Seeds
for Change

Sustainable Research in Action

Green Science Festival

TRANSITIONING TO SUSTAINABLE
RESEARCH PRACTICES TOGETHER

Table of Contents

Introduction

Welcome to Seeds for Change: Sustainable Research in Action — a collection of initiatives and projects contributed by our community in the lead-up to the Green Science Festival 2026.

This booklet brings together the work of researchers, technicians, policy makers, funders, and professional staff who are actively contributing to a more sustainable research landscape. The contributions featured here highlight innovative approaches, collaborative projects, and practical solutions that aim to reduce environmental impact while strengthening the future of science.

By sharing these initiatives, we hope to encourage connection across disciplines and roles, spark new collaborations, and inspire others to join and sustain the movement toward greener research practices. Together, these efforts show that change is already happening — and that collective action can drive meaningful transformation throughout the research ecosystem.

Every project shared here represents a seed for change. We hope they continue to grow, connect, and inspire.

#1

The MSCA Green Charter (2025 Update)

Guidance, concrete examples & resources on sustainable research for researchers & organisations

Authors: MSCA Green Charter update group of stakeholders and experts on sustainable research practices, coordinated by Robin Gadbled (European Commission)

Organisations: European Commission - Marie Skłodowska-Curie Actions Unit

Why

In 2021, the Marie Skłodowska-Curie Actions (MSCA) adopted a Green Charter encouraging the take up of environmentally sustainable practices in research projects. While many of the researchers and organisations supported by MSCA signaled an interest in doing more, they also said they did not always know what to do or where to turn to for concrete guidance on sustainability. In parallel, tools and initiatives on sustainable research have been flourishing in Europe. The updated MSCA Green Charter, published in December 2025, gathers in one place the best guidance, tools and recommendations available and directs the readers to the resources they need to adopt better practices.

How

To update the MSCA Green Charter and its guidance material, we worked with over 40 researchers, research managers, sustainability experts, project coordinators, representatives from research organisations and their networks to produce hands-on guidance and help MSCA participants (and beyond) find out how they can act concretely. This was the way to ensure we did not promote abstract notions and proposed resources that can be truly useful to an array of profiles in the research sector.

What

The MSCA Green Charter offers recommendations covering resource-intensive research settings, travel, events and meetings, digital practices in research, as well as procurement, facilities and infrastructure. It is now available in 23 EU languages and is accompanied by two guidance documents: one for researchers and research managers; the other for research groups, organisations and consortia. systems. We also offer accompanying educational materials for schools.

marie-sklodowska-curie-actions.ec.europa.eu/about-msca/green-charter/

#2

Piloting the integration of sustainability into calls

Exploring methods of integrating sustainability in calls

Authors: Contact person: Anne Marie de Beaufort
Organisations: Dutch Research Council

Why

NWO has launched this initiative to strengthen the sustainability of research practices and thereby reduce the environmental impact of publicly funded research. To identify the most effective ways to integrate sustainability into funding calls and their assessment processes, NWO is experimenting with several approaches. These range from raising awareness among applicants to embedding sustainability explicitly within the objectives of specific calls.

Through these experiments, NWO aims to understand how researchers respond to different forms of guidance, which measures are most meaningful in practice, and what works best for different types of research projects.

How

NWO is integrating sustainability into its funding instruments in several ways:

Part of objective — in infrastructure upgrade calls, sustainability is included directly in the call objectives and is assessed by the evaluation committee.

Awareness — in computing-time calls, sustainability is highlighted through an awareness paragraph, without affecting evaluation.

Optional material costs — in thematic calls, applicants may use part of their budget for greening measures under certain conditions, though these are not evaluated.

What

The pilot has already given us a clearer understanding of how often the different sustainability options are used, the types of requests researchers submit, and what these choices mean for our processes as a funder. The pilot will continue in the coming years, and we will closely monitor how these measures are implemented in practice.systems. We also offer accompanying educational materials for schools.

nwo.nl/sites/nwo/files/media-files/Call-for-proposals-Rekentijd-2026-EN-def.pdf

nwo.nl/sites/nwo/files/media-files/Call-for-proposal-ReduceCRM_EN_0.pdf

nwo.nl/sites/nwo/files/media-files/Call%20for%20Proposals%20GWI-Opwaardering%202025ENG.pdf

#3

AMMODO DOCS

Ammodo Docs

Forward-thinking films

Authors: Marie-Louise Oster, Maartje Bakers, India Rose Klap (Team Ammodo Docs), Marleine van der Werf (director The Underground Astronaut), Renko Douze (director Moving Mountains)

Organisations: Stichting Ammodo

Why

Ammodo Docs is a documentary series that highlights the work of pioneering scientists and artists who are addressing the urgent challenges of our time. The series focuses on making complex research and artistic practice accessible to a wider audience, showing how original thinkers respond to global issues such as climate change, ecology, and societal transformation. Sustainability is one of the recurring central themes, reflecting its ongoing relevance in both science and art.

How

Each year, Ammodo Docs commissions a curated selection of short documentaries, typically around six new films annually. These films are created in collaboration with renowned Dutch filmmakers, who bring a cinematic perspective to the work of researchers and artists. Through this approach, the series combines storytelling and scientific insight, offering an intimate look into the methods, motivations, and environments of the featured thinkers.

What

Ammodo Docs is a freely available online. Within the series, the film The Underground Astronaut follows evolutionary biologist and Tyler Prize winner Toby Kiers on her ambitious quest to map the world's underground fungal networks and understand their complex behaviour before critical ecological relationships are lost. Meanwhile, the documentary Moving Mountains features mountain hydrologist Walter Immerzeel as he travels to high-altitude regions of the Himalayas to collect precise meteorological data, helping to predict the far-reaching consequences of climate change on water systems. We also offer accompanying educational materials for schools.

ammododocs.org/en/documentary/the-underground-astronaut

ammododocs.org/en/documentary/moving-mountains

#4

ULTRA-SAFE: stable samples at –70°C for more sustainable cold storage

We test if diverse lab samples remain safe at –70°C & –60°C, cutting ULT freezer energy use by >~30%

Authors: Hannah van der Stok, Dr. Tom Caniel, Dr. Evelien Boekhout - Berends, Dr. Aram de Haas

Organisations: Amsterdam UMC

Why

This initiative addresses the high energy demand of ultra-low temperature (ULT) freezers, which are typically set at –80°C to store biological and chemical samples. At Amsterdam UMC, ULT freezers use about 2.5% of the hospital's total electricity, while the biological necessity of –80°C is unclear. Many labs hesitate to raise temperatures because of concerns about sample integrity. ULTRA-SAFE aims to generate robust stability data so freezers can safely operate at –70°C, reducing energy use and CO_2 emissions without compromising research quality.

