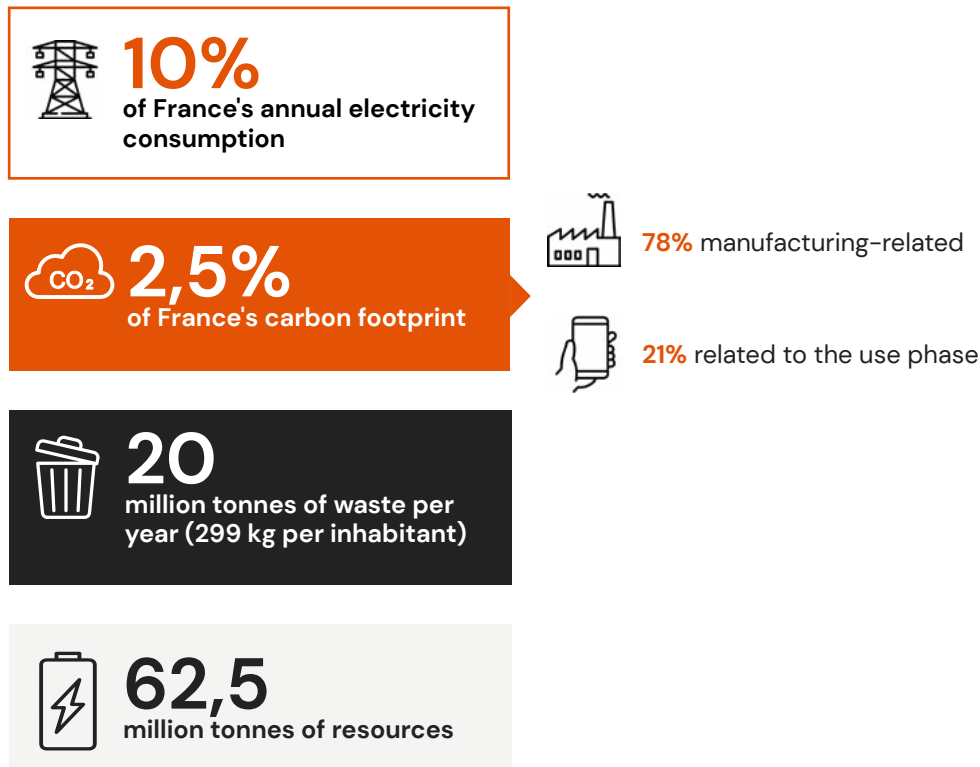


Emissions associated with information and communication technologies

I - Presentation of the source of emissions

Greenhouse gas (GHG) emissions linked to information and communication technologies are caused by the energy consumption required to operate the devices, the emissions linked to the production of the devices and the production and maintenance of the interfaces.

Infographic with figures on [information and communication technologies](#) :



Although digital-related emissions may seem low today, it is important to note that the sector accounts for [6% of French GDP](#) and that it [grew by 7.2% in 2022](#). The associated GHG emissions are also expected to increase.

II - Presentation of levers and best practices

Levers in **green** are easy to implement and offer significant gains in terms of GHG emissions, while the **orange** levers are more difficult to implement, but offer significant gains in GHG emissions, and the **blue** levers are easy to implement, but offer lower GHG emission gains.

1. Reduce emissions linked to the manufacture of IT equipment

- 1.1 Prefer reconditioned appliances
- 1.2 Reduce the number of items of equipment per employee
- 1.3 Extend the life of equipment
- 1.4 Hire equipment

2. Reduce emissions linked to the energy consumption of equipment

- 2.1 Switch off appliances outside working hours
- 2.2 Integrate environmental considerations into the choice of hosting provider

3. Reduce emissions linked to data consumption

- 3.1 Prefer fixed networks to mobile networks
- 3.2 Prefer the use of collaborative platforms
- 3.3 Limit the consumption and creation of very high quality videos
- 3.4 Choose or design eco-designed digital services

1. Reduce emissions linked to the manufacture of IT equipment

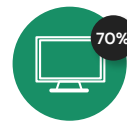
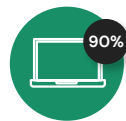
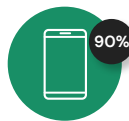
1.1 PREFER RECONDITIONED APPLIANCES

■ Buying reconditioned appliances greatly reduces their impact on the environment

The ADEME suggests that the impact of a reconditioned product is only 10% of the impact of a new product

■ In a Life Cycle Assessment study on the impact of digitisation, the [ADEME](#) shows that the main impact on climate change comes from the manufacturing phase :

- 90% in the case of a smartphone
- 90% in the case of a laptop
- 70% for a computer screen



1.2 REDUCE THE NUMBER OF ITEMS OF EQUIPMENT PER EMPLOYEE

■ The production phase of laptops and smartphones is responsible for around 90% of the impact on climate change

- Offer employees a single additional screen
- Offer dual SIM mobile phones to share business and personal use
- Adopt a "bring your own device" policy to use personal equipment already available (laptop, mouse, keyboard, etc.)

