REPRÉSENTATION PERMANENTE
DE LA FRANCE AUPRÈS DE
L'UNION EUROPÉENNE

Liberté
Égalité
Fraternité

arcep les réseaux comme bien commun

"The Environmental Impact of Digital: From Evidence to Action"

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A new but essential topic

- Growing societal awareness and public expectations regarding the environmental impact of digital technologies since the late 2010s.

- Arcep started to take into account environmental issues: **data collection across the digital value chain**
  - to understand, assess and act;
  - to provide robust neutral inputs and recommendations to policy-makers and society as a whole.

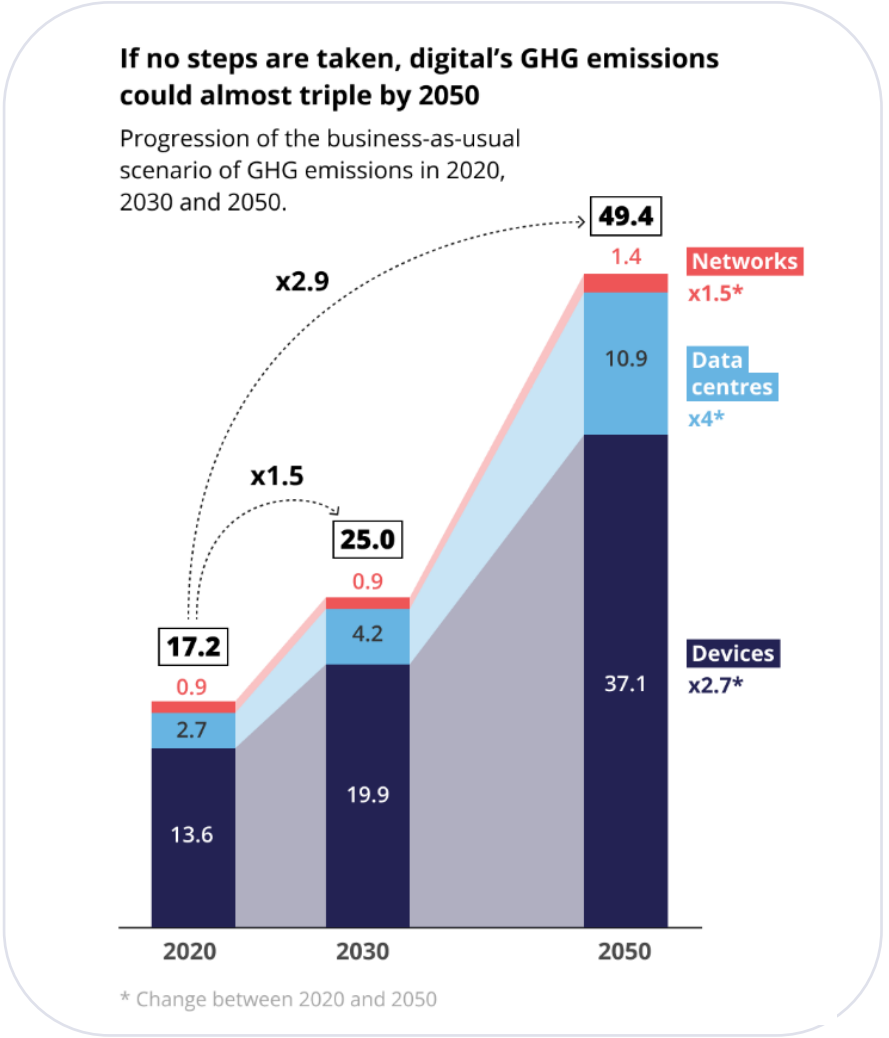
Arcep's main take-aways on digital sustainability:

- **Data-driven regulation** (*incl*. transparency from all players);
- **Environmental accountability of all digital players** (interdependence between the elements of the digital value chain);
- **Ecodesign obligations also for digital services** (*i.e.*, measures optimising energy consumption at the same time limiting attention-grabbing technics effects).

→ **Europe is the right level to act => <u>A call to develop 'sustainability-by-design' at EU level.</u>**

