

SURVEY REPORT
**APPRAISING GREENHOUSE
GAS EMISSIONS OF
RESEARCH ORGANISATIONS**
2024

SCIENCE
EUROPE
Shaping the future of research

Colophon

December 2024

Survey Report 'Appraising Greenhouse Gas Emissions of Research Organisations'

DOI: 10.5281/zenodo.14413954

Authors: Diana Potjomkina, Bregt Saenen, James Morris, Nicola Francesco Dotti (Science Europe)

Contributors: Sheila Gonzalez (AEI), Laura Raaska, Jaana Roos (AKA), Yamine Aït-Ameur, Antony Lebeau, Anne-Hélène Prieur-Richard (ANR), Pablo Del Río González, Alberto Mercado Gonzalez (CSIC), Stefan Hinrichs, Christiane Joerk, Johanna Steinkellner, Stephanie Wegener (DFG), Troels Andersen (DG), Margarida Prado (FCT), Alexandra Adão, Salomé Branco, Tiago Martins (FCT FCCN), Sophie Broquard, Christiane Kaell (FNR), Sule Karamik (Formas), Ina Matt (FWF), Inge Geurden, Steven Heylen (FWO), Kamila Pětrašová (GAČR), Ozren Polašek (HRZZ), Gabriella Verbovszky (HUN-REN), Marta Dalla Vecchia (INFN), Justyna Chlopek (NCN), Anne Marie De Beaufort (NWO), Elisabeth Andrésdóttir, Ágúst Ingbórsson (Rannís), Tarjei Nødtvedt Malme, Hilde Vestrheim (RCN), Sakshi Lamba (RI), Elena Simion (UEFISCDI), Martin Farley (UKRI), Maria Lindholm (VR)

Editor: Lidia Borrell-Damián (Science Europe)

Image credits

Cover Pexels/veeterzy

For further information please contact the Science Europe Office: office@scienceeurope.org

© Copyright Science Europe 2024.

This work is licensed under the Creative Commons Attribution 4.0 International License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original authors and source are credited, with the exception of logos and any other content marked with a separate copyright notice. To view a copy of this license, visit creativecommons.org/licenses/by/4.0/.





APPRAISING GREENHOUSE GAS EMISSIONS OF RESEARCH ORGANISATIONS

Table of Contents

Introduction	5
Objectives	5
Scope	6
Methodology	6
1. Results from the Scoping Questionnaire	7
2. Best Practices and Challenges in Greening Research Organisations	10
2.1. Context factors	10
2.2. Establishing a data collection system	14
2.3. Implementing a sustainable travel policy	15
2.4. Managing office buildings	17
2.5. Addressing research infrastructures	18
2.6. Procuring IT equipment sustainably	20
2.7. Reducing other emissions sources	21
Conclusion	23

Introduction

In response to the growing urgency of addressing climate change, Science Europe has embarked on a comprehensive initiative with the aim to improve environmental sustainability of research and research-related activities. An initial step in this initiative aims to understand how research funding and research performing organisations (its Member Organisations) appraise their greenhouse gas (GHG) emissions, and what strategies are employed or being considered to reduce related climate-harmful impacts. This effort is part of Science Europe's **strategic priority** to strengthen the role and contribution of science in tackling societal challenges and is in line with the **Call to Action for the Net-Zero Transition** initiated by Science Europe and its partners in November 2021.

Data on the carbon footprint of research and research-related activities is fragmented and overall, scientific activities account for a relatively small share of the total emissions. However, when their impact is scaled by budget or per capita emissions, it can be compared to the impact of other sectors of the economy and can be quite significant in absolute terms.¹ According to ALLEA, “data on greenhouse gas emissions indicates that significant changes are necessary for the academic system to reach climate sustainability,” additionally noting that the existing data is “often incomplete.” This explains the importance of a comprehensive appraisal of research organisations’ greenhouse gas emissions.

The overarching goal of this report is to support research organisations to contribute actively to the global objectives set forth in the Paris Agreement and the United Nations Sustainable Development Goals, as well as to the objectives of the European Green Deal, thereby reducing climate-harmful emissions and addressing the

broader climate crisis. In November 2024, Science Europe published the **Framework for the Environmental Sustainability of Research Organisations**, which outlines priorities and objectives for research funding and research performing organisations towards making their activities more environmentally sustainable. The Framework promotes environmental sustainability on the systemic level in Europe; it is underpinned by eight objectives, the first one being to “assess and mitigate the environmental footprint of research organisations,” including carbon footprint. As such, this study is one of the elements linked to the implementation of the Framework.

This report offers insights on how Science Europe members appraise their greenhouse gas emissions, identifies the main challenges of making research organisations more environmentally sustainable, and provides a library of good practices and initiatives from Science Europe Member Organisations. These can serve as an inspiration to other research organisations.

Objectives

Measuring carbon footprint is the first step in reducing greenhouse gas emissions. This survey takes stock of Science Europe members’ actions when it comes both to measuring and mitigating their carbon footprint, with the following objectives:

- Identify Science Europe member organisations prioritising the reduction of their greenhouse gas emissions.
- Analyse existing principles and methodologies for appraising and mitigating emissions within these organisations.
- Develop and propose recommendations to Science Europe members for estimating their greenhouse gas emissions and implementing strategies to reduce their environmental impact.

1. See for example T. Pultarova, *The Mission to Reduce the Carbon Footprint of Astronomy*, Space.com, 2 February 2022: <https://www.space.com/reducing-carbon-footprint-of-astronomy>; N. Oreskes, *Science Needs to Shrink Its Carbon Footprint*, Scientific American, 1 July 2022: <https://www.scientificamerican.com/article/science-needs-to-shrink-its-carbon-footprint/>; M.-E. Perga et al., *The Elephant in the Conference Room: Reducing the Carbon Footprint of Aquatic Science Meetings*, Limnology and Oceanography Letters (2024), Iss. 9: <https://aslopubs.onlinelibrary.wiley.com/doi/epdf/10.1002/lol2.10402>.

