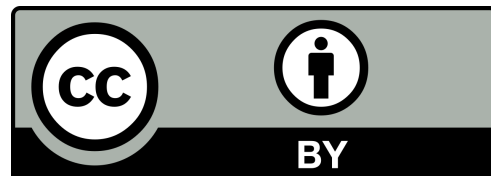


Sustainable Research Practices

Anne Baillot, DARIAH-ERIC

May 23rd, 2024



What I will talk about today

- Research practices are not per se sustainable
- Measuring the footprint of research activities
 - What?
 - How?
 - What for?
- Two key areas
 - The crux of digital technologies
 - Rethinking Academic travel
- Our climate debt

Research as an intellectual exercise

What do you do when you do your research?

- ... come up with a problem
- ... formulate hypotheses
- ... verify them
- ... formulate an answer/solution

All in your brain? Not really.

Research as a practice

- Intellectual dimension + material context
- A practice including interactions, consumption of goods
- Like any human activity: has an environmental footprint
- Embedded in socio-economic fabric and in structures of power
-> long-lasting tendency to pressure society into having change leveraged by individuals => blindness towards professional practices (particularly in some areas)
- Question for Academia: is it transformation or adaptation we can/ should achieve in order for our research activity to be sustainable?

Leveraging change

- Knowledge about the extent of climate and biodiversity collapse within Academia: often blurry (also because the truth is hard to cope with)
- First step: raising awareness, showing scales of magnitude
- Second step: identifying where research practices contribute to the overall situation
 - Many aspects of footprint not factored in even by researchers: hidden impact of invisible infrastructures
 - Emotional dimension

Leveraging change

- Knowledge about the extent of climate and biodiversity collapse: often blurry (also because the truth is hard to cope with)
- First step: raising awareness, showing scales of magnitude
- Second step: identifying where research practices contribute to the overall situation
 - **Many aspects of footprint not factored in even by researchers: hidden impact of invisible infrastructures, of interiorised mechanisms**
 - Emotional dimension
- **Third step: drafting solutions towards sustainable research practices**

Making the invisible visible

- Giving an account of the footprint of research activities: what is it good for?
 - Fact-checking the impact of the whole research process
 - Identifying areas of local vs. systemic change
- Pros and cons of measuring carbon footprint:
 - **Cons:** carbon is only one aspect of the environmental footprint, the effort invested in measuring should go into divesting - we are in an **emergency!**
 - **Pros:** makes it possible to give concrete figures (badly needed by sustainable ICT research), measuring tools exist, can leverage change.
 - Measure it, but carefully: beware of (expensive) **greenwashing** certifications!

How to measure: the GES1point5 tool

- GHG measuring tool developed by French research network labos1point5

Labos 1.5

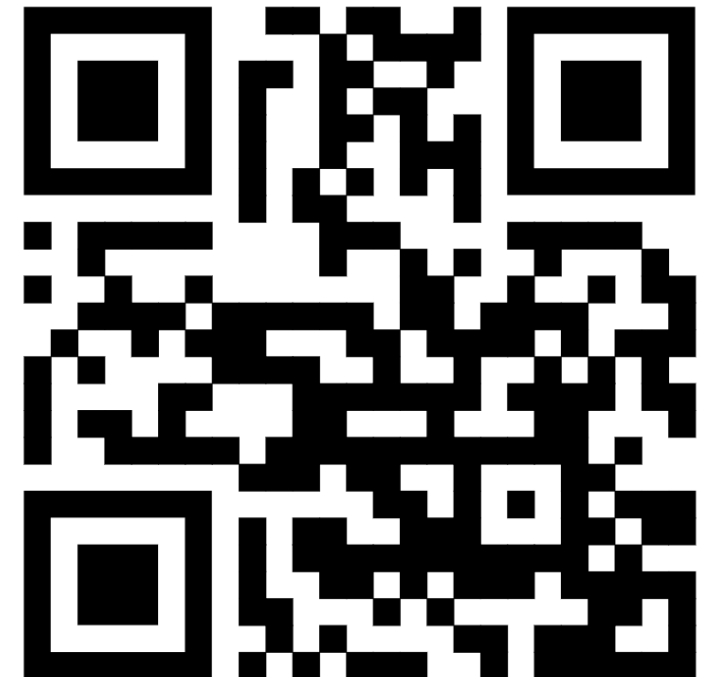
Collectif Publications Médiathèque Outils Ressources Actualités

Reducing the environmental footprint of our research activities

Labos 1point5 is an international, cross-disciplinary collective of academic researchers who share a common goal: to better understand and reduce the environmental impact of research, especially on the Earth's climate.

