INR Institut du Numérique Responsable

2021 WENR

PUBLIC REPORT

ASSESSMENT OF

THE IMPACT OF THE INFORMATION SYSTEMS OF

EUROPEAN ORGANISATIONS

FOREWORD

The INR (Institut du Numérique Responsable), Think and Do Tank Numérique Responsable is a non-profit association created in France in 2018, a natural and structured extension of the Club Green IT. Since then, the INR France has seen the birth of two sister associations, the INR Belgium in 2020 and the INR Switzerland in 2021. The institute's vocation is to be a place of reflection in Europe on the four key issues of Sustainable IT: the reduction of the environmental footprint of digital technology and its ability to reduce the environmental footprint of humanity, the reduction of the negative societal impacts of digital technology and its ability to solve other societal problems, the reduction of economic difficulties caused by digital technology, and the creation of sustainable value / responsible innovation via digital technology.

The INR's ambition is to build together a Sustainable IT, a digital world capable of proposing solutions and innovations that are sustainable for the planet, ethical and inclusive, for the benefit of all. To achieve this, the INR is developing close interdisciplinary cooperation between actors from the civil society, from the social and solidarity economy, from teachers, researchers, and from public. As well as private and associative actors to anticipate and take ownership of the challenges and values of Sustainable IT. The Institute thus brings together organisations to reflect on, experiment with and promote good practice for a more regenerative, inclusive and ethical digital environment.

The INR's action is always guided by the triptych: People, Planet, Prosperity, which invites organisations to reinvent themselves, not only to be economically viable but also to face environmental and societal challenges. In order to enable European public and private organisations to make the necessary trade-offs for a successful transition, the INR's mission is to provide tools to understand the challenges, measure the footprint of digital services, decide on the actions to be taken, and then deploy them.

In this respect, WeNR is the first tool, free of charge and based on data that is free to access and use, to measure the environmental footprint of the Information System, allowing verification of the results by peers or scientific researchers. Its calculation model is similar to the one used for WeGreenIT 2018. More ambitious, it offers different levels of granularity to meet the needs of the greatest number of people, allowing organisations of all sizes to calculate the quantitative and qualitative footprint of their Information Systems.

CONTENTS

Publication date: December 2021

Conception and writing

- Clarisse Popower, Founder of Green makers, Digital Corporate Responsibility consulting

Contributions

- Anne Tozzolino, Digital Referent, La Poste Group
- Benjamin Duthil, INR Scientific Co-Director
- Guillaume Bourgeois, PhD student at La Rochelle University
- Jean-Christophe Chaussat, President of INR France
- Julien Gontier, Leader EcoConception IT, Decathlon
- Mathilde Lecompte, CSR Project Manager, Edenred
- Olivia Bertout, Digital CSR Leader, ADEO
- Olivier Vergeynst, Director of INR Belgium
- Victoria Rase, Business analyst in Digital Transformation, Brussel environment
- Thierry Chappe, Sustainable IT manager of BRIC (Brussels regional informatics center, Belgium)
- Vincent Courboulay, INR Scientific Director

Proofreading

- Guillaume Bourgeois, PhD student at La Rochelle University
- Olivier Vergeynst, Director of INR Belgium
- Rémy Marrone, INR Projects Director
- Vincent Courboulay, INR Scientific Director

Layout and illustration

- Green makers, Digital Corporate Responsibility consulting

1

Editorial

EDITORIAL

The transformation of organisations is driven by both the exponential growth of digital technology and the ecological transition. Faced with the urgency of climate change and the demands for digital inclusion for all, the INR has been working since 2018, alongside many actors, for a more Sustainable IT, digital services capable of offering solutions and innovations that are sustainable for the planet, more accessible, more ethical and more inclusive.

We are convinced that organisations are at the heart of this transformation and have a leading role to play in positively orienting this digital revolution towards a sustainable economy with a low environmental footprint and a high societal impact. We are at a pivotal moment, where the use of digital technology must be regulated so that it provides concrete solutions to reduce its footprint. If its undeniable contribution has become essential in our daily lives and in the activity of companies, it must also actively contribute to the acceleration of the ecological and solidarity-based transition.

Surrounded by a rich ecosystem of experts and committed structures, working in collaboration and sharing skills, we bring together public and private organisations of all sizes to take part in meeting these challenges and to deploy a Sustainable IT approach together. Our objective is to build, thanks to collective intelligence, common resources (reference systems, good practices, tools, etc.), to make them available free of charge, and to disseminate them as widely as possible in a continuous improvement loop over time.

With WeNR, the INR offers a democratised tool enabling organisations wishing to optimise their carbon footprint to take a concrete look at the impacts of digital technology and to have the measurement elements tools to do so. Measuring the impact of information systems and analysing their maturity are the fundamental building blocks of Sustainable IT management. Beyond evaluating its performance year after year, the objective of WeNR is above all to offer organisations the construction of a shared reference base. It is the INR's will to make it public, with emission factors that are free to use and accessible to all. Our priority is not to be better than others, but to privilege a model that invites all stakeholders to pool their skills, produce in multi-collaboration and make the most of the resulting deliverables, for the benefit of the common good and with an ambition turned towards Europe. "

JEAN-CHRISTOPHE CHAUSSAT
INR PRESIDENT

2

Digital challenges and impacts

DIGITAL CHALLENGES AND IMPACTS

In the age of the digital revolution and in the face of social challenges and the climate emergency, two observations can be made. On the one hand, the environmental and social impact of digital technology is growing rapidly. On the other hand, digital technology, through innovation, offers solutions to reduce the environmental footprint of many industries. Some figures :

IMPACT OF DIGITAL TECHNOLOGY

2% — **FRANCE**
In 2019, the digital sector accounted for 2% of French greenhouse gas emissions, and 7% are expected in 2040. (1)

4% — **EUROPE**
From a broader perspective, the ICT activities account for 8 to 10% of European electricity consumption and up to 4% of its carbon emissions, depending on the EU country. (2)

4% — **WORLD**
Digital technology accounts for 4% of global greenhouse gas emissions and the sharp increase in usage suggests that this carbon footprint will double by 2025. (3)

SUSTAINABLE IT CHALLENGE

ENVIRONNEMENTAL
The environmental indicators of digital technology are greenhouse gas emissions, depletion of abiotic resources, energy consumption, water consumption, etc.

SOCIETAL
Illectronism concerns 17% of the French population (4). (Illectronism is the difficulty, or even the inability, to use digital devices and computer tools due to a lack or total absence of knowledge about their operation). Moreover, only 24% of women work in digital professions (5)

SOCIAL
The growing environmental footprint, inequalities linked to digital illiteracy, the transformation of the organisation of work and the development of platforms may become factors of exclusion(6)

Sources
1. Pour une transition Numérique Écologique, report by the French Senate's Committee on Regional Planning and Sustainable Development, June 2020
2. Datacenter Converge Europe, European Commission 2015
3. Report " Déployer sobriété numérique", The Shift Project, October 2020
4. Study "One in six people do not use the Internet, more than one in three users lack basic digital skills", INSEE, October 2019
5. Recensement, INSEE, 2017
6. Study on the digital responsibility of companies: data, environmental and social issues, France Stratégies, April 2021

THE INR'S ACTION

01 RAISING AWARENESS

Promote awareness of the environmental and societal impacts of digital technology through education.

02 MEASURE

Assessing the environmental footprint and maturity of European organisations on Sustainable IT.

03 PILOT

Provide organisations with decision-making tools to enable them to structure and manage their approach and their Sustainable IT strategy.

VINCENT COURBOULAY

INR SCIENTIFIC DIRECTOR, INITIATOR OF THE WENR PROJECT

"It is the INR's mission to provide measurement tools that match the ambitions of organisations wishing to manage their carbon emissions and their Sustainable IT maturity. WeNR is a flagship example. It is the first free tool, based on free access and use of data, which will enable to manage both carbon emissions and to monitor the Sustainable IT maturity of information systems. It is the fundamental building block for all organisations wishing to deploy a Sustainable IT approach to improve their ecosystem. WeNR is intended to be the reference tool. Future versions will include new features, state-of-the-art figures and a broader scope. WeNR, a tool designed to accompany organisations over the long term!"

3

WeNR study

WENR STUDY

Available in English and French, WeNR is the first free information system footprint measurement tool based on open-source data.

