Digital Emission Tracker

See the Unseen

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DISCONNECT to RECONNECT 2023-3-FR02-KA210-YOU-000175553

This toolkit is based on the project Disconnect to Reconnect 2023-3-FR02-KA210-YOU-000175553 , part of the Erasmus+ program launched in 2023, led by Regain association (France) in partnership with Robycode (Germany) and Kocatürk (Türkiye) organisation and co-funded by the European Union.This Toolkit has been designed in line with the European Green Deal and sustainable digitalization goals.

Inside, you'll find simple ideas to implement in your daily life to contribute to a better future for our planet!

The views and opinions expressed in this booklet are the sole responsibility of their authors and do not necessarily reflect those of the European Commission.

INTRODUCTION

Sector: 210YOU Duration: 18 months

The main objective of this project is to provide young people with clear tools and information about digital pollution, its impact on the environment, and its effects on personal well-being , encouraging more conscious digital habits for a healthier life and a better planet.

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Expected Impact

Increased Awareness Among Young People:

Participants and youth across partner countries will gain a deeper understanding of digital pollution, its environmental consequences, and its effects on mental and physical well-being.

Behavioral Change and Sustainable Digital Habits:

The project will encourage more mindful and sustainable use of digital technologies, promoting healthier online behaviors that reduce environmental footprint and support personal balance.

Enhanced Competences of Youth Workers:

Youth workers will acquire innovative tools, methods, and resources to address digital pollution in non-formal education settings, improving their capacity to engage and support young people.

Project Activities

Kick-off Meeting (France)

A coordination meeting to launch the project, align objectives, and define responsibilities among project partners.

International Workshop (Berlin)

A collaborative workshop focused on research, sharing best practices, and exchanging experiences related to digital pollution and youth well-being.

Training and Tool-kit Development (Izmit, Turkey)

A hands-on training session aimed at developing practical tools and methods to address digital pollution, tailored for youth educators and facilitators.

Online Meeting for Evaluation and Dissemination:

A final virtual meeting to assess project outcomes, share results, and plan dissemination strategies across partner countries.

What's in the Toolkit ?

1. **Definition of digital pollution**
2. **Digital and environment**
   What impact ?
3. **Daily digital habits**
   Facts and figures
4. **Digital Cleaning and Security**

Topics

Research & Analysis : **The consortium identified the knowledge gaps regarding digital pollution**

Priority Setting : **open discussions, to rank the most important subjects**

Ressources : **educational materials, article and gouvernamental tools to fight digital pollution**

Expert Identification : **a list of potential experts, both internal and external to the partnership,to lead the activities (workshop, webinars, seminars).**

Teaching Methods : **we exchanged views on the most effective strategies to capture young people's attention.**

Project Objectives & Agreements : **were redefined and agreed for the consortium**

Host Regain France May 2024 Collaborative planing session

Three representative from each organisation met for three days to work on the project programme.

Association Regain
La Borie Noble
www.association-regain.info

Erasmus+
FRANCE
JEUNESSE & SPORT

1 Definition of digital pollution

Digital pollution refers to the negative environmental impact of our increasing reliance on digital technologies and the internet.
This includes the energy consumed by data centers, the waste generated by electronic devices, and the carbon emissions from internet usage.

Did you know that watching a video, sending an email or "just" surfing the web...all of these can harm the environment? But how?

🔨 *Device production = mineral extraction, energy consumption*

⚡ *Usage = internet, data centers, e-mail, video watching*

🗑️ *Disposal = electronic waste, non-recyclable parts, toxic substances*

Data centers consume a lot of energy to perform these operations. And this energy is still mostly provided by fossil fuels.

Let's look at the figures

600 kg of raw materials are needed to produce a 2 kg laptop.

500 kg of raw materials are required for an Internet box.

A smartphone contains 70 different materials, including 50 metals, many of which are rare. The equivalent to 800 liters of water, or one person's water consumption for four months.

