

BEREC Report on the outcome of the public consultation on the Draft BEREC Report on Sustainability Indicators for Electronic Communications Networks and Services



5 October 2023

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I. INTRODUCTION

During its 54th plenary meeting (9th and 10th March 2023), the BEREC Board of Regulators approved the Draft BEREC Report on Sustainability Indicators for Electronic Communications Networks and Services (Report) for public consultation.

This Report aims to help identify relevant sustainability indicators, which are instrumental in measuring and communicating the environmental footprint of the electronic communications sector. It also analyses the potential role of National Regulatory Authorities (NRA) in efforts to harmonise sustainability indicators and the use of methodologies for measuring the environmental impact of ECN/ECS.

Since the publication of its Report on environmental sustainability in June 2022,¹ BEREC has continued to build up its knowledge on the important topic of sustainability in order to contribute with its expertise in shaping the twin 'green and digital' transition.

Collaboration with relevant stakeholders is of importance in this process, especially for knowledge and information exchange related to ICT environmental sustainability.

BEREC based this work stream on sustainability indicators on the existing EU regulations and initiatives that are detailed in this Report, as well as on an active dialogue with other relevant bodies engaged in this topic. The Report gathers the findings from two questionnaires and a series of workshops with stakeholders which aimed to establish an overview of sustainability indicators currently used and which are perceived as relevant for assessing the environmental footprint and performance of the electronic communications sector. It also presents BEREC preliminary assessment of main challenges and learnings regarding sustainability indicators for ECN/ECS.

In accordance with BEREC's policy on public consultations (PCs), all stakeholders were invited to submit their inputs via EU survey portal by 12 April 2023 (17:00 CET).

The following PC Report summarises the responses received to the public consultation and presents BEREC's position with regard to suggestions and proposals put forward in those responses, as relevant.

In total 8 responses were received, none of which were indicated as confidential.

The contributions were received from the following organisations: Ericsson, ETNO, Eurofiber, EWIA, Greening of Streaming, GSMA Europe, Liberty Global and the University of Oulu.

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

Generally, in their responses, the stakeholders acknowledged the significance of the work done by BEREC in order to help identify relevant sustainability indicators and assess some of the main challenges to increase environmental transparency in the ICT sector.

¹ https://www.berec.europa.eu/system/files/2022-07/10282-berec-report-on-sustainability-assessing_0_3.pdf

Many stakeholders were thankful for the opportunity to submit their views through the questionnaires, workshops and the public consultation and would be keen to engage further and share their expertise with BEREC in order to further build upon the common industry knowledge.

BEREC appreciates this willingness of its stakeholders to engage in its work on environmental sustainability in 2023 and beyond and is continually working to nourish its engagement with all stakeholders.

II. CHAPTER 1: Introduction and objectives

The overall feedback from stakeholders who submitted their contributions during the public consultation welcomed the work of BEREC. Stakeholders including, Ericsson, ETNO, Eurofiber, EWIA, Greening of Streaming, GSMA Europe, Liberty Global and the University of Oulu, welcomed BEREC's attention to the subject matter - the willingness to identify relevant sustainability indicators and to assess some of the main challenges to increase environmental transparency in the ICT sector. Respondents also expressed appreciation for the opportunity to submit their views and additional insights through the public consultation.

Ericsson encourages BEREC to work more closely with the Standards Developing Organisations (SDOs), in particular ITU and ETSI, as such engagement may benefit future work on developing indicators and fostering transparency. When developing indicators, Ericsson recommends to make a distinction between transparency and comparability (between companies/products). They argue that the two purposes demand different level of accuracy and different methodologies, especially when considering life cycle/value chain impacts that can only be assessed not measured. Comparability demands control over or normalisation of contextual factors. Ericsson encourages BEREC to refer in its introduction to various international standards developed by ITU-T, in particular ITU L.1410 which elaborates on challenges when it comes to comparability.

Ericsson suggested the inclusion of recent studies that could be relevant to inform work on impact assessment² and called to distinguish more clearly between indicators for ICT companies and indicators for ICT products, networks and services, in future work. According to Ericsson, the distinction was not sufficiently clear in the Draft Report except in the table of preliminary classification, rendering the conclusions of the Draft Report less obvious. The least frequently collected indicators seem to be those that would more commonly be calculated at a product level (as part of an LCA). This raises the question whether the suggested 'relevance' refers to the company level assessment, the product level assessment or both.