- THINK TANK TEAM**
The think tank team is in charge of bringing intellectual reflection to life and organizing in-depth debates within the collective and beyond.
For more information, visit the [think tank team](#) page. To participate, you can [join the think tank team](#).
#THINK TANK MEMBERS
551
- THE GDR**
The objective of the research group (GDR) *Labos 1point5* is to better understand and reduce the carbon footprint of French public research.
For more information, visit the [GDR](#) page. To participate in the activities, you can [join the GDR](#).
#RG MEMBERS
272
- APPS 1POINTS**
The GDR launches a scientific study on the carbon footprint of French public research and is making several tools available on a [dedicated platform](#), including :
[GES 1point5](#) : analyse
[Scénario 1point5](#) : get into action
[Transition 1point5](#) : get connected
#GHG INVENTORIES **2480** #LABORATORIES **1214**

NEWS
Seminar - 2024 winter cycle - Geopolitical issues:



An open source tool

- *An open-source tool to assess the carbon footprint of research.* Jérôme Mariette, Odile Blanchard, Olivier Berné, Olivier Aumont, Julian Carrey, AnneLaure Ligozat, Emmanuel Lellouch, Philippe-Emmanuel Roche, Gaël Guennebaud, Joel Thanwerdas, Philippe Bardou, Gérald Salin, Elise Maigne, Sophie Servan and Tamara Ben-Ari. 2022 Environ. Res.: Infrastruct. Sustain. **2** 0350080 [10.1088/2634-4505/ac84a4](https://doi.org/10.1088/2634-4505/ac84a4) .
- Including more and more aspects over time: 2020 buildings and travels, 2021 digital activity, 2022 purchases, 2023 scenarios, water consumption, construction of buildings, 2024 food and large data computing.

What to measure

- at research institute (« lab ») level
- pluri-annual measures
- >2400 GHG assessments recorded

<https://apps.labos1point5.org/ges-1point5>

The table presents the GHG emissions calculations according to the French regulatory inventory. It is consistent with ISO 14064-1:2018 standard and follow the ISO/TR 14069 technical report. 📌 It distinguishes 6 categories of emissions:

- Category 1: direct emissions, i.e. generated by the stationary and mobile GHG sources controlled by the lab;
- Category 2: indirect emissions associated with energy, from the generation of electricity, heat or steam purchased by the lab for its activities;
- Category 3: indirect emissions other than energy-related emissions, which are a consequence of the lab's activities but which come from GHG sources controlled by other entities.
- Category 4: indirect emissions associated with purchased products. These emissions concern both goods and services purchased by the laboratory;
- Category 5: Indirect emissions associated with products sold. This category concerns the use of goods and services produced by the laboratoire.
- Category 6: other indirect emissions. This category includes all emissions that cannot be classified under other headings.

Within each category, emissions from the following items have been included in the tool.

Category 1:

- Item 1.1: emissions from stationary combustion sources under the lab's control (heating equipment);
- Item 1.2: emissions from mobile sources under the lab's control (vehicles);
- Item 1.4: fugitive emissions from leaking cooling systems under the lab's control.

Category 2:

- Item 2.1: indirect emissions from the electricity purchased by the lab;
- Item 2.2: indirect emissions related to the steam, heat or cooling purchased by the lab.

Category 3:

- Item 3.1: upstream transportation and distribution. This is the transportation of all products whose cost is paid by the unit;
- Item 3.3: emissions related to commuting;
- Item 3.5: emissions related to business travel. This item includes travels, overnight stays and expenses;
- Item 3.4: travels by visitors and clients. Includes only travel by staff who are not members of the unit.

Category 4:

- Item 4.1: purchased goods;
- Item 4.5: purchased services;
- Item 4.2: emissions related to fixed assets. This item includes all emissions embedded in equipment outside the use phase;
- Item 4.3: waste. This item includes the transport and treatment of the unit's waste;
- Item 4.4: upstream leased assets. This includes the manufacture of all goods leased by the unit.

Category 5:

- Item 5.4: investments.