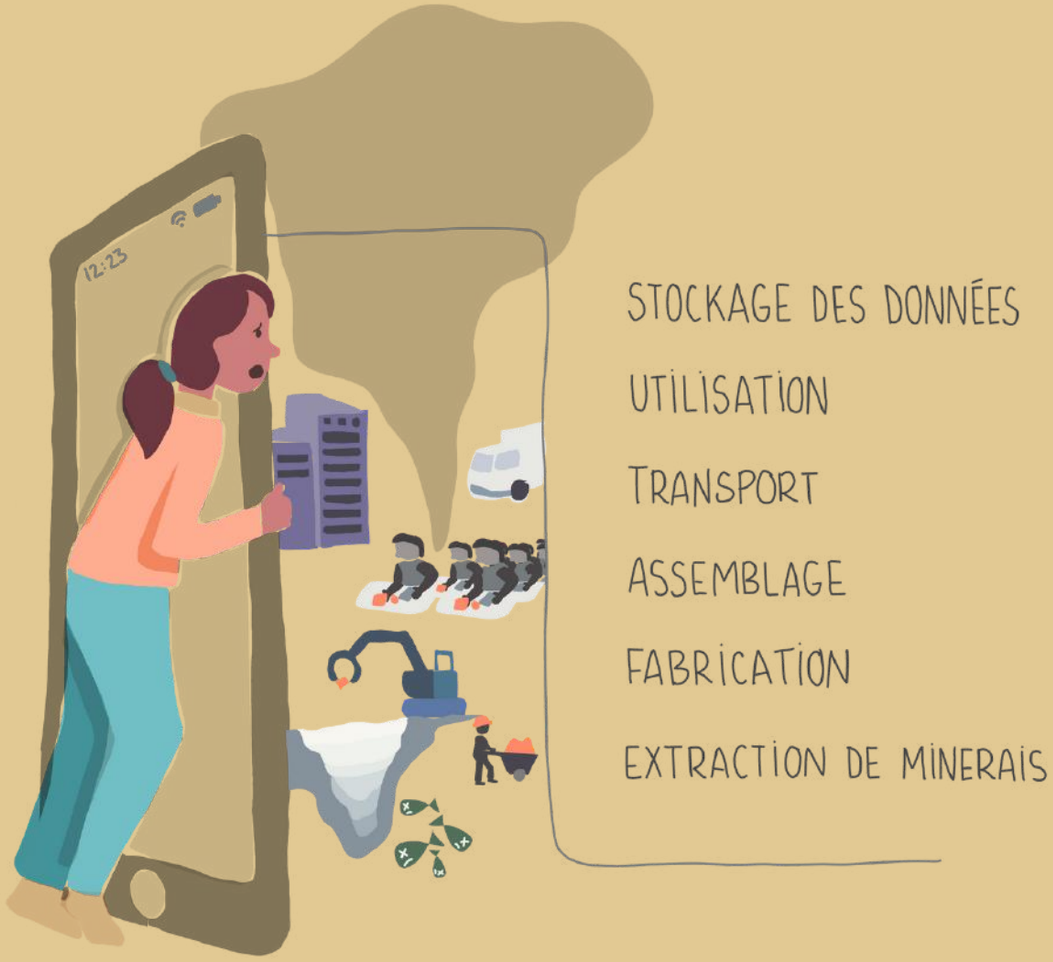
Digital devices are now an indispensable part of our lives.
We send emails, watch movies, use social media...

But we often don't realize the effect of these digital transactions take on nature.

If the internet were a country, it would be the world's third-largest energy consumer – after China and the US.

When you "upload" your photos and documents to the cloud, not everything actually goes up in smoke. That "cloud" consists of huge data centers spread around the world.

To put this into perspective, a single data center consumes as much energy as a town of 30,000 people in Europe.



Enter the cloud

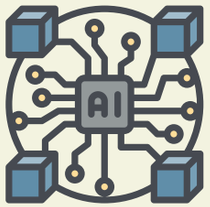
The cloud is made up of servers located in data centers around the world.

Cloud servers must always be online and available, even if some individual servers fail. Cloud providers usually back up their services across multiple machines and in several regions.

Artificial Intelligence

Artificial intelligence requires significant amounts of energy, mainly due to the complexity of algorithms and the large volumes of data being processed.

Training the GPT-3 model generated 550 tons of CO_2, which is equivalent to 500 transatlantic flights.



Initial estimates were clear: a single query on ChatGPT may consume up to 10 times more energy than a Google search.

Artificial intelligence (AI) is transforming many economic sectors , from healthcare and finance to marketing, logistics, and environmental management.
However, this technological revolution comes with a downside: its environmental impact.

The Expansion of Remote Work

Since 2020, there has been a rapid increase in the use of video calls and remote working. Remote work helps businesses lower their need for physical office space and reduce expenses related to heating and building maintenance. However, this also leads to a surge in digital communication, which puts more strain on data networks.

Raising awareness among both companies and individuals is essential, especially given that **73% of people in France are unfamiliar with the idea of digital sustainability, according to a study by Occurrence for the NGO Digital for the Planet.**

💡**Fact:**

Even just one Google search causes dozens of servers to run in the background. This means energy and carbon emissions.