Ericsson believes that it is important to develop the KPIs jointly with the methodology for assessing environmental impact.

² For instance: Electricity Consumption and Operational Carbon Emissions of European Telecom Network Operators (2022), <https://www.mdpi.com/2071-1050/14/5/2637>; Assessing Embodied Carbon Emissions of Communication User Devices by Combining Approaches (pre-print, 2023), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4258869

Ericsson outlines that BEREC's findings particularly highlight Product Environmental Footprint (PEF), ISO and Lifecycle Analysis (LCA) standards and put forward the need for Product Category Rules (PCRs). The stakeholder suggests that the joint standard ITU L:1410/ETSI 203 199 (ITU/ETSI LCA standard) gives more detailed and specific guidance for ICT goods, networks and services relevant for PCR. Ericsson also highlights that ITU-T and ETSI are currently revising this standard to provide further guidance for consideration of several life cycles for ITU, related work item of to the assessment of products.

Ericsson also mentions the importance of ITU work on companies' environmental footprint: ITU L.1420 (currently under revision) complementing ISO 14064-1 and GHG protocol with specific guidance for ICT companies as well as guidance on Scope 3 for telecom operators. The author also named four standards at sector level from ITU: ITU-L.1450 (assessment guidelines for ICT sector GHG emissions), ITU-T L.1470 (decarbonization trajectory), L.1471 (Net zero for ICT organisation) Ericsson suggests that SDOs are particularly relevant for the work on standardised, comparable groups of metrics. Ericsson mentions the need to differentiate between the concept of net zero (L.1471, ISO IWA42 Net zero guidelines etc.) from climate neutrality.

ETNO acknowledges the significant work BEREC has been undertaking to help identify relevant sustainability indicators and assess some of the main challenges to increase environmental transparency in the ICT sector. At the same time, ETNO believes that a broader discussion with regard to carbon and energy intensity indicators is needed, as this could provide valuable and comparable information regarding management practices and actions being undertaken within organisations to limit their environmental impact.

Eurofiber welcomes the fact that BEREC is willing to take an active role to help promote this important topic of sustainability indicators. The stakeholder supports the conclusion that the sector is already taking action and states the belief that there is not yet a clearly defined role for BEREC at the current time.

EWIA (European Wireless Infrastructure Association) welcomes the work of BEREC on sustainability and the effort to establish a fruitful dialogue with stakeholders, scientific and civil society and specialised agencies. EWIA takes note of the information and directions contained in the

Report which will be taken into account in upcoming work on sustainability.

Greening of Streaming indicates its alignment with the view of BEREC that technical assistance is needed to improve comparability and reliability of the information reported, both through standardisation efforts of the industry and third-party evaluation through a public authority, where relevant. Greening of Streaming also agrees with open data models, although they underline that it is not clear at this stage what open data model should be adopted.

GSMA acknowledges and welcomes BEREC's recognition of the crucial role played by connectivity in facilitating the 'green transition'. While the mobile industry is committed to reducing its own emissions, its significant contribution to combating climate change lies in enabling emissions reductions in other sectors through smart connected technologies and promoting changes in consumer behaviour. Therefore, the industry association is of the opinion that the final Report should acknowledge the significant enabling role of the mobile industry, citing the results of its work on the topic and documenting its possible role in reducing

the industry's emissions. GSMA recognises it may be challenging for BEREC to estimate the precise extent of this enabling factor in other industries but wishes a clear acknowledgement of improvements in the environmental impact of the telecom industry within the broader context of its 'positive' environmental impact on other sectors. GSMA also encourages NRAs to take into account the work already carried out by the mobile industry.

Considering the upcoming proposal for a 'Code of Conduct' on the environmental sustainability of telecoms by the European Commission, for GSMA it is essential to establish a consistent set of basic sustainability indicators for the industry within the EU. The stakeholder insists on the fact that inconsistencies between sustainability indicators used by relevant bodies could erode public trust in environmental initiatives by all stakeholders, despite their commitment to combatting climate change. Therefore, GSMA supports the suggestion to define the scope and boundaries of the network (or parts of it), in order to ensure that reported figures are comparable, homogeneous, and based on consistent definitions.

Liberty Global appreciates the opportunity to provide feedback on the Draft Report. The company strongly supports the European Commission's goals of reducing emissions and achieving a green and digital transition. Liberty Global recognises the ICT sector's role in this transition and has made significant investments in infrastructure upgrades to achieve energy savings and emissions reduction. They also emphasise waste reduction through recycling and refurbishment practices. Liberty Global also mentions its commitment to developing green technologies and measuring environmental impact.