APPROACH

WeNR enables all European organisations, public and private, to measure the carbon footprint of their Information Systems and assess their maturity.

The study is based on the work of a thesis funded by the Metropolitan Area of La Rochelle in partnership with La Rochelle University and the engineering school EIGSI (1). Thanks to scientific collaboration between the European INR network (INR France, INR Switzerland, INR Belgium), the University of Louvain, and all the members of the INR, the calculation model was refined over several months and enabled the first data to be consolidated.

OLIVIER VERGEYNST
DIRECTOR, INR BELGIUM

"The internationalisation of the INR, with a growing presence in Belgium and Switzerland, also allows many organisations outside France to benefit from this free tool. Already very complete in its version open to all organisations, the version of WeNR reserved for INR members allows them to benefit from a more detailed analysis to better guide their action. The presence of European members, with different electricity mixes, has prompted us to go further in taking into account these electricity mixes, attaining a footprint calculation that has become more granular. Structures with a complex geographical organisation (in two distinct regions for example) will be able to benefit from a measurement granularity by site, by subsidiary or by department if they so wish. This will be of particular interest to multinationals: the calculation will be much more accurate. Thanks to this level of detail on the results provided, WeNR users will be able to draw real conclusions and better pilot their transformation!"

1. EIGSI : École d'ingénieurs en génie des systèmes industriels héritière de l'École EEMI-Violet - School of Industrial Systems Engineering, heir to the EEMI-Violet School

OBJECTIVES

WeNR is the fundamental building block from which European organisations will be able to measure their carbon footprint (1) and maturity, compare themselves to other players, and better see how they can improve their ecosystem.

The WeNR objective is to enable any organisation to understand where its impacts lie, to measure them quantitatively on the one hand and to qualitatively estimate their level of Sustainable IT maturity on the other.

01 **MEASURE**
Measuring the environmental footprint of the information systems of the European organisations

02 **ASSESS**
Assess the maturity of European organisations with regard to good Sustainable IT practices

03 **PILOT**
Provide factual, qualitative and quantitative elements to enable organisations to manage their information systems in a responsible manner

METHODOLOGY

WeNR takes the form of a set of quantitative and qualitative questionnaires to be completed by each participating organisation, using a specific file template provided by the INR. After submitting their answers, the organisations obtain a personal, complete and detailed quantitative and qualitative report of their Information System footprint.

The calculation model developed by weighting each of the questions is in line with WeGreenIT 2018 published in partnership with WWF (2). More ambitious, the calculation model offers different levels of granularity to adapt to the problems of the greatest number of people, allowing structures of all sizes to calculate the quantitative and qualitative footprint of their Information System.

1. The carbon footprint of this study is measured with the impact factor of the equipment and the electricity used. The main sources are ADEME, the Energy Star label, data from the CNRS eco-info tool, manufacturer data and the electricity mix declared by participants.
2. WeGreenIT 2018 study, WWF France and Club Green IT, October 2018

4

Results of study

RESULTS OF STUDY

WeNR's objective was to mobilise organisations in 3 European countries where INR is present (France, Belgium and Switzerland) in order to measure the environmental footprint of their Information Systems and their Sustainable IT maturity. Here are some key figures:

75

PARTICIPATING ORGANISATIONS

In 2021, WeNR mobilised 75 European organisations to participate in measuring the qualitative and quantitative footprint of their Information Systems. This is 3 times more than in 2018 WeGreenIT study!

1 309 604

EMPLOYEES

WeNR presently represents 1,309,604 employees compared with 24,000 in 2018, which makes the results all the more significant and representative of European organisations, all sizes and sectors combined.

4 951 304

EQUIPEMENTS

WeNR was able to study the footprint of almost 5 million devices (including inventory and data centres). Almost 2.8 million were analysed in the 2018 WeGreenIT study.

ANNE TOZZOLINO
DIGITAL REFERENT, LA POSTE GROUP

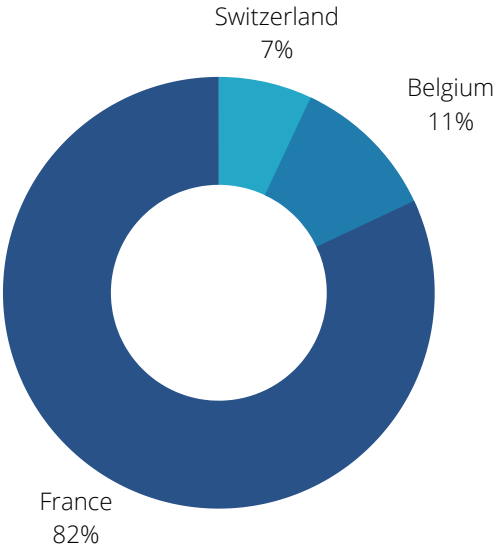
Since 2011, La Poste Group has been dealing with Sustainable IT within a Group governance structure that brings together various players (IS, HR, CSR, Strategy, etc.). Since 2014, we have been measuring the carbon footprint of our IT assets and since 2021 Sustainable IT has been fully integrated into our corporate strategy. As we became a mission-driven company in June 2021, we have strengthened our commitments, particularly in terms of ethical, inclusive and frugal digital services. To honour our commitments, Green Argile, our internal measurement tool, enables us to carry out a census of the group's IT assets every two years and to deploy our action plan. WeNR provides a complementary vision, with additional indicators. It is also a great tool for raising awareness, notably on the importance of the impact of equipments"

MATHILDE LECOMPTE
CSR PROJECT MANAGER, EDENRED

As part of a continuous improvement process, we have committed to regularly reviewing our IS. Our participation in the WeNR study enabled us to mobilise our internal stakeholders around this subject, in particular the cooperation of the CSR & IT teams, and to share our areas for improvement and accelerate awareness in order to establish the 2022 action plan."

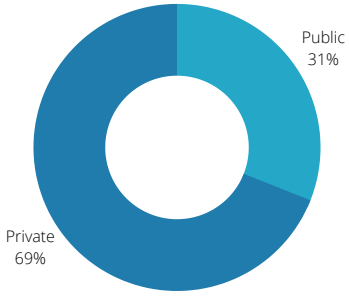
QUALITATIVE ANALYSIS

DISTRIBUTION BY COUNTRY



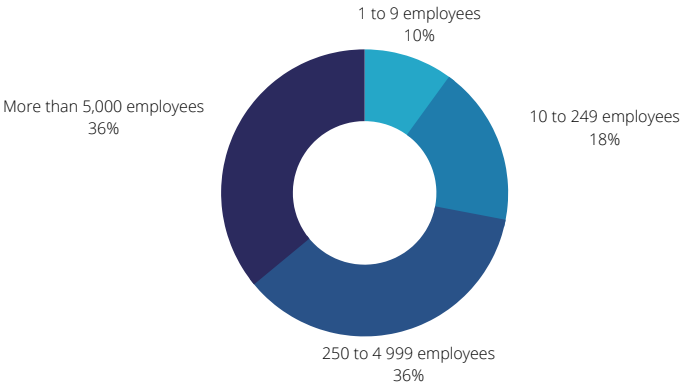
France, Belgium and Switzerland represent respectively 82%, 11% and 7% of the 75 public and private organisations that participated in the study, making them pioneers in the field of Sustainable IT. This distribution should be seen in the context of the total volume of organisations in each of these countries. In the short term, WeNR intends to cover more countries in Europe, and even the world, and to become the reference measurement tool for information systems.

DISTRIBUTION BY SECTOR



Among the 75 participating organisations, 31% are public and 69% private.

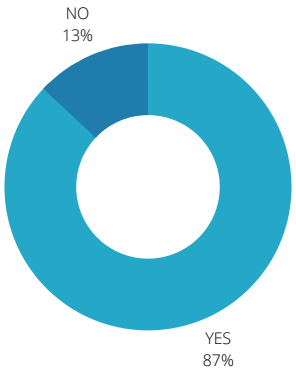
DISTRIBUTION BY SIZE



With an even distribution in the size of the participating organisations, the study is very representative.

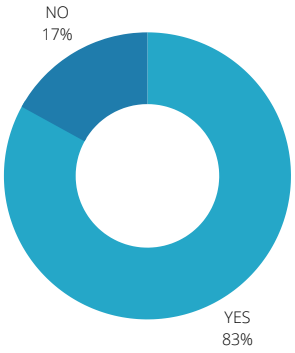
QUALITATIVE ANALYSIS

PERCENTAGE OF ORGANISATIONS HAVING ALREADY UNDERTAKEN A SUSTAINABLE IT ACTION



87% of organisations stated that they had already undertaken a Sustainable IT action prior to the WeNR survey.