For items 1.1, 1.2, 2.1 and 2.2, emissions related to energy consumption are calculated using "non-upstream" emission factors. Emissions related to the "upstream" use of fuels are included in item 4.1.

How it can be measured

- only orders of magnitude
- only valid in France (electricity production as a key factor in impact calculation)

Methodology page: <https://apps.labos1point5.org/ges-1point5>

Examples of GHG assessments

Empreinte carbone	Emissions en t eCO2	Part de l'empreinte totale
Empreinte carbone des bâtiments	117.56 ± 20.23	8 %
-- Empreinte carbone des usages	81.25 ± 8.92	6 %
-- Chauffage	26.74 ± 7.08	2 %
-- Électricité	54.32 ± 5.43	4 %
-- Fluides frigorigènes	0.00 ± 0.00	0 %
-- Eau	0.19 ± 0.02	0 %
-- Empreinte carbone des constructions	36.32 ± 18.16	3 %
Empreinte carbone des activités de recherche	0.00 ± 0.00	0 %
Empreinte carbone du matériel informatique	24.78 ± 6.85	2 %
Empreinte carbone des achats	1 031.53 ± 253.87	72 %
Empreinte carbone des déplacements	254.68 ± 70.51	18 %
-- Déplacements domicile-travail	184.24 ± 66.16	13 %
-- Déplacements professionnels	70.44 ± 24.39	5 %
-- Les véhicules	1.33 ± 0.80	0 %
-- Les missions	69.11 ± 24.38	5 %

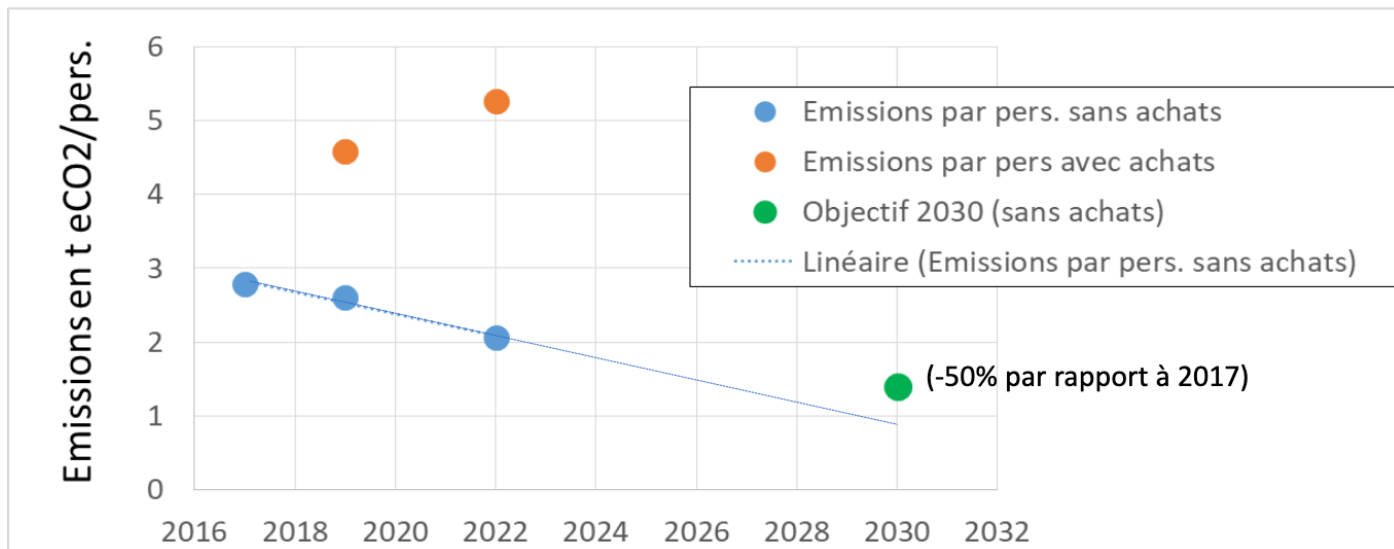
Biology and health research institute in Rennes,
<https://apps.labos1point5.org/ges-1point5-results/a6a4b834-d6f2-496e-a5fd-1fda2f9605ef>

Physics research institute in Grenoble 2022,
<https://apps.labos1point5.org/ges-1point5-results/4aa796e2-4d2a-4cf1-8842-ab213af37ebe>