The University of Oulu from Finland welcomes the opportunity to provide feedback on the sustainability work being conducted. The University supports the perimeter of the work on 'sustainability indicators for electronic communications networks and services' presented as a crucial topic. The stakeholder also acknowledges that the Draft Report emphasises the environmental sustainability aspect of the ICT sector, without taking into account the social and economic dimensions. The University is of the view that this limitation of topic should be addressed in the current draft and in BEREC's future work, and deems it important to consider the broader concept of sustainability, as outlined in the UN Sustainable Development Goals (SDGs). The stakeholder emphasises that term 'sustainability' is frequently used to refer specifically to environmental sustainability and could be replaced with 'environmental sustainability' for clarity.

Chapter 1 of Draft BEREC Report on sustainability indicators aims at presenting the main targets of BEREC's Sustainability workstream, as well as European and international environmental targets applicable to the digital sector.

BEREC welcomes the feedback provided by stakeholders and has carefully considered the respondents' views on this Draft Report.

From the outset, BEREC reiterates that this workstream must be read in the context of the European Commission's parallel project on this topic, due for publication at the end of 2023. BEREC is actively liaising with the European Commission team working on the development of list of sustainability indicators for electronic communications and the upcoming Code of Conduct for ECN/ECS.

It is clear that accessible and reliable data is required to accurately capture the impact of ECN/ECS on the environment. As correctly pointed out by stakeholders, BEREC notes that this

impact extends beyond carbon emissions, and also includes resources use, waste production, water consumption, land use, biodiversity etc.

BEREC agrees with the feedback that this particular Report is focussed on ‘environmental’ sustainability and does not encompass other aspects of sustainability (economic, social). As such, the mentioned ‘indicators’ with respect to ECN/ECS are explicitly ‘environmental sustainability indicators’. Other dimensions of sustainability in the context of BEREC agenda are tackled by other workstreams and publications of BEREC. For instance, the fight against digital divide has been covered in a recent BEREC Report. More generally, BEREC supports wholly the UN SDG framework by identifying the promotion of full connectivity, the support of sustainable and open digital markets and the empowerment of end-users as strategic priorities in the BEREC Strategy 2021 – 2025.

On the difference between ‘comparability’ and ‘transparency’ objectives for such environmental indicators, BEREC agrees that these are two separate topics. However, the transparency goals for methods of measuring, monitoring and reporting on environmental impact will inherently enable the comparability of such metrics across industry players. Equally, the ability to compare environmental impact will help improve transparency and the understanding of the electronic communications sector overall impact on the environment. Therefore, comparability and transparency are interrelated concepts, and not mutually exclusive when it comes to objectives for environmental sustainability indicators.

BEREC continues to follow the important work of standardisation bodies, and closely monitors developments in ITU, ETSI and ISO standards. These organisations and their standards feature in almost all chapters of the Report. A speaker from ITU SG-5 participated in the series of workshops organised by BEREC to draft this Report (detailed in Chapter 3). Also, to emphasise the relevance of existing standards, BEREC added information about the standards used by companies who replied to BEREC questionnaire in the Report (Annex I).

BEREC welcomes the call for methodological precision from stakeholders for future analysis on environmental sustainability indicators. This may include guidance on distinct indicators for companies at an organisational level, and then indicators for products and services within the ECS sector. This distinction is included in BEREC preliminary classification (featured in Chapter 6).

BEREC acknowledges the efforts of the sector to reduce its own emissions, as well as the work of the European Green Digital Coalition (EGDC) and the ITU on indirect effects (incl. enabling effects on other sector green transition).

III. CHAPTER 2: European Framework

Greening of Streaming provided a quote from the study ‘Greening Cloud Computing and Electronic Communications Services and Networks Towards Climate Neutrality by 2050’ mentioning kWh/GB while referring to energy efficiency of networks. From the point of view of the consortium, there is no direct proportionality between GB and kWh. Hence, it invites



BEREC to treat this metric with extreme caution throughout the document and apply careful assessment in this specific area.

ETNO and GSMA, on the contrary, express positive feedback on the mention of this metric regarding energy efficiency of networks (kWh/GB) by the study (see part V of this Public Consultation Report).