PERCENTAGE OF ORGANISATIONS WITH A SUSTAINABLE IT REFERENT



83% of organisations already have a Sustainable IT Officer, indicating a strong commitment and a high level of maturity.

AVERAGE TIME ELAPSED SINCE THE IMPLEMENTATION OF SUSTAINABLE IT ACTIONS

3 years and 4 months

The participating organisations are already engaged in the deployment of their Sustainable IT approach with the implementation of actions and the presence of a referent on the subject. On average, they have been engaged in Sustainable IT actions for more than 3 years (40 months).

These figures should be put into perspective, as participation in the WeNR study is proof of interest in the topic of Sustainable IT. In order to broaden the study, the INR aims to deploy a measurement campaign in wider ecosystems.

5

Detailed analysis

DETAILED ANALYSIS

The qualitative analysis revealed a high level of commitment to Sustainable IT among the organisations studied: 87% of them have already undertaken Sustainable IT actions and 83% already have a Sustainable IT referent.
In order to understand the environmental impacts in more detail and to reflect the degree of maturity of the participating European organisations, an analysis (*) will be detailed in the following section.

ENVIRONNEMENTAL FOOTPRINT

4 613

TONS OF CO2e

Digital weighs more than 346 000 tonnes of CO2e for the 75 organisations studied, i.e. an average of more than 4 613 tons of CO2e.

5 311

kWh OF FINAL ENERGY

On average, an employee of an organisation in the WeNR study consumes 5 311 kWh of final energy per year.

2

KG WEEE

The participating organisations generated over 1.9 million kg of e-waste, equivalent to 2kg of e-waste (WEEE pro. cat. 3 and 4) per user per year. In 2018, the WeGreenIT study found that one employee consumed the equivalent of 3kg of e-waste (WEEE pro. cat. 3 and 4) per year. The longer life span of equipment partly explains this encouraging progress.

---

*Analysis points to note:
1. The lifetime of equipment has largely contributed to the decrease in emissions compared to 2018.
2. External service providers (subcontractors) were excluded from the scope studied for this year, only the organisation's scope was covered.
3. As organisations are migrating massively to the CLOUD, some factors could not be quantified in the study.
4. The impact factors used for the 2021 edition provide updated and more accurate results

The study shows that the digital environmental footprint of an organisation is strongly influenced by: its sector of activity, its organisation and the level of equipment used by its employees. In concrete terms, a centralised company with equipment shared between employees will have less impact. Other factors such as the total lifespan of equipment, the rate of internal and/or external reuse, and printing volumes will have a significant impact on the organisation's footprint.

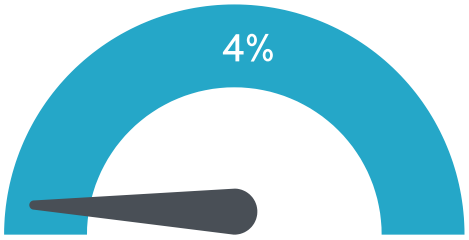
The analysis of the impact of users and equipment on the digital footprint of an organisation is therefore fundamental, and will be developed in the following section.

FOCUS ON THE USER FOOTPRINT

EQUIVALENCE IN KG OF WEEE

Over the course of one office day (220 working days), the digital footprint of a European employee represents the equivalent of 10g of electronic waste (i.e. 2kg of WEEE cat. 3 and 4 over a year).

EQUIVALENCE IN KG OF CO2e

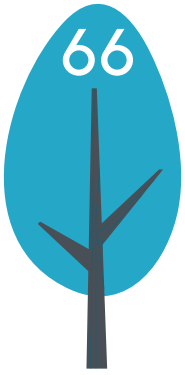


The digital carbon footprint of a European employee is 265 kg of CO2e over a year. This represents 4% of the global carbon emission of a French person, who emits 6.8 T of CO2e per year (1).

FINAL ENERGY EQUIVALENCE

The consumption of a European employee represents the equivalent of 47 25W light bulbs over a day in the office. That is 5,311 kWh of final energy/user/year.

CARBON CAPTURE EQUIVALENCE



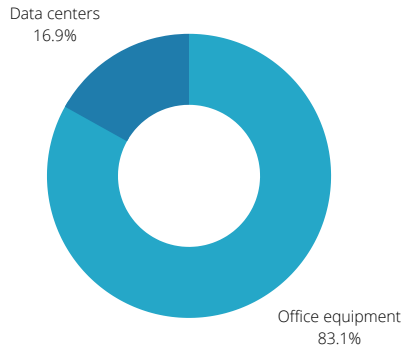
The digital footprint of a European employee represents 265 kg CO2e per year. It would take the planting of 66 trees per year to offset the digital carbon footprint of one European employee.

Sources :

1. https://www.statistiques.developpement-durable.gouv.fr/

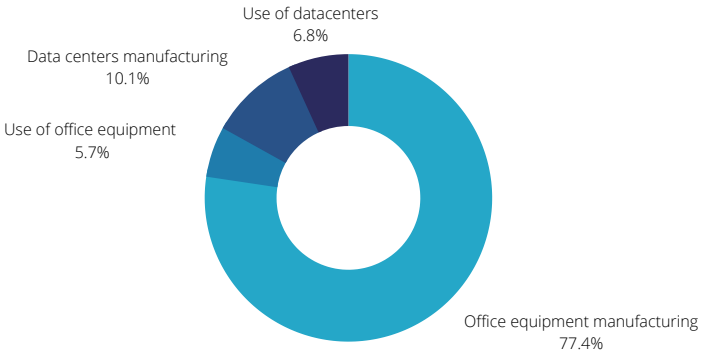
FOCUS ON EQUIPEMENT

BREAKDOWN OF GREENHOUSE GASES (1) BY EQUIPMENT AREA



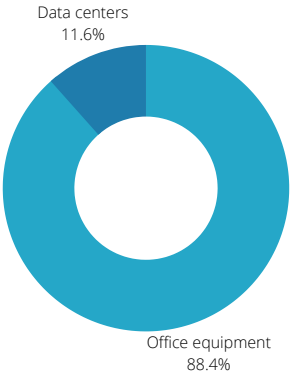
More than 80% of the Greenhouse Gases (GHGs) from manufacturing come from inventory. The three most polluting equipments are: desktops, monitors and laptops.

BREAKDOWN OF GHG BY EQUIPMENT AREA IN THEIR LIFE CYCLE



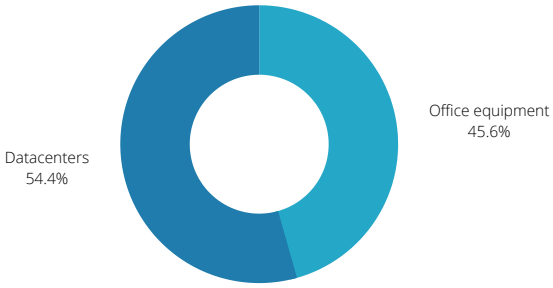
Office equipment manufacturing is responsible for 77% of the GHG emissions of the organisations participating in the study. Overall, nearly 90% of GHG emissions are due to manufacturing (office equipment and data centers combined).

BREAKDOWN OF GHG EMISSIONS FROM MANUFACTURING



Nearly 5/6 of the GHGs of emissions from information systems of European organisations come from their office equipment (1) and 1/6 from data centers.

BREAKDOWN OF GHG EMISSIONS FROM USE



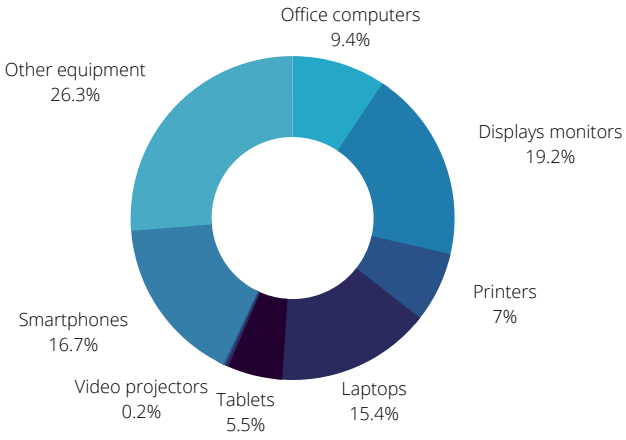
GHGs from usage are almost equally distributed between office equipment and data centers.