Empreinte carbone	Emissions en t eCO2	Part de l'empreinte totale
Empreinte carbone des bâtiments	521.94 ± 27.69	25 %
-- Empreinte carbone des usages	487.67 ± 21.75	23 %
-- Chauffage	367.09 ± 18.11	18 %
-- Électricité	120.55 ± 12.05	6 %
-- Fluides frigorigènes	0.00 ± 0.00	0 %
-- Eau	0.04 ± 0.00	0 %
-- Empreinte carbone des constructions	34.27 ± 17.13	2 %
Empreinte carbone des activités de recherche	564.86 ± 183.49	27 %
Empreinte carbone du matériel informatique	34.30 ± 9.04	2 %
Empreinte carbone des achats	760.12 ± 83.09	37 %
Empreinte carbone des déplacements	196.63 ± 39.99	9 %
-- Déplacements domicile-travail	81.42 ± 25.06	4 %
-- Déplacements professionnels	115.21 ± 31.16	6 %
-- Les véhicules	30.14 ± 17.27	1 %
-- Les missions	85.07 ± 25.95	4 %

A brick towards developing scenarios

Evolution des émissions totales entre 2017, 2019 et 2022 et trajectoire



Sans considérer les achats: On est sur la bonne trajectoire

Par contre, La réduction des émissions est annulée par le poids des achats, en augmentation de 2019 à 2022

Isterre institute marked a 2030 target and identified negative elements in the evolution towards this target, https://www.isterre.fr/IMG/pdf/bilan_ges_simplifie_isterre_2022_et_evolution_2017-2022-1.pdf

A steering tool?

- Relevant local and global parameters to be taken into account
- Development of an action toolkit to be used in research institutes (Kit1point5)





Variables	Hypothèses d'évolution d'ici à 2030		
Production d'énergie fossile	1. La production des énergies fossiles reste soutenue permettant une stabilité du PIB.	2. La production des énergies fossiles diminue sensiblement, la France est en décroissance structurelle de long terme de 2 % par an.	3. La production des énergies fossiles se contracte fortement, à cela s'ajoute une pandémie mondiale qui touche l'ensemble de l'économie.
Impact du dérèglement climatique	1. La hausse des températures moyennes continue au rythme de 0,1 °C sur la décennie sans événement climatique majeur en France.	2. La hausse des températures moyennes continue au rythme de 0,1 °C sur la décennie avec des canicules un été sur deux en France.	3. La hausse des températures moyennes continue au rythme de 0,1 °C sur la décennie avec des canicules (de niveaux identiques à 2003) tous les étés entraînant une hausse de la consommation d'électricité des bâtiments climatisés.
Positionnement des étudiants	1. La proportion des étudiants qui continue des études supérieures reste identique et 50 % font leurs choix en fonction de la politique DD du laboratoire.	2. La proportion des étudiants qui continue des études supérieures reste identique et 90 % font leurs choix en fonction de la politique DD du laboratoire.	3. La proportion des étudiants qui continue des études supérieures chute de 50 % et 90 % de ceux qui continuent font leurs choix en fonction de la politique DD du laboratoire.
Aménagement du territoire	1. La politique d'aménagement du territoire reste inchangée.	2. La politique d'aménagement du territoire favorise les mobilités douces dans les zones urbaines très denses.	3. La politique d'aménagement du territoire se heurte à un étalement urbain toujours plus important et échoue également à prendre en compte les problématiques extra urbaines.
Efficacité énergétique	1. Inchangée.	2. Amélioration faible (de l'ordre de 3 %) des équipements et véhicules.	3. Amélioration sensible (de l'ordre 30 %) des rendements des moteurs thermiques suite à une forte politique restrictive sur le poids des véhicules (limité à 1 t).
Durée amortissement matériel	1. La durée d'amortissement est laissée libre.	2. La durée d'amortissement des matériels est augmentée de 10 % pour les matériels informatiques uniquement.	3. La durée d'amortissement des matériels est augmentée de 50 % pour qu'ils soient renouvelés moins souvent.
Nombre de contractuels	1. Inchangé.	2. Réduit de 20 %.	3. Réduit de 50 %.
Mobilisation du personnel	1. L'ESR est sanctuarisé : le ministère de tutelle n'incite pas les personnels des laboratoires à changer leur pratique.	2. Forte demande des membres du laboratoire pour réduire les émissions GES.	3. Le personnel refuse de continuer à travailler sur des thématiques de recherche dont les impacts en termes d'émissions sont incompatibles avec l'objectif de réduction de 55 % d'émissions en 2030 fixées par l'UE.

