Within the project:

VEforCA

Prepared by:

Fundacja „Fundusz Inicjatyw" ("Initiative Fund" Foundation) Prometeo

Activity No. 3

VET SUSTAINABILITY KIT

Shrinking our (digital) carbon footprint

Free publication

Area's name: Shrinking our (digital) carbon footprint

No.	Question/statement	Always	Often	Rarely	Never	N/A
	Questions/statements related to the area					
For individuals						
1.	How often do you power down or put your electronic devices into sleep mode when they are not in use?					
2.	How often do you optimize the energy settings on your electronic devices to minimize energy consumption?					
3.	How often do you consciously choose energy-efficient electronic devices when making purchasing decisions?					
4.	How often do you avoid unnecessary streaming or downloading of large files to conserve energy and reduce your digital carbon footprint?					
5.	How often do you unsubscribe from unnecessary email lists or delete unnecessary emails to reduce digital storage and energy usage?					
6.	How often do you use energy-saving features like screen dimming or automatic power-off timers on your electronic devices?					
7.	How often do you consider the environmental impact of cloud storage and utilize it as a way to reduce the need for physical storage devices?					
8.	How often do you offset your digital carbon footprint by supporting renewable energy projects or carbon offset initiatives?					
9.	How often do you choose digital communication methods like video conferencing instead of traveling for in-person meetings to minimize carbon emissions?					
10	How often do you practice digital minimalism by limiting your screen time and reducing your overall digital presence?					
11.	How often do you responsibly recycle or donate old electronic devices to reduce electronic waste?					

12.	How often do you educate yourself and stay updated on eco-friendly practices and technologies to further shrink your digital carbon footprint?					
13.	How often do you share your knowledge and encourage others to adopt sustainable digital practices to collectively reduce our digital carbon footprint?					
14.	How often do you participate in initiatives or programs that promote sustainable digital habits and raise awareness about the environmental impact of digital activities?					
15.	How often do you prioritize using devices and platforms powered by renewable energy sources to reduce the carbon footprint associated with your digital activities?					
For organisations						
1.	How often does your organization assess and monitor its digital carbon footprint?					
2.	How often does your organization optimize the energy efficiency settings of electronic devices and equipment?					
3.	How often does your organization encourage employees to minimize unnecessary data transfers and reduce file sizes?					
4.	How often does your organization promote the use of renewable energy sources to power digital infrastructure?					
5.	How often does your organization educate employees about the importance of shrinking the digital carbon footprint and provide training on sustainable digital practices?					

Self-assessment instruction for individuals

For each answer "always" and "often" you get 1 point.

Number of points: *from 15 to 12 - You are doing great and supporting the sustainable development of our planet - keep going.*
Number of points: *from 11 to 8 - It is noticeable that you are working for the sustainable development of our planet - continue like this and think about what else you could do.*
Number of points: *from 7 to 4 - You take some steps for the sustainable development of the planet, but it would be worth expanding your activities. Think about what changes you could make.*
Number of points: *from 3 to 0 - This is rather the beginning of your path for the sustainable development of our planet. Don't be discouraged and think about what you could do. Even the little things make a big difference if a lot of people do them.*

Useful information

Description

Shrinking the digital carbon footprint is a critical endeavor in the modern era as digital technologies have become deeply ingrained in our daily lives and have a significant environmental impact.

Scientific facts

Here are some statistics and key scientific facts about shrinking the digital carbon footprint:

1. Total Greenhouse Gas Emissions: In 2019, Italy's total greenhouse gas emissions amounted to approximately 445 million metric tons of carbon dioxide equivalent (MtCO2e). These emissions include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and other greenhouse gases.

2. Sectoral Emissions: The energy sector, including electricity generation, heating, and transportation, is the largest contributor to Italy's carbon footprint. Other significant sectors include industry, agriculture, and waste management.

3. Renewable Energy: Italy has been making efforts to transition towards renewable energy sources to reduce its carbon emissions. As of 2020, renewable energy accounted for approximately 40% of the country's total electricity consumption.

4. Climate Policies: Italy has implemented various climate policies and initiatives to mitigate its carbon footprint. These include the National Energy Strategy, which sets targets for renewable energy deployment and energy efficiency improvements, and the National Climate Adaptation Plan, which addresses the challenges posed by climate change.