1. The "office equipment" are : desktops and laptops, smartphones, monitors, printers, tablets, televisions television sets, projectors, network equipment and other office equipment

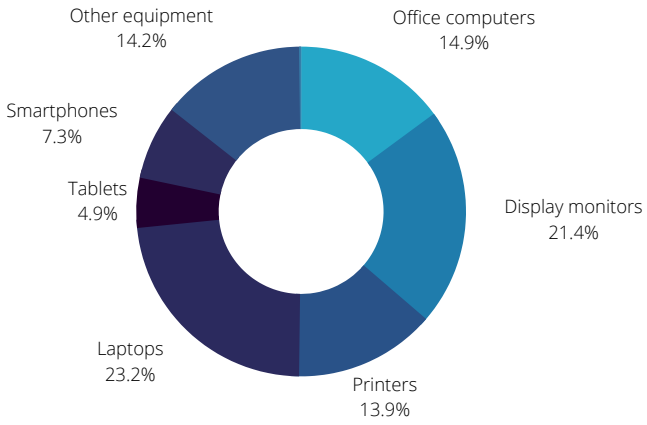
FOCUS ON EQUIPMENT

FOCUS ON GHG EMISSIONS FROM OFFICE EQUIPMENT

DISTRIBUTION BY TYPE OF EQUIPMENT



DISTRIBUTION OF GHG EMISSIONS BY TYPE OF EQUIPMENT

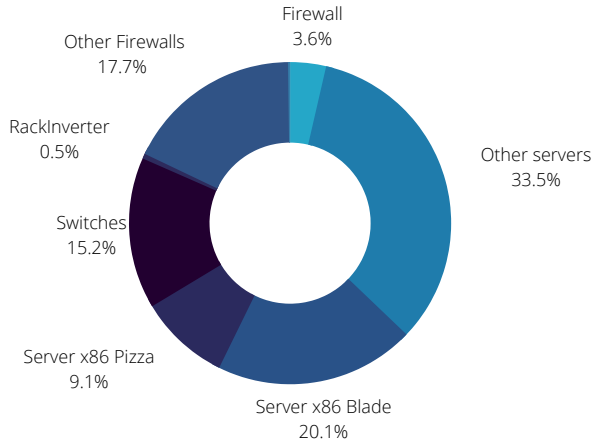


For 15% of office equipment, laptops account for nearly 25% of GHGs from office equipment. It is the equipment with the strongest environmental footprint.

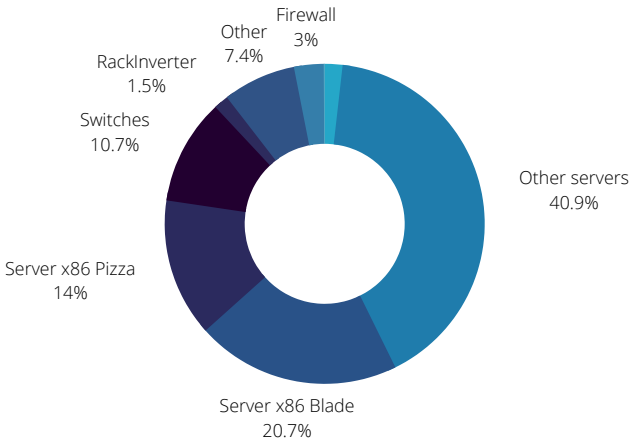
While the environmental footprint of office equipment is essentially linked to its manufacture, its use will have a direct impact on its lifespan. Thus, reasoned use will have a direct impact on the quantity of equipment consumed by the organisation.

FOCUS ON GHG EMISSIONS FROM DATA CENTRES EQUIPMENT

BREAKDOWN BY TYPE OF EQUIPMENT



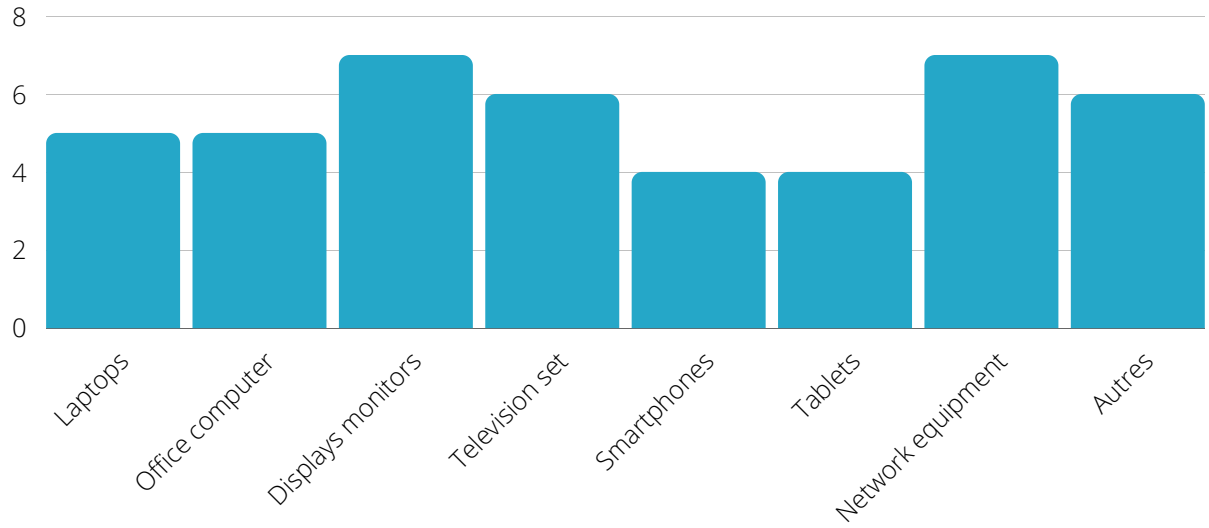
BREAKDOWN OF GHG BY TYPE OF EQUIPMENT



The "other servers" account for more than 40% of the GHGs in the data centers of the participating European organisation. They include servers in tower format (VPS, NAS, etc.). These servers are not as optimised as infrastructures dedicated to data storage, which explains their high carbon emission rate

ZOOM ON THE LIFE CYCLE

LIFE CYCLE OF EQUIPMENT (IN YEARS)



Displays monitors and network equipment stand out with a lifespan of 7 years. In the study, smartphones and tablets have a lifespan of 4 years (world average of 18 to 36 months depending on the country), which shows that organisations are committed to extending the lifespan of their equipment. The longevity of equipment is a very encouraging sign that needs to be generalised.

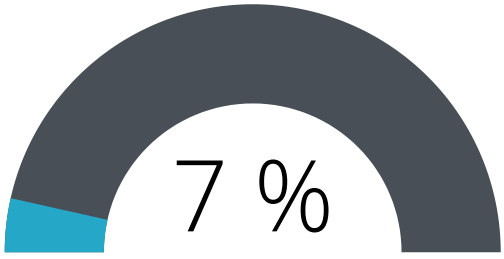
To pursue their efforts, organisations that are already well on their way to a Sustainable IT approach can implement key best practices such as equipment reuse and repurposing. This exercise can significantly reduce the environmental footprint of the Information System.

In the same vein, there is the BYOD (Bring Your Own Device) approach which consists of using one's smartphone for professional use. This reduces the amount of equipment in the organisation and has a positive impact on the environmental footprint of the information system.
However, the more intensive use of equipment can increase the risk of having to replace it more quickly.

To reduce the footprint of equipment, it is therefore essential to find a solution adapted to the organisation's own uses.

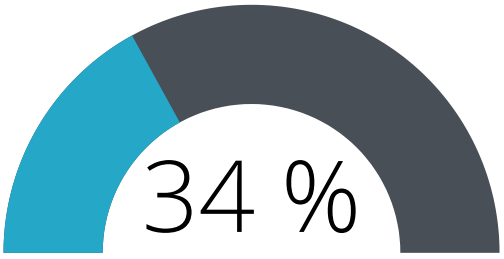
FOCUS ON THE LIFE CYCLE OF EQUIPMENT

% OF DIGITAL OFFICE EQUIPMENT PURCHASED AS REFURBISHED



Only 7% of office equipment in the organisations surveyed is purchased as refurbished. This represents a considerable area of progress for organisations wishing to reduce their environmental footprint.

