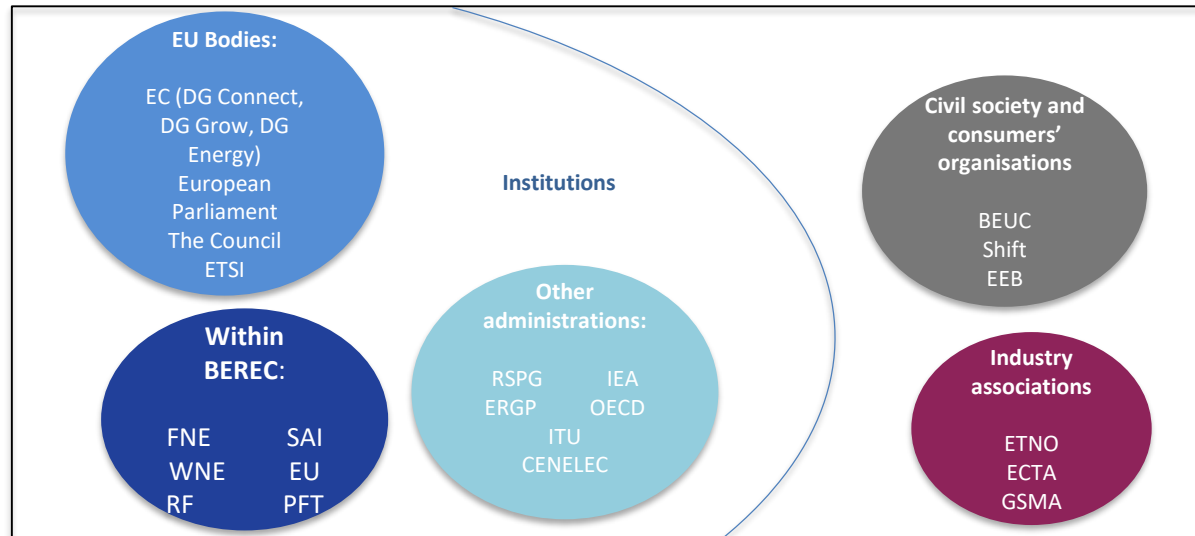
Data & indicators:
- To take part in the process of identification and definition of indicators to assess the environmental impact of ECNs;
- Item 5.3.3 Work Program 2022 on sustainability indicators for ECN/ECSs.

NEW : Mention of ITU, ETSI standards and Product Environnemental Footprint methodology. Reference to academic stakeholders (as well as other type of stakeholders).

Use of existing regulatory tools for sustainability:
- Art. 44 of EECC, BCRD, State Aid schemes and spectrum management as potential lever to promote environmental sustainability (in collaboration with RSPG);
- Address **[SLIGHTLY NEW WORDING]** migration to more energy-efficient next-generation technologies.

Encouraging environment-friendly practices of digital players in collaboration with other relevant bodies:
- Assessing common criteria of what is a "good" practice for limiting the environmental footprint of electronic communications;
- Collaboration with other relevant public bodies to encourage sustainable practices.

NEW : Possible analysis of the relationships between digital ecosystem's openness and sustainability in terms of devices' lifespan and software

Promoting end-users' empowerment in terms of environmental information on ICTs:
- Data-driven approach to raise awareness in terms of environmental information about the impact of devices, services and certain uses and most sustainable practices;
- Create positive incentives for providers.

NEW : Paragraph on developing BEREC's understanding of indirect environmental impacts including positive enabling effects of digital solutions on other sectors and rebounds effects, in the light of and collaboration with existing initiatives including from the Commission.

Other potential research questions: sustainability in terms of economic and social impacts (e. g. with relation to BEREC's work on the digital divide), potential relationship between digital ecosystem, infrastructures' resilience adaptation to climate change.

