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

Fields marked with * are mandatory.

Body of European Regulators for Electronic Communications
BEREC

During its 50th plenary meeting (10 March 2022), the BEREC Board of Regulators has approved the Draft BEREC Report on Sustainability: Assessing BEREC's contribution to limiting the impact of the digital sector on the environment for public consultation.

This Draft Report on Sustainability provides an overview of the results of BEREC's groundwork on ICT sustainability to assess and better understand the impact of the digital sector, including electronic communications networks and services, on the environment. It sets out an outline of BEREC's approach to environmental sustainability of the sector.

This Draft report constitutes the first step: BEREC will continue to build up its knowledge on the important topic of sustainability to be able to contribute with its expertise in shaping the green and digital twin transition. Collaboration with relevant stakeholders will be of importance in this process, notably to share analysis and experiences related to ICT sustainability.

For structured responses to this consultation, BEREC kindly asks you to submit your comments/remarks per each chapter of the draft report in the following questions below. You will have also the opportunity to upload a supporting document at the end of the survey (file size limit: 1 MB).

Responses should not be submitted later than **14 April 2022 (17:00 CET)**.

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Feedback on each chapter of the Draft Report

1) Please enter your comments on Chapter 1 (Introduction) here:

The introduction should be improved by emphasizing that many of the studies cited are overestimating the energy use of ICT. These studies are top-down studies, where the energy use of a small set of countries or networks today is extrapolated over a larger set and to the future. The reality is that the official statistics of ETNO, EU telcos etc show a declining use of energy for their networks. Lunden and Malmodin 2022 clearly show no correlation between data growth and energy use.

Unfortunately many studies, such as the one by the Shift project or Andrae base themselves on estimates of kwh/GB which are then extrapolated, this leads to rapidly increasing energy use. However network equipment doesn't use more energy to send more data. A bottom up approach measuring from the individual interfaces, switches and modems up to core routers shows that subsequent generations of modems and switches use the same or sometimes even less energy on a per connection, switch and router basis, while upgrading to higher traffic speeds.

2) Please enter your comments on Chapter 2 (Case studies) here:

The example of the French Arcep/Ademe database should be carefully considered. It appears that the data collected is around the number of gigabytes transferred and the energy used by the network. This then results in a kwh/GB metric. As said, the metric is meaningless. It has the same validity as measuring the energy use of streetlighting by the number of cars that drive by. The energy of a connection is fixed, most of the energy is needed for the laser to transport the light a certain distance. The modulation doesn't change the energy use much. Subsequent generations of technology generally use the same energy for the link, but provide higher bitrates at the same or less consumption. What the French data will show is that networks that have higher data use will have less energy use per GB. If they would zoom in, they would realise each connection of the same technology/vendor uses the same energy, regardless of data transferred. An example from the Netherlands is that T-Mobile NL uses roughly the same amount of energy for its mobile network (130GWh) as Vodafone or KPN, but handles almost the same traffic in total. Based on a kWh/GB metric T-Mobile the Netherlands is more efficient than its competitors. The energy use of the mobile network is therefore not determined by the data handled but by the number of sites and the energy use of the site.

EU regulators would do better if they would collect traffic statistics based on Megabit/s per customer to evaluate how much capacity there is, instead of the amount of bytes consumed. This will also aid in discussions on IP interconnection. Average bandwidth use per broadband connection at 9pm is 2-3Mbps according to British Telecom and other ISPs. Given that 1Gbps is widely available there is no indication that networks can't handle 30Tbps per 10M custmer, nor that this is environmentally unsustainable. Better metrics of energy use of networks would be the energy use per retail connection for fixed networks and the energy use per site for mobile networks (with some measure of coverage, because we do need sites)

3) Please enter your comments on Chapter 3 (Outcomes on BEREC's previous work on sustainability) here:

4) Please enter your comments on Chapter 4 (Inputs from stakeholders) here:

5) Please enter your comments on Chapter 5 (Key findings of the external study) here:

The author's of the external study had the unenviable task to work through may studies and papers based on wrong assumptions. It is commendable they've been able to dodge most of the problems associated with those studies. However they still assume rebound effects and see a benefit in digital sobriety (eg lowering streaming quality to save bandwidth) for either there isn't any support on the network side. Energy savings can be achieved by making more efficient modems, putting services in the cloud instead of in "Le box" and promoting the use of smaller televisions.

6) Please enter your comments on Chapter 6 (Conclusions and outline for BEREC's future work on sustainability) here:

The conclusions that ICT will be 14% of energy use is very speculative. Some of the growth in energy use of the ICT sector is also based on a change in classification. For example, the Dutch central government closed the computer centers each individual agency had and consolidated those 64 computer centers in 5 professional datacenters, part of which were commercial datacenters. The electricity use over a year reduced according to the Dutch government from 235GWh to 128GWh, mostly from savings in cooling. That energy use was however more concentrated and some of it now was calculated as part of the electricity use of commercial datacenters and therefore part of the ICT sector. Moving to professional datacenters with a lower Power Use Efficiency or even hyperscalers has constrained the growth of energy use considerably according to the IEA. It does however make energy use that used to be within a bank or factory visible as part of the ICT sector.

Future work should focus on a bottom up assessment of the energy use of the sector. Determining for each class of components how energy use can be improved. In addition it should focus on proper estimates of growth in mobile data sites and broadband connections. The telecom industry has over estimated the growth of small cell sites and macro-sites consistently for the last few decades. There is no reason BEREC should use estimates of 4 times the number of sites in the next 10 years.

7) Please enter any other comments you may have:

Some operators have commissioned studies on energy growth and ip interconnection that are wrong in both areas. Please do not use those studies. A very poignant example is an academic study and blog by Deutsche Telekom that claims that the growth of Youtube traffic in its German network from 3.7 to 7.3MB per customer per day is ecologically unsustainable and it cannot handle the traffic in its network. If German consumers can't watch 1 minute of Youtube per day, we may have some issues achieving the goals of the Digital Decade and Gigabit society. https://www.telekom.com/en/company/management-unplugged/details/how-sustainable-is-unlimited-data-growth-on-the-internet-644368

Please upload here any supporting document that you deem relevant:

In accordance with the BEREC policy on public consultations, BEREC will publish all contributions and a summary of the contributions, respecting confidentiality requests. Any such requests should clearly indicate which information is considered confidential.

Confidential contribution:
☐ Yes
☑ No

If yes, please specify the information which should be treated as confidential:

Background Documents

Draft BEREC Report on Sustainability

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