Tableau 3 : Hypothèses d'évolution des variables (cas du scénario alternatif indiqué en bleu ici).

OUTILS DE SENSIBILISATION

-  Introduction
-  Fiche #1 : Ateliers
-  Fiche #2 : Questionnaire
-  Fiche #3 : Récits

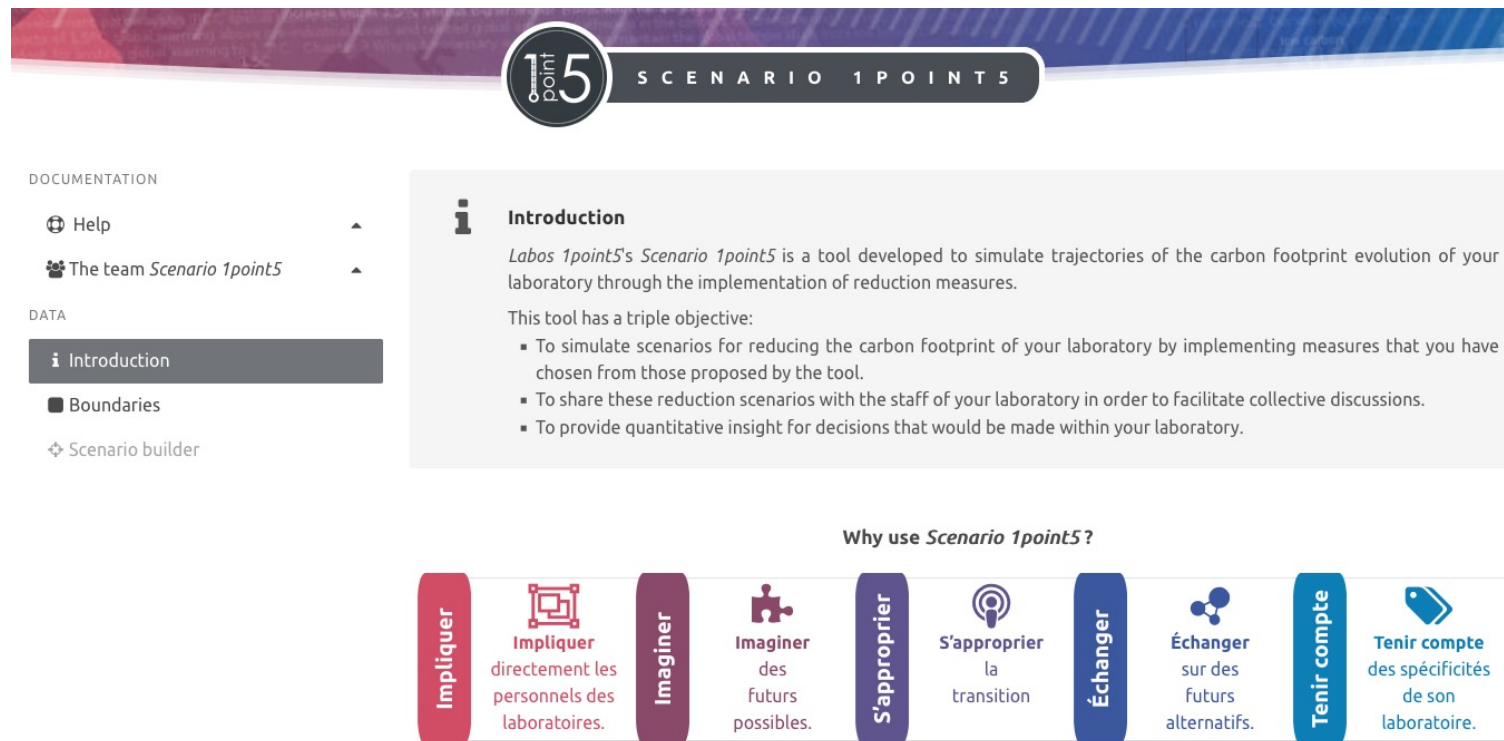
OUTILS ÉCONOMIQUES

-  Introduction
-  Fiche #1 : La taxe carbone
-  Fiche #2 : Les quotas carbone
-  Fiche #3 : La compensation carbone

<https://labos1point5.org/kit-1p5/kit1p5-intro>

Turning projections into a strategic instrument

Now modelled with the GES1Point5 scenario tool



1point5 SCENARIO 1 POINT 5

DOCUMENTATION

- Help
- The team *Scenario 1point5*

DATA

- Introduction**
- Boundaries
- Scenario builder

i Introduction

Labos 1point5's Scenario 1point5 is a tool developed to simulate trajectories of the carbon footprint evolution of your laboratory through the implementation of reduction measures.