Scope

The scope of this initiative includes the research performing and research funding organisations represented in Science Europe. The focus is on appraising their greenhouse gas emissions and exploring feasible strategies to minimise these emissions.

By identifying trends, good practices, and successful case studies within member organisations, this initiative aims to foster a collaborative approach towards achieving climate sustainability in the research sector.

This project focuses on greenhouse gas emissions, or so-called carbon footprint.² While emissions appraisals have become relatively mainstream, they form just one part of the broader environmental footprint. Recognising that the mitigating activities and actions of research organisations need to extend beyond GHG emissions to other environmental impacts, in time, this focus on carbon footprint may also be expanded into a more holistic study of environmental footprints of research organisations.

Methodology

The methodology for this initiative is structured into four key steps. By following this structured approach, it aims to empower research organisations to take actionable steps towards reducing their GHG emissions, thereby contributing to a more sustainable and climate-resilient future. The four steps are as follows:

1. Preliminary overview – A review of available sources to understand the current landscape of GHG emissions within research organisations.
2. Scoping questionnaire – A questionnaire designed to identify Science Europe member organisations that are actively engaged in or committed to climate sustainability efforts.

3. In-depth interviews – Conducting interviews with selected member organisations to gather more detailed insights and case studies regarding their efforts to reduce GHG emissions.
4. Drafting recommendations – Based on the findings from the previous steps, developing a set of guidelines and recommendations aimed at assisting research organisations in their efforts to appraise and mitigate their greenhouse gas emissions and broader environmental impact.

This report is based on the material gathered during the first three steps of this initiative. The guidelines and recommendations will be published at a later date.

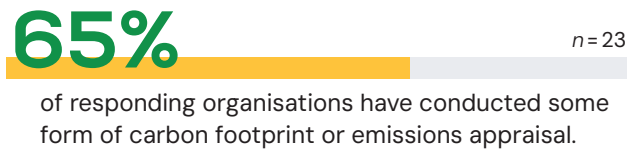
2. According to the definition by the Center for Sustainable Systems of the University of Michigan, “a carbon footprint is the total greenhouse gas emissions caused directly and indirectly by an individual, organization, event, or product,” which are measured “in units of mass of carbon dioxide equivalents.” Source: Center for Sustainable Systems, University of Michigan, *Carbon Footprint Factsheet* (2024): <https://css.umich.edu/publications/factsheets/sustainability-indicators/carbon-footprint-factsheet>

1. Results from the Scoping Questionnaire

A Science Europe membership survey was conducted between February and April 2024 entitled 'Appraisal of the Carbon Footprint of Research Funding and Performing Organisations'. Out of 40 members, 23 responded to the survey (58% response rate). In line with the membership composition of Science Europe, the majority of responding organisations (78%) were research funders (RFOs), with 2 responses from research performing organisations (RPOs), and 3 responses from organisations that have a joint funding and performing function. As such, herein, RFOs and RPOs will be collectively referred to as 'research organisations', unless otherwise specified.

Out of 23 organisations, 15 declared some level of appraisal regarding their carbon footprint/greenhouse gas emissions.

FIGURE 1 Has your organisation done any appraisal of its carbon footprint/greenhouse gas emissions?



While this survey mostly focused on operation emissions (with the exception of grant-related travel), the focus of these appraisals varied amongst organisations. As shown in Figure 2a, over half of the organisations that had con-

ducted some form of appraisal had done so for their own offices/buildings. Only 13% had conducted appraisals of other facilities belonging to the organisation. Another commonly appraised category amongst responding organisations was 'travel'. Figure 2b shows that over 50% of responding organisations had conducted appraisals of the business travel of their staff, and over one-third of responding organisations had appraised the daily commute of staff and the travel of engaged external experts. For research funding organisations, only 1 responding organisation had appraised the travel undertaken as part of funded research projects, both for research conduct activities and travel to research-related events. The carbon footprint or emissions related to external suppliers or events organised by responding organisations were not commonly appraised (figure 2c).

FIGURE 2A For which of the following categories has your organisation appraised its carbon footprint/greenhouse gas emissions? (Organisation-owned facilities)

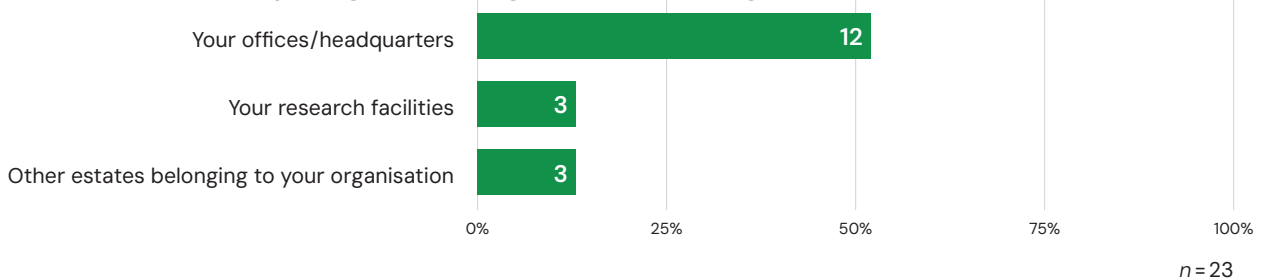


FIGURE 2B For which of the following categories has your organisation appraised its carbon footprint/greenhouse gas emissions? (Travel by personnel)