Next item on sustainability indicators for ECN/ECSs which will include a call-for-inputs for stakeholders

PC after P1 2023 / final report to be presented at P3 2023

New QoS obligations

- QoS obligations do not apply
- No automatic switch needed

Free of charge

Aligned with intra-EU comm and TR

Including:
- QoS
- VAS
- Emergency Services
- Non-terrestrial networks

Including:
- Definition
- Voluntary measures to avoid inadvertent roaming

Handover between

Include new provisions and raise awareness about charging

Mention competent authorities

Wholesale Guidelines → Launch of consultation 25 May → 30 days consultation → Final Publication 5 October

Retail Guidelines → Launch of consultation 10 June → 2 month consultation time → Final Publication deadline 1 Jan 2023, Plan to publish after P4

Data Collection → Consultation of template during summer → Next data collection to be launced in September → First Report published after P1 2023

Commission Implementing Regulation → BEREC opinion in 2023 → Update Retail Roaming Guidelines
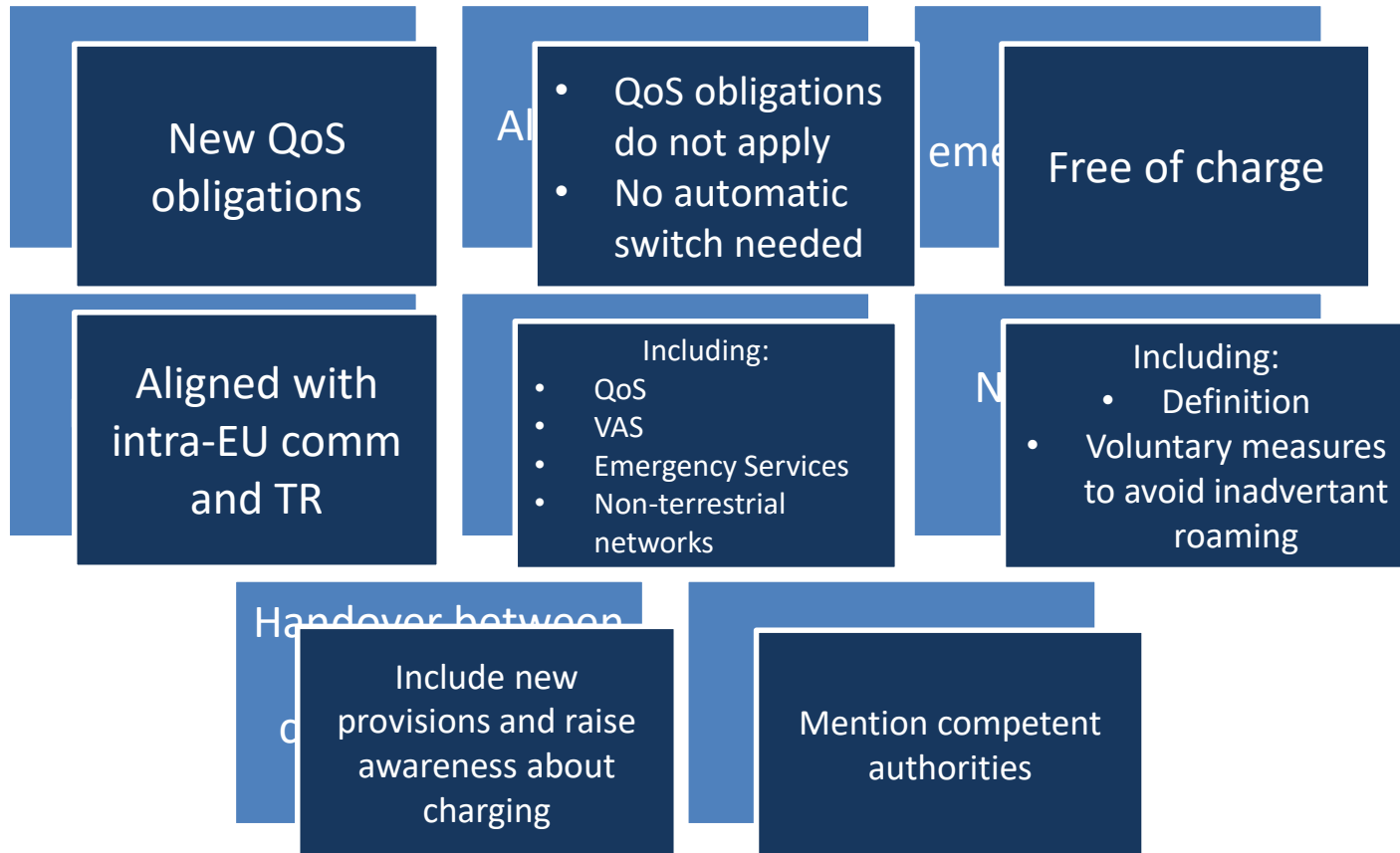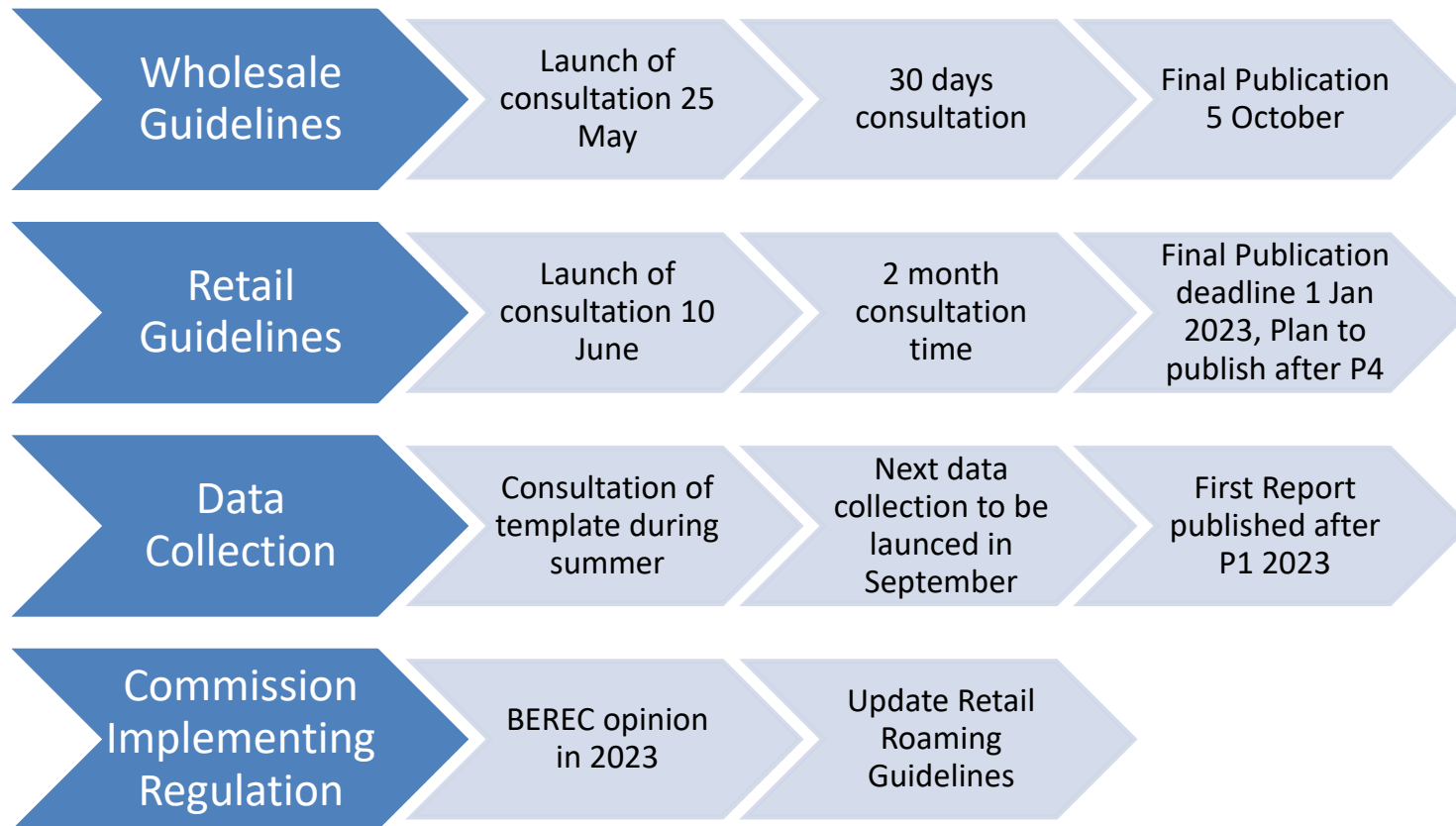
Draft BEREC Report on the Internet Ecosystem