How

We prospectively stored a wide range of fresh samples (human plasma, serum, cerebrospinal fluid, PBMCs, bacterial strains, viral RNA etc.) at –80°C, –70°C and –60°C. At predefined timepoints, samples are retrieved from the biobank and analysed in specialised core facilities for stability, functionality and analytical performance. The project team coordinates study design, sample preparation, quality control, data interpretation and communication. In parallel, we quantify institutional and national energy and CO_2 savings of switching ULT freezers from –80°C to –70°C.

What

After 12 months of storage, none of the analysed materials showed meaningful deviations between –60°C, –70°C and –80°C. These early data support broader adoption of –70°C as a safe, more sustainable default for ULT storage. Our main audience includes researchers, lab technicians, biobank managers, sustainability officers and research infrastructure managers. They can use our results to update freezer policies, set new and existing ULT freezers to –70°C where appropriate, and justify replacement of old, inefficient models. All results and guidelines will be openly shared for others to adopt and build upon.

We will publish our findings in open-access journals and link the publication to an openly accessible data repository that will be updated as new timepoints are analysed. Results will be presented at national and international meetings on biomedical research, biobanking, laboratory management and sustainability, and shared via seminars, institutional sustainability working groups and networks such as the National Freezer Challenge and GreenLabs NL. For scientific and practical questions, please contact Dr. Aram de Haas at Amsterdam UMC.

#5

Replacement of plastic consumables in neuroscience research

Upgrade non-recyclable plastic with porcelain alternatives in immunohistochemistry experiments

Authors: Lucy Menage
Organisations: King's College London

Why

My PhD at KCL required regular immunohistochemistry (IHC) staining on murine brain tissue. For this protocol, I was taught to use single-use polystyrene 8- or 12-well cell culture plates. Each well could be used as a replicate and the plate in combination with the lid created a humidity chamber preventing the reagents from evaporating over a multi-day protocol. After the protocol the plates were discarded in hazardous waste for high temperature incineration. This protocol was common and the plastic waste substantial. The plastic plates are non-recyclable and non-reusable as detergents failed to remove adhered fluorescence to the plastic.

How

The plates were used for convenience rather than a need for sterility so to combat the issue I looked for a replacement material which would work as well as the plastic. I found a suitable alternative made from porcelain and secured free samples. To replicate the humidity chamber, I placed the plate inside an old pipette box with wet paper towel with the lid closed, thus also reusing the pipette boxes. The staining worked just as well and the porcelain material actually made aspirating the liquid when swapping out the incubation liquid a lot easier as the tissue would stick to the porcelain wells preventing the tissue from being sucked into the pipette tip which often causes tissue tears.

What

I used these plates from the first year of my PhD onwards and the protocol was also adopted by 3 other PhD students in our lab leading to significant diversion of single-use plastic from incineration. The technique was taught to all BSc & MSc students who did a project with us including an explanation of why it was done like this. Hopefully this idea has been brought forward by these students in their future research careers.

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#6

Reduce Pipette Tip Waste with a Closed-Loop Solution

Giving used TipOne racks a second life through circular recycling

Authors: Iris Haex

Organisations: Isogen Life Science

Why

Modern research depends on single-use plastics to ensure accuracy, sterility, and reproducibility. But this also creates a significant environmental challenge, with thousands of pipette tip racks discarded every day in laboratories around the world. Researchers increasingly want to make their labs more sustainable without compromising scientific quality. This initiative was created to help laboratories reduce plastic waste, lower their environmental footprint, and move toward a more circular way of working, transforming used TipOne racks from waste into a valuable resource.

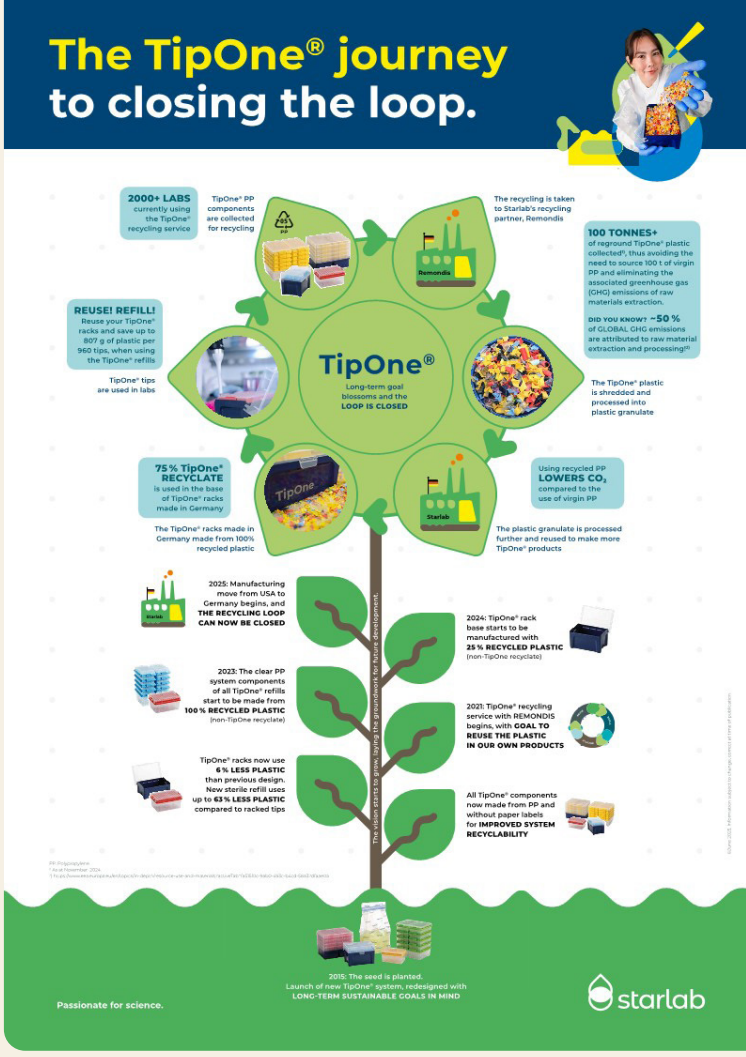
How

The initiative works through a closed-loop recycling system designed specifically for laboratories. Researchers collect and return used TipOne racks instead of disposing of them as waste. The material is then recovered, recycled, and reintroduced into the production cycle to create new products, reducing the need for virgin plastic. By making recycling simple and integrated into daily lab workflows, the program enables scientists to actively contribute to sustainability efforts while continuing to rely on the high-quality consumables they need for their research.