1.3 EXTEND THE LIFE OF EQUIPMENT

- Ensure proper maintenance of equipment (regular updates, anti-virus protection, etc.)
- Use an open source operating system such as Ubuntu to limit the programmed obsolescence of the media
- Provide employees with protective equipment (protective cover, carry bag, double screens, protective shell, etc.)
- Base equipment renewal on performance rather than accounting criteria

1.4 HIRE EQUIPMENT

- Lease IT equipment (video projectors, screens, computers, etc.)
- This allows companies to share equipment and smooth out needs during peaks in activity
- Offers better maintenance of equipment and a high rate of reuse after renewal

2. Reduce emissions linked to the energy consumption of equipment

2.1 SWITCH OFF APPLIANCES OUTSIDE WORKING HOURS

- The impact of a fixed network on climate change is divided between the manufacture of the network (50%) and its use (50%). Use of the network is mainly affected by the associated energy consumption.
- Disconnecting a company's internet network outside office hours can reduce the associated impact on climate change.

2.2 INTEGRATE ENVIRONMENTAL CONSIDERATIONS INTO THE CHOICE OF HOSTING PROVIDER

- [Using data centres](#) to store data requires continuous energy consumption to keep them running smoothly, but also to cool them down.
- Choose a web host committed to environmental criteria such as :
 - Low-carbon energy supply.
 - Eco-design of infrastructures.

3. Reduce emissions linked to data consumption

3.1 PREFER FIXED NETWORKS TO MOBILE NETWORKS

- It is estimated that, at equivalent data rates, the carbon impact of transferring 2 GB of data over a fixed network is [three times lower](#) than on a mobile network.
- Offer employees a stable Wi-Fi connection for professional and personal media in the workplace.
- Request access to a fixed network when teleworking.

3.2 PREFER THE USE OF COLLABORATIVE PLATFORMS

- On average, ordinary [emails](#) emit 4 gCO₂eq, while emails with attachments emit 35 gCO₂eq.
- Limit the number of emails sent by :
 - Using an instant messaging system.
 - Using collaborative platforms to share files (or send files by using a link to the server)
 - Deactivating automatic notification emails and newsletters.

3.3 LIMIT THE CONSUMPTION AND CREATION OF VERY HIGH QUALITY VIDEOS

- Halving the resolution of a video can [reduce the carbon impact of video streaming by 20% to 30%](#) (i.e. from 1080p to 480p).
- Reduce the quality of videos viewed within the company.
- Reduce the quality of videos published by the company.

3.4 CHOOSE OR DESIGN ECO-DESIGNED DIGITAL SERVICES

- Eco-design involves integrating environmental impacts throughout the life cycle of a digital service right from the design phase. The impact generated by the [eco-designed service](#) is lower than that of a conventional service.
- Choose digital service providers who adopt an eco-design approach for their products.
- Train teams in charge of digital services in eco-design.

III - Case study



Celeste is a French B2B digital infrastructure platform dedicated to SMEs, large companies and the public sector. Celeste owns and operates the third largest national network providing high-speed connectivity and other telecommunications services. Celeste has also launched a wholesale offer providing network access to operators serving businesses.

In 2022 Celeste embarked on the Science-Based Target (SBT) trajectory process and defined a 1.5°C alignment strategy. As an SME (taking the scope of France into account), Celeste must commit to a "short-term SBT" objective of reducing its absolute Scope 1 and 2 emissions by 42% by 2030 compared with the reference year 2022. 88% of Scope 1 & 2 emissions are linked to the vehicle fleet and 11% to electricity. The underlying actions are to gradually replace fleet vehicles with hybrid or electric models, to purchase green electricity with guarantees of origin and to deploy solar panels across the sites. Celeste aims to submit to SBTi in Q2/Q3 2023.

In order to maintain a holistic vision, the Group is also continuing to work on its Scope 3 emissions, which represent 98.9% of total emissions. Various levers have been identified: energy efficiency action plan with energy consumption (data centre, infrastructure, building) and optimisation of business travel; improved waste management through sorting and reporting on the five main waste streams (paper, metal, plastic, glass, wood); development of a server reconditioning workshop.

IV - Openness to other environmental issues

The reduction in GHG emissions associated with information and communication technologies can have co-benefits on other environmental issues.

- **Use of fossil fuels** : the energy consumption associated with information and communication technologies is contributing to the increasing scarcity of fossil fuels.
- **Use of mineral resources** : energy consumption linked to information and communication technologies is contributing to the depletion of mineral resources.