Chiara Caccinelli (Arcep) and Jorge Infante (CNMC)

Market and Economic Analysis Working Group Co-Chairs

Body of European Regulators
for Electronic Communications

BEREC

- **Objectives:**
  - Describe how the Internet ecosystem is structured and how competition dynamics, internet openness, users' choice and experience may be affected by the position, role and practices of some key digital players

> Provides an analysis of issues to be studied
> and addressed by BEREC in the near future

- **Public consultation:**
  - Open to public consultation till 22 July 2022
  - Contributions from all types of stakeholders structured around the different chapters are welcome
  - Final report: December 2022

- **Content of the report**

  - The different elements have been organized around the client, internet infrastructure and server sides

  - Overview on the Internet ecosystem (chapter 2), description of the different elements (chapter 3) and most relevant legal provisions (chapter 4)

  - Analysis of actors active in the IE (Big Tech companies and ECS providers) (chapter 5)

  - Analysis of competition dynamics for each element (chapter 6)

  - Analysis of openness issues for each element (chapter 7)
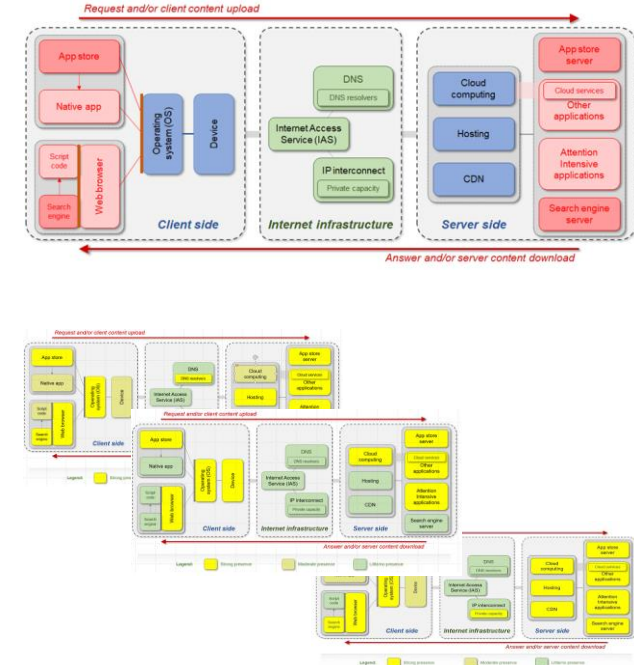
- **Main take-aways**

  - Big Tech companies most prominent in the client and server side, while ECS providers are mainly focused on IAS and infrastructure. Still, Big Tech companies increasingly investing in telco infrastructure (virtualised network services, CDNs, cloud computing, submarine cables deployment, trends toward IAS provision) → may impact ECS competition dynamics and regulation

  - The type of internet-based services' provision has significant effects: the trends from web architecture towards app architecture affect e.g. the relations between Big Tech companies and CAPs and the potential of the internet to provide an open, easy-to-access and common infrastructure

  - Several potential bottlenecks identified: CDNs, cloud computing, enabling and discovery elements (OSs, web browsers, app stores, and search engines), devices, attention-intensive applications (social networks, video-sharing platforms), e-commerce, instant messaging and IoT. Most of them dominated by provider-specific ecosystems (Big Tech companies)

  - Strong network effects, consumer inertia, lack of transparency and of interoperability result in low switching, reinforcing market concentration

  - User experience on the internet affected by many different elements not regulated by NRAs

- **Future work**

  – Competition & collaboration dynamics between Big Tech companies and ECS providers

  – Increasing investment by Big Tech companies in telco infrastructure (e.g. submarine cables) and its implications for ECSs competition dynamics and regulation

  – CDNs and cloud computing

  – Evolution of interconnection architectures and its impact on interconnection agreements, openness and competition dynamics

  – Devices, including smart speakers, virtual assistants, IoT and the increasing use of e-SIMs and its implications on terms on openness, restrictions on competition, switching, interoperability, etc.