Understanding the environmental footprint of digital technologies

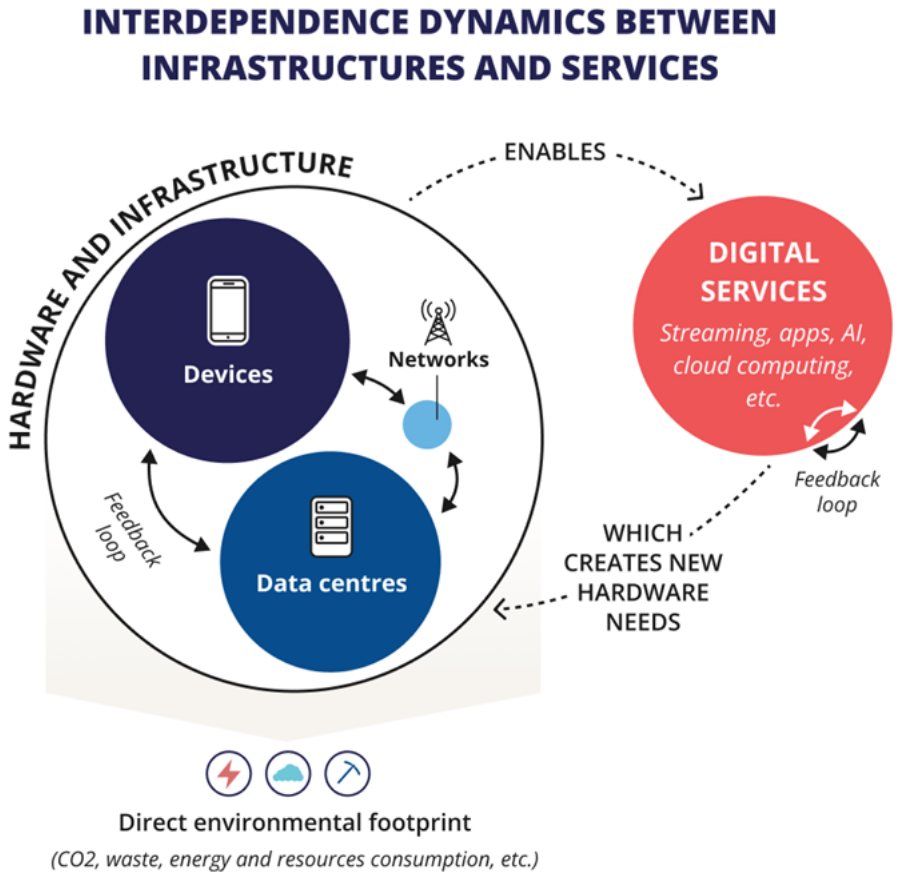
- **Digital electricity consumption in France in 2022 = 11% of the national electricity consumption** (51,5 TWh; 65 TWh with abroad data centres for French use).
- **Digital technology's carbon footprint in France in 2022 = 4.4% of the national carbon footprint** (29.5 Mt CO2eq).
- In addition to the carbon footprint, the study highlights **the issue of the availability of metals and other strategic resources.**
- Arcep and ADEME study based on a robust approach (multicriteria, multi-components and multi-stages): if nothing changes, **the French electricity consumption could double and the carbon footprint could triple by 2050** compared to 2020 levels.
- **Worldwide trend**: the **sharp growth** of the digital footprint is a **global issue** (*cf*. BEREC, JRC, World Bank, ITU publications).



… and these figures do not take into account the exponential growth in the use of AI!

A growing impact driven by the development of digital services

- **Three interdependent building blocks** (end-user devices, data centres, networks) **enable digital services.**
- **Digital environmental impacts** (electricity, carbon, water, metals, land use….) **may be exacerbated by the development of Generative AI (48% use it in 2025 in France, +15% compared to 2024 levels).**
- **At the global level, the data centre electricity consumption could double by 2030 and potentially reach 1,000 TWh** (compared to 415 TWh in 2024) according to the International Energy Agency.
- **Need for action: deploying digital infrastructure and services in a sustainable way to ensure future generations' rights to competitive and sovereign digital Tech.**