What

The TipOne closed-loop recycling initiative delivers measurable environmental impact for laboratories worldwide. During 2024–2025, the program recovered approximately 154.3 tonnes of polypropylene regrind from returned TipOne plastic racks. This effort helped save around 104.8 tonnes of CO□-equivalent emissions, comparable to the annual carbon sequestration of approximately 4,355 trees. By transforming used laboratory plastics into reusable materials, the initiative enables researchers to actively reduce waste, support circular manufacturing, and contribute to more sustainable scientific research without compromising laboratory performance.

isogenlifescience.showpad.com/share/4q2IfyWmpV3jv4LbSTsgJ



#7

COALITIE DUURZAME LABORATORIUMDIAGNOSTIEK

The foundation of the Sustainable Laboratory Diagnostics Coalition

A collaboration of all stakeholders involved in laboratory diagnostics

Authors: Joost van Katwijk, Marie-Hélène Schutjens, Else de Ridder, Evelien Boekhout

Organisations: SAN centra voor medische diagnostiek, Diagnostica Associatie Nederland (Diagned), Green Care Academy, Nederlandse Vereniging voor Klinische Chemie en laboratoriumgeneeskunde (NVKC)

Why

All stakeholders in laboratory diagnostics are both necessary and responsible for making laboratory diagnostics more sustainable. To make the required changes, everyone should be involved: from laboratory equipment and reagent suppliers to the different clinical and laboratory professionals. The Coalition for Sustainable Laboratory Diagnostics is pioneering the promotion of a sustainable laboratory chain in which high-quality diagnostics have minimal environmental impact.

How

The Sustainable Laboratory Diagnostics Coalition provides a platform that brings together knowledge and experience, sparks inspiration, and develops and widely implements sustainable initiatives for laboratory diagnostics. Biannually, meetings are organized on a central location in the Netherlands to meetup and update each other on ongoing sustainability projects.

What

Current projects:

- This project aims to facilitate the sharing of data of validation reports of new equipment or laboratory tests. This enables laboratories to shorten their validation process, reducing their use of chemical reagents, time and patient material.
  To be able to perform diagnostic tests 24/7, clinical laboratories must be well-stocked at all times.
- Suppliers therefore often offer fast order fulfilment. However, this results in a high volume of transport to and from laboratories. This project examens ways to reduce transport in a responsible manner, drawing on input from laboratories and suppliers.
- A third project ams to make urine diagnostics more environmentally friendly.

linkedin.com/company/coalitie-duurzame-laboratoriumdiagnostiek

#8

Green Certification for Regulatory-Bound Laboratories

Can your lab go green if your methods are fixed by law? Explore the gap.

Authors: Sacide Girayhan
Organisations: Independent Researcher

Why

Most sustainability certification systems for laboratories were designed with academic research labs in mind. But the majority of labs worldwide are under fixed methods set by law. These labs cannot substitute solvents, reduce reagent volumes, or adopt greener alternatives without losing their accreditation. Existing certification systems were not built with this constraint in mind. Some exclude private labs by design. Others offer no path that acknowledges regulatory limits. The result: labs that want to do the right thing quickly realise they can never reach the highest certification level. Why start if you cannot finish? This framework makes the gap visible — and proposes a way forward.

How

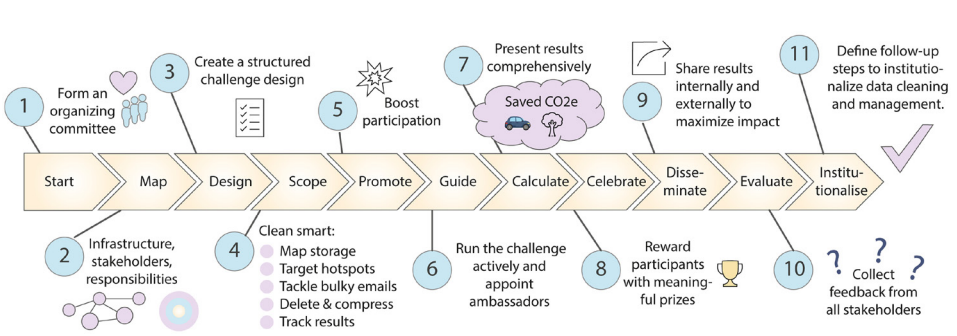
This framework analyses the criteria of LEAF and My Green Lab to understand what regulatory-bound test laboratories can realistically achieve — and where they hit a wall. Drawing on Schell & Bruns (2024, RSC Sustainability) and Green Labs NL reports (2021–2024), the criteria were mapped against the reality of labs working under fixed legal methods. The result is a practical matrix showing which criteria are reachable and which are structurally blocked by regulation — along with five recommendations for certification bodies, accreditation authorities, and funders to close the gap

What

This framework offers laboratory managers, sustainability coordinators, and accreditation bodies a clear picture of what green certification can realistically deliver for regulatory-bound labs. The core output is a practical matrix showing which LEAF and My Green Lab criteria are reachable, which are partially reachable, and which are blocked by regulation. Five recommendations are proposed for certification bodies, accreditation authorities, ISO technical committees, and funders. Anyone working in or with regulatory-bound laboratories is encouraged to engage, respond, and build on it.

www.linkedin.com/in/sacide-girayhan-a5aa64370

#9



Eleven quick tips for organizing a data cleaning challenge

Use our publication for tips to organise a data cleaning challenge in your own organisation

Authors: Ireen Kal, Lidwien Smabers, Joanna von Berg, Giulia Perticari, Mette van de Meent, Denise Fokkelman, Joep Sprangers, Loïc Lannelongue, Florijn Dekkers

Organisations: University Medical Center Utrecht (NL), Princess Máxima Center (NL) & University of Cambridge (UK)

Why

This initiative was started to address the environmental impact of digital data storage in research institutions. As data volumes in healthcare and science expand rapidly, so does the energy consumption, greenhouse gas emissions, and resource use of the data centers that store it. At the same time, poor data management contributes to reduced research reproducibility. To tackle both challenges, we developed a data cleaning challenge; a structured, participatory initiative that motivates researchers and staff to delete unnecessary data, improve data management practices, and make the environmental costs of data storage visible and actionable.

