BEREC
Body of European Regulators for Electronic Communications

WG Sustainability

External workshop on digital services ecodesign for greener networks and ICTs

Co-Chairs introduction

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The material impacts behind digitalisation

- Up to 3.2 % of global GHG emissions in 2020
- 6% to 12% of global electricity use
- One smartphone requires 70 kg of raw materials

(Source : UNCTAD, *Digital Economy Report* 2024)

BEREC's commitment to reduce the environmental footprint of electronic communications and ICTs 1/2

In 2020, BEREC included in its 5-year strategy a new focus on sustainability to contribute to ICT-related goals of the Green Deal and UN Agenda 30. Four key areas of actions detailed in its first report on sustainability:

1

Data availability and common indicators for the telecom and ICTs : Sharing of experiences (workshop on September 11th) and contribution to DG Connect and JRC work for a CoC on ECN/ECS sustainability (JRC first study published in 2024).

2

Use of existing regulatory tools for sustainability purposes: Inputs to EC public consultation on the needs of digital infrastructures and ongoing work on infrastructure sharing.

BEREC Report on Sustainability Indicators for ECN/ECS

BEREC's commitment to reduce the environmental footprint of electronic communications and ICTs 2/2

3

Encouraging environment-friendly and resource-efficient practices among digital players: 2024 BEREC High level position on AI and virtual words.

4

Contributing to the empowerment of end users through information on ICT products : 2024 BEREC Report on ICT Sustainability for End-Users and communication campaign.

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Understanding the environmental footprint of digital technologies

- The **entire value chain should be considered** because there is an **interdependence between the three tiers of digital technologies and the digital services they support: their dynamics influence each one another**
- **Impact** of digital services' growth **on data traffic and necessary data centres (ex: generative AI)**
- **Impact** of digital services' **on the diversity of devices and their renewal (software obsolescence)**

Understanding the environmental footprint of digital technologies

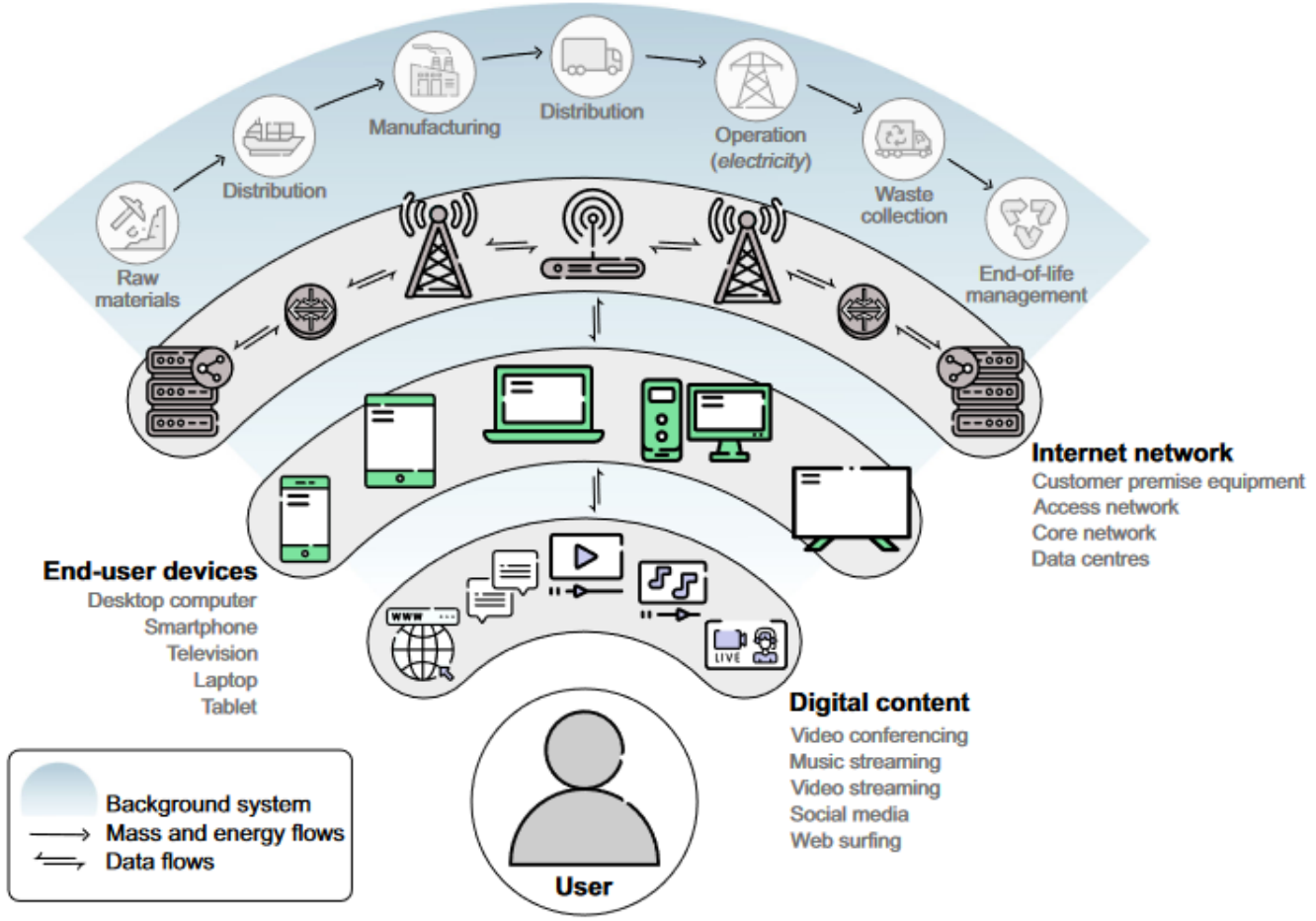

Fig. 1 | Framework for assessing the life cycle environmental impacts of digital content consumption. Digital content includes web surfing, social media, video streaming, music streaming, and video conferencing. Data centres and end-user devices process and store data, while the core and access networks and the customer premise equipment (e.g., modems and Wi-Fi routers) transfer the data between data centres and users. The background system supplies the equipment (i.e., end-user devices, modems, servers, etc.) and electricity necessary for operation. The icons used in the figure are designed by Freepik.