This tool has a triple objective:

- To simulate scenarios for reducing the carbon footprint of your laboratory by implementing measures that you have chosen from those proposed by the tool.
- To share these reduction scenarios with the staff of your laboratory in order to facilitate collective discussions.
- To provide quantitative insight for decisions that would be made within your laboratory.

Why use Scenario 1point5?

- Impliquer**: Impliquer directement les personnels des laboratoires.
- Imaginer**: Imaginer des futurs possibles.
- S'approprier**: S'approprier la transition.
- Échanger**: Échanger sur des futurs alternatifs.
- Tenir compte**: Tenir compte des spécificités de son laboratoire.

- Provides guidance to target more sustainable research practices at institute level
- Facilitates interactions with University governance and with R&D staff
- Fosters creativity and team building – or resentment and helplessness?

<https://apps.labos1point5.org/scenario-1point5>

Down/Upscaling?

- Importance of bottom-up approach: practices at institute level are key (strong agency of researchers)
- But definition of “sustainable” not homogenous: = less impactful? = sufficient?
- Some steering mechanisms can only be leveraged at a higher/lower level:
 - **Choice of research themes and methodologies:** in whose hands should they be? Individual researchers, labs, funders? -> **Academic reputation mechanisms** are merciless when it comes to disciplinary reorientation
 - **Research infrastructures** condition our scope of action; oftentimes not steered by research community itself

Fostering sustainability in the Academic ecosystem

- Sustainable research practices require:
 - individual awareness
 - local good will (institutes)
 - intellectual and material room for change (GHG measuring tools, task forces to develop guidelines, safeguards for risk-taking)
- Also: taking an epistemological step back on the impact of the climate emergency on your discipline as a whole.
 - What is changing?
 - How can institutions like learned societies, scientific networks, disciplinary associations contribute to leveraging towards sustainable research practices?

The case of digital technologies

- Paradigmatic of techno-solutionist crux
- Deeply embedded in our day-to-day Academic behaviour (invisible materiality)
- Can contribute to sustainability, but is most likely to have the opposite effect if based on a competitive +innovation-led ecosystem (that looks more like a market than an ecosystem)

Digital Humanities and the Climate Crisis

a manifesto

Preamble

This manifesto emerged from a collective desire to foreground the climate crisis within digital humanities work. We are a group of digital humanists, in varying positions and career stages, from the Caribbean, Europe, and the United States, working within well-resourced academic institutions. We know that as individuals and as a community we contribute to the climate crisis. We believe that with our world in the midst of vast and borderless catastrophe, digital humanists have a responsibility to act.

Some Context

The digital is material. As digital humanists, every project we create, every software application we use, every piece of hardware we purchase impacts our environment. In this document we aim to surface the ecological impacts of our work while learning with and from our DH community about ways to reduce harm to the environment and to the people most impacted by environmental

<https://dhc-barnard.github.io/dhclimate/>

What are digital best practices

- A series of simple measures
- A more in-depth reflection on how the digital impacts our lives at large

Université de Tours, vers des pratiques numériques responsables

/// DHCC

Introduction

I Want To ...

Minimal Computing

Maximal Computing

Grant Writing

Working Practices

Advocating within your Institution

Climate Change FAQs

Teaching

Case Studies

About DHCC ->

Github

digital humanities cli

The Digital Humanities Climate Coalition Toolkit

This toolkit is a guide to making your research practices more environmentally responsible. It is geared towards digital practices, but also touches on general areas such as travel and advocacy. We hope it will be relevant to researchers, educators, students, administrators, librarians, technicians, and others.

The toolkit aims to highlight actionable solutions, while also critically reflecting on their nuances, in the broader context of climate justice. It is a community-developed work-in-progress, and you are warmly invited to contribute.