How

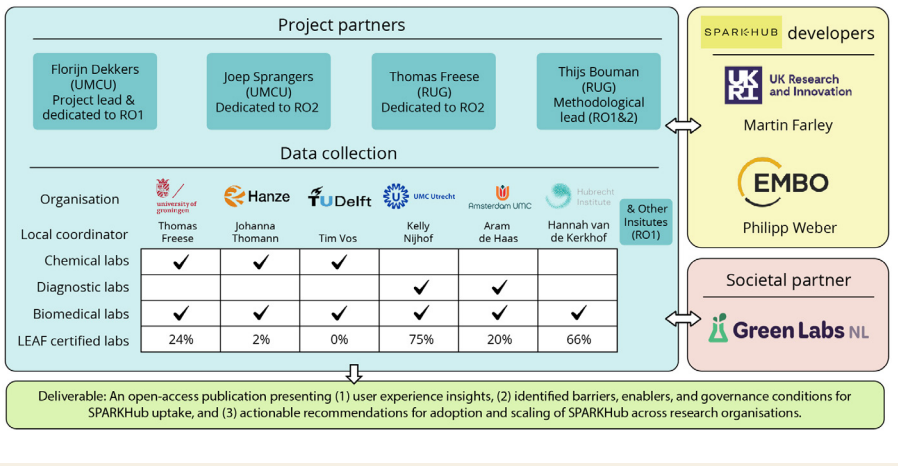
The initiative was developed through a bottom-up approach, inspired by the success of laboratory freezer challenges. Two data cleaning challenges were organized in Utrecht, the Netherlands, each with a different design and scope. Both were driven by green teams within research departments and involved ICT departments, data stewards, and communications teams. Participants were guided to identify data storage hotspots, delete redundant files, and document their results. Environmental impact was calculated and communicated using CO_2 equivalents and relatable metrics such as kilometres driven or trees needed for carbon sequestration.

What

Together, the two challenges resulted in the removal of over 100 terabytes of data, corresponding to substantial reductions in CO_2emissions, storage costs, and hardware demand. At the Princess Máxima Center, 96 researchers from 11 groups participated; at UMC Utrecht, 50 individuals from 15 groups took part. Beyond data volumes, both challenges improved data management practices, including adoption of data exit strategies and management plans. The initiative is documented as eleven practical tips in a freely available publication in PLOS Computational Biology, enabling any research institution to replicate and adapt the approach for their own context.

journals.plos.org/ploscompbiol/article/authors?id=10.1371/journal.pcbi.1013791

#10



Implementing SPARKHub for sustainable research: a Dutch pilot study

Learn from our study on how to implement and scale SPARKHub effectively

Authors: Florijn Dekkers, Joep Sprangers, Thomas Freese, Ellen van der Werff, Tim Vos, Johanna Thomann, Erik Keller, Iris Forkink Hannah Van de Kerkhof, Aram de Haas, Philipp Weber, Martin Farley, Kelly Nijhof

Organisations: University Medical Center Utrecht, University of Groningen, Hanze Hogeschool, TU Delft, Amsterdam UMC, Hubrecht Institute

Why

SPARKHub is a new open-access, community-driven European platform for assessing and certifying sustainable research. In a pilot study, running from June 2026 to June 2027 and granted by NWO-KIN (NL), we aim to provide evidence on how to implement and scale SPARKHub effectively.

How

The project combines a national landscape analysis with real-world pilots across six Dutch research organisations in biomedical, chemical, and diagnostic settings. A team of sustainability coordinators, environmental psychologists, and green research experts implements SPARKHub in 10–15 research groups per domain. Implementation is guided by the Consolidated Framework for Implementation Research, with surveys and interviews capturing barriers and enablers.

What

The project will deliver an open-access publication with practical recommendations for researchers, institutions, and funders on implementing and scaling SPARKHub. It will identify organisational and system-level conditions for successful adoption.

nwo.nl/en/news/sustainable-science-fund-20-projects-granted-funding-to-make-research-practices-more-sustainable/

#11

Making Sustainable Choices Easier in Laboratories

Helping labs take practical first steps towards sustainability

Authors: Martijn Jakobs
Organisations: Boomlab.nl

Why

Laboratories want to work more sustainably, but making better choices is often difficult in daily practice. Purchasing and usage decisions are frequently based on habit, availability, price, or lack of visibility of sustainable alternatives.

At Boom, we believe sustainability should not require extra effort from lab professionals. Small, smarter purchasing and usage decisions can collectively make a significant environmental impact.

How

To support laboratories in making more conscious purchasing decisions, Boom introduced the “More Sustainable Choice” label within its webshop and product assortment. Products with this label meet one or more sustainability criteria, such as reduced waste, lower energy consumption, longer product lifespan, sustainable production methods, or environmentally conscious packaging. By integrating the label directly into the purchasing process, sustainable alternatives become more visible and easier to choose in daily lab operations without compromising quality, safety, or performance.

What

The “More Sustainable Choice” assortment continues to grow monthly and includes laboratory gloves, tissues and wipes, reusable or recyclable consumables, energy-efficient laboratory equipment, and products with reduced or optimized packaging. By making sustainable products easier to identify, we help laboratories reduce waste and make smarter purchasing decisions. The applicability of sustainable alternatives strongly depends on the specific requirements of each laboratory environment, which is why our focus is on making suitable options visible and accessible. Together with suppliers, customers, and our teams, we continue building a more future-proof laboratory environment.

boomlab.nl/Assortiment/Duurzamere-keuze

#12

SPARKHUB

Sustainable Practice and Research Knowledge Hub

Sustainable Practice and Research Knowledge Hub (SPARKHub)

SPARKHub provides open access tools in a single funder supported platform

Authors: Martin Farley, Susan Simon,Philipp Weber

Organisations: UKRI

Why

We started this initiative because we recognised that while there were a range of wonderful sustainable lab efforts, there were gaps regarding many other research activities and specialist fields. We also wanted to try and unite funders around a single platform, so that there was a consensus on what sustainable research looks like today and tomorrow. Finally, we wanted to create something that was open-access, and could create a scaffold which new innovation could be quickly disseminated through, ensuring quick uptake of new ideas.

How

To achieve this, we ran dozens of workshops, both with research performers and research funders. Both were engaged on the needs of the sector. We invested in building a website platform which reflected these needs, while continually collaborating with sustainability professionals, technical staff, and researchers. We also worked with funders on outlining how such a program could be co-governed, ensuring there was consensus and evolution. Currently, we are piloting the platform with 60 organisations around Europe, and will announce the other funders alongside UKRI that will support this platform in October, though many have indicated externally their support already.

What

Currently on the website, you will find open-access training modules on sustainable use of plastics in labs, sustainable digital research, and links to a host of other trainings. You will also find calculators which assess carbon in plastics, chemicals, and equipment, as well as a range of other calculators. On the purchasing page you will find a set of pre-written specifications which align how we engage suppliers on commonly purchased items and services related to research. Once the pilot is complete, a set of over 20 open-access modules will be released which provide practical guidance on sustainable research activities, ranging from imaging facilities to textile workshops.