Liberty Global believes that regulatory instruments supporting sustainability should be appropriate, proportionate, and adhere to the principle of technology neutrality. It emphasises the importance of preserving legal certainty, and for this reason it advocates for the need to demonstrate clear legal mandate. It also highlights the Corporate Sustainability Reporting Directive (CSRD) and the EU Taxonomy as critical opportunities for standardisation. It is of the view that BEREC should feed into the developments of the standards used under the CSRD. According to Liberty Global, challenges posed by fragmented reporting frameworks extend beyond the EU and should be tackled at a global level, as many operators operate internationally and face divergent sustainability reporting requirements. It invites policymakers and regulators, including within BEREC, to collaborate with their counterparts in other jurisdictions to establish harmonised standards. According to the company, international harmonisation would also benefit end-users by enabling easier comparisons of operators on an international scale.

According to the University of Oulu, Chapter 2 of the Draft Report provides a comprehensive overview of European regulatory activities related to the topic of environmental sustainability. The University regrets that RSPG and standardisation work are not mentioned in this particular Chapter.

In this Chapter, BEREC outlines the existing work on indicators and measurements for environmental footprint, including EU legislative proposals, such as Directives and Regulations, as well as studies and non-regulatory EU initiatives. This extensive review of the EU framework is generally welcomed by stakeholders.

BEREC acknowledges the debate on the appropriate ratios and figures to express sustainability indicators, such as energy intensity, expressed in kWh/GB. It notes that further investigation and consideration on these figures should be carried out when defining a precise methodology on energy efficiency. The Draft Report aims to show an accurate picture of current use and analysis from stakeholders and NRAs, where relevant. BEREC agrees that it would be beneficial for all related entities (other public bodies, SDOs, stakeholders and policymakers) to collaborate on establishing common methodologies and standardisation for environmental reporting at an international level. As stated in the Draft Report, BEREC agrees that the CSRD and EU Taxonomy framework as well as other regulatory initiatives – such as the European framework on eco-design requirements and the upcoming Directive on green claims – could improve harmonisation of the calculation of the environmental footprint and environmental transparency of the sector. In relation to end-users, these frameworks represent important opportunities to align on harmonised methodologies and standardised definitions where relevant.

The companies of the ICT sector reporting on their environmental impact and, to a certain extent, also end-users would profit from a harmonised reporting scheme. BEREC will indeed work in 2023 and 2024 on the topic of end-users' empowerment through disseminating

information on the environmental footprint of digital products and services. In its Draft Report, BEREC has analysed feedback from the stakeholders based in Europe, but also took into account feedback from relevant international bodies, such as the ITU, combining all relevant sources of information in this respect. BEREC will continue in its future work to allow for the existing and/or emerging international reporting standards as much as possible where they adhere to the EU requirements for the ICT sector.

Regarding the mention of the work of RSPG and standardisation, BEREC reminds stakeholders that Chapter 2 covers the European framework (EU proposals, Directives and Regulations, studies and non-regulatory initiatives from EU) while the work of RSPG and international standardisation bodies are presented in Chapter 3, through the material provided by the relevant workshops. The Introduction of Chapter 2 will be amended to make this approach more clear.

IV. CHAPTER 3: Results from stakeholder workshops on environmental transparency and related reports

EWIA expresses gratitude to the BEREC Sustainability WG for the invitation to speak at the stakeholder workshop in 2022 and for providing an accurate summary of the discussions in Chapter 3. EWIA shared the results of their study conducted by EY-Parthenon, which is mentioned in the Draft Report (published later in March 2023).

The study report briefly highlights the opportunities presented by the wireless communication sector in combating climate change, as well as the challenges associated with expanding network infrastructure and the resulting increase in energy consumption. To address these challenges, the study emphasises the pragmatic approach of the independent towerco model in mitigating both concerns through an efficient passive infrastructure sharing model.

Ericsson believes it would be beneficial for future studies to have a wider representation of targeted speakers. According to Ericsson, the workshop with academics and civil society organisations might not represent the original research and diverse views of these groups which risks leading to biased conclusions.

Ericsson points out that one sentence which relates to Vlad Coroama's intervention during the BEREC workshop with academics is unclear as it refers to the internet traffic increase rather than to the ICT electricity consumption increase.

Ericsson notes that due to the overall need for one common methodology, adding new methodologies may not lead to a wider consensus. It suggests that the main focus should be on reusing and improving existing standards. It is often stated that standards are lacking – however in several cases, standards may exist but may not be sufficiently known.