% OF DIGITAL EQUIPMENT GIVEN A SECOND LIFE



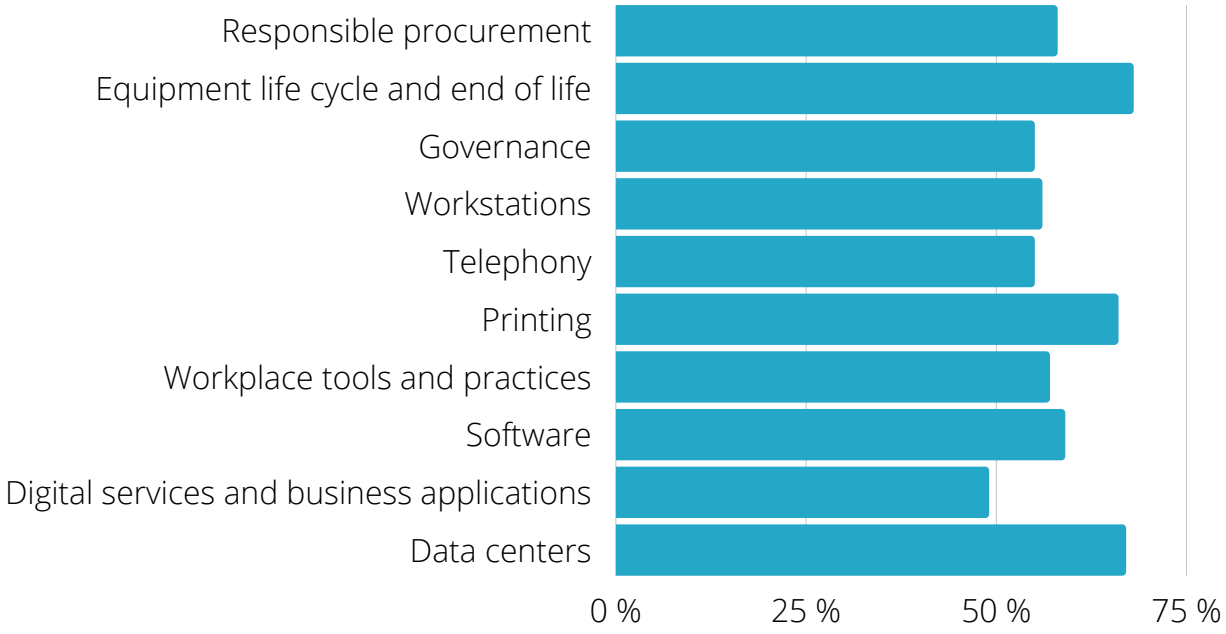
After use within the organisation, on average 34% of office equipment is reconditioned or given a second life. This is also a lever for improvement to reduce the environmental impact of organisations.

SUSTAINABLE IT MATURITY

A maturity model is a reference model for assessing an organisation's transition to an evolutionary implementation of business processes. Maturity is a prerequisite for being able to measure, monitor and plan modifications in practices.

In the context of Sustainable IT, maturity applies to operational processes of organisations in order to respond to the 3Ps (Planet, People, Prosperity). Sustainable IT maturity analysis of the organisations participating in WeNR was based on the 10 categories presented below.

10 SUSTAINABLE IT MATURITY CATEGORIES



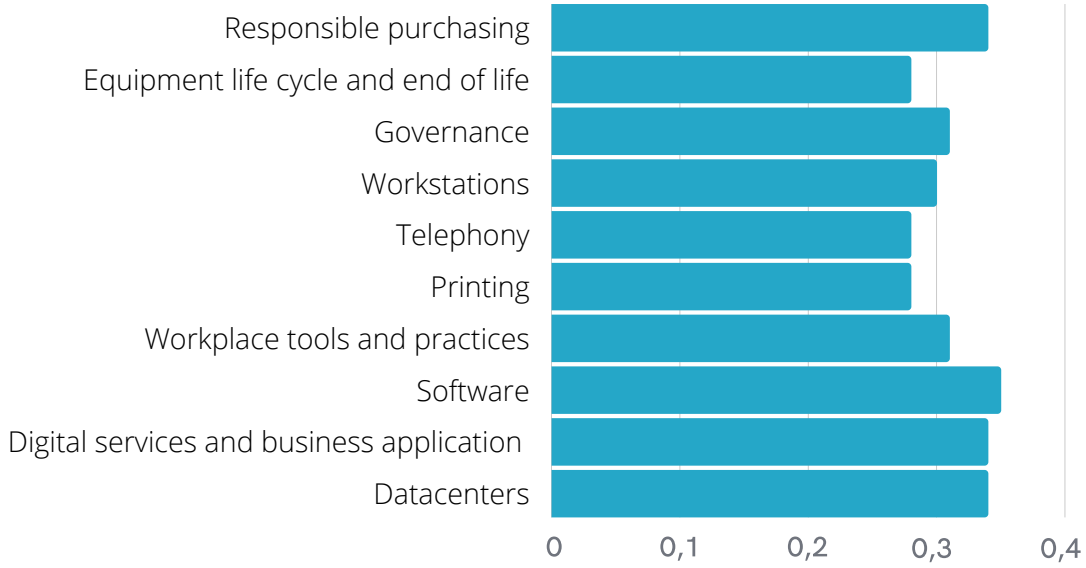
Organisations are focusing on three areas of action in their Sustainable IT approach and are therefore more mature in terms of: equipment life cycle and end of life, data centre management and print optimisation.

Definitions of the 10 areas :

1. Responsible purchasing : actions and clauses implemented in the purchasing policy and calls for tender.
2. Equipment life cycle and end of life : actions to extend the life cycle of equipment, including reuse and recycling.
3. Governance: strategy, budget, KPIs, etc. put in place to integrate the Green IT subject into the entities and internal governance.
4. Workstations : actions to optimise the purchase and use of workstations with less impact.
5. Telephony : actions to optimise the purchase and low-impact use of fixed and mobile telephones.
6. Printing : reduction of printing volumes and associated impacts.
7. Workplace tools and practices: training and awareness-raising on responsible use and key actions.
8. Software : actions to optimise purchasing and raise awareness of low-impact use of software.
9. Digital services and business applications : eco-design of the company's digital services.
10. Data centers : reducing power consumption and environmental impacts.

MATURITY

DISPERSION BETWEEN THE SUSTAINABLE IT MATURITY CATEGORIES (STANDARD DEVIATIONS)

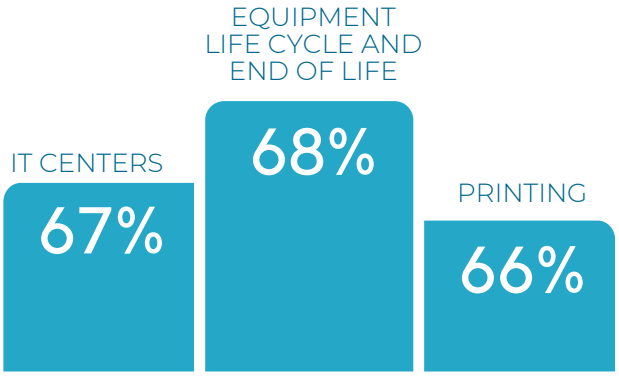


Standard deviations are used to measure the dispersion of a set of values around their mean, the lower the standard deviation the more homogeneous the population.

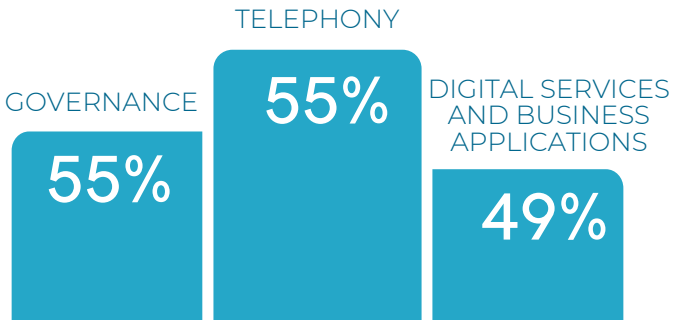
With low values between 0.2 and 0.3, the maturity of study participants is very homogeneous across all categories.