Check out sparkhub.eu to learn more. Beyond this, UKRI has supported Labos 1.5 internationalise their calculators, which are in testing for a range of other countries around Europe. Once the pilot is complete, these will be linked on the SPARKHub pages. Also in development is an Organisational level framework, which will address how whole organisations support sustainable research activities.

sparkhub.eu

#13

A life cycle assessment of dialysis and conservative kidney care

Innovative framework to apply life cycle assessment to clinical cohort data

Authors: Sjoerd Verbakel, Abass Fehintola, Imre Demirhan, Alferso Abrahams, Karin Gerritsen, Marjolijn van Buren, Niek Sperna Weiland, Brett Duane, Hugo Touw, Tim Stobernack

Organisations: Radboud University Medical Center,Trinity College, University Medical Center Utrecht, Amsterdam University Medical Center

Why

Environmental sustainability has become an increasingly important component of quality care, yet it is rarely integrated into healthcare decision-making. A relevant case study for this integration is the treatment choice for older patients with kidney failure, where the choice between dialysis and conservative kidney care is based on shared decision-making between the patient and doctor. To integrate environmental sustainability into patient- and policy-level treatment decisions, this study applies a comparative life-cycle assessment to a clinical cohort of elderly patient with kidney failure (DIALOGICA).

How

The environmental impact of the patients care trajectory was calculated using life cycle assessment methodology. The assessed care trajectory starts just before kidney failure is reached (eGFR between 20-15), and captures the care consumption of a patient over 48 months. The care consumption is modeled through building blocks and includes dialysis access creation, dialysis sessions, hospital and general physician consultations, and hospitalizations. Data was collected from UMC Utrecht and Radboudumc. Scenario and sensitivity analyses are performed to identify environmental impact mitigation strategies, such as switching from treatment or modality, or changing travel modes and distances.

What

The environmental impact of the care pathway components have been calculated and the follow-up of the clinical study has been completed. The two datasets will be combined to quantify the emissions of the dialysis and conservative care group. A scientific publication will be published, describing a life cycle assessment framework that could be applied by other researchers on clinical cohort studies. Ultimately, this study contributes by closing the gap on integrating environmental sustainability into healthcare evaluations.

zorgevaluatienederland.nl/evaluations/dialogica **kitnewcare.eu** **sjoerd.verbakel@radboudumc.nl**

#14

Less fossil oil for your lab consumables

From fossil-based to BioBased: switch your lab consumables today

Authors: Remco Altena, Geertjan van Munster, Jan Bebermeier
Organisations: Eppendorf

Why

As scientists, we rely on plastic consumables for our daily work in the lab. They are essential for safety, sterility, and reliable results. At the same time, plastic production depends on fossil oil – a limited resource. To move forward, we need to rethink how we use and source plastic: Material-saving concepts, alternative materials, and recycling strategies. Our goal: Improve the sustainability without compromising scientific quality.

Recycling lab plastic itself is still a challenge. However, using recycled material from non-fossil sources is a step in the right direction. It helps address the resource side of the problem while we continue working on closing the loop for lab plastics.

How

Based on feedback from scientists to ""do something with all the plastic"" but also with our own experts at Eppendorf around material science, biosafety rules, and procurement, we collected ideas. From there, we refined concepts to create an alternative product that comes at no extra cost – with the same quality and the same reliability you are used to.

Using recycled cooking oils (e.g., French fries oil) as a feedstock offers a reliable and more sustainable option compared to fossil-based oil. It is an important step on our way to closing the loop through reliable and meaningful recycling of lab plastics. Become more sustainable by changing a small habit: Switch to the new order number.

What

- More Eppendorf BioBased options for your daily work in the lab: tips, conical tubes, microtubes, PCR plates, DWP
- Biobased content between 86 and 100%, depending on product type and based on mass-balance-approach
- Lower CO_2-footprint (calculations based on ISO 14067 standard)
- Raw material and production are monitored by ISCC plus
- Products are validated My Green Lab and received the ACT 2.0 label
  Identical testing procedures in R&D and production resulting in performance you are used to

eppendorf.com/biobased **eppendorf.com/de-en/company-careers/sustainability/knowledge/** **sales@eppendorf.nl**

#15

Interreg
(Ko-)finanziert von der Europäischen Union
(Mede) gefinancierd door de Europese Unie
Deutschland – Nederland
ELFI

Towards Sustainable Healthcare: The ELFI Consortium

A Cross-border approach to improve sustainability and resilience of care via shared-decision making

Authors: Iris Dirks, Tim Stobernack, Ilja Obels, Michiel Hageman, Deborah Fröhlich, Monica de Heide, Sören Weinrich, Beate Rottkemper, Renate Kat, Fülöp Scheibler

Organisations: Radboudumc, SHARE TO CARE, University medical center Groningen (UMCG), SteriNoord, PATIENT+, Netzwerk Gesundheitswirtschaft Münsterland e.V., Bekkenbodem4all, FH Münster, Universitätsklinikum Münster

Why

While the short-term benefits of medical care are clear, the long-term health effects linked to environmental damage receive far less attention. Hospitals are increasingly working to make their buildings and operations more sustainable, but similar efforts are rare for the medical treatments themselves. Studies suggest that both patients and doctors are willing to consider sustainability in treatment decisions, provided clear information is available. However, research on the environmental impact of full care pathways is still limited, and existing data are often difficult for patients and healthcare professionals to understand or use.

How

The primary aim of the consortium is to generate interpretable environmental impact data for treatments across clinical care pathways and integrate these data into decision-making aids. Comprehensive life cycle assessments (LCAs) will be conducted for care pathways for three common non-life-threatening conditions for which multiple treatment options are available. In collaboration with relevant stakeholders, a communication strategy will be established to convey the results to patients and healthcare professionals. To improve reproducibility and reduce time requirements for future LCAs, a standardized modular framework for LCAs in the healthcare sector will be developed.

What

A detailed assessment was conducted of care use, energy use, and related variables. Early differences in care pathways between the Netherlands and Germany are evident and may have substantial environmental effects, highlighting mitigation options and areas for mutual learning. Interviews and co-creation activities have begun to integrate stakeholder perspectives into the communication strategy. Over the next two years, public symposia will be organized to share and discuss the findings. Follow us on LinkedIn and join!

deutschland-nederland.eu/nl/projects/elfi **elfi@radboudumc.nl** **@ELFI Project**

#16

Sustainability at research funder ZonMw

How ZonMw stimulates sustainable research activities

Authors: Jan Schnitzler, Renata Klop, Flori Visser, Lotte Middelberg
Organisations: ZonMw

Why

ZonMw strives to make both healthcare and research more sustainable. The healthcare sector is one of the most polluting sectors in the Netherlands. That is why we encourage researchers to develop and expand knowledge on sustainability. In addition, we consider it important that projects funded by ZonMw are implemented in a way that is as climate-neutral as possible.

How

ZonMw aims to stimulate sustainability in the conduct of research projects by setting specific requirements and criteria. In addition, we ask applicants to consider sustainability as a primary focus of the project where relevant, to include sustainability indicators, and to carry out the project in the most sustainable way possible. In turn we ask applicants and committee members about their experience and needs on this topic at ZonMw by semistructured interviews. This way, ZonMw aims to contribute to a better and more sustainable research environment by addressing the needs of applicants as well.