Utilisation des sites internet et des logiciels

1. Fermez vos onglets inactifs : une fois consultée, fermez la page en question.
2. Supprimez les logiciels inutiles, dont vous ne vous servez finalement pas.
3. Prenez le temps de vous désabonner de vos newsletters non lues : il y a forcément un lien de désabonnement quelque part, c'est obligatoire ! Sinon faites-le gratuitement grâce à CleanFox (<https://www.cleanfox.io/fr/>)
4. Mettez en favoris les sites que vous consultez régulièrement afin d'éviter les chemins intermédiaires et de réduire les datas utilisées pour atteindre une page web.
5. Privilégiez les sources documentaires en format physique s'ils sont disponibles (livres, revues, articles...).
6. Téléchargez et enregistrez un document qui sera régulièrement consulté.
7. Privilégiez les formats textuels et audios plutôt que vidéos. Si une vidéo est consultée juste pour son audio, mettez la qualité de l'image au minimum (144p au lieu de 1080p = 10 fois moins de données utilisées).
8. Supprimez régulièrement votre historique, votre cache de navigateur, vos cookies et vos fichiers téléchargés non utilisés.
9. Tapez l'URL directement dans la barre de recherche ou réalisez des recherches plus précises en employant des mots-clés.

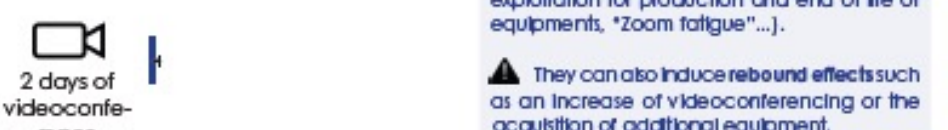
Impression

<https://sas-dhrh.github.io/dhcc-toolkit/>

A workshop in Berlin: how to attend?

Let's reconsider our meetings and conferences

25% of the annual individual footprint necessary to reach global net-zero by 2050.



⚠ Transportation as well as digital solutions also bear **other environmental impacts** (destruction of biodiversity, pollution, resource exhaustion, ...) as well as **social ones** (human exploitation for production and end of life of equipments, "Zoom fatigue" ...).

⚠ They can also induce **rebound effects** such as an increase of videoconferencing or the acquisition of additional equipment.

60 to 80% less data by deactivating the video.



<https://labos1point5.org/les-rapports/poster-ecoinfo>

A conference in Sydney, New York, Berlin: what do I choose?

Let's reconsider our meetings and conferences

Annual individual footprint necessary to reach global net-zero by 2050.



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60 to 80% less data by deactivating the video.



Publishing as a key area for leveraging change

- Academic reputation mechanisms still revolve around citation indexes (do not take sustainability issues into account)
- Big publishers have a responsibility: grievance mechanism against RELX (Elsevier) for its facilitation of fossil fuel expansion: <https://www.climaterightscoalition.com/> - currently trying to have the OECD take up the complaint
- Publishing strategies should rely on (mostly green) OA and application of [FAIR principles](#) implementing [SF-DORA](#) (did your institution sign the declaration?): more reusability, more shareability

The trouble with Academic travel

- Connection between high citation index and intense flying has been established ([Berné et al. 2022](#))
- Academic travel as a major privilege, also as a major leverage to reduce Academic footprint, leading to proposing concrete solutions like quotas ([Ben Ali et al. 2023](#))
- Quotas or offsetting do not fundamentally question the relevance of Academic flying
- 30 years ago, researchers had one big trip a year, if at all. Why is it we suddenly can't perform the very same job without traveling the world?

From rules of thumb to radical changes

Dans les grandes lignes, ces préconisations s'articulent autour de trois principes:

- On **évite**: report sur le train tout voyage dont la durée en train est inférieure à **15h**. Aussi certains motifs de déplacement ne justifient plus un déplacement en avion (jury de thèse / HDR, suivi de projet, comité de sélection, événement non majeur ...).
- On **réduit**: mise en place d'un **budget carbone par équipe** projet (unité de recherche Inria d'une dizaine de permanents en moyenne). La mise en place de ce budget sera supervisé par une **commission voyage**.
- On se **réorganise**: le groupe préconise de modifier (a) l'organisation des conférences et de (b) l'évaluation.
- (a) les conférences étant un facteur majeur de déplacement dans nos communautés scientifiques, le groupe préconise par exemple les points suivants: organisation en hubs continentaux, meilleur prise en charge du mode hybride, bilan carbone pour les conférences organisées localement ...
- (b) À l'heure actuelle il existe en quelque sorte "une prime à la mobilité" lors de diverses évaluations. Le groupe préconise différentes mesures visant à valoriser d'autres formes d'engagement moins intense en émissions carbone.