MATURITY

TOP 3 MOST MATURE AREAS



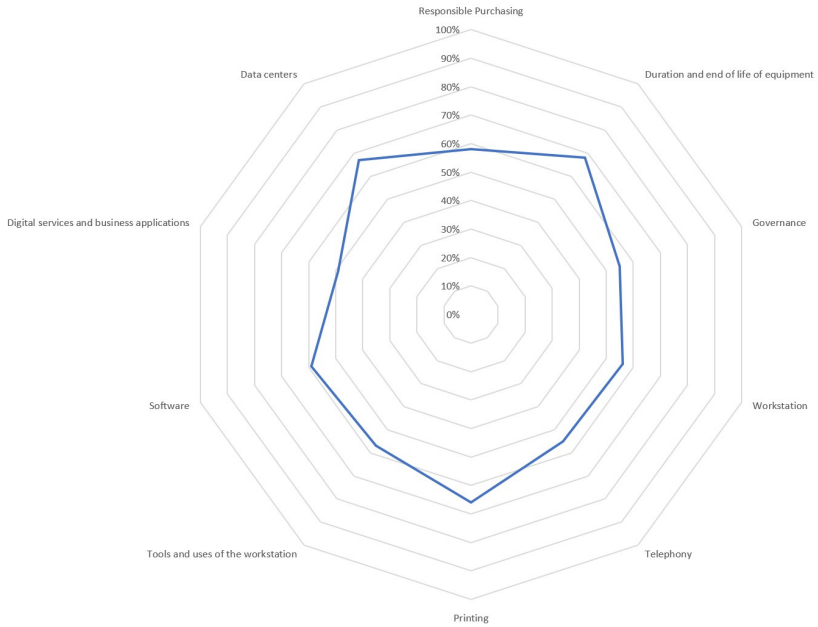
TOP 3 LEAST MATURE AREAS



The maturity of organisations follows the same trend as in 2018, with some areas being more mature than others.

In contrast, 'Digital Services', 'Telephony' and 'Governance' are areas for improvement for the majority of participating organisations. The latter is in contradiction with the qualitative analysis which, as a reminder, revealed a high level of commitment to Sustainable IT among the organisations studied (87% of them have already undertaken Sustainable IT actions and 83% already have a Sustainable IT referent). This illustrates the level of expectations of the participating organisations in this "Governance" category.

MATURITY ANALYSIS BY DOMAIN



ORGANISATIONS ARE MOBILISING FOR A MORE SUSTAINABLE IT ENVIRONMENT

The number of organisations participating in the WeNR study shows a strong awareness of Sustainable IT. Overall, the entities show maturity on the subject with an average score of 59% (as in the WeGreenIT 2018 study). However, there is a significant gap between the least mature organisation (20% compared to 40% in 2018) and the most mature (83% compared to 77% in 2018).

Sustainable IT is expanding and moving out of the environment of expert organisations, which are already well ahead of the game. The less mature entities are taking up the issue and are seeking to assess the footprint of their information systems from the outset of their Sustainable IT approach.

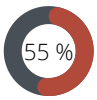
The democratisation of the deployment of Sustainable IT approaches and the ability of organisations of all sizes to work towards implementing good practices to reduce the social and environmental footprint of their information systems plays a decisive role and is very encouraging!

responsible purchasing

Only 58% of the participating organisations seem to have mastered this area. The cost of acquisition remains the determining factor in the contracts, ahead of the consideration of ecolabels and good sustainable purchasing practices.

equipment life cycle and end of life

As in 2018, the management of the life cycle and end of life of equipment is the most mature area of the participating organisations, with an average maturity rate of 68%. They promote the extension of the total lifespan from internal reallocation to external reuse through end-of-life management.



governance

Sustainable IT governance is an important area for improvement. 55% of European organisations claim to be mature on the subject, yet 83% of them have appointed Sustainable IT officers and 87% have initiated Sustainable IT actions. This shows the demands they make on themselves in order to declare themselves mature on the subject. Structuring and monitoring the deployment of the Sustainable IT approach is an important lever.

workstations

Organisations are not yet mobilising to put into practice the most effective recommendations for reducing the footprint of workstations, such as "updating equipment rather than replacing it" or "favouring second-hand equipment before considering new equipment". On the other hand, they are systematising other good practices by dissociating the renewal of central units from peripherals (screen, keyboard, etc.) and extending the duration of the equipment.

telephony

Telephony remains a lever for progress for many organisations, only 55% of which consider themselves to be mature. To progress, organisations can opt for more sustainable, repairable, recyclable or energy-efficient equipment (e.g. by choosing Blue Angel, TCO or EPEAT certified mobile phones, if available).

printing

The digital transformation is resulting in a steady decline in the number of prints, which allows organisations to be 66% mature in this area. There are still levers for improving the environmental impact of this area, such as choosing FSC or Blue Angel certified unbleached recycled paper rather than uncertified virgin pulp or PEFC, as well as raising employee awareness and promoting the use of graphic eco-design.

workplace tools and practices

57% of European organisations say they are mature in this area. There are simple and effective practices: generalising file sharing systems (web and/or shared directories) to avoid increasing the weight of e-mails, switching off or putting workstations on standby.

software

59% of organisations declare themselves to be mature in this area and are generalising certain key good practices to combat the premature obsolescence of workstations. For example, updating software only when necessary or maintaining computers to prevent them from slowing down and becoming unstable. Further, uninstalling unused software can reduce licensing costs and increase the lifespan of equipment.

digital services and business applications

As telephony, digital services and business applications are a strong lever for progress for the majority of organisations which are still not very mature in terms of responsible design of their digital services. As with WeGreenIT 2018, this is the lowest score in the maturity assessment (49%). Awareness and training in eco-design, and more broadly in responsible design, are essential to make progress on this point.

data centers

Along with end-of-life management, this is the most mature field (67%) for the organisations participating in the WeNR study that have taken up the subject in order to reduce the environmental footprint of their data centers. There are two levers to manage the ecological impact of the production of electricity consumed by data centers. The first is to reduce electricity consumption by optimising the management of server cooling and the second is to re-use the heat released (low temperature heating: offices, swimming pools).

6

Tools & recommendations

RECOMMENDATIONS

Faced with the environmental challenges of digital technology, and following the results of the WeNR study, the INR has identified good practices to reduce the environmental impact of public and private organisations.

01

DEVELOPING A SUSTAINABLE IT STRATEGY

Implementing a Sustainable IT strategy and deploying the approach : the deployment of the NR approach makes it easy to reduce by 10% at 20% the environmental impacts of the information system. The key challenge lies in governance and the acculturation of the entire organisation. The approach must be as inclusive as possible, starting with an inventory of the existing situation and identifying ambassadors who will take up the subject.

02

EXTEND THE LIFE OF EQUIPMENT

Continue to extend the lifespan of equipment: from the time of purchase, select equipment that is easy to repair and upgrade, while forging closer links with refurbishers in order to encourage the optimisation of computer stocks, improve the traceability of equipment and better value outgoing equipment (thus optimising the refurbishment rate).

03

ECO-DESIGN OF DIGITAL SERVICES

The eco-design approach and, more broadly, the responsible design of digital services aims to create value by designing digital products and services that are more efficient from an environmental, social and economic point of view.
This leads to the creation of a differentiated and innovative offer, more virtuous, favouring a longer lifespan for equipment, more sustainable for the planet, and accessible to the greatest number (whatever the situation, skills, equipment or network).

TOOLS

A number of tools, best practice guidelines and MOOCs for raising awareness of Sustainable IT are available from the INR and also from our colleagues. Here is a non-exhaustive list of existing free tools that you can use to deploy your Sustainable IT approach.

SOME INR'S TOOLS

LIST OF TOOLS

INR's toolbox which lists Sustainable IT tools.