What

By conducting interviews, we can address the needs of researchers. In our discussions, we find that researchers generally understand why sustainability is being emphasized in the funding process, that they wish to retain autonomy over their projects, and that ZonMw should provide guiding directions to support them. How this will be embedded in the funding process, will be the focus of the next stage.

zonmw.nl/en/sustainable-healthcare

#17

Sustainable Minute (under FCCN+Sustainable Project)

Take one minute of inspiration for sustainability

Authors: Daniel Gomes; Francisco Vasco; Margarida Prado; Simone Zacarias (Invited speaker Susana Batel)

Organisations: Foundation for Science & Technology/FCCN

Why

Within the remit of the FCCN+Sustainable project, the Sustainable Minute initiative goal is to bring inspiration and awareness on environmental sustainability through motivating colleagues in everyday life actions, sharing practical tips on how each of us can make a difference within our reach to promote environmental sustainability.

How

The project is implemented by a network of ambassadors which bring topics of potential interest. These are representatives from different departments of the organization. Ambassadors voluntarily bring topics and produce a short video (1 – 8 mins) and may invite experts outside the organization to participate in “Sustainable Minute” initiative. This action is in place since 2025. Themes covered so far:

- Fighting Marine Litter
- Native species home garden
- Building a Bee Hotel
- Energy transition and democratic citizen participation

What

The “Sustainable minute” short videos were announced though our internal newsletter to all users and remains available at educast platform.

Platform: https://educast.fccn.pt/ (search term “minuto sustentável”) Access to the Educast platform is available to all entities connected through the RCTS network, namely higher education institutions

educast.fccn.pt

(Search term: “minuto sustentável”)
Access to the Educast platform is available to all entities connected through the RCTS network, namely higher education institutions

#18

The Role of FAIR Data Management in Advancing Sustainability

Contribute to the sustainable future with Green FAIR Data Management in an Academic Medical Center

Authors: Kiana Gholamjani Moghaddam and Efi Gkumassi
Organisations: University Medical Center Groningen

Why

This initiative has been started to consider the importance of sustainability when FAIR data comes to practice. As the volume of data is growing exponentially, all organizations need to work in a sustainable way and avoid increasing energy demands driven by modern data collection, storage, and processing. They need to integrate sustainable technologies and practices into the research data lifecycle and work toward green FAIR data management. The project aims to reduce the digital carbon footprint by managing the research data more sustainably, with careful attention to the energy consumption associated with digital data, without reducing the scientific and societal impact of the research.

How

The project is in its early stages and started with the idea of promoting sustainability within FAIR data practices from the perspective on an Academic Medical Center. This concept was developed into a manuscript that has been submitted for publication and presented as a conference poster. We decided to start with the Digital Sustainability Certification program (GreenDiSC) for our team at the Digital Competence Center. This effort aims to help researchers assess and reduce their digital carbon footprint through certification. Finally, the goal is to integrate sustainability criteria into storage decisions during data management planning, while ensuring maximum impact for the research data.

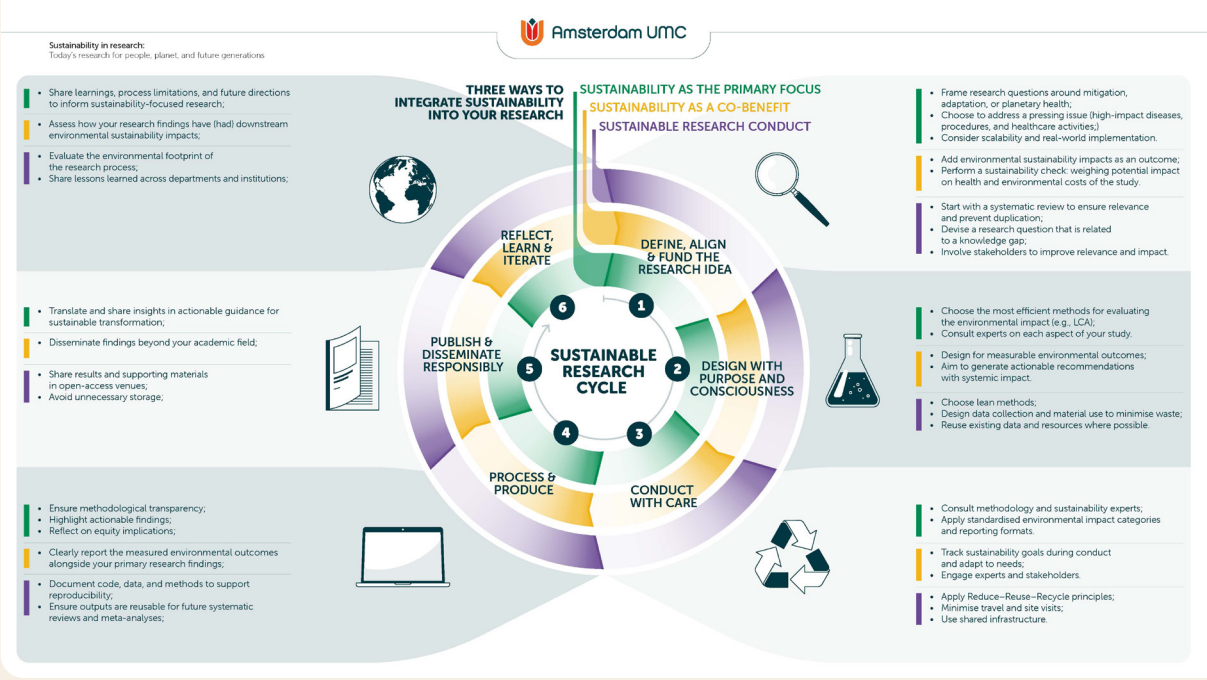
What

We aim to implement the green data management plan in which every step of the research data lifecycle is aligned with sustainability goals. For example, it needs to highlight energy-efficient storage solutions, sustainable computing infrastructure, data minimization in the collection phase, strategic archiving of high-value datasets, and destruction policy after the data retention period. We encourage the researchers to collaborate with us in improving the implementation of the green data management.

umcgresearch.org/w/dcc **linkedin.com/company/umcg-digital-competence-center-dcc**

#20

The Sustainable Research Cycle



A tool for implementing sustainability in research

Authors: Mitra Nekouei Shahraki, Tobias Bartman, Prof. Dionne Kringos, Prof. Wouter Hehenkamp, Nicolaas Sperna Weiland

Organisations: Amsterdam University Medical Center

Why

The Sustainable Research Cycle (SRC) was developed to support researchers in integrating sustainability into health research. While awareness of the environmental impact of health research is growing, researchers often lack clear guidance on how sustainability can be considered throughout the research process and which choices may contribute to reducing environmental impact. The initiative addresses this gap by providing a framework that helps researchers reflect on sustainability at each stage of research, extended to various health research types, to identify priorities, navigate available options, and align their work with broader principles of sustainability

How

The Sustainable Research Cycle (SRC) was developed through interdisciplinary collaboration between researchers in clinical epidemiology, research policy, sustainability in healthcare, and health system improvement. The framework was informed by literature on sustainable healthcare, research waste, evidence-based research, and environmental principles, combined with practical experiences from conducting and supporting health research projects. The Cycle was developed iteratively through discussions with authors representing diverse backgrounds to ensure applicability across various health research types.