Program

Day 1 - Digital Pollution and E-Waste

Turkish participants introduced digital pollution, its impacts and forms. In group discussions, participants shared experiences and solutions focused on E-Waste management and responsible recycling.

Day 2 - Eco-Friendly Digital Practices

German participants introduced energy-efficient technologies and habits to reduce digital footprint. Participants explored media literacy, analyzed online contentand created and awareness campaign

Day 3 - Digital Responsability and Sustainable CItizenship

French participants led sessions on cyber ethics and responsible online behavior through interactive debates and research material for the website campaign

Host Robycode Germany
October 2024 Digital footprint training

A three-day training program on eco-digital skills for responsable digital citizenship brought together 18 young representatives.The program included workshops on digital pollution, e-waste, energy efficiency and digital responsability.

robycode
web & mobile

2 Digital and environment
What impacts ?

It looks small... but its impact is big

Make Responsible Choices When Buying IT Equipment

Extending the lifespan of a tablet or computer from 2 to 4 years improves its environmental impact by 50%, according to ADEME (the French Environment and Energy Management Agency).

In France, ADEME estimates that 88% of people replace their mobile phones while the old one is still working.

75% of electronic waste is not recycled.Extending the use of a tablet or computer from 2 to 4 years improves its environmental footprint by 50%, according to ADEME.