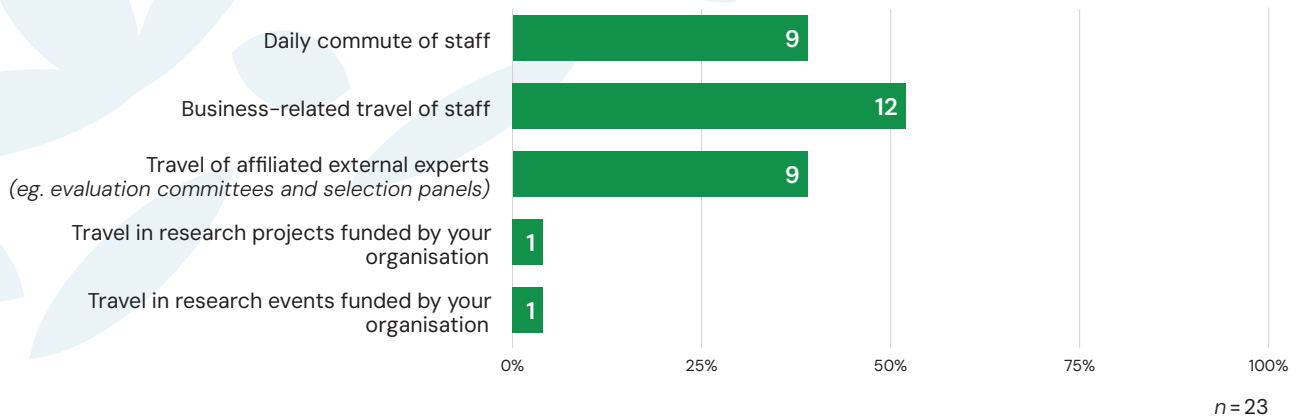
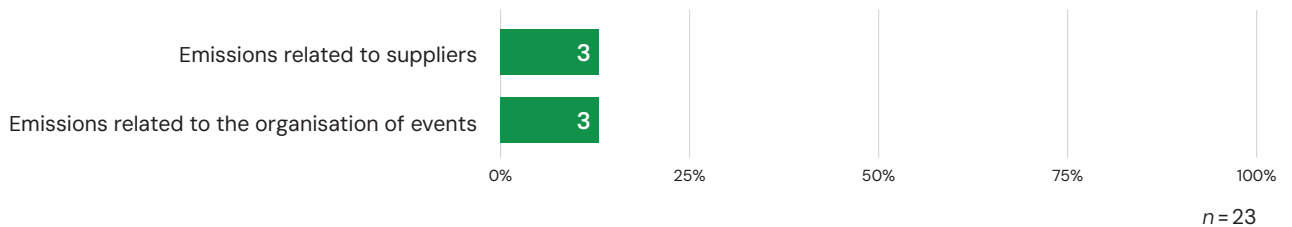


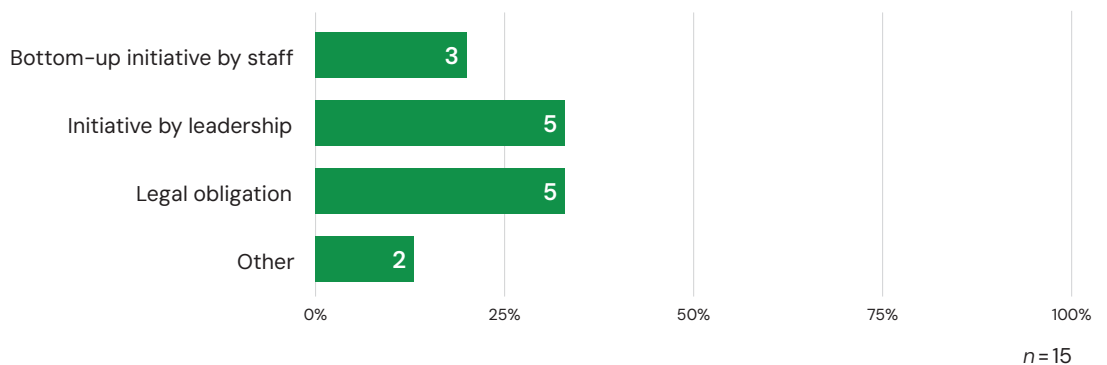
FIGURE 2C For which of the following categories has your organisation appraised its carbon footprint/greenhouse gas emissions? (Other emissions)



Several common triggers for beginning the process of emissions appraisals within research organisations were identified (see Figure 3). Most commonly, these actions were prompted by legal obligations at a national level, or as an initiative of the leadership of the organisation (5 of 15 responding organisations in both cases). Less common, but reported by 3 of 15 responding organisations, appraisal activities were triggered

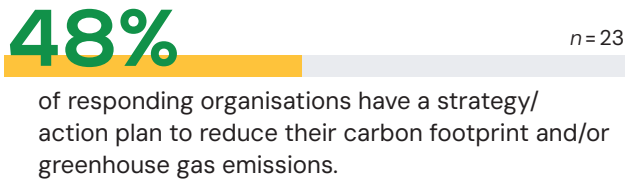
by bottom-up initiatives from organisation staff. While the reasons for not conducting an appraisal were not explored in depth in the survey, some of the main reasons hinted at changing and conflicting priorities; resource constraints; and fragmented and unclear regulation. Further studies could engage in more detail with the organisational reasons for delaying climate action and the ways to address them.

FIGURE 3 What was the origin of the process to assess the ecological footprint of your organisation?



At an organisation-wide level, just under half of the responding organisations (11 of 23) had a strategy/action plan already in place to reduce their emissions. Of those that did not yet have a strategy or action plan in place, 7 responding organisations were working towards one.

FIGURE 4 Does your organisation have a strategy/action plan to reduce its carbon footprint/greenhouse gas emissions?



The results of the survey show a varied level of maturity of activities and actions towards emissions appraisals among research organisations. For those already undertaking activities, a range of appraisal categories have been explored, mostly relating to internal facilities and personnel activities. These actions were most often prompted by top-down action, and organisation-wide activities were often guided by strategic plans.

2. Best Practices and Challenges in Greening Research Organisations

This report identifies the main challenges of making research organisations more environmentally sustainable. They are accompanied by interesting examples and a library of good practices and initiatives from Science Europe members.

The context for these organisational challenges involves navigating a varied legal landscape, managing complex internal processes, leveraging the commitment of dedicated staff, and fostering collaborative relationships with key external actors.

These elements collectively create a foundation for addressing the challenges and advancing the sustainability agenda of research organisations. Before turning to the organisational challenges, we will briefly outline these contextual factors.