  – For a more holistic approach, environmental aspects could also be considered on top of competition and openness

Draft BEREC Report on measures for ensuring equivalence of access and choice for disabled end-user

Paolo Lupi (AGCOM) and Iris Pita (ANCOM)
End User Working Group Co-Chairs

Body of European Regulators
for Electronic Communications
BEREC

❖ **An inventory of measures and initiatives** in place throughout MSs to meet the needs of users with disabilities that NRAs might consider when evaluating any action to be pursued to ensure equivalence of access and choice for these end-users.

❖ This report follows on from **three previous reports**, published in 2011, 2015 and 2018, broadly on the same subject. It builds on the answers to an **electronic questionnaire** issued by BEREC through its constituent NRAs to gain insight into how the issues of access and choice for disabled end-users are currently addressed across Europe. 28 responses were received in total.

❖ The report provides information on the way MS are **implementing the measures** referred in Articles 111 and 85.4 of the EECC on the availability and affordability of specific equipment and specific services that enhance equivalent access, including total conversation services and relay services, as well as those referred in Article 102, on contractual information, and Articles 85, 96, 103, 104, 109, 114, which all contain provisions aimed at end-users with disabilities.

❖ The directive on the accessibility requirements for products and services (Directive (EU) 2019/882, "The European Accessibility Act") contains overarching legal provisions on accessibility, also relevant for the electronic communication sector.

- The report consists in nine sections and five annexes, describing:

❖ the **policy principle and legal background**;

❖ **how NRAs have implemented the relevant provisions** contained in the EECC (as well as other measures) and how NRAs monitor their compliance by operators; **planned future implementation** of the measures in the EECC and of other measures;

❖ the **measures and initiatives currently in place** with regards to, *inter alia*, the concepts of access and affordability, equipment, software and website information, customer services and complaints, special retail packages, emergency services, directory enquires;

❖ the **competences of NRAs** regarding the protection of end-users with disabilities on adopting specific regulations, imposing obligations such as tariff packages, information requirements, defining QoS parameters and additional standards;

❖ the **funding mechanism**;

❖ the implementation of **total conversation services and relay services**;

❖ the **engagement with disabled end-users' associations and stakeholders**;

❖ the measures concerning **access to emergency services**.

❖ Even if NRAs' answers to the questionnaire showed that **there is no single way** to ensure equivalence of access for end-users with disabilities across all MSs, and for this it was not possible to single out best practices, it was nevertheless possible to derive **some conclusions**.

❖ The conclusions, *inter alia,* suggest:

  ❖ shifts of focus from specific US provisions to a set of general and overarching accessibility provisions;

  ❖ collaboration between NRA, Government and other national entities in each country;

  ❖ constant dialogue between NRAs and disability associations;

  ❖ relay services should aim at being multipurposed, and doing so accommodating the needs of persons with different types of impairments;

  ❖ targeted campaigns and other educational activities organized by NRAs;

  ❖ promotion of accessible solutions for access to emergency services.

❖ Along the same lines of BEREC, the **EDF, i**n its Directive Implementation Toolkit, underlines the need for a close contact between NRAs and national organisations of persons with disabilities, and declares that access and 24/7 availability of relay services is crucial for ensuring equal access especially in emergency situations.

Documents approved for public consultations	Deadline to submit the contributions
Draft BEREC Report on the internet ecosystem	**22 July 2022**
Draft BEREC Guidelines on the new Roaming Regulation (EU) 2022/612 and Commission Implementing Regulation (EU) 2016/2286 (Retail Roaming Guidelines)	**9 August 2022**
Draft BEREC report on measures for ensuring equivalence of access and choice for disabled end-users	**15 August 2022**
Draft BEREC Report on satellite connectivity for universal service	**15 August 2022**