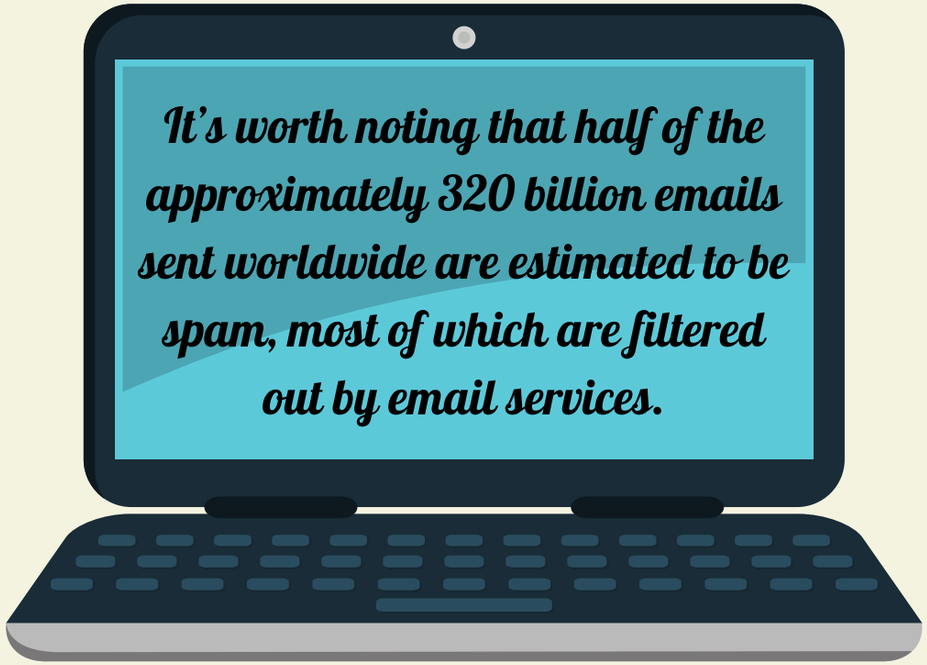
📨 1 email → 0.3g - 50g CO_2

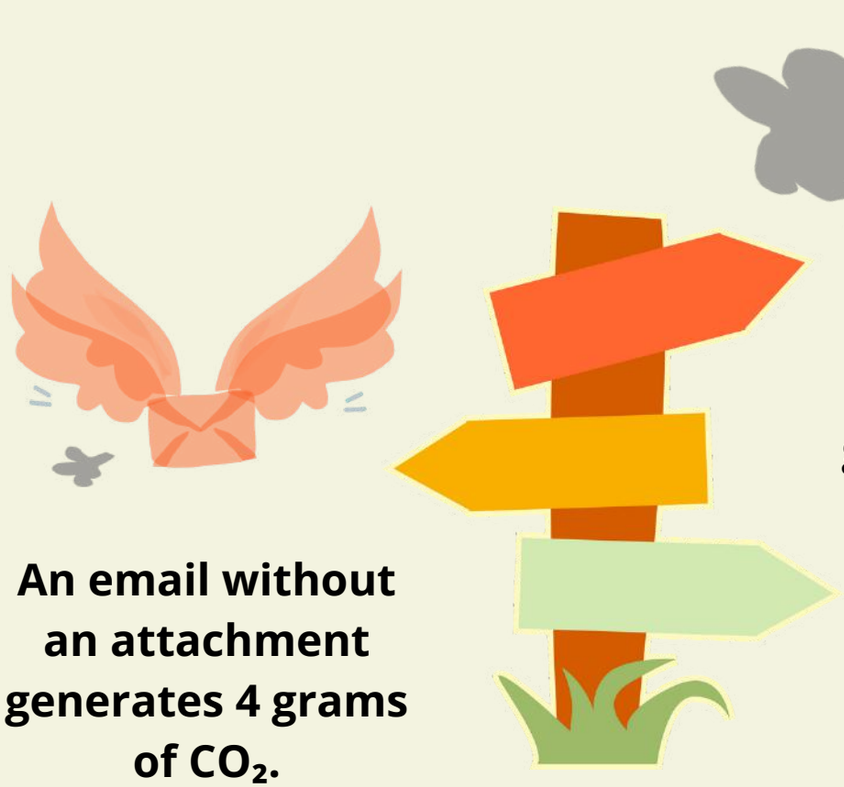
▶️ 1 hour video → Up to 50g CO_2

🌍 Digital world → 15% of world electricity consumption - and this rate doubles every 4 years.

1 Email = 1 Problem?

1.6 billion emails are sent every day in France (2025).
Simple and fast, emails can also be a major source of digital pollution.





An email without an attachment generates 4 grams of CO_2.

An email with an attachment can generate up to 19 grams of CO_2.

DigitalFootprintCheck.com is a free online platform designed to help individuals understand and manage their digital presence.

Easy Steps to Reduce Email-Related Digital Pollution

📥 **Clean Your Inbox Regularly**
Delete sent emails, spam, junk mail.

📎 **Limit Attachments and Recipients**
Reducing the size of our attachments reduces their carbon footprint.

🔗 **Use USB Drives or File-Sharing Services Instead**
Sending large files by email consumes a lot of energy.

🗑️ **Empty Your Trash Folder**
Old deleted emails still consume energy while stored on servers.

The average person in France receives 936 newsletters a year = 9 kg of CO_2 (Cleanfox).

You're not the only one on stage

When you click on a video, all that appears on your screen is that content. But behind the scenes:

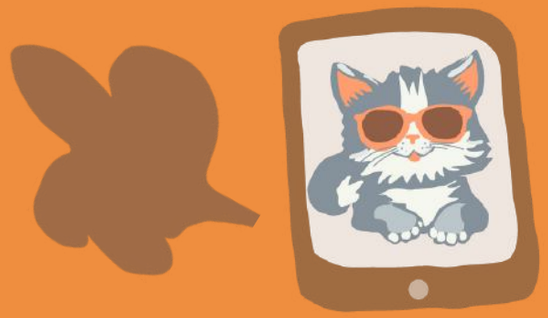
Servers are running

Data centers are cooled

Signals travel thousands of kilometers

Electricity is consumed

Carbon emissions begin



Watching a video on your phone via 4G uses 23 times more energy than using Wi-Fi, because the mobile network relies on energy-intensive relay antennas. Choose Wi-Fi over 4G whenever possible.

Un appel vidéo d'une heure sur Zoom émet environ 1,2 kg de CO2, soit l'équivalent d'un trajet en voiture de 10 km.

What is the carbon impact of social media on mobile?

165.6 g of CO_2 per person per day from using social media on mobile — equivalent to driving 1.4 km by car
60 kg of CO_2 per user per year — equivalent to driving 535 km by car

Comparison of the Carbon Emissions Impact of Various Applications

APPLICATIONS	1H D'UTILISATION émet en moyenne (en gCOEeq)	EQUIVALENCE CARBONE sur 1an (km en voiture)
LinkedIn	28	91
Facebook	38	122
Snapchat	39	126
YouTube	52	168
TikTok	57	185

selon l'impact CO_2 (ADEME)

Between now and 2030, if no steps are taken to reduce the digital environmental impact, and consumption continues to grow at the current pace, by 2030 data traffic will increase sixfold and the number of devices by close to 65%, compared to 2020, particularly due to the rise of connected objects.

The resulting increases between 2020 and 2030 would include:
A 45% increase in the digital carbon footprint in France (reaching 25 Mt CO2eq)
A 14% increase in the consumption of abiotic resources (metals and minerals);
A 5% increase in final energy consumption, during the device utilisation phase (to reach 54 TWh a year).

What is digital garbage ?

Digital trash refers to any digital data, files, and content that is no longer in use but is stored.
Sounds harmless, right? But even this trash consumes energy.

Unused Files
Old documents, folders that are not reopened, projects forgotten on the desktop...
All of these take up storage space. In the cloud, they constantly consume energy.