2.1. Context factors

Firstly, the legal framework for research organisations to appraise their carbon footprint varies significantly across Europe. There are examples of countries where legal requirements compel research organisations to assess their carbon emissions, often yearly or periodically. In these countries, legal mandates provide a clear impetus for action.

More commonly, the driver for emissions appraisals comes from within the organisation itself, or is based upon community or societal influence. In many countries, research organisations proactively appraise their carbon emissions without the driver of a legal obligation but rather in response to their own strategic orientations

and goals and the broader global imperative to combat climate change.

A key strength in the greening efforts of research organisations is the high level of commitment among personnel, both employees and people engaged in review panels. Organisations can often rely on the commitment of staff members towards actions to support environmental sustainability. This volunteer spirit and personal dedication have, in many cases, been instrumental in kick-starting and sustaining greening processes within research organisations. The intrinsic motivation of employees to contribute to environmental sustainability significantly bolsters and motivates the organisations overall efforts.

GOOD PRACTICE EXAMPLE

Luxembourg National Research Fund (FNR)



While there are no legal requirements for the **Luxembourg National Research Fund** to report or assess its environmental impact, FNR's staff, supported by management, initiated the process of measuring its carbon footprint, based on their personal convictions and an awareness of other organisations in the research ecosystem in the country beginning to do the same. Engaging FNR staff from the start of the process facilitated their involvement in the subsequent data collection and other ongoing actions which are being conducted internally. This is a successful example of change management, used to drive future actions for sustainability through building awareness, enthusiasm, knowledge and ability to engage and reinforcing all commitments.

Secondly, assessing the carbon footprint within research organisations is inherently complex and multifaceted. It may involve collecting and analysing data from various departments and numerous personnel, and should include a wide array of categories such as travel, procurement, and facility management. While external consultants can be engaged for carbon emissions appraisals, the breadth and depth of internal data collection and analyses lends itself better to an in-

ternally managed and performed process. Further, self-performance can help to ensure the continuity and consistency of activities: both crucial dimensions for meaningful carbon emissions assessments. Relying solely on external consultants can be costly (an important concern for publicly funded organisations), and may lead to inefficiencies and loss of crucial institutional knowledge, as consultants may not fully understand the unique dynamics of research organisations.

GOOD PRACTICE EXAMPLE

Foundation for Science and Technology (FCT)



The **Foundation for Science and Technology** in Portugal is implementing sustainable environmental practices at both the Scientific Computing Unit (FCCN) and its headquarters. Through the flagship [FCCN+Sustainable project](#), which aims to strengthen its alignment with the SDGs, FCCN has conducted an internal pre-assessment questionnaire, gathered suggestions for new practices to be implemented, and developed an environmental policy based on 14 principles of commitment.

The FCCN+Sustainable Project for 2024 includes 25 tasks. Completed initiatives include integrating environmental criteria in public procurement procedures (64% of all eligible procedures in the second quarter of 2024); sharing sustainability tips in the internal newsletter; creating recycling points; preparing the Carbon Footprint Report for 2023; and conducting Diagnostic Audits for ISO 14001 (environmental management systems).

FCCN's actions for environmental sustainability include all its employees, who also benefit from FCT's Raise Awareness and Training Programme. FCCN's carbon footprint per employee fell by 75% between 2016 and 2022.

Lastly, greening efforts of national research organisations must be aligned with and supported by various external actors, including:

- **Public authorities:** National laws and regulations play a pivotal role in shaping the sustainability strategies of research organisations. Even in countries without mandatory carbon footprint appraisals, government policies and incentives can encourage and facilitate greening efforts.
- **Higher Education Institutions and other Research Performing Organisations:** Collaboration with these entities is essential. They often share similar sustainability goals and challenges, and working together can lead to the exchange of good practices, joint initiatives, and a more coordinated and consistent approach to reducing environmental impact.
- **Other stakeholders:** This includes umbrella organisations in the research, education, and innovation sector, industry partners, non-governmental organisations (NGOs), libraries, and the scientific community. Engaging with these stakeholders can provide additional resources, expertise, and opportunities for collaborative projects aimed at sustainability.

GOOD PRACTICE EXAMPLE

Foundation for Science and Technology (FCT)

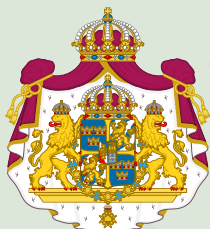


The **Foundation for Science and Technology** of Portugal was one of the first governmental public institutions to introduce a strategic initiative on energy efficiency, by publishing its [Resource Efficiency Program](#). This strategy document offers a coherent framework composed of internal environmental policies, guidelines, and commitments to comply with the Resource Efficiency Program in Public Administration for the period up to 2030 ([ECO.AP 2030](#)). This programme was designed to reach the Ministry of Education, Science and Innovation’s priorities and goals concerning environmental sustainability and decarbonisation indicators.

The document sets concrete measures to help FCT reduce energy consumption, water and material resources in its own operations; increase the use of renewable energy sources and improve the organisation’s resource efficiency; support its energy and water renovation; reduce GHG emissions; and, to raise awareness and capacity training for FCT employees and users in these subjects.

GOOD PRACTICE EXAMPLE

Sweden



In Sweden, [regulation/ordinance \(2009:907\)](#) requires government agencies to implement an environmental management system (EMS) that integrates environmental considerations into their operations. This ensures that the direct and indirect environmental impacts of their activities are systematically taken into account.

The EMS must assess the environmental impact of the organisation’s internal and external activities. This assessment must be kept up to date, reviewed, and revised when significant changes occur within the organisation, or at least every five years. The assessment, documented in report form, should also include information on the legal and regulatory environmental requirements relevant to the organisation’s activities. It also serves as the basis for the focus and design of the EMS.

Additionally, as part of the EMS, government agencies are required to establish an environmental policy, environmental goals, and an action plan to support these goals. These three components are shaped by the findings of the environmental assessment.