5. Carbon Pricing: Italy has introduced a carbon pricing mechanism known as the Carbon Tax. It imposes a tax on the carbon content of fossil fuels and aims to incentivize emissions reductions and promote the transition to cleaner energy sources.

6. Carbon Footprint of Digital Technologies: Digital technologies, including smartphones, computers, data centers, and the internet, contribute to greenhouse gas emissions and environmental degradation. The energy consumption associated with manufacturing, operating, and disposing of digital devices, as well as running data centers and communication networks, generates carbon dioxide (CO_2) emissions and other pollutants.

7. Growing Energy Demand: The energy demand of digital technologies is continuously increasing. The proliferation of internet usage, cloud computing, streaming services, and data-intensive applications contributes to higher energy consumption and subsequent carbon emissions. This trend is expected to escalate as technology advances and digitalization expands across industries.

8. Energy Consumption of Data Centers: Data centers play a crucial role in supporting digital services and storing vast amounts of data. These facilities require significant amounts of electricity for cooling, powering servers, and data transmission. Data centers globally consume enormous amounts of energy, contributing to the digital carbon footprint.

9. Emissions from Electronic Manufacturing: The production of electronic devices, such as smartphones and laptops, involves resource extraction, manufacturing processes, and transportation, all of which contribute to carbon emissions. The extraction and processing of raw materials, such as metals and minerals, release greenhouse gases and cause environmental degradation.

10. Digital Infrastructure and Connectivity: The expansion of digital infrastructure, including telecommunication networks and data centers, relies on energy-intensive processes. The transmission of data over long distances also requires substantial energy inputs. The carbon footprint of digital connectivity is affected by the energy sources used to power these infrastructures.

11. Standby Power Consumption: Many electronic devices consume energy in standby or idle modes. Standby power, also known as vampire power, contributes to energy waste and unnecessary carbon emissions. Charging cables, power adapters, and plugged-in devices draw electricity even when not in active use, contributing to the digital carbon footprint.

12. Data Transmission and Storage: The transmission and storage of digital data contribute to energy consumption and carbon emissions. The growth of cloud computing and the increasing demand for data storage require substantial energy inputs to power and cool the infrastructure that supports these services.

13. Renewable Energy Transition: Shifting to renewable energy sources for powering digital infrastructures is a crucial step in shrinking the digital carbon footprint. Embracing renewable energy, such as solar and wind power, can significantly reduce the environmental impact of digital technologies by minimizing reliance on fossil fuels.

14. Sustainable Design and Manufacturing: Implementing sustainable practices in the design and manufacturing of digital devices can help reduce their carbon footprint. This includes using recycled materials, optimizing energy efficiency, extending product lifespans, and promoting repairability and recyclability.

15. Energy Efficiency Measures: Enhancing the energy efficiency of digital devices and infrastructure can have a substantial impact on shrinking the digital carbon footprint. Innovations in energy-efficient hardware, software optimization, and intelligent power management can reduce energy consumption and associated emissions.

16. Digital Waste Management: Proper disposal and recycling of electronic waste (e-waste) are crucial for minimizing the environmental impact of digital technologies. E-waste contains hazardous materials that can leach into soil and water, posing health risks. Promoting responsible e-waste management, including recycling and proper disposal, is essential.

17. Digital Minimalism: Practicing digital minimalism involves consciously reducing digital consumption and focusing on essential activities. By limiting screen time, avoiding unnecessary digital activities, and minimizing data storage needs, individuals can contribute to shrinking the digital carbon footprint.

18. Sustainable Digital Practices: Adopting sustainable digital practices, such as reducing file sizes, utilizing energy-saving features, and practicing responsible data management, can help individuals

To access up-to-date and specific statistical data about carbon footprint in Italy, I recommend referring to official reports and publications from organizations such as the Italian Ministry of Environment, the National Institute of Statistics (ISTAT), and the European Environment Agency (EEA). These sources provide comprehensive data and insights into Italy's greenhouse gas emissions and efforts to mitigate climate change.