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Source: Istrate, Robert & Tulus, Victor & Grass, Robert & Vanbever, Laurent & Stark, Wendelin & Guillén-Gosálbez, Gonzalo. (2024). The environmental sustainability of digital content consumption. Nature Communications. 15. 10.1038/s41467-024-47621-w.

High-Impact Digital Services: What's Driving ICT Footprint?

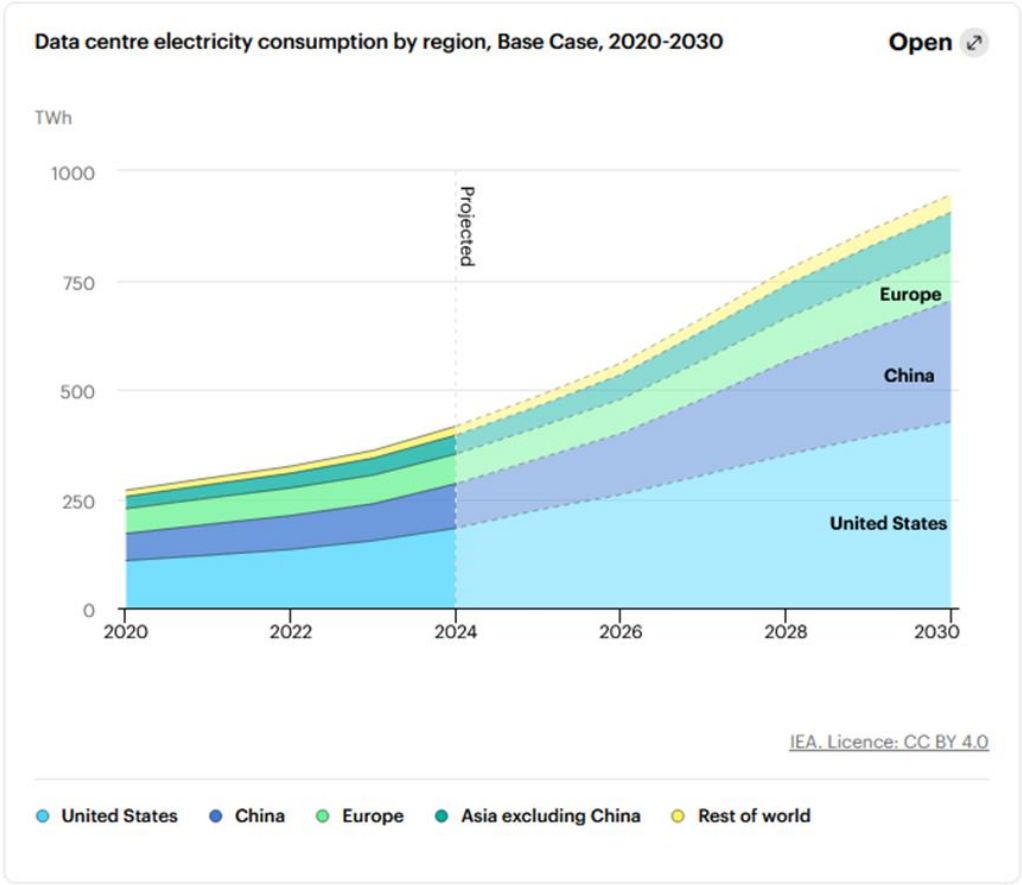
Video Streaming - 60%+ of global internet traffic - 1h HD = 30- 55g CO_2 equiv - Pushes CDN + data center demand	Server Load High energy demand Wide environmental impact due to mainstream usage
Cloud Gaming - Consumes 5-20GB of data per hour - Needs low latency + Graphics Processing Unit (GPU)	Heavy graphics load High bandwidth use Network upgrades
Artificial Intelligence - High training + inference power - Integrated in many apps	Intensive compute Data center reliance Device renewal due to new AI features
Cloud Computing - Constant server use - Often opaque to users	Always-on impact Shared but hidden environmental costs
Music Streaming - 24/7 habits, high-bitrate audio - Smart speaker usage	Continuous data flow Hidden "always-on" energy
Social Media - Autoplay, scroll, updates - AI for content curation	Device drain Software-driven obsolescence

The environmental footprint of digital services: the GenAI example

- The International Energy Agency (IEA) projects that **electricity demand from data centres worldwide is set to more than double by 2030 to around 945 terawatt-hours (TWh),** slightly more than the entire electricity consumption of Japan today.

- **AI is projected to be the primary driver of this increase**, with electricity demand from **AI-optimised data centres projected to more than quadruple by 2030.**

- **In 2024, global electricity consumption by data centres is estimated at 415 TWh**, or **1.5% of global electricity consumption** for all sectors combined. Over the last 5 years, this represents an average increase of 12% per year.



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Conclusions

- Devices manufacturing and energy consumption from infrastructures continue to rise due to increase in digital usage
- Sustainability is essential for **future technological acceptability and availability of ICT**
- **Study** the positive indirect effects of digital technologies on other sectors and of rebound effects in other industries related to ICT
- **Collective efforts and actions are needed** for sustainable by design ICTs, and <u>especially</u> for **the ecodesign of digital services**

THANK YOU!

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