GOOD PRACTICE EXAMPLE

Research Ireland (RI)



Taighde Éireann – Research Ireland aligns with the [Government of Ireland’s Green Public Procurement Policy](#) (GPP), where the public bodies seek to source goods, services or works with a reduced environmental impact throughout their life cycle. The organisation prioritises virtual and hybrid events, local & sustainable suppliers, Digital first communications strategy and a ‘Reduce, Reuse, Recycle’ policy. The grant awardees are also advised to comply with the GPP policy.

** Ireland’s national competitive research and innovation funding agency, established in 2024 through the amalgamation of Science Foundation Ireland (SFI) and the Irish Research Council (IRC).*

GOOD PRACTICE EXAMPLE

Spanish National Research Council (CSIC)



The **Spanish National Research Council's** Sustainability Plan 2024–2026 is the first comprehensive effort to systematically address sustainability at CSIC. Its main objective is to incorporate sustainability as a strategic priority in all CSIC's areas of action, contributing to environmental, social and economic well-being, aligned with the SDGs.

This plan establishes 32 specific actions, organised around 4 strategic objectives, which are monitored through 32 indicators. The plan is divided into the following 10 action areas: Facilities; IT; Staff Mobility; Service Travel; Internal Demographics; Accessibility; Public Procurement; Food; Waste Recycling; and Sustainable Awareness and Research. The plan is in its final stage and is expected to be made public in December 2024.

GOOD PRACTICE EXAMPLE

UK Research and Innovation (UKRI)



**UK Research
and Innovation**

Over the last two years, **UK Research and Innovation** has been leading a collaborative work programme working with UK universities, research institutes and other funders to develop a framework that is based on a shared environmental sustainability ambition to progressively embed environmental sustainability into all R&I practices.

The main outcome of this work has been the publication of the [Concordat](#) for the Environmental Sustainability of Research and Innovation Practice in April 2024. 37 UK organisations, [including UKRI](#), have already committed as signatories and 15 as supporters. Many more have indicated they are going through authorisation processes to allow them to become signatories in the near future. The Concordat has brought this topic to the forefront of conversations across the sector in the UK by setting a standard for sector-wide culture change with actions identified for people at all levels across the R&I environment.

2.2. Establishing a data collection system

The first challenge involves setting up a robust system to collect relevant data. This important initial step is an opportunity to create a dedicated sustainability role/unit within the organisational structure, which can serve as a central point of co-ordination for various departments or staff members.

Initially, external consultants might be engaged to carry out preliminary data collection due to their expertise. While it can be highly advantageous to (gradually) internalise this expertise, consultants may remain useful for specialised tasks, such as calculating emissions from travel (see also 2.3), which require specific (re)sources.

GOOD PRACTICE EXAMPLE

UK Research and Innovation (UKRI)



UK Research and Innovation

UK Research and Innovation as an organisation has developed a net-zero target for 2040, which was published via its [Environmental Strategy](#) in 2020. It is currently working to renew this strategy in 2025. To support this, UKRI has been reporting on its own direct (scope 1) and indirect (scope 2) emissions from UK operations, plus UK business travel (scope 3) for over five years.

The reporting of its emissions is managed through an environmental data platform, which allows it to map its performance against the UK's Greening Government Commitments (GGC). It reports on its progress annually through its [Annual Report](#).

GOOD PRACTICE EXAMPLE

Luxembourg National Research Fund (FNR)



Luxembourg National Research Fund

The collection of data for the carbon footprint calculation of the **Luxembourg National Research Fund** was based on a data structure provided by external technical experts. However, data collection itself was carried out by FNR staff and co-ordinated by the sustainability project team.

This combination of using external technical advice when required for specific analyses, while performing the data collection and follow-up internally, enabled a high quality of assessment, active staff engagement and considerable control over the process for the FNR.

GOOD PRACTICE EXAMPLE

Swedish Research Council for Sustainable Development (Formas)



The **Swedish Research Council for Sustainable Development** recently conducted an environmental assessment to identify its direct and indirect, positive and negative environmental impacts. Using the findings from this assessment, it developed its [environmental policy, goals, and action plan](#) for the period 2024-2027.

Formas' environmental policy and goals are designed to minimise the negative impacts of the organisation's activities, while maximising its contribution to sustainable development. The environmental goals focus on reducing potential negative environmental impacts in Formas-funded projects, reducing emissions from business travel, promoting sustainable meeting practices, implementing systematic and environmentally responsible procurement, and reducing resource consumption and waste (e.g., *electronic products, food, and office supplies*).

2.3. Implementing a sustainable travel policy

A sustainable travel policy is a key aspect of sustainability actions within research organisations, particularly as flights are identified as a major source of greenhouse gas emissions. This policy should ideally differentiate between three categories of travel: (i) travel by staff (possibly with a distinction between leadership/management and other employees); (ii) travel for the purpose

of expert committees and panels; and (iii) travel associated with funded projects (specific to research funding organisations). Addressing these categories individually allows for more targeted and effective strategies to reduce travel-related emissions, which may include measures such as telework, e-conferencing, or use of more sustainable modes of transportation.

GOOD PRACTICE EXAMPLE

Research Foundation Flanders (FWO)



Since 1 January 2020, the **Research Foundation Flanders** has had a [sustainable travel policy](#) in place that contributes to climate objectives while promoting internationalisation and avoiding the creation of extra barriers for researchers.

Firstly, FWO encourages researchers to participate remotely or avoid air travel for all trips taking less than six hours. Secondly, the CO₂ contribution of science-related travel by plane is considered an eligible cost for FWO-funded projects. Finally, it calculates the total amount of CO₂ emissions generated as the result of the travel grants it finances every year, as well as the corresponding cost for the CO₂ contribution. It then invests this sum to offer the FWO Scientific Award Climate Research. The Award supports excellent innovative scientific research on climate science.