Regarding the last paragraph on page 31 of the Draft Report, Ericsson notes that from the perspective of applying ICT solutions in other sectors, other organisations besides EGDC have contributed important work. For instance, ITU-T has established a methodology for assessing the impact of such solutions (L.1480) and World Business Council for Sustainable Development (WBCSD) has recently published guidance on avoided emissions.

GSMA appreciates the growing interest in sustainability demonstrated by NRAs and calls to consider the efforts made by the global mobile industry thus far. GSMA emphasises that the mobile industry is actively addressing climate change and has voluntarily developed a decarbonisation pathway aligned with the science-based target initiative (SBTi) and the Paris Agreement's goal of achieving net-zero emissions by 2050. The GSMA invites BEREC to explore their latest work on the topic.³

The University of Oulu argues that the workshops – featuring representatives from public bodies, academia and civil society organisations – should have welcomed a broader spectrum of speakers. According to the university's response, the first workshop did not facilitate the work of other important organisations such as ETSI and ISO. The workshops with academics and civil society organisations featured only a small number of representatives, and the author suggests including a broader range of independent research representatives to ensure comprehensive discussions. In the view of the University of Oulu, methods for involving independent research from academic and other organisations should be prioritised to enhance the regulatory process. The stakeholder notes that in contrast, workshops with industry associations included a larger number of representatives, offering a broader perspective from the private sector.

In this Chapter, BEREC recalls the input provided during the workshops conducted with various stakeholders, which was a starting point for collecting information on sustainability indicators related to the ICT sector. BEREC notes the concerns expressed by one of the stakeholders regarding workshops on the need for a wider representation of academia and civil society organisations, and indeed considers it very important to have a wide range of stakeholder views on this topic. BEREC values indeed the inputs of stakeholders and encourages third parties to continue to engage with BEREC regarding issues/developments related to sustainability in order to take these perspectives into account in its future work.

BEREC will make all necessary amendments in the Report where draft sentences were deemed not sufficiently clear.

BEREC is also of the view that developing a new methodology where robust methodology(-ies) already exist may not lead to a wider consensus. However, in some cases, certain impacts are not covered by a reliable methodology and would benefit from further work on developing reliable evaluation and monitoring methods in particular regarding the implementation in the ICT sector. In any case, BEREC strives to facilitate harmonisation and supports the focus on the adoption of a widely accepted common and reliable methodology.

³ 'Mobile Net Zero' report for further information on the industry's climate action efforts. The report can be accessed at the following link: <https://www.gsma.com/betterfuture/resources/mobile-net-zero-state-of-the-industry-on-climate-action-2023>

V. CHAPTER 4: National regulatory authorities' approach to environmental transparency and indicators) and ANNEX II (Additional information and graphs on answers to BEREC questionnaire to national regulatory authorities)

Liberty Global thinks it is useful for operators to understand different regulatory obligations across jurisdictions. Hence, it finds the collation of the various approaches taken by different NRAs in the Draft Report very useful. It is also of the opinion that the role of NRAs in supporting sustainability initiatives, particularly in data collection, should be carefully considered. According to this stakeholder, operators already face increasing reporting requirements on sustainability indicators, as demonstrated by the upcoming Corporate Sustainability Reporting Directive (CSRD) and national initiatives mentioned in the Draft Report. Liberty Global is of the opinion that it is unclear whether NRAs are the most suitable entities to monitor sustainability indicators across the telecommunications sector and that expanding reporting requirements by obligating operators to provide sustainability information to NRAs is deemed unnecessary. Liberty Global does not support an expansion of NRAs' responsibilities to collect data on sustainability indicators through revisions of the European Electronic Communications Code (EECC).

The University of Oulu states that the collection of NRAs' activities on the environmental sustainability of the ICT sector reveals the status in Europe – very few NRAs have collected information from ICT companies. The University outlines that the differentiation of indicators and the lack of coherent data collection approaches at national level is a major finding of the study.

In Chapter 4, BEREC provides an overview of activities carried out by European electronic communications regulators and other competent authorities, as collected via a dedicated questionnaire in 2022. This chapter also includes the associated underlying challenges identified with regard to environmental transparency and the measurement of environmental sustainability of telecoms.

The contributors to the public consultation welcomed BEREC's summary of activities conducted in this Chapter, which they consider useful. BEREC acknowledges the comments formulated on the disparity of NRA's initiatives on environmental sustainability. Indicators currently collected by NRAs are largely dependent on national contexts and the mandates of individual NRAs, which underlines the importance for a clearer mandate at EU level for a harmonised approach to the collection of environmental data.