INDIVIDUALS:

- Reduce Screen Time: Limiting the amount of time spent on digital devices can significantly reduce energy consumption and carbon emissions. By consciously reducing screen time, individuals can shrink their digital carbon footprint. Engage in offline activities, spend time outdoors, or participate in hobbies that do not require electronic devices.
- Optimize Device Energy Settings: Adjusting the energy settings on electronic devices is a simple yet effective way to shrink the digital carbon footprint. Enable power-saving modes, adjust screen brightness, and set shorter time intervals for device sleep or auto-shutdown. These optimizations reduce energy consumption during periods of inactivity.
- Minimize Data Storage and Transfers: Being mindful that data storage and transfers can contribute to reducing the digital carbon footprint. Regularly delete unnecessary files, emails, and applications to conserve storage space. When sharing files, choose efficient compression formats, reduce file sizes, and consider using cloud storage instead of large email attachments.

- Practice Sustainable Internet Use: Adopting sustainable Internet practices can help shrink the digital carbon footprint. Avoid unnecessary online streaming and downloading of large files, as these activities consume significant amounts of energy. Choose lower-resolution video streaming options or download content for offline viewing when possible.
- Support Renewable Energy and Green Hosting: When using online services, platforms, or websites, consider those powered by renewable energy sources. Many hosting providers offer green hosting options that rely on renewable energy. Supporting and utilizing services with a commitment to renewable energy helps reduce the carbon footprint associated with digital activities.
- Responsible E-Waste Management: Properly dispose of electronic waste (e-waste) to minimize its environmental impact. Research local e-waste recycling programs or drop-off locations and ensure that old electronic devices are recycled through appropriate channels. Avoid throwing e-waste in regular trash bins, as it can end up in landfills and contribute to pollution.
- Encourage Digital Minimalism: Advocate for digital minimalism among friends, family, and colleagues. Raise awareness about the environmental impact of excessive digital consumption and promote mindful usage. Encourage others to reduce screen time, practice digital decluttering, and adopt sustainable digital habits.
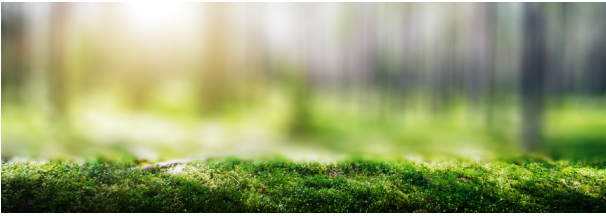
ORGANISATIONS:

- Energy-Efficient Hardware and Infrastructure: Organizations can shrink their digital carbon footprint by investing in energy-efficient hardware and infrastructure. This includes choosing energy-efficient servers, data storage systems, networking equipment, and desktop computers. Energy Star certified devices can significantly reduce energy consumption and carbon emissions.

- Virtualization and Cloud Computing: Adopting virtualization and cloud computing technologies can help organizations optimize resource utilization, leading to energy and carbon savings. Consolidating servers and utilizing cloud services reduce the need for physical hardware, resulting in reduced energy consumption and a smaller carbon footprint.

- Data Center Optimization: Data centers are major energy consumers. Organizations can shrink their digital carbon footprint by implementing energy-efficient cooling systems, efficient power distribution, and server virtualization techniques. Optimizing data center operations through temperature management, server consolidation, and advanced cooling technologies can significantly reduce energy consumption and carbon emissions.

- Renewable Energy Procurement: Transitioning to renewable energy sources for powering digital infrastructure is an impactful step in shrinking the digital carbon footprint. Organizations can procure renewable energy through power purchase agreements (PPAs), on-site solar installations, or purchasing renewable energy credits (RECs) to match their energy consumption with clean energy generation.

- Sustainable IT Policies and Practices: Organizations can establish sustainable IT policies and practices to reduce their digital carbon footprint. This includes setting default energy-saving settings on computers, encouraging employees to power down devices when not in use, minimizing printing, and promoting remote collaboration to reduce travel-related emissions. Additionally, organizations can implement recycling programs for electronic waste and encourage responsible disposal of obsolete devices.

- Digital Workflow Optimization: Streamlining digital workflows and reducing unnecessary data transfers can contribute to shrinking the digital carbon footprint. Encouraging employees to use efficient file formats, compress files when possible, and minimize email attachments can help reduce energy consumption associated with data transmission and storage.

- Employee Awareness and Training: Educating employees about the importance of shrinking the digital carbon footprint and providing training on sustainable digital practices can drive meaningful change. Training sessions, awareness campaigns, and regular communication can encourage employees to adopt energy-efficient practices, responsible data management, and mindful digital consumption.