GOOD PRACTICE EXAMPLE

Research Ireland (RI)



Taighde Éireann – Research Ireland has put in place a [Sustainable Travel Guidance](#) for all grant recipients, their team members and grant applicants, aligned with the [European Code of Conduct for the Recruitment of Researchers](#) and the organisation's commitment to the [Public Service Climate Action Mandate](#). The travel guidance encourages travel options to be deployed with the lowest carbon emissions.

Support is also available for various alternatives to travel, including videoconferencing, communication and file-sharing software (such as required functionality or subscription features) as green initiatives.

The organisation furthermore provides 'Personal Support', 'Childcare and companion travel', and 'Assistive Technology' as eligible costs in the [Grant Budget Policy](#). This aligns with the [National Sustainability Policy](#) under the [EU Sustainable and Smart Mobility Strategy](#).

GOOD PRACTICE EXAMPLE

Swedish Research Council for Sustainable Development (Formas)


 FORMAS


The **Swedish Research Council for Sustainable Development** will have an updated [meeting and travel policy](#) as of 1 January 2025. It applies to all individuals participating in its activities, including employees, members of various councils and groups, participants in review panels, and others traveling on its behalf. The policy prioritises travel-free meetings when possible and outlines the responsibilities of managers and employees regarding meetings and travel. It serves as a crucial tool to reduce travel-related emissions.

The policy mandates that all travel must be booked through Formas' travel agency and carried out in the most efficient manner, considering environmental impact, cost, and time. It also specifies that all meetings for project evaluations should be conducted digitally, with only the chair and vice-chair permitted to attend in person, provided they use low-emission transport options such as trains or buses instead of flying.

To increase the number of train journeys, the policy states that all domestic trips that take less than five hours by train, must be taken by train. Additionally, it highlights the need for careful evaluation of international travel, considering, for instance, if physical attendance is necessary. If so, managers are responsible for assessing how many Formas colleagues should attend.

GOOD PRACTICE EXAMPLE

Research Council of Norway (RCN)


 Research Council of Norway

Eco-Lighthouse is Norway's most widely used certification scheme for enterprises seeking to document their environmental efforts and demonstrate social responsibility, approved by the Norwegian public procurement authorities. Enterprises are certified subject to independent assessment and must undergo a recertification process every three years, as well as submit annual environmental reports.

The **Research Council of Norway** has been certified as an Eco-Lighthouse since April 2016, which includes having a sustainable travel and mobility policy.

For example, RCN reviewed over 2,660 applications for research grants in 2023 where 1,474 external experts were involved. These were all handled through digital panel meetings, saving that many trips at a minimum, which would mostly have been taken by air due to RCN's geographical location. Conducting the review process online does not only save travel costs and carbon emissions, but also makes it easier to secure reviewers' time and is more user-friendly for case officers, experts, and applicants.

As another example, RCN also organises an annual 'walking and biking' campaign and competition for all employees. This includes financial support for bike repairs for those joining the campaign.

GOOD PRACTICE EXAMPLE

Foundation for Science and Technology (FCT)



Fundação
para a Ciência
e a Tecnologia

The **Foundation for Science and Technology** in Portugal has implemented a sustainability-oriented mobility and telework practice. As a research funding organisation, FCT conducts its evaluation processes remotely, offering hybrid options only in specific cases. Between 2023 and 2024, approximately 10,000 applications from major calls were assessed entirely online.

FCT has also introduced a Conciliation Policy facilitating remote work to promote a healthy balance between personal and family life. This shift has significantly reduced commuting and carbon emissions.

Finally, to further reduce carbon emissions, FCT has worked on renewing its car fleet to make it more eco-friendly. Of the current ten fleet cars, seven are electric, one is hybrid, and only two are fossil-fuel powered.

2.4. Managing office buildings

The focus here is on the office and administrative buildings of research organisations; section 2.5 will look at research infrastructures.

In general, buildings are a major source of emissions – in the EU, they accounted for [35% of energy-related emissions](#) in 2022, which led the EU to adopt the revised [Energy Performance of Buildings Directive](#) in 2024. While few examples of this type of carbon appraisals were reported by members, they are still significant. The challenge lies in implementing sustainable practices within these buildings, which could include energy effi-

ciency measures, waste reduction, and the use of sustainable materials. Highlighting and sharing good practices can provide valuable insights and inspiration for other organisations. A key issue when considering the sustainability of managed estates is the age of the facilities and buildings and the ease and efficiency with which updates, renovations, or rebuilds can be conducted. Here, the emissions appraisals and potential ameliorative actions should be contextualised according to the starting point of these estates, recognising that some actions may be more difficult to implement.

GOOD PRACTICE EXAMPLE

Research Council of Norway (RCN)



Research Council
of Norway

The **Research Council of Norway** has been certified as an Eco-Lighthouse since April 2016. In the environmental work, the following focus areas have been selected: procurement, energy use, travel/transport, waste management, and working environment.

During the eight years RCN has been certified and focused on the environment, it has improved at waste sorting, energy consumption has decreased, and 82% of its suppliers are now environmentally certified.

The area RCN will focus on is transport, especially air travel. It has a strict travel policy (see section 2.3), and it has invested – and continues to do so – in better equipment for digital meetings and video conferences.

GOOD PRACTICE EXAMPLE

Research Foundation Flanders (FWO)



The sustainable management of the FWO building falls under the internal Climate Plan of the Flemish government, which foresees a reduction of 55% in CO₂ emissions and primary energy savings of 35% by 2030, when compared to 2015.

Based on an energy scan of the building performed in 2021, [eighteen measures were taken into account](#) (related to areas such as insulation, heating, and cooling) to achieve its objectives. These were implemented in the framework of the renovation of FWO's offices, which took place between March 2020 and July 2022. In particular, these measures have helped to save electrical and thermal energy, decrease natural gas consumption, as well as recycle and reuse water. As a result of the renovation, FWO now manages its building in a more efficient, environmentally friendly and cost-effective way.

2.5. Addressing research infrastructures

This challenge is specific to research performing organisations, contrary to section 2.4. It relates to their unique research infrastructure, such as for example particle accelerators, data centres, or oceanographic research vessels.