Regarding a remark of one contributor on the increasing demands for the environmental reporting of companies, BEREC takes note of the importance of not overburdening market participants and emphasises the need to strive for a high level of harmonisation.



VI. CHAPTER 5: Analysis of industry players feedbacks on environmental reporting practices and sustainability indicators) and ANNEX I (Additional information on answers to BEREC questionnaire to industry players)

ETNO finds it relevant to deepen the answers and results that were obtained from all the consultation methods that were carried out regarding carbon and energy intensity indicators pointed out by certain industry respondents in the Draft Report. When analysing the metrics reported in Annex I related to CO₂ emissions, ETNO points out that the relative metric shown is the tCO₂/M€ (intensity using million-euro revenues) and would appreciate it if collected data or results on metrics related to tCO₂/energy consumption (MWh), tCO₂/Petabyte could be included. When analysing energy efficiency metrics, in Annex I, the most relevant ones related to measuring the number of petabytes transmitted per energy consumption are: TB of data/GWh, Petabyte/kWh, Mb/kWh. However, ETNO finds that these metrics do not properly show and address the most relevant environmental impacts. According to ETNO, in terms of environmental indicators, 'kWh per Petabyte' is probably more valuable, as it indicates energy is being used to process and store a given amount of data (energy efficiency), which is directly related to GHG emissions associated with the production of electricity. For this reason, ETNO considers it appropriate to include this kind of energy efficiency indicators discussion and mention in the Draft Report: MWh/Petabyte, kWh/GB.

Ericsson comments that in Draft Report, Section 5.1, the strong numerical representation of operators (compared to service providers) may impact results. It suggests that it might be better to distinguish between providers and operators when analysing results. It also acknowledges that the term 'relevance' has not been defined which makes it hard to interpret results. It also points out coming initiatives of Science Based Targets Network and Taskforce on Nature-related Financial Disclosures.

Eurofiber outlines that the respondents that have provided input might not be fully representative of the entire sector and therefore it could be difficult to draw any sound conclusions. Eurofiber calls on BEREC to be cautious about the analysis of responses received and believes that hard conclusions cannot be drawn for the data collected thus far. Eurofiber believes that BEREC should be cautious regarding the responses received during the earlier consultations and how these responses were being used in the current Draft Report.

GSMA suggests that it might be helpful to provide further details and discussion on energy efficiency indicators for mobile networks, including their advantages, limitations, and complementarity. According to GSMA, it would be preferable to collect data or results on metrics related to tCO₂/energy consumption (MWh) or tCO₂/Petabyte, as suggested by ETNO. GSMA states that to gain a comprehensive understanding of network energy efficiency and how to improve it, a set of complementary indicators should be considered – such as energy use per unit data, energy use per connection or subscriber, energy use per coverage area, and energy per mast site. GSMA also shared two benchmarking reports on energy efficiency



published by the organisation in 2021 and 2023, exploring different efficiency indicators and referring to resources like ITU L.1330 and ETSI ES 203 228.⁴

The University of Oulu pointed out that the stakeholder classification is not clear in terms of what the difference between a telecom operator and a service provider is. The author mentioned that the questionnaire of BEREC mentioned standards that are not covered in the text accordingly.

In this Chapter, BEREC presents a summary of the information gathered from industrial players in the questionnaire published in 2022, on their current environmental reporting practices, the environmental footprint and performance indicators they use, and the challenges identified in terms of achieving environmental transparency. The BEREC summary aims to help identify indicators deemed feasible and useful according to existing methodologies, with a view to share environmental information and improve the comparability of the environmental impact of players in the electronic communications industry.

BEREC is very grateful to respondents to the public consultation for the feedback they provided on this Chapter, which BEREC regards with the highest attention.

BEREC notes that a large number of contributions point out that certain categories of players are more represented than others in the responses summarised in this Chapter (e.g. telecom operators are over-represented compared to device manufacturers). BEREC is aware that this may have an influence on which indicators are considered relevant or not and reiterates that this specificity is taken into account in the BEREC's analyses and wording of the Report. Regarding the classification of the categories of industry players and more specifically, the difference between telecom operators and telecom providers, BEREC follows the definition as provided by the European Electronic Communications Code (EECC).