Recommendation 1: The need for greater transparency

The importance of data-driven regulation

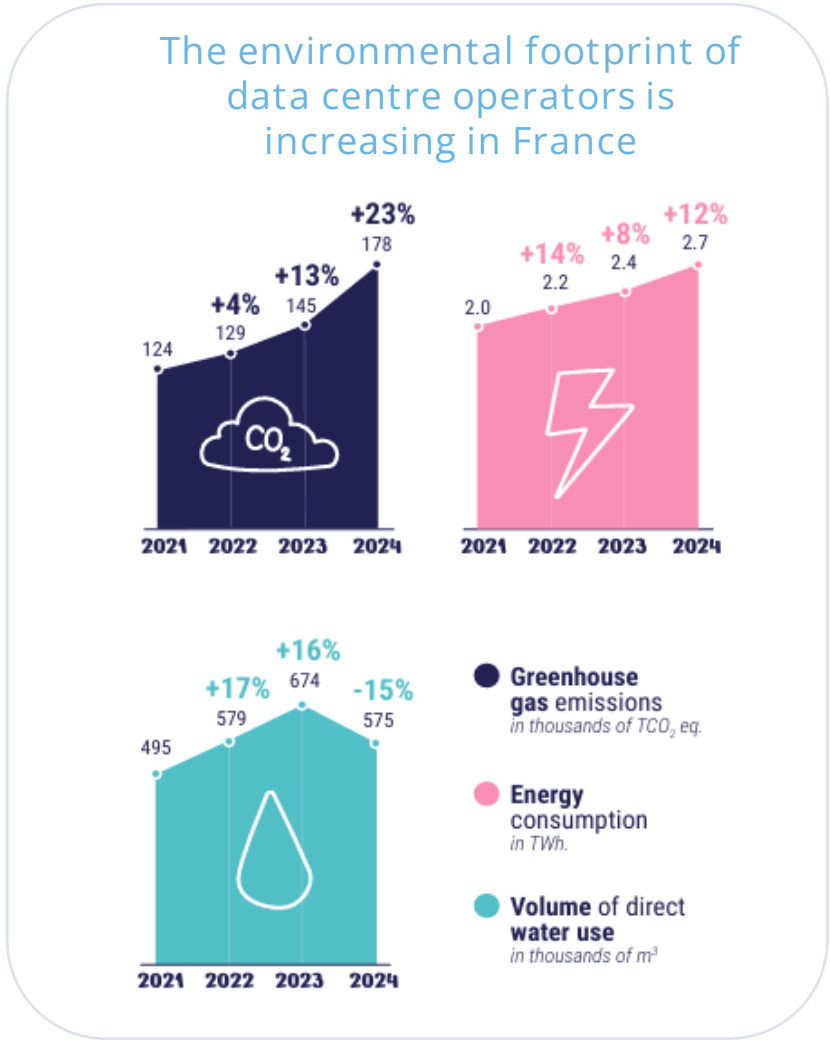
- **A lack of transparency:** no environmental information available for 84% of all AI models for instance.

→ **Data-driven regulation, through collection and publication of indicators and methodologies, to allow evidence based decisions from policy makers, incentivise stakeholders and empower users**.

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- **Extension** of Arcep's **environmental data collection powers** since 2021 by law.
- World Bank and ITU: replicate this data collection in other countries.

→ **At the European level: Digital Networks Act (DNA) as a basis to provide clear legal mandate for National Regulatory Authorities (NRAs) to collect environmental information from stakeholders of the whole digital value chain.**



Recommendation 2: Ecodesign of digital services, an opportunity for EU sustainability and digital competitiveness

Complementing product requirements with service-level measures

WHAT IS ECODESIGN?

The integration of environmental sustainability considerations into a product's lifecycle.

ESPR, Regulation (EU) 2024/1781, Art. 2(6) - adapted summary of the definition for products.

WHY ECODESIGN MATTERS FOR DIGITAL SERVICES

Digital services (websites, applications, video streaming, AI, etc.) **have a tangible environmental footprint, even if they appear non-physical.**

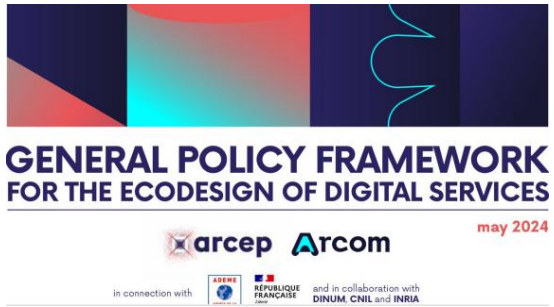
EU ecodesign requirements (*e.g.,* ESPR) **focus on physical products.**

Extending the discussion to software and digital services **would better allocate accountability to reduce environmental impacts of ICTs.**

Ecodesigning builds, notably, **on greater efficiency: doing better with less resources.**

What does ecodesign for digital services look like in practice?

Concrete design choices to reduce the footprint of digital services from France's voluntary guidelines published in May 2024 by Arcep and other public bodies.



FOUR EXAMPLES OF PRACTICAL LEVERS

01 Keep devices in use longer

Build websites and apps that work on older devices, avoiding unnecessary hardware replacement.

02 Design lighter digital services

Limit unnecessary features, data transfers and storage throughout the service life cycle, usese only the computing and storage capacity actually needed.

03 Improve user information

Provide robust methodologies and practical tools to share environmental information to users (*e.g.*, ecodesign index for audiovisual content).

04 Use AI where it adds value

Where appropriate, favour smaller, less resource-intensive models over more demanding alternatives.