Each of these infrastructures presents unique challenges and opportunities for reducing emissions, including the GHG emissions resulting from long-term storage of research information and outputs. Given their specialised nature, it is essential to develop internal expertise for

managing these facilities sustainably (see also section 2.2). Additionally, sharing experiences and good practices through platforms like the [European Strategy Forum on Research Infrastructures \(ESFRI\) Stakeholders Forum](#) can foster collaboration and innovation in reducing the environmental impact of these infrastructures. As with all categories, but of particular relevance to research infrastructures, actions to ameliorate or mitigate GHG emissions must be contextualised and balanced against the core activities and mission of the facilities, resources, or services.

GOOD PRACTICE EXAMPLE

National Institute of Nuclear Physics (INFN)



The Italian **National Institute of Nuclear Physics** has implemented two heat recovery systems. The first one was installed at the National Laboratory of Frascati to recover heat from the cooling of the data centre: 1 GWh/year to heat 45% of the buildings. It has been in operation since 2014. The new ICSC Data Center, currently under construction, will integrate the same solution to heat other buildings. Low temperature (42°C) heating seems to be the best compromise for a campus reuse of waste heat.

The second one is installed at the National Laboratory of Legnaro: a chiller serving the Alpi magnets, the Third experimental room, and the helium compressors. It is equipped for the total heat recovery with a potential of 450 kW at a temperature of 50–45°C. During the operation of the Tandem-Alpi complex and the cryogenic systems, the heat is recovered and used to heat the following buildings: Third experimental room, Tandem, guest houses, canteen, and Auriga.

GOOD PRACTICE EXAMPLE

German Research Foundation (DFG)



In 2023, to promote the operation of ecologically sustainable and resource-preserving research equipment infrastructures, the **German Research Foundation** launched a new [call for ideas](#) for researchers who operate major research instrumentation and equipment. This builds on DFG's commitment to anchor the concept of sustainability into research funding and aims to promote more sustainable equipment-related funding opportunities in close co-operation with the research community.

The call was open to all career levels and research institutions in Germany, for single-location as well as collaborative projects. It gathered 26 ideas, 15 of which were invited to submit a full proposal. These ideas were also used to modernise DFG rules and framework conditions related to infrastructure, to allow for more long-term use, re-use and repair.

More generally, DFG has introduced a mandatory consideration of sustainability aspects in research proposals, and also published a 'Catalogue of Guiding Questions' for applicants.

GOOD PRACTICE EXAMPLE

UK Research and Innovation (UKRI)



UK Research and Innovation's Natural Environment Research Council (NERC) uses three research ships for research around the world. These ships run on marine gas oil. To help mitigate the carbon emissions associated with marine research, NERC, the National Oceanography Centre (NOC), and the British Antarctic Survey (BAS) undertook [low-carbon fuel trials](#). The trial outputs will support future decisions for NERC's research ships and support the wider shipping industry on its journey to net-zero.

GOOD PRACTICE EXAMPLE

Science Europe



Science Europe and the OECD Global Science Forum have published a [joint Policy Paper](#) on Optimising the Operation and Use of National Research Infrastructures, discussing how to optimise their portfolio management and user-base, including by promoting international co-operation and data sharing. At the moment, most research infrastructures are operated at the national or federal level and provide services to national research communities.

While this paper focuses on the economic sustainability of existing research infrastructures, collaboration can also have implications for environmental sustainability, notably by ensuring that the potential of existing infrastructures is fully utilised before constructing new ones.

2.6. Procuring IT equipment sustainably

The procurement of IT equipment is another significant challenge. Research organisations often have existing procurement rules, and integrating environmental considerations into these rules is crucial, including through measures that promote circular and sharing economy. Organisations that have implemented environmental criteria for IT

equipment procurement have shown support for these measures, highlighting the feasibility and benefits of such practices. Similar to section 2.5, the carbon emissions resulting from long-term storage of research information should be taken into account as a challenge.

GOOD PRACTICE EXAMPLE

French National Research Agency (ANR)



The **French National Research Agency** has a policy for sustainable and circular procurement of computer and phone equipment. Computers are replaced every five years (instead of four years previously) and repaired whenever possible: on average, 15 PCs are repaired every year. After the computers have reached their end of service at ANR, they are wiped, equipped with free software suites and offered to the personnel to be purchased for a symbolic price; if they are not sufficiently functional, the contract with the supplier provides for recycling.

Additionally, ANR procures computer bags from recycled material and modular Fairphone mobile phones (when necessary) for its staff. Finally, softphony is used to make calls over the internet, eliminating the need for dedicated phone equipment.

GOOD PRACTICE EXAMPLE

Dutch Research Council (NWO)



The **Dutch Research Council** has a hardware contract with a supplier that offers Device as a Service, which is similar to leasing hardware. NWO pays for the use of the device, not for its ownership. This DaaS model allows NWO to easily scale the amount of equipment according to the need and to draw on the expertise of the supplier for maintenance.

At the end of the contract term, the supplier takes the device back. In this model, it is in the supplier's interest to extend the lifespan of the delivered hardware. The supplier furthermore takes responsibility for re-using equipment or parts that have been taken in. Part of the contract management includes the supplier's reporting on the progress on their sustainability objectives. NWO's supplier strives for zero CO₂ emissions and zero IT waste in 2030, as well as various social indicators. This ensures that the ambitions of the supplier and NWO meet.

GOOD PRACTICE EXAMPLE

Spanish National Research Council (CSIC)



The Spanish National Research Council has an [ICT Strategic Plan 2024-2026](#). Line 3 of the plan, 'Improvement of infrastructures, solutions and digital architectures' includes measures for the "technological and environmental sustainability of infrastructures." In particular, a green data centre strategy and the consolidation of data processing centres into global ones will be developed. In general, this strategic plan will drive CSIC's digital transformation through: a) an effective and efficient management of resources; b) constant technological innovation; and c) leadership in change management. In this way, CSIC will become a benchmark in the provision of digital services to support research.