EDUCATIONAL TOOLS

Digital Energy Audit (duration: 1 hour)

This exercise aims to raise awareness and encourage learners to assess and optimize their energy usage while utilizing digital devices. Here's how the exercise could be conducted:

1. Introduction: Begin by explaining the concept of digital energy consumption and its environmental impact. Highlight the importance of reducing energy usage to shrink the digital carbon footprint.

2. Instructions: Distribute worksheets or handouts that contain a list of common digital devices, such as computers, smartphones, tablets, and peripherals. Instruct learners to assess and record the energy consumption habits associated with each device.

3. Energy Consumption Assessment: Ask learners to estimate the average time they spend using each device per day and the typical power mode (e.g., active, sleep, or standby) it is in during non-use periods. They should also note any additional energy-consuming habits, such as leaving chargers plugged in or excessive screen brightness.

4. Energy Reduction Strategies: Facilitate a group discussion to explore and brainstorm strategies for reducing energy consumption associated with digital devices. Encourage learners to share their ideas on practices such as:

o Enabling power-saving features on devices.

o Adjusting screen brightness to a lower level.

o Setting shorter periods for automatic sleep or power-off modes.

o Unplugging chargers when not in use.

o Minimizing the use of resource-intensive applications or streaming services.

5. Personal Energy Action Plan: Individually, learners should create an action plan based on the strategies discussed. They should identify specific steps they will take to reduce their energy consumption and shrink their digital carbon footprint.

6. Sharing and Reflection: Provide an opportunity for learners to share their action plans with the group. Encourage discussion on the feasibility of each plan and any potential challenges they may face. Emphasize the collective impact of their individual efforts in reducing the overall digital carbon footprint.

7. Implementation and Follow-up: Encourage learners to implement their action plans in their daily lives. After a designated period, gather feedback on their experiences and challenges faced during the implementation. Discuss the effectiveness of their strategies and any additional measures they adopted to further reduce their digital energy consumption.

Digital Carbon Footprint Calculator (duration: 1 hour)

This exercise allows learners to estimate their personal digital carbon footprint and explore ways to reduce it. Here's how the exercise could be conducted:

1.*Introduction: Begin by explaining the concept of a digital carbon footprint and its environmental impact. Highlight the connection between digital activities, energy consumption, and carbon emissions.*

2.*Digital Carbon Footprint Calculator: Introduce learners to a digital carbon footprint calculator tool or online platform that estimates the carbon emissions associated with their digital activities. Provide them with access to the calculator or direct them to a recommended online resource.*

3.*Individual Assessment: Ask learners to individually assess and record their digital activities and usage patterns. They should consider factors such as:*

o *Time spent on devices (computers, smartphones, tablets),*
o *Frequency of email communication and data transfers,*
o *Streaming and downloading of media content,*
o *Social media usage and online browsing habits.*

4.*Calculator Utilization: Guide learners in using the digital carbon footprint calculator to estimate their personal carbon emissions resulting from their digital activities. The calculator should provide insights into the carbon emissions generated by their specific usage patterns.*

5.*Reflection and Discussion: Facilitate a group discussion where learners can reflect on their individual carbon footprint results. Encourage them to share their findings, insights, and any surprises or realizations about the environmental impact of their digital activities.*

6.*Strategies for Reducing the Digital Carbon Footprint: Engage learners in brainstorming strategies to reduce their digital carbon footprint. Encourage them to think creatively and consider measures such as:*

o *Prioritizing energy-efficient devices and equipment,*
o *Reducing screen time and digital consumption,*
o *Using energy-saving settings on devices,*
o *Opting for streaming services with lower energy consumption,*
o *Practicing responsible data storage and management.*

7.*Action Plan Development: Instruct learners to develop personalized action plans based on the strategies discussed. Each individual should identify specific steps they will take to reduce their digital carbon footprint and set achievable goals.*

8. *Implementation and Review: Encourage learners to implement their action plans in their daily lives. Set a timeline for a follow-up session where they can share their experiences, challenges, and successes in implementing their strategies. Use this opportunity to discuss the collective impact of their efforts.*