Backup Backups
Keeping backups of the same photo in 3 different places?
Think: 1 MB = 1 million people → 1 million MB = energy madness.

Junk Emails
"Subscription", "information", "stay in CC"...
Unless deleted, emails remain in data centers, wasting energy.

Forgotten Apps
On your phone, tablet, computer: Apps you haven't opened in a year may still be updating.
And yes, they may still be pulling data.

How aware are you about your footprint?

1. How many emails do you send per day?

- 1 - 5
- 6 - 20
- More than 20

2. What quality do you watch videos in?

- SD (360p - 480p)
- HD (720p)
- 4K Ultra HD

3. Where do you keep your files?

- On local disk
- Half and half cloud
- Everything is in the cloud

4. How often do you change your phone?

- Every 3 years or longer
- Every 2 years
- Every Year

Results Page

- You're Reducing Your Digital Footprint!
- You're in the middle, but you can improve.
- Be careful, digital nature is sounding the alarm!

Seminar & Toolkit

Day 1 : **Explored internet addiction, its effects, and coping strategies. Learned practical tools for managing screen time and mindful tech habits**

Day 2 : **Focused on online relationships and emotional well-being. Strategies for buiding positive connections in virutal spaces.**

Day 3 : **Sustainable tech practices, ethical use and digital citizenship**

Day 4 : **Each country contributed resources and selected content to include in the toolkit**

Day 5 : **Developed instructional content and comics to explain digital wellness. Country teams collaborated to make materials visually easy to understand**

Day 6 : **Refined the toolkit materials based on feedback from all partners. Prepared the final toolkit ready for dissemination.**

KOCATÜRK DANIŞMANLIK

Host Kocaturk Turkey May 2025
Surfing the digital world

Six days of seminar with two days dedicated to creating together the toolkit and the digital guide comic. We selected resources, materials and designs to make the content engaging

3 Daily digital habits

What about you ?

1: What is the first thing you do when you wake up in the morning?

a) I check my notifications
b) I check my emails
c) I start the day without looking at the apps

2: When watching a video on YouTube...

a) Play, stop, move forward, open another video
b) Watch a single video and exit
c) While watching, I browse in another tab

3: When the phone's charge drops to 10%...

a) I panic, I immediately put it on charge
b) I can handle it a little longer
c) This is the opportunity, I leave the screen off

Test Results

A. Digital Cyclist

Notification is your energy. You can't stop it. You can reduce your consumption with conscious awareness. Be sure to try Toolkit's tips!

B. Controlled Explorer

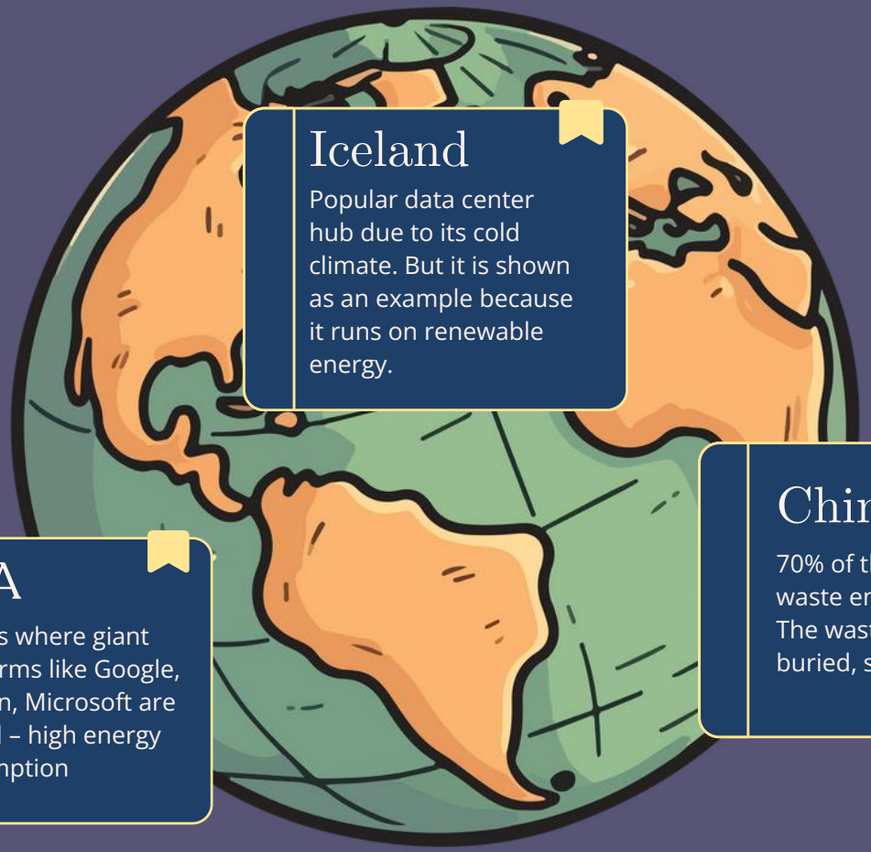
You use digital but you are careful. You can reduce your carbon footprint even more with small changes.