V - Further information

Here are a few resources to explore the issue of emissions from information and communication technologies in greater depth :

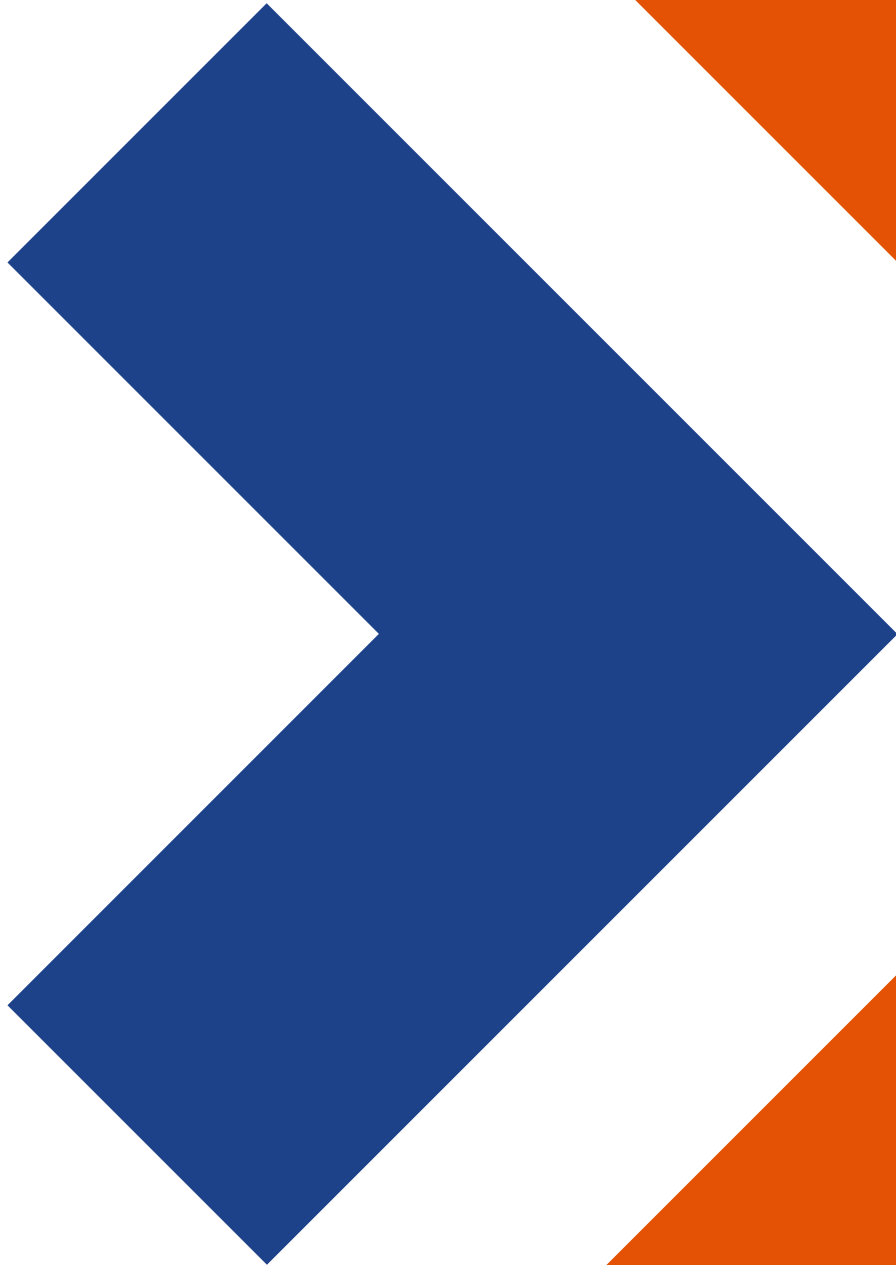
- [ADEME guide to digital technologies, information and communication](#)
- <https://bilans-ges.ademe.fr/fr/ressource/guide-sectoriel-list/index/idElement/10/siGras/O>
- [Guide to the future of the digital sector, ADEME](#)
- [General eco-design standard for digital services](#)

VI - Appendice

Regulatory method version 5	Item	GHG Protocol	Category
Category		Scope	
1. Direct GHG emissions	Emissions from direct mobile combustion sources, processes other than energy etc.	Scope 1 (direct)	Emissions from direct and mobile combustion sources, non-energy processes, etc.
2. Indirect emissions associated with energy	2.1 Indirect emissions from electricity consumption	Scope 2 (indirect) Generation of energy consumed	Indirect emissions linked to electricity consumption
	2.2 Indirect emissions from energy consumption other than electricity		Indirect emissions linked to the consumption of steam, heat or refrigeration
3. Indirect emissions associated with transport	3.1 Upstream goods transport	Scope 3 (indirect)	4. Upstream transport and distribution
	Goods transport, commuting, etc.		Goods transport, commuting, etc.
4. Indirect emissions associated with products purchased	4.1 Purchase of goods		1. Products and services purchased
	4.2 Fixed assets		Energy and fuel-related activities
	4.3 Waste management		2. Fixed assets
	4.4 Upstream leasing assets		5. Waste generated by operations
5. Indirect emissions associated with products sold	4.5 Purchases of services	Transformation, use and end-of-life of products sold, investments, etc.	
6. Other indirect emissions	Use and end of life of products sold, investments, etc.		
	Other indirect emissions		

Emissions item concerned by the sheet
 Emissions item not concerned by sheet





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