Lien vers le rapport: <https://univ-rennes.hal.science/hal-04506138>

Research
institutes in
Rennes

Research should not be an exception, it should show the path

<https://geosciences.univ-rennes.fr/ddrs-demarche-engagement-unite>

 **Charte Environnementale.pdf** - (39.01 Ko)

Charte Environnementale de l'UMR Géosciences Rennes

L'impact de nos sociétés productivistes sur notre environnement est aujourd'hui clairement démontré. Il s'illustre notamment par l'altération des flux biogéochimiques, l'érosion de la biodiversité, la pollution chimique des milieux, l'anthropisation des sols, l'altération du cycle de l'eau, l'acidification des océans et le changement climatique.

En tant que personnels de l'enseignement supérieur et de la recherche, travaillant à l'interface entre sciences et société, nous sommes conscient-e-s de la nécessité d'une transition environnementale qui ne peut passer que par une réduction de nos émissions de gaz à effet de serre et une réduction de notre impact environnemental. Nous ne pensons pas que le contenu de notre recherche justifie une forme d'exemption et sommes conscient-e-s des bienfaits de l'exemplarité.

L'UMR Géosciences Rennes et ses personnels s'engagent donc dans la réduction de leur empreinte environnementale de manière à répondre aux objectifs de la Stratégie Nationale Bas Carbone. Ils s'engagent ainsi à participer à une limitation de l'augmentation de la température moyenne terrestre, ciblée idéalement en deçà de 1.5 °C par rapport à la période préindustrielle. Cet objectif nécessite d'atteindre la neutralité carbone à l'horizon 2050.

La direction s'engage avec l'appui du groupe de travail « Développement Durable & Responsabilité Sociétale » et de l'ensemble des personnels à (i) considérer l'empreinte environnementale comme essentielle dans sa politique, (ii) communiquer et sensibiliser les personnels face à l'urgence climatique, (iii) proposer des indicateurs de réduction de l'empreinte carbone, (iv) porter un message auprès des tutelles pour travailler sur les différents postes de réductions.

Look into your pension funds

- Researchers are often civil servants, contributing to pension funds
- Pressuring pension funds to divest from the fossil industry: also a powerful leverage
- Do you know what your pension funds are invested in?

SUSTAINVBL

Home Forderungen Unterstützen Unterstützer Über uns News English

Gemeinsam sorgen wir für die transparente und nachhaltige Anlage unserer Betriebsrenten

Die Versorgungsanstalt des Bundes und der Länder (VBL) verwaltet die **betriebliche Altersvorsorge von 5 Millionen Beschäftigten** im Öffentlichen Dienst.

Die VBL verfolgt dabei eine **intransparente Anlagestrategie ohne ausreichende ökologische und soziale Kriterien**.

Wir fordern die Erarbeitung und Einhaltung von verpflichtenden ökologischen und sozialen Standards für alle Investments der VBL.

<https://www.sustainvbl.de>

Cognitive dissonance and institutional constraints

- We need to cope with cognitive dissonance between what we know to be done and the institutional constraints in which to do it
 - As individuals, we have been raised in awareness of our political leverage (we can vote, protest)
 - As professionals, we are not used to question fundamentally an institution that we perceive to be a room for freedom, even less so to act on the cracks we spot
- Emotionally demanding because we identify strongly with our research
- And because we have a systemic, encompassing worldview (that's what being a researcher is about)

Thinking outside the European box

- Still: a very Eurocentric worldview
- Researchers in the South hemisphere already have sustainable research practices. Shouldn't we learn from them?
- And also, shouldn't we do all we can to pay our climate debt to them?

Thank you for your attention!

More information on:

- Labos1point5: <https://labos1point5.org/>
- Ecoinfo: <https://ecoinfo.cnrs.fr/>; publications: <https://cnrs.hal.science/ECOINFO/>
- The Manifesto « Digital Humanities and the Climate Crisis »: <https://dhc-barnard.github.io/dhclimate/>
- Archiving and publishing strategies in the context of the climate crisis: <https://www.openbookpublishers.com/books/10.11647/obp.0355>

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