C. Digital Balancer

You are great! You use technology as much as you need, you care about your mind and the environment.

What's Really Happening?

Data flow, data center, network infrastructure, cooling systems...
They are all physically energy consuming, carbon emitting structures.



Iceland

Popular data center hub due to its cold climate. But it is shown as an example because it runs on renewable energy.

China

70% of the world's e-waste ends up here. The waste is burned, buried, shredded.

USA

Regions where giant data farms like Google, Amazon, Microsoft are located – high energy consumption

Each digital transaction

Creates demand for electricity

Powers fossil fuel power plantsé

Releases carbon dioxide and other greenhouse gases

Impacts biodiversity and natural habitats

Facts and figures

Average connected devices owned per person

One reason not to throw away an old phone: the legal warranty of conformity.

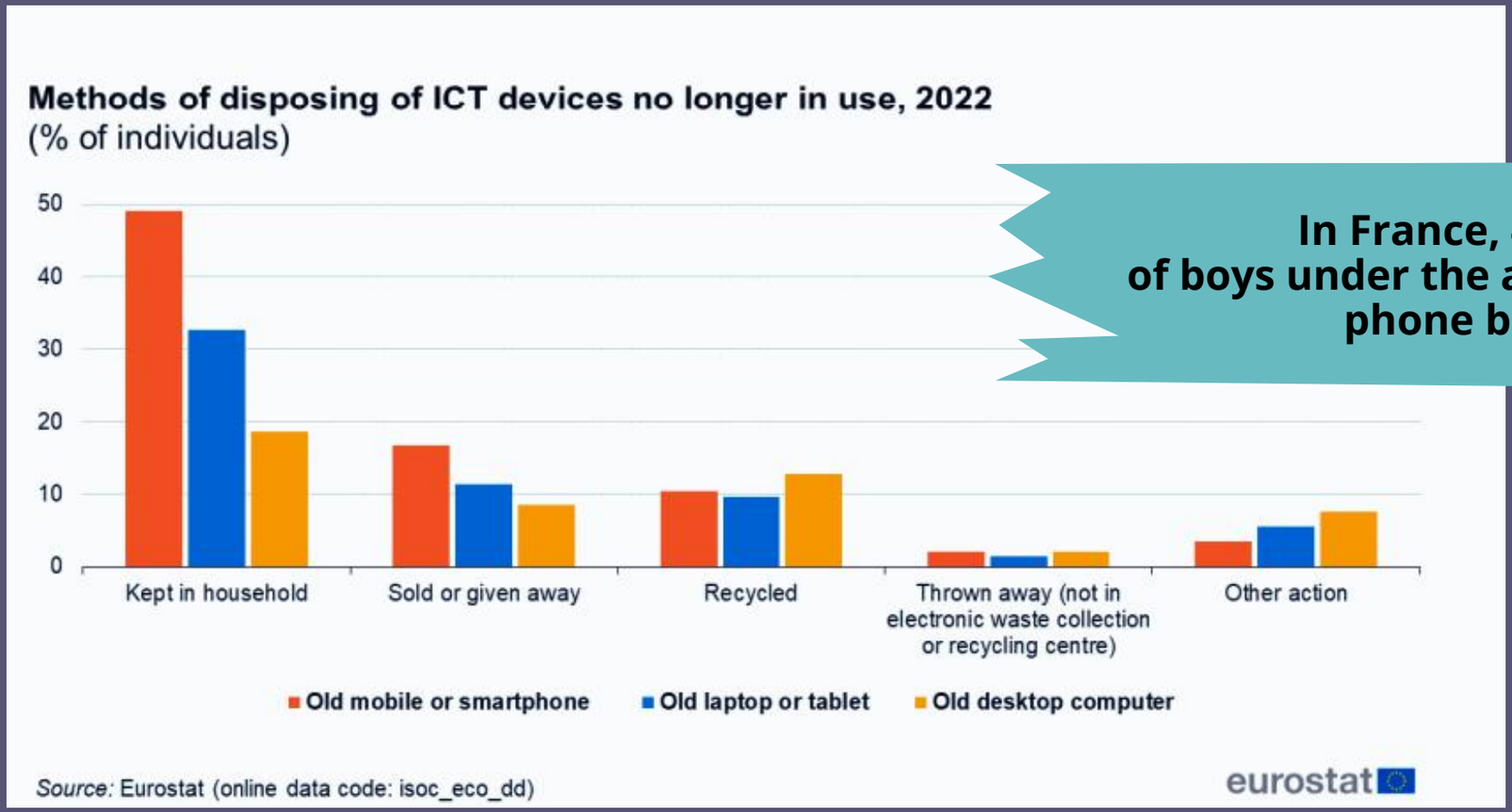
In France, it's mandatory for two years on all electronic devices. Since July 1, 2021, it must appear on receipts and invoices. During this period, consumers can get their phones repaired for free if the fault comes from the device.