BLUE BOOK

Good practice guidelines

SUSTAINABLE IT MOOC

14 modules in order to progress and grasp all the environmental, ethical and inclusion issues

GR491

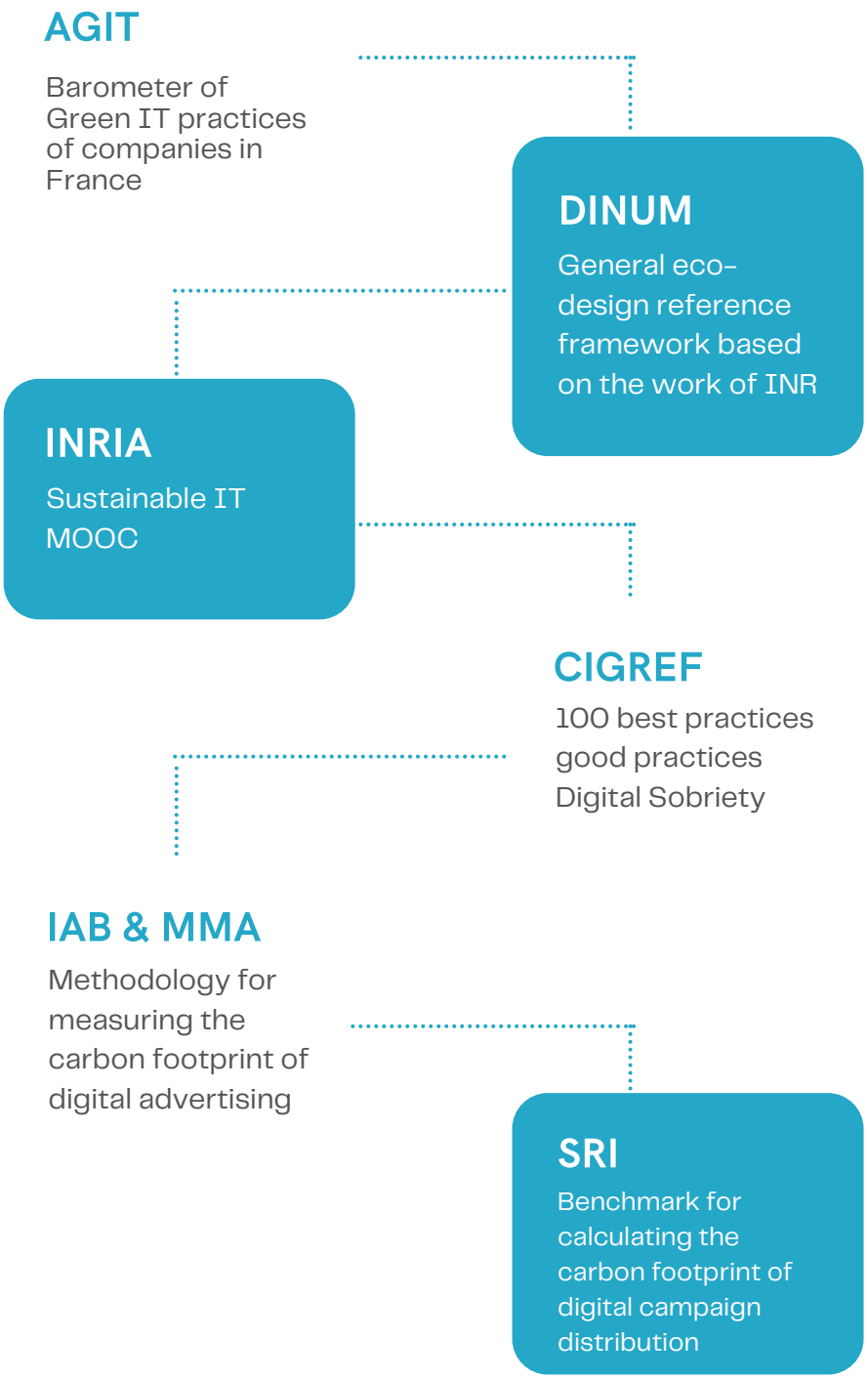
Reference Guide to Responsible Design of Digital Services created by INR

SUSTAINABLE IT PURCHASING GUIDE

Practical guide to Sustainable IT purchasing

TOOLS

TOOLS OF OTHER SUSTAINABLE IT ACTORS



7

Conclusion

BENEFITS OF THE STUDY

RAISING AWARENESS

Promote awareness of the environmental, social and societal impacts of digital technology through education

MEASURE

Assess the environmental footprint and maturity of European organisations on Sustainable IT

PILOTE

Provide factual, qualitative and quantitative elements to enable organisations to manage their information systems in a responsible manner

VICTORIA RASE

BUSINESS ANALYST IN DIGITAL TRANSFORMATION, BRUSSELS ENVIRONMENT

WeNR really helped us to identify the different areas for improvement throughout the life cycle of our electronic equipment, the departments involved, and to ask the right questions.
The study enabled us to refine our action plan.
The proposed indicators will also guide us in monitoring our progress.

THIERRY CHAPPE

SUSTAINABLE IT MANAGER OF BRIC (BRUSSELS REGIONAL INFORMATICS CENTRE, BELGIUM)

WeNR enabled us to mobilise our internal departments to gain a clear vision of the impact of our digital infrastructure. This analysis led us to refine our action plan in 4 areas:

The first concerns hardware, which is one of the main axes. Its key objective is to extend the lifespan of all our IT equipment and to promote a circular economy within the region. We have identified three key areas of work within this field:

Firstly, sourcing, which consists of identifying the most virtuous equipment in terms of impact on the entire manufacturing chain, the most economical in terms of energy consumption and with the longest lifespan. These criteria are integrated into our public procurement contracts for IT equipment for all the region's administrations.

Secondly, we are extending the lifespan of all our equipment step by step. The aim is to return to the useful life of 30 years ago and to disconnect the hardware renewal cycles from financial depreciation.

Finally, we are focusing on the end of life of equipment, trying as much as possible to give a second life to decommissioned equipment. To do this, we are organising partnerships with various players in the IT circular economy in the region.

The second axis focuses on the eco-design applied to our digital services. The objective is to make our applications and websites more economical in terms of energy consumption, transactional volume and quantity of stored data. To do this, we train our technical teams in application eco-design practices and integrate a set of best practices into our DevOps processes.

The third axis is IT for Green, also called IT for Sustainable IT. The aim is to use our digital infrastructure to serve projects with a positive impact. To this end, we are integrating into our project financing selection procedures a reflection on the environmental and social impact of projects in order to favour projects that make sense and have a positive influence on our ecosystem.

The fourth and final area concerns awareness, commitment and use. The aim of this area of work is to raise awareness among all the region's digital players and the general public of the environmental and societal challenges of the digital industry. Then to offer them concrete solutions to encourage a more virtuous use of their digital consumption."

ENCOURAGING RESULTS

Digital technology is both a tool and a challenge for the ecological transition. The opportunities it offers are real, and must be subject to environmental constraints. It is the responsibility of all organisations to take part in a Sustainable IT transformation by making resilient and sustainable choices.

The 75 organisations participating in the WeNR study show a growing general interest in implementing a Sustainable IT approach. They are focusing their efforts on equipment life cycle and end-of-life, data centres and printing. Moreover, 87% of them state that they have appointed a Sustainable IT manager, which is a strong and encouraging sign of commitment for the future.

The results of the study lead to three recommendations to be implemented in all organisations: develop a Sustainable IT strategy, extend the life of equipment and eco-design digital tools and services. The deployment of these approaches must be part of an organisational strategy to see a reduction in the environmental impact of information systems that is effective on the long term.

OLIVIA BERTOUT
DIGITAL CSR LEADER - ADEO

"The process of collecting data for the WeNR study made it possible to mobilise around the measurement of digital impact and to reflect on the company's capacity to include sobriety in its overall strategy. We have identified the improvement of our purchasing policy as a major lever. In which we could work on the type of purchase, the life span and the end of life."

JULIEN GONTIER
ECODESIGN LEADER IT - DECATHLON

"With 1.3 billion Decathlon products in the world, greenhouse gas emissions from the digital sector represent less than 1% of our overall emissions. This is an important subject, which is not negligible in absolute terms, but which is complicated to manage in relative terms in terms of the company's challenges. WeNR is an interesting tool for raising awareness of the environmental impact of digital technology."

WENR TOMORROW

BENJAMIN DUTHIL,
SCIENTIFIC CO-DIRECTOR INR

Today, WeNR enables organisations to find out where they stand in terms of their environmental impact and maturity. In the future, the idea is to optimise this tool, which is freely accessible to all, and to repeat this study each year for all organisations. In addition, we want to provide our members with more than just a status report, with concrete recommendations based on the results to improve the organisation's IS performance. Thus, we are in the process of developing a recommendation and decision support tool called WeNR Plus."