What

The SRC was designed as a practical tool to support reflection, guide decision-making, and facilitate the integration of sustainability considerations throughout the research lifecycle. It was primarily aimed at our Amsterdam UMC researchers, but is relevant for everyone involved in (health) research. The tool is being picked up by ZonMw to refer to in grant calls, as a way to operationalize environmental sustainability. We will be urging more researchers to make use of the SRC through presentations and embedding the SRC in our internal research policies. Many researchers were thankful that we provided this tool in addition to the strategy of our position paper on sustainability in research.

amsterdamumc.org/en/research/support/services-support/sustainable-research-cycle-1

amsterdamumc.org/en/research-support/sustainability-1

#21

Freezy is coming around!

A simple way to encourage the cleaning up of -70 freezers

Authors: Youri Adolfs, Oxana Garritsen, Evi Kokosali, Laura Wieg, Nik Heijmink, Serife Uysal, Willem Naert, Carola Kusserow

Organisations: Database Team Pasterkamp lab, Department of Translational Neuroscience, UMC Utrecht

Why

In our lab, we have noticed that people are not very good at cleaning up their -70 freezers, which leads to the storage of a lot of unnecessary material. In addition, if more material that is no longer needed would be trashed, we would maybe need less -70 freezers to begin with.

How

We have a plush toy called Freezy that makes his way around the lab to get all the lab members to clean up their -70 freezers. During lab meetings, Freezy is handed over to the next person on the list. When it is your turn, you have to clean up your -70 freezer within two weeks, together with a member of the database team. The latter is mostly to ensure that people are actually looking trough their freezers and not just hand over Freezy without doing anything. To further encourage clean up within two weeks, people who do not meet this deadline are asked to bring in cake for the whole lab for the next lab meeting.

What

We cannot give exact numbers, but when compared to other labs, we have less material in the -70 freezers. We also more regularly clean up and trash unnecessary material. Freezy is well known and accepted in our lab.

#22

The Durham Declaration on Climate Change and Sustainability

Uniting 42 Coimbra Group universities to turn shared climate commitments into action

Organisations: Coimbra Group

Why

The Coimbra Group launched this initiative to respond collectively to the growing urgency of climate change and biodiversity loss, recognising that universities are uniquely positioned - as innovators, educators, partners and investors - to drive transformative change in this area. As the effects of climate change become increasingly evident, sustainability efforts are often overshadowed by competing political priorities, climate scepticism and widespread anti-scientific sentiment. The Durham Declaration, launched in March 2025, addresses the need for accelerated and coordinated action by strengthening collaboration in research, education, policy engagement and campus operations.

How

Initiated jointly by Durham University and the Coimbra Group (CG)'s governance bodies, the Declaration was developed through a collective, member-led process combining the expertise of researchers, university leaders and administrative staff. It was shared with the rectors of all CG universities and received unanimous signatures in record time. Formally adopted at CG's Climate Symposium (Durham, March 2025), the Declaration sets out seven shared principles and twelve areas for joint action. Since the text was adopted, the network has mobilised its member institutions and thematic Working Groups, while reaching out to policy makers, funding agencies and international organisations.

What

The Durham Declaration was translated into a living implementation roadmap, structured around operational, strategic and political action lines. Key achievements include presenting the Declaration at COP30 and making climate a cross-cutting priority across all CG Working Groups. Eight CG universities are now co-designing a CG-labelled sustainability course. CG also participates in an Erasmus+ project to support student behaviour change (Green Erasmus 2.0). In addition, we are advancing new partnerships on green jobs and sustainable research, while engaging in climate policy advocacy. Our target audience includes universities, policymakers, international organisations and civil society.

coimbra-group.eu/all-coimbra-group-universities-now-signatories-of-the-durham-declaration

coimbra-group.eu/durham-declaration

coimbra-group.eu/policy-seminar/2025-coimbra-group-climate-symposium

coimbra-group.eu/a-shared-path-forward-universities-and-the-sustainability-imperative

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#23

LABEX
UTRECHT SCIENCE PARK

LABEX, an online platform for sharing surplus laboratory items

A non-commercial tool to enable reuse and collaboration within the local lab community

Authors: Hannah van de Kerkhof
Organisations: Utrecht Science Park and Utrecht Life Sciences

Why

Laboratories consume large amounts of chemicals and single-use plastics. This creates significant waste, sometimes even including unused, unopened products. To help save high-quality materials from going to waste — and to support more sustainable science — LABEX Utrecht Science Park was created. The initial idea was a result of a hackathon organised on campus. Initially developed by the vetenary sciences.

How

We created an online platform where users around the Utrecht Science park can make an account. On the platform, you can upload laboratory consumables, chemicals and equipment. Users can then browse through all offers and when they see something they can use, they can connect to the person who offers this. In the case of Utrecht Science Park this can be a match within their own organisation but also with a lab from another organisation at the campus. The platform enables the matchmaking, the exchange or other questions happen through email between offering and interested party. Since our users are all located close to each other on the campus, most pick-ups happen by foot.

What

So far we have over 250 users from more than 7 organisations at Utrecht Science Park. More than 150 matches have been made but we hope more will follow after our campaign. Since we received lots of interest from universities and organisations outside of Utrecht and even outside of the Netherlands, we are currently working on a pilot where we make multiple LABEX environments for other cities, such as Vienna and Maastricht. Keep an eye on our website or send us an email if you are interested in starting an online marketplace for laboratory items too!

labexus.nl

#24

European Commission

Sustainability of hydrogen deployment

Monitoring, assessing and improving the environmental and social impact of a hydrogen economy

Authors: Alessandro Arrigoni, Tatiana D'Agostini, Marco Serafini, Konstantina Vasilakou, Julien Bolard, Markus Nohl, Darina Blagoeva, Francesco Dolci, Eveline Weidner, Beatriz Acosta

Organisations: European Commission - Joint Research Centre

Why

The EU views hydrogen as an important piece of the sustainable transition puzzle. The Joint Research Centre (JRC) advises EU policymakers with evidence-based insight on the sustainability of deploying hydrogen for this transition. Where and how can hydrogen be used sustainably? The aim is to avoid creating new environmental and social burdens by deploying hydrogen technologies and to identify the contexts in which hydrogen represent the most appropriate solution for moving away from fossil fuels use and building a more sustainable society.