In Europe, 53 % of people admit to using their phones while on the toilet.

In Italy and France, the number exceeds 60 %

E-Waste Dilemma

In France, 41 % of girls and 30 % of boys under the age of 25 got their first mobile phone before the age of 12.



Fairphone

Since 2013, Fairphone has been designing durable, repairable phones made with over 70% recycled or fair-trade materials.

A click may seem small...
But behind the scenes, there is an army of data working. Every data center is the heart of digital life.
And this heart beats with nature

Journey of a data packet

One afternoon... You start watching a video on your phone. "Just 5 minutes," you say. But at that moment, an invisible chain reaction begins...

Click!
Your data request first reaches the nearest base station. From there, it is sent to a main server via fiber cables, and then to a huge data center.

In the data center...
Thousands of servers work 24/7.
Processors come into play to find, process, and send the video you are watching. Servers heat up. Cooling systems work. Energy is consumed.

At that moment...
Power plants have to produce more energy. Fossil fuel-powered systems come into play. Carbon emissions begin.

That video is watched, it ends...
But the data centers continue to work. You leave, but they are waiting. Millions of data are processed, stored and backed up every second.

Topics

Evaluation of the project's impact using testimonials from participants and beneficiaries.

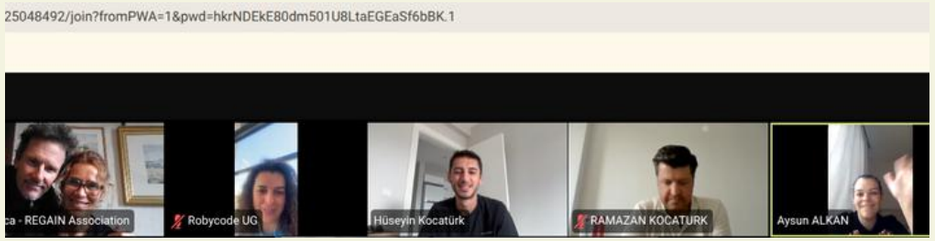
Presentation of the final financial report, expenditures, reimbursements and compliance with the approved budget, for responsible management of resources.

Sustainability plans, presenting strategies on the continuation of project outcomes beyond the official conclusion of the project.

Host Regain September 2025
Final project virtual meeting

We marked the conclusion of our collaboration efforts within the Erasmus+ partnership. Each partner presented a summary of their actions, achievements and the project dissemination plan.

After the evaluation, we were thankful to everyone who took part in this project and contributed to the achievement of its goals.



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KOCATÜRK
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4 Digital Cleaning and Security

Digital cleaning improves the performance of our devices and reduce environmental impact by deleting unnecessary files, applications and data.

How ?

- Data centers work harder
- Devices draw more energy
- Personal data remains vulnerable in unnecessary places.

Why ?

So digital cleanliness:

- Becomes both an environmental responsibility
- And a personal precaution

What ?

- Clear Data
- Protect Privacy
- Reset and Recycle your device

Which Eco-Friendly Search Engine Should You Use?

Ecosia uses its ad revenue to plant trees around the world.

Lilo funds social and environmental projects through "water drops" earned by users with each search.

How much did you learn ?

💬 **Read the following statements and choose whether they are true or false:**

📩 **Deleting unnecessary emails does not contribute to nature.** ✅❌

🗑️ **Deleted digital files do not harm the environment because they are invisible.** ✅❌

🌍 **Most data centers are powered by renewable energy.** ✅❌

🌱 **"Measures taken at an individual level do not make a big difference."** ✅❌

Results

📩❌ **False**

→ Although they are not visible, they consume energy as long as systems process them.

🗑️❌ **False**

→ Most are still powered by fossil fuels

🌍❌ **False**

→ A small awareness of millions of individuals leads to a big transformation.

🌱❌ **False**

→ Every data stored in data centers uses energy!