BEREC acknowledges the call from some respondents to deepen the understanding and continue the work on energy intensity or energy efficiency indicators. BEREC welcomes these suggestions and considers including further work on these indicators in its future work where applicable.

In this Chapter, BEREC also addresses a variety of different standards and methodologies of different organisations and bodies. BEREC thanks the respondents to the public consultation for providing BEREC with additional references on standards in their contributions. BEREC will include an additional Annex I which features the most frequently mentioned standards in the industry responses.

⁴ See: (1) 2021 report: <https://data.gsmainelligence.com/api-web/v2/research-file-download?id=60621137&file=300621-Going-Green-efficiency-mobile.pdf>

(2) 2023 report: <https://data.gsmainelligence.com/api-web/v2/research-file-download?id=74384072&file=280223-Going-Green-Second-Edition.pdf>

The resource for ETSI ES 203 228 can be found at:

https://www.etsi.org/deliver/etsi_es/203200_203299/203228/01.03.01_60/es_203228v010301p.pdf

VII. CHAPTER 6: BEREC's preliminary assessment on sustainability indicators

ETNO is convinced that the optimal and efficient way towards common EU indicators for network-specific sustainability requires the dialogue between policymakers and the industry players. ETNO believes that the telecom industry in Europe has a proven record of the ability to agree on effective common standards, processes and regulatory approaches and that harmonisation would be redundant. ETNO also recommends that reporting of sustainability indicators, whenever implemented, is not limited to the largest operators. Otherwise, such reporting may not capture the environmental impact of a substantial part of the market; while the individual environmental impact of each of the smaller operators is supposedly minor, when taken together, these may still account for a substantial share of that impact. In ETNO's view, BEREC could explore ways of how 'greening' of networks should be linked to the sectoral regulation, e.g. incentivising investment in more sustainable network technologies by alleviating the regulatory burden. For ETNO, the introduction and/or extension of reported sustainability indicators should preferably not lead to an increase in the reporting burden upon operators.

The University of Oulu reiterates its comment on the Draft Report focus solely on the environmental sustainability of the ICT sector not considering the social and economic dimensions of sustainability. It recommends expanding the scope of the work in the future to consider the interrelationships and trade-offs between the environmental, social, and economic dimensions of sustainability. The University also suggest considering the 'handprint' effect of the digitalisation, meaning the positive impact of ICT solutions to reduce other sectors' environmental footprint. The University of Oulu suggests engaging more with the research community to provide unbiased research results. It also encourages industry stakeholders and operators to share their data and methodologies with the research community. The University of Oulu is of the view that through collaboration and knowledge exchange, the ICT sector's sustainability can be addressed as a collective effort.

In the opinion of Ericsson, the term 'relevance' is not well defined, which renders the results difficult to interpret. When assessing the relevance of environmental sustainability indicators, future BEREC work should also distinguish between company and product-level on the one hand and operators and providers on the other hand, as these factors have a significant consequence for relevance. The company takes the view that the forecast of 13% of European energy consumption generated by the ICT sector for 2030 according to the recent EU Action plan is not generally accepted and states that Scope 3 is an integrated part of net zero.

In this Chapter, BEREC examined the state of play and challenges in the electronic communications industry relevant to the sustainability indicators, the potential role of NRAs as well as made a preliminary classification of sustainability indicators.

At this stage, the scope of BEREC's work included the identification of sustainability indicators for collection and transparency purposes adopted by the industry and collected by NRAs. The social and economic dimensions of sustainability, the examination of sectoral regulation to provide incentives for greening networks and the enabling effect from the use of ICT

solutions in other sectors are not in the scope of the present Report. BEREC will therefore clarify within the final Report that it specifically addresses indicators for measuring environmental sustainability.

BEREC strongly agrees with the view that in order to establish common sustainability indicators, collaboration is needed between public bodies, standardisation organisations, industry players and other stakeholders from civil society and academia. In addition, its efforts focus on capturing the environmental impact of the telecom sector in order to have a more accurate view of the environmental impact in the ICT market.

BEREC takes note that one stakeholder points out the benefits of a clearer definition of 'relevance' and distinguishing between company- and product-level and different business models in the future work of BEREC. BEREC also acknowledges the remark regarding the possible limitation of figures on the energy consumption of the ICT sector by 2030 at the EU level, but notes that this claim was not substantiated by relevant data.