WENR

WeNR takes the form of a file to be filled in by each participating organisation using a specific template provided by the INR. WeNR is free to use and accessible to all organisations, large or small, so that as many people as possible can assess the footprint of their Information System using a personal report.

WENR LIGHT

Free and very quick online questionnaire to assess the maturity of any European public or private organisation
(Available in 2022)

WENR PLUS

WeNR Plus uses the standard WeNR model and calculator. The personal report provided to INR member organisations allows a comparison with organisations in the same sector. The analysis tools provided provide insights into how to develop a Sustainable IT strategy. (Available in 2022)

8

Apprendixes

Assessment of Information Systems impact in European organisations

INFOGRAPHICS

FINDINGS

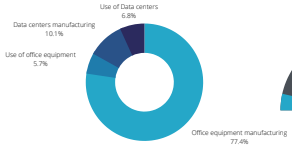
Digital footprint of a European employee represents 265 kg CO2e per year (220 working days). 66 trees would have to be planted per year to offset this.

WENR STUDY

> In the age of ecological transition, the awareness of European organisations of the environmental impact of their Information Systems is paramount. With WeNR, we aim to offer a public, free tool with emission factors that are accessible to all.
>
> JC CHAUSSAT - Président of INR

WeNR takes the form of a file to be completed by each participating organisation using a specific template made available by INR. WeNR is free to use and accessible to organisations of all sizes, in order to allow as many people as possible to assess the footprint of its Information System using a personal report.

FOCUS ON EQUIPMENT

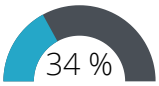


Breakdown of GHGs by equipment area in their life cycle

Manufacturing of office equipment is responsible for 77% of the GHG emissions of organisations participating in the study. Overall, nearly 90% of GHG emissions come from manufacturing (office equipment and Data Centers combined).

% of office equipment purchased is refurbished

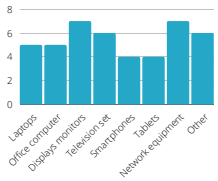
Only 7% office equipment of the organisations studied is purchased refurbished. This constitutes a considerable area of progress for organisations wishing to reduce their environmental footprint.



% of digital equipment given a second life

After use within organisation, on average 34% of office equipment is reconditioned or intended for a second life. This is also a lever for improvement to reduce the environmental impact of an IT park.

Life cycle of equipment (in years)

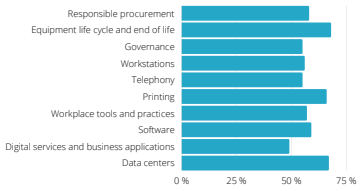


Displays monitors and network equipment stand out with a lifespan of 7 years. In the study, smartphones and tablets have a lifespan of 4 years (world average of 18 to 36 months depending on the country), which shows that organisations are committed to extending the lifespan of their equipment. The longevity of equipment is a very encouraging sign that needs to be generalised.

To pursue their efforts, organisations that are already well on their way to a Sustainable IT approach can implement key best practices such as equipment reuse and repurposing. This exercise can significantly reduce the environmental footprint of the Information System.

FOCUS ON MATURITY

10 sustainable IT maturity categories



Overall, the participating entities show maturity on sustainable IT with an average score of 59%. Sustainable IT is expanding and leaving the environment of expert organisations. Less mature entities are taking up the issue and seeking from the start of the implementation of their sustainable IT approach to assess the footprint linked to their Information System. The deployment of sustainable IT approaches democratisation and the organisations capacity to work to put in place good practices to reduce the social and environmental footprint of their Information System play a determining role and is very encouraging.

RECOMMENDATIONS

Develop a Sustainable IT Strategy

Develop a Sustainable IT strategy based on the measurement of the environmental footprint of the Information System with WeNR. Deploying the Sustainable IT approach can reduce the environmental impact of the information system by 10 to 20%.

Extending equipment life

From the time of purchase, select equipment that is easy to repair and to upgrade within the organisation or outside: second life, reconditioning, etc.
It is essential to extend the life of equipment to reduce its their environmental footprint.

Promote Eco-design of digital services

While the environmental footprint of equipment is primarily a result of manufacturing, use will have a direct impact on the lifespan. Thus, designing digital services that are more virtuous from an environmental, social and economic point of view will have a direct impact on the amount of equipment consumed by the organisation.

GLOSSARY

LCA

Life Cycle Assessment (LCA) is a method for quantifying the environmental impacts of a product, good or service. This method is governed by the international standards ISO 14040:2006[1] and ISO 14044:2006[2]. LCA is the the compilation and evaluation of the inputs, outputs and potential environmental impacts of a system over its life cycle

life cycle

The product life cycle is the succession of marketing stages that a product (good or service) goes through over time.
Products generally go through 5 stages: Development of a new product, Launch and introduction of a new product to the market,
Growth, Maturity, Decline

data center

Data centers are physical entities that include the building, IT equipment for data storage, processing and communication, and non-IT equipment such as cooling units, access controls, energy supply (incoming, backup, inverters, etc.), etc.

w.e.e.e

Waste Electrical and Electronic Equipment. In the field of Sustainable IT, we are particularly interested in categories 3 (IT and telecommunications) and 4 (consumer equipment).

eco-design

According to the international standard ISO 14062, "eco-design consists of integrating the environment from the design stage of a product or service, and at all stages of its life cycle"

final energy

It refers to all the energies ready to be consumed by the end user. It takes many forms: electrical energy, thermal energy, mechanical energy ... The final energy comes from primary energy (available in nature before any transformation). This can be either used directly, or else transformed into secondary energy to be easily usable and transportable and ultimately consumed.

end-of-life

The stage in the life cycle of an object at which it is no longer used. The end-of-life stage itself comprises various sub-stages: collecting, sorting, reconditioning, depollution, recycling, recovery (incineration) and burial.

GHG

GHG is the acronym for Greenhouse Gases. GHGs are gases of natural (water vapour) or anthropogenic (linked to human activities) origin that absorb and re-emit part of the sun's rays (infrared radiation), which is the cause of the greenhouse effect. The main GHGs linked to human activities are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) and fluorinated gases

kilowatt-hour

Kilowatt-hour (kWh) is a unit of measurement of an amount of energy. Alternative to Joule, ISO international unit. For example, the power consumption of a computer is measured in kWh per year.

digital pollution

Digital pollution is defined as "all pollution linked to the possession or use of a digital system". Sources: Senate information report: "For an ecological digital transition" (June 24, 2020)

ACKNOWLEDGEMENTS

The INR warmly thanks :

- ADEME
- La Rochelle Agglomeration
- Anne Tozzolino, Digital Referent, La Poste Group
- Benjamin Duthil, INR Scientific Co-Director
- CIGREF
- Direction interministérielle du numérique (DINUM) - Interministerial digital department
- Florian Revaz, INR Switzerland
- Guillaume Bourgeois, PhD student at La Rochelle University
- Jean-Christophe Chaussat, President of INR France
- Julien Gontier, Leader EcoConception IT, Decathlon
- La Rochelle University
- EIGSI
- The 75 organisations participating in the WeNR study
- Mathilde Lecompte, CSR Project Manager, Edenred
- Olivia Bertout, Digital CSR Leader, ADEO
- Olivier Vergeynst, Director INR Belgium
- Rémy Marrone, INR France Project Director
- Victoria Rase, Business analyst in Digital Transformation, Brussels environment
- Thierry Chappe, Sustainable IT manager of BRIC (Brussels Regional Informatics Centre, Belgium)
- Thierry Lochon, Head of the Architecture and Methods Department Ministry of Ecological Transition
- Vincent Courboulay, INR Scientific Director

Although this document has been extensively reviewed, errors may still exist. If you find any errors, please let us know at wenr@institutnr.org. We thank you for your contribution to the improvement of this document.

INR Institut du Numérique Responsable

CONTACT DETAILS

INR
Université de la Rochelle,
Av Michel Crépeau,
17042 La Rochelle

presse@institutnr.org
https://institutnr.org/

INR BELGIUM
ISIT-BE ASBL/VZW

info@isit-be.org
https://isit-be.org/

INR SWITZERLAND

https://institutnr-ch.org/

2021
WENR PUBLIC REPORT

If you choose to print the PDF file, remember that paper is precious. Use the "two-sided" and / or booklet mode (two sheets per page), use eco-responsible paper, share your archives and recycle when the print becomes unnecessary.

Produced by Green makers.