Congratulations! You are now a conscious traveler in the digital world

Ideas to Take Back Control

- ***Create screen free zone :*** **Keep laptops and telphones out of a room**
- ***Be informed :*** **Learn about the hidden environmental and social cost of digital technologies**
- ***Limit screen time :*** **Set daily limits on how much time you spend on your smartphone or digital devices**
- ***Unplug Regularly :*** **Take digital detox breaks ; go offline during week-end or evening to reconnect with real life**
- ***Recycle responsibility :*** **Don't throw your old phone in the trash. Use proper e-waste recycling programs and choose refurbished smartphone instead of buying new ones**

e.

Become Aware of Your Screen Time:
Use apps like Digital Wellbeing (Android) or Screen Time (iOS) to monitor and manage how much time you spend on your devices.

Turn Off Unnecessary Notifications
Avoid constant distractions by disabling non-essential notifications.
You can also use tools like StayFocusd or Freedom on your computer to limit online temptations.

Turn On Focus Mode
Block access to certain apps during specific times to stay focused and reduce distractions.

Time to Clean Up in the Digital World

DAY 1 : ***Clear your email archive***
Select all > Delete → Lighten the load of data

DAY 2 : ***Remove unnecessary apps***
Apps that you don't use can consume energy in the background.

DAY 3 : ***Simplify your desktop***
A clutter of files tires both the mind and the system.

DAY 4 : ***Review cloud storage***
Check files you backed up but forgot

DAY 5 : ***Adjust your notification settings***
Silence is productive
Both nature and the screen

DAY 6 : ***Clear your social media history***
It is easy to leave a mark, erasing it requires consciousness

DAY 7 : ***Check your old devices***
If you still have it, either donate it or recycle it.

Conscious digital cleaning reduces data load, energy consumption and carbon footprint.

Digital Hidden Dangers

Hidden Danger – *Cookie Tracking*
Websites track you.
They don't just consume you, they also consume energy.
💨 According to Carbolytics, 11,000 tons of CO_2 per month comes from cookies alone!

Hidden Danger – *Data You Thought Was "Deleted"*
You thought you deleted it, but there are still traces of it on your recycled device.
🔐 Someone with bad intentions can access this data.

Hidden Danger – *Dark Data*
Server data that is never opened but stored
💡 What is not used but stored: an energy thief.
🧠 Every company has a dark data dump in their data centers.

Break the digital loop

Endless streams of content not only consume attention but also resources, making it difficult to manage.

This behavior increases digital garbage.
Unused data accumulates.
Unnecessary repetitions keep servers constantly busy

This cycle tires not only you,
but also nature.
Data is transferred at every step.
Energy is spent. Servers are running.

Digital Behavior Cycle

What can You do?

Fighting digital pollution is not just the job of software engineers, institutions or companies.
It starts with you.
This toolkit opens a path for every user.
Which one are you?

👩‍🎓 I am a student

- ✅ I can organize a “digital simplification day” at my school
- ✅ I can start a digital cleaning week with my friends
- ✅ I can share what I learned from the Toolkit as a presentation

👩‍🏫 I am an instructor

- ✅ I can turn the Toolkit into course material
- ✅ I can determine weekly cleaning tasks with the class
- ✅ I can prepare digital awareness certificates for students

👩‍💻 I am an individual

- ✅ I can share information from the Toolkit on my social media accounts
- ✅ I can reduce my digital footprint by simplifying my devices
- ✅ I can inform my close circle about digital cleaning

Sources and Tools

- https://**myimpact.isit-europe**.org/fr/
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- https://**epargnonsnosressources**.gouv.fr/
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To go further

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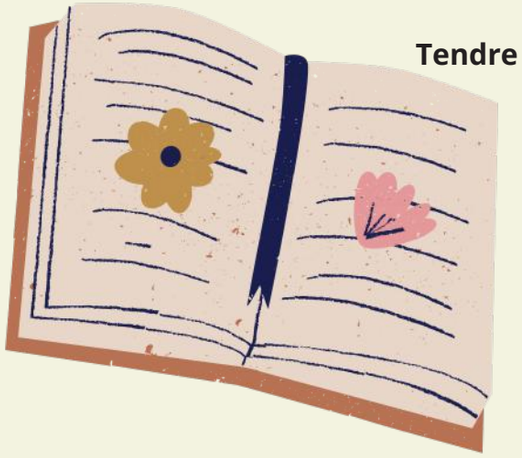
Tendre vers la sobriété numérique, de Frédéric Bordage

L'âge des low tech, de Philippe Bihouix

Mission déconnexion, de Laurence Bril



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