VIII. CHAPTER 7: Conclusions and future work for BEREC and general/other comments

GSMA welcomes the interest shown by NRAs in sustainability and calls for consideration of the work carried out by the global mobile industry. The mobile industry has been a leader in aligning with the goals of the Paris Climate Agreement and is actively reducing its environmental footprint, aiming for 'Net Zero' emissions by 2050 or earlier. GSMA acknowledges the challenge of measuring total value chain emissions and the lack of a standardised approach for measuring Scope 3 emissions. The stakeholder cited a project group had been created to develop a standardised approach for measuring each of the 15 GHG Protocol Scope 3 categories, with guidance expected to be published in 2023. Regarding environmental impacts beyond carbon emissions, GSMA provided details on its efforts to promote a circular economy for network equipment. It is of the opinion that standardised data sets from network equipment manufacturers are a key recommendation to support this transition.

GSMA emphasises the importance of dialogue between policymakers and industry players for establishing common EU indicators for network-specific sustainability. It does deem not harmonisation through European regulation as being necessary, instead trusting the industry's ability to agree on effective common standards. GSMA calls for alignment with existing data collection and reporting initiatives to minimise the reporting burden on operators and allow them to focus resources on climate action. For GSMA, reporting obligations related to sustainability indicators should be reasonable, feasible, and applicable to all operators, regardless of size. GSMA expresses broad support for the conclusions of BEREC's Report and emphasises the relevance of a collaborative approach to address environmental challenges in the telecom sector and reiterates its call for further consideration of carbon and energy intensity indicators.

Liberty Global invites BEREC to continue to monitor NRAs' work in this area and make this information publicly available. Liberty Global is of the view that it would be useful for

stakeholders across the sector, and more broadly it would be useful for policymakers in the process of developing these indicators through the CSRD and other legislative initiatives.

According to the University of Oulu, independent research conducted by academics and other organisations plays a crucial role in addressing sustainability topics and in balancing the self-interests of stakeholders towards the common good. However, there is a need to develop mechanisms that allow academic voices to be heard beyond the scope of this study. EU-funded and national-level research projects on sustainability can significantly contribute to regulatory activities, but there should be established mechanisms for information exchange between these projects and regulatory bodies. In addition to the research domain, the University of Oulu highlights significant efforts related to the environmental sustainability of the ICT sector are being carried out in standardisation bodies. It then calls for mechanisms that facilitate the sharing of knowledge with standardisation bodies to inform BEREC's future work on sustainability. The University suggested that the Draft Report should include a summary of relevant standards and ongoing efforts in Europe to bridge the gap between these interconnected activities. It recommends for the glossary to be expanded and include several terms, including 'environmental sustainability'.

ETNO agrees with the conclusions of the BEREC report, that the most relevant environmental sustainability indicators for the ICT sector are those related to measuring energy consumption and GHG emissions. However, it suggests that BEREC should further elaborate the results obtained from different stakeholders regarding carbon and energy intensity metrics, as in its view, these findings could potentially serve as a threshold and criteria used for many emerging regulations aiming at measuring and quantifying the impacts from the ICT sector, e.g. the EU Taxonomy. ETNO considers it a priority issue for these types of indicators to be further shared, discussed and implemented by all stakeholders in the sector.

In this Chapter, BEREC summarises the conclusions reached on the topic and briefly presents its future work on sustainability-related matters.

BEREC echoes stakeholders' views on the importance of dialogue between public bodies, policymakers and industry and highlights, in that it considers this cooperation important not only for establishing common EU indicators for network-specific sustainability, but for all related issues that contribute to the improvement of the ICT sector environmental performance. BEREC acknowledges the significant contribution of the industry, as well as important public bodies' role towards harmonisation, applicability and reliability of environmental reporting.

Regarding network intensity indicators, BEREC acknowledges the fact that carbon and network intensity indicators may call for deeper analysis but notes that the analysis in this BEREC Draft Report and related conclusions were based at large on the answers and results obtained from the stakeholders' feedback. These results can only be viewed as a first step for further research and thorough analysis.

BEREC considers it very important to continue collaborating with all related entities (organisations, standardisation bodies, academics, stakeholders and policymakers) regarding the ongoing work to develop indicators through the various legislative initiatives. BEREC supports the need to develop a knowledge sharing platform among public bodies as

well as with relevant stakeholders that will eventually contribute to the improvement of the environmental performance of the ICT industry.

In response to feedback on the glossary, BEREC amended this to include a definition on environmental sustainability.