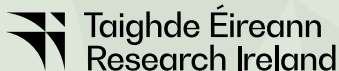
2.7. Reducing other emissions sources

There are a myriad of other sources of carbon emissions (and more broadly of environmental impacts). These sources, such as those from catering, paper use, and similar activities, are less frequently mentioned, but still relevant. Although these sources typically generate relatively low

emissions, addressing them can contribute to the overall sustainability efforts of research organisations. Even small changes in these areas can have a cumulative positive impact on reducing the environmental footprint of these organisations, and engages the staff in a collaborative effort.

GOOD PRACTICE EXAMPLE

Research Ireland (RI)



Taighde Éireann – Research Ireland is committed to funding excellent and impactful research that supports climate action and environmental sustainability under their [Climate Action Strategy](#). The Strategy has three pillars, through which climate action and sustainability are integrated in all organisation's functions: Funding Excellent Research that will Shape a Sustainable Future; Moving Knowledge and Talent through our Society and Economy; and Conducting Research and Related Activities Sustainably.

Internally, the organisation uses energy-efficient data centres and emphasises green energy practices, including hybrid working, hot-desking, remote support tools that allow troubleshooting and resolving issues without needing to visit in-person to reduce the need for travel and the associated environmental impact, as well as deleting or archiving data that are no longer needed.

GOOD PRACTICE EXAMPLE

National Institute for Nuclear Physics (INFN)



Greenhouse gases are used in many gas detectors for high-energy research. Since 2014, an Italian group of physicists ([Liberti, Piccolo et al.](#)) has been studying how to replace the greenhouse gases in the resistive plate chambers (fast gas detectors used at CERN) with gases that have a low environmental impact.

Now, the Italian **National Institute of Nuclear Physics** is making an important contribution to ECOGas@Gif++, a collaboration between ALICE, ATLAS, CMS, LHCb/SHiP and the CERN EP-DT-FS group. The aim of this physics research collaboration is to test the use of new gas mixtures in research. For their work, they have also won a grant from AIDAInnova, a large-scale international project co-funded by the Horizon 2020 programme to provide state-of-the-art upgrades to detectors at accelerators. The new mixtures studied have a total global warming potential (GWP) of about 10 instead of 1,430, significantly reducing the environmental impact of fundamental particle research.

GOOD PRACTICE EXAMPLE

National Research Fund of Luxembourg (FNR)



The results of a carbon footprint assessment at the **National Research Fund of Luxembourg** have highlighted the importance of emissions from events and office-purchased services. As part of a general move towards eco-responsibility, FNR is keen to implement more sustainable and environmentally-friendly solutions at its events – which is why it obtained the ‘[Green Business Events](#)’ certification (launched at the start of 2023 by the Luxembourg General Directorate for Tourism of the Ministry of the Economy) for the annual [FNR Awards ceremony](#) as the pilot event.

This certification reflects the commitment and direction in which FNR wishes to continue evolving. In addition, office services are now purchased through Requests for Offer, including clauses which mandate provision of information on carbon emissions for suppliers’ products or services, enabling a more accurate calculation of the carbon footprint: activity-based instead of spend-based. This also has a positive side-effect of building awareness among FNR’s suppliers.

GOOD PRACTICE EXAMPLE

Science Europe



In January 2024, the Science Europe Office obtained the [Brussels Label for Ecodynamic Organisations](#), receiving 2 out of 3 stars. The label is an official recognition of the Brussels-Capital region, acknowledging sustainable organisational practices. Obtaining the label involved several changes to make the organisation’s operations more environmentally friendly, for example choosing sustainable catering services and cleaning products, reducing printing and waste, reducing airline travel, opting for more economical electrical equipment, and extending the lifecycle of IT equipment wherever possible. Science Europe is committed to promoting sustainability as a fundamental value for European research and intends to continuously review and improve its environmental performance.

Conclusion

Environmental sustainability, and in particular reducing greenhouse gas emissions, is increasingly a concern for research organisations, driven by their own initiatives (be that bottom-up activism, institutional leadership, or both), as well as legislative developments. In particular, as sustainability is progressively regulated via legislative means – at least in the EU – research organisations will need to consider the implications of new rules, such as the revised Energy Performance of Buildings Directive or the Corporate Sustainability Reporting Directive (CSRD).

Measuring carbon footprint is often the first step on the path to reducing GHG emissions. This report has demonstrated that research organisations are not only steadily more aware of the importance of reducing their GHG emissions, but are also undertaking specific steps to measure and minimise them. Among the Science Europe members who took part in the survey, almost two thirds (65%) have already conducted some sort of appraisal. As illustrated by the numerous examples above, research organisations have also developed a wide range of policies and best practices linked to both appraisal and mitigation of their GHG emissions across various sectors of activity, from infrastructure to travel to digital products. Importantly, many of these policies and practices provide not only environmental but also

economic and social benefits, supporting goals such as inclusion, work-life balance, and cost-efficiency. It is Science Europe's hope that, in the future, such appraisals will be conducted by all research organisations and with a broader scope, resulting in ever more ambitious action.

To follow up on this report, Science Europe intends to develop shared guidelines and recommendations linked to appraisals and minimisation of research organisations' GHG emissions as well as their wider environmental impact. This work will have further linkages with the implementation of the [Framework for the Environmental Sustainability of Research Organisations](#), published by Science Europe in November 2024.



Science Europe AISBL

RUE DE LA SCIENCE 14, 1040 BRUSSELS, BELGIUM

Science Europe is the association of major research funding and research performing organisations in Europe.

Our vision is for the European Research Area to have the optimal conditions to support robust education and research & innovation systems.

We define long-term perspectives for European research and champion best-practice approaches that enable high-quality research for knowledge advancement and the needs of society.

We are uniquely placed to lead advancements to the European Research Area and inform global developments through participation in research initiatives where science is a strong and trusted component of sustainable economic, environmental, and societal development.

More information is available at www.scienceeurope.org

 @ScienceEurope

 Science Europe