Same experience, fewer resources

The same image encoded in different formats

83%

smaller

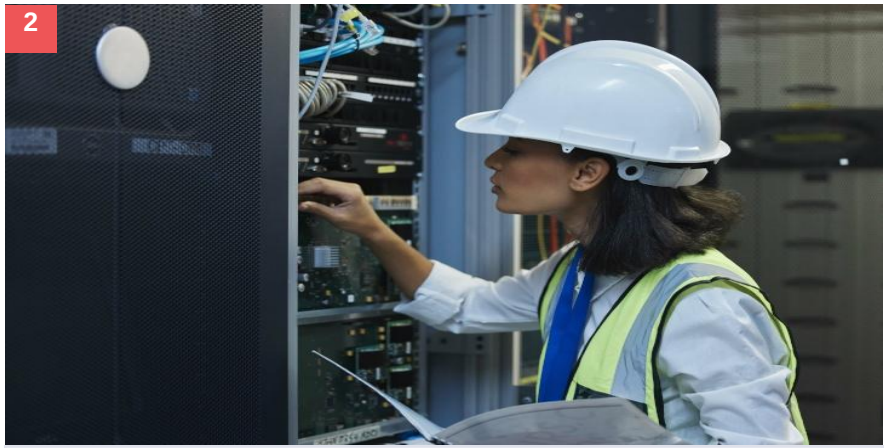
119 KB (JPEG)
→
20 KB (AVIF)

1



AVIF **20 KB**

2



JPEG (original) **119 KB**

The same video encoded in different formats

Adapting resolution and codec choice can significantly reduce video bitrate.

Video bitrate

High resolution (1080p) + less efficient codec (H.264) **4.5 Mbps**

ADAPT RESOLUTION ↓ −45%

Optimised resolution (720p) + less efficient codec (H.264) **2.5 Mbps**

USE A MORE EFFICIENT CODEC ↓ −60%

Optimised resolution (720p) + more efficient codec (AV1) **1.0 Mbps**

Combined reduction in bitrate **−78%**

Source: Test conducted by Arcep using the short, comedic animated film "Big Buck Bunny". Results may vary depending on the content, encoding settings, and viewing conditions. Bitrate savings do not necessarily translate into equivalent energy savings

Key targeted ecodesign proposals for more efficient content delivery and better user control in Europe

From voluntary best practices to EU requirements for the ecodesign of digital services

1 Adapt resolution to devices and use efficient codecs

Enable an energy-saving mode by default; adapt resolution and frame rates to devices. Support efficient, royalty-free codecs and optimized image formats.

2 Offer audio-only options

Offer an easily accessible audio-only mode, activated when video moves to the background unless users opt otherwise.

3 Reduce unnecessary loading

Give users control over autoplay and infinite scrolling; avoid unsolicited preloading.

Related EU initiatives

Digital Networks Act

Sustainability target and efficient content delivery

Digital Fairness Act

User control and environnemental transparency

EU Kids Act

Configuration options and responsible design

How do telco operators assess the impact of video ecodesign on network traffic?

FFT / I Care / Greenspector · March 2026 · Laboratory measurements and modelling

Video services account for 70% of total internet data traffic

IF MEASURES WERE ADOPTED AT SCALE (MODELLED POTENTIAL)

-51% fixed network peak-hour traffic

-54% mobile network peak-hour traffic

-84%

ENERGY-SAVING MODE

Average bitrate reduction on a recent smartphone when the mode is enabled.

-41%

AUTOPLAY OFF

Reduction in viewing time assumed in the study's modelling, based on external research.

4×

RAPID SCROLLING

Fast scrolling used four times as much data as slow scrolling on social platforms.

Source: FFT / I Care / Greenspector (2026), summary report, pp. 12–13, 19, 34–35. Open source ↗

Estimates are scenario-dependent; traffic savings are not equivalent to energy or carbon savings.

A sustainable digital ecosystem to foster competitivity and tech sovereignty

1 **Serves the EU competitiveness:**

- more efficient ways of consuming resources (*e.g.*, electricity) and associated cost reductions;
- competitive differentiation by adressing consumers' environmental concerns (*e.g.,* Frugal AI), etc.

2 **Empowers end-users in Europe:**

- combating the obsolescence of devices (*i.e.,* benefits in terms of purchasing power and understanding the products purchased);
- greater control over their use of digital services (*e.g.,* by limiting the abuses of the attention grabbing practices).

3 **Contributes to reducing the EU's strategic dependencies:**

- ecodesign requirements ultimately help to decrease component replacement and the use of raw materials and other resources – which generally do not originate from within Europe.

4 **Reflects who we, as Europeans, are:**

- "European way for the digital transformation, putting people at the centre, built on European values and EU fundamental rights, reaffirming universal human rights, and benefiting all individuals, businesses, and society as a whole" (*cf*. European Declaration on Digital Rights and Principles for the Digital Decade).

Additional resources

Arcep's annual « Achieving digital sustainability »
(French)

***General policy framework for the ecodesign of digital services** (English)*

Full report « Generative AI: environmental issues and challenges »
(English)

PEReN study on AI's inference phase
(French)

Arcep strategic roadmap « Ambition 2030 »
(English)

Thank you for your attention!