External Digital Tools

Links to Scientific information

"Shrinking the Carbon Footprint: A Systematic Review of Carbon Reduction Strategies" - This scientific article provides an in-depth review of various strategies and approaches for shrinking carbon footprints. It discusses the effectiveness of different measures, including energy efficiency, renewable energy, sustainable transportation, and behavioral changes. Access the article here: [Link to the article]

"Carbon Footprint Reduction in Practice: An Empirical Analysis of Companies' Strategies" - This research paper examines the practical implementation of carbon footprint reduction strategies by companies. It explores case studies and real-world examples, highlighting successful approaches and challenges faced in shrinking carbon footprints. Find the paper here: [Link to the paper]

"Carbon Footprint Reduction and Mitigation Strategies: A Comprehensive Review" - This comprehensive review paper provides an overview of carbon footprint reduction strategies across various sectors, including energy, transportation, buildings, and waste management. It assesses the effectiveness of different strategies and provides insights into policy implications and future directions. Access the review here: [Link to the review]

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Links to Interactive resources

Calculate your global footprint
https://carboncloud.com/?
utm_term=about%20carbon%20footprint&utm_campaign=Always+on+-
+Lead+generation+-
+Phrase+match&utm_source=adwords&utm_medium=ppc&hsa_acc=86228703
45&hsa_cam=16049287422&hsa_grp=135561454760&hsa_ad=580513118143&hsa_s
rc=g&hsa_tgt=kwd-
300181222201&hsa_kw=about%20carbon%20footprint&hsa_mt=b&hsa_net=ad
words&hsa_ver=3&gad=1&gclid=CjwKCAjw36GjBhAkEiwAKwIWyRo7Csfft4ADnl7
mx5Bdd4RpAElvRwCluuVwdDrIJn-RrFGJzk8PFhoCpl8QAvD_BwE

Test Umberto for free and calculate your Product Carbon Footprint now
https://www.ifu.com/umberto/trial-version/?
utm_term=carbon%20footprint%20software&utm_campaign=04.02+Umberto+
Suche+EN&utm_source=adwords&utm_medium=ppc&hsa_acc=4900437700&h
sa_cam=13705385689&hsa_grp=127883603687&hsa_ad=648185878202&hsa_src=
g&hsa_tgt=kwd-
3501603356&hsa_kw=carbon%20footprint%20software&hsa_mt=p&hsa_net=ad
words&hsa_ver=3&gclid=CjwKCAjw36GjBhAkEiwAKwIWybVz3e36qT1uVdmCa8
2L4iArkRYCgXbcNhpf9DkWRV_z7396HQ8fiRoCrpoQAvD_BwE

Links to Media

The Guardian Environment Section: The Guardian is a well-known news outlet that covers a wide range of environmental topics, including efforts to shrink carbon footprints. You can explore their Environment section for articles and features related to carbon footprint reduction: [https://www.theguardian.com/environment]

Environmental Defense Fund (EDF): The EDF is an environmental organization that provides research, resources, and articles on various sustainability topics. They often cover strategies and initiatives to shrink carbon footprints. Visit their website for valuable insights: [https://www.edf.org/]

Scientific American: Scientific American publishes scientific articles and features on a broad range of topics, including climate change and carbon footprint reduction. Their articles often provide in-depth analysis and research-backed information. You can explore their website for relevant content: [https://www.scientificamerican.com/]

Links to Scientific Tools

Carbon Footprint Calculator by the World Wildlife Fund (WWF): The WWF provides a carbon footprint calculator that allows individuals and organizations to estimate their carbon emissions across various sectors. It provides insights into areas where emissions can be reduced and offers guidance on sustainable practices. Access the calculator here: [https://footprint.wwf.org.uk/]

Carbon Trust Footprint Calculator: The Carbon Trust offers a comprehensive carbon footprint calculator for businesses. It helps organizations measure and manage their carbon emissions across operations, products, and supply chains. The tool provides detailed reports and recommendations to support carbon reduction strategies. Explore the calculator here: [https://www.carbontrust.com/footprint-calculator]

OpenLCA: OpenLCA is a free, open-source life cycle assessment (LCA) software tool used for analyzing the environmental impacts of products, processes, and systems. It enables users to assess carbon footprints, identify hotspots, and explore mitigation strategies. Access OpenLCA and its resources here: [https://www.openlca.org/]

Free publication

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