How

We implement our work in different ways: we review the existing literature and distil clear, evidence-based messages for policy-makers, we contribute to the development of methodologies and standards for assessing the environmental and social impacts of hydrogen technologies – for example those required in hydrogen valleys, we support the drafting of calls for projects by identifying knowledge gaps, such as the collection of primary data on emerging hydrogen technologies or the climate impact of hydrogen losses, we carry out laboratory experiments and research analyses when urgent questions arise (e.g., how much PFAS are released when hydrogen is produced?)

What

Our primary audience is EU policymakers, but the reports we produce are also intended for researchers in the field and for members of the public who are interested in the hydrogen transition. The methodologies we help draft are designed for industrial use. For example, companies can assess the performance of their electrolyzers by applying the harmonised test protocols we have developed, and they can evaluate the environmental and social impacts of their activities using our life-cycle-assessment (LCA) guidelines. The wider public can consult our resources to obtain reliable information on the hydrogen transition and to gain insight into sustainability-related questions.

joint-research-centre.ec.europa.eu/projects-and-activities/hydrogen-electrolysers-and-fuel-cells-decarbonised-and-sustainable-europe-0_en/

#24

National Freezer Challenge 2025 has a major sustainable impact

Learn from our freezer clean-up how to save energy, CO_2 and money

Authors: Aram de Haas, Mandy Erkelens, Adriaan van Nieuwenhuizen, Fred van Opzeeland, Anouk de Boer-Poelstra, Megha Pandey-Upadhyay, Eline van der Kwaak, Esmee Kiewiet-Kasteleijn, Joep Sprangers

Organisations: Amsterdam UMC, LUMC, MUMC+, Radboud UMC, UMCG, UMCU, Erasmus MC, Green Labs NL

Why

Cold storage is essential in scientific research, but it also cases a high energy demand for laboratories. Ultra-low temperature (ULT) freezers operating at -80°C use about as much electricity as two average Dutch households. Freezers at -150°C or systems using liquid nitrogen consume even more. In addition, hospitals and research institutes have a large number of -20°C freezers, which also often use a lot of electricity.

How

Researchers the at seven Dutch University Medical Centers and other participating institutes were encouraged to clean out unnecessary or outdated samples. This was reported to their local department and institute coordinators and in turn to the national working group. In this way, valuable storage capacity was freed up, reducing the need for new freezers. In addition, freezers contents can be consolidated, which in some cases could result in freezers being shut down.

What

Across 12 participating institutes, 6.708 boxes from -20°C freezers, 19.692 boxes from ULT freezers and 68.789 samples from -150°C freezers or liquid nitrogen storage were cleaned up. This results in yearly savings of €144.000 and 176 tonnes CO2-emissions, which is equal to the emissions of around 269 average Dutch households. In total, 19 -20°C freezers and 35 ULT freezers were turned off. The oldest samples that were thrown away dated from 1977, highlighting the need for good sample and freezer management.

greendealduurzamezorg.nl/service/nieuws/nationale-freezer-challenge-2025-levert-grote-duurzame-impact-op/

greenlabs-nl.eu/projects/freezer-challenge-2025

#26

CaixaResearch Institute
Fundación "la Caixa"

Designed for Discovery: A Sustainable Home for Immunology Research

A sustainable vision for the future of immunology research and social impact and well-being

Authors: "la Caixa" Foundation and CaixaResearch Institute teams.

Organisations: "la Caixa" Foundation and CaixaResearch Institute

Why

The initiative was created to respond to the growing need to advance immunology research while ensuring greater sustainability and social responsibility in science. Immunology is central to understanding and treating major diseases such as cancer, infections, and autoimmune disorders, but it requires highly specialised, collaborative environments to progress effectively.

The CaixaResearch Institute, a 22,000 m^2 facility, addresses this challenge through a state-of-the-art centre that accelerates biomedical discovery while minimising environmental impact. It combines scientific excellence with sustainable infrastructure to drive innovation for health and societal well-being.

How

The CaixaResearch Institute was developed through an integrated approach combining scientific planning, sustainable architecture, and interdisciplinary collaboration. Researchers, architects, engineers, and sustainability experts worked together to ensure that the building would support advanced biomedical research while minimising environmental impact.

The methods included energy-efficient design strategies, use of low-impact materials, and optimisation of natural light and ventilation. Laboratory spaces are flexible, adaptable, and designed to foster interaction between research teams, supporting sustainable innovation in immunology.

What

The building holds an energy class A rating and is designed as a nearly zero-energy facility, incorporating photovoltaic panels and geothermal probes that cover between 30% and 40% of its energy demand. It also includes rainwater and greywater recovery systems, along with efficiency measures that reduce water consumption by up to 75%.

So far, it has strengthened biomedical research capacity while setting a benchmark for sustainable scientific infrastructure and fostering collaboration among researchers, clinicians, and industry partners. The institute's model demonstrates how advanced research and sustainability can be combined to maximise impact on health and society.

caixaresearch.institute/en/home

#27

Towards a more circular Genmab

Reducing plastic waste and improving circularity across Genmab

Authors: Arden Bull & Isa Griffioen

Organisations: Genmab

Why

Labs play an essential role in innovation and research, but they also rely heavily on single-use plastics, creating large amounts of waste and contributing to greenhouse gas emissions. At Genmab, we wanted to better understand where plastic waste was generated in our labs and explore practical ways to improve circularity without compromising safety or research quality. Through the Environmental Working Group and My Green Lab initiatives, we saw an opportunity to raise awareness, encourage more sustainable behaviour, and test solutions that could help make everyday lab operations more sustainable.

How

These initiatives were developed through collaboration between the Environmental Working Group, My Green Lab, facilities, sustainability colleagues, researchers, and other environmental enthusiasts across Genmab. Since the Environmental Working Group started in 2020, the focus has been on creating awareness and embedding sustainability into everyday lab practices. New ideas are first explored through small pilot projects, usually starting in one lab, to better understand feasibility, quality, and user experience before scaling further. This approach allowed us to work closely with lab users, gather feedback, and identify practical solutions that fit within existing workflows.

What

So far, the initiatives have led to several practical actions to improve circularity in Genmab laboratories. We piloted a tip washer to clean and reuse pipette tips, explored biobased consumables as alternatives to virgin plastics, and introduced separate recycling streams for thin and thick lab plastics. These projects helped increase awareness of plastic waste within laboratory environments and encouraged stronger collaboration between sustainability teams, facilities, and researchers. The initiative continues to create valuable insights into how labs can reduce waste and adopt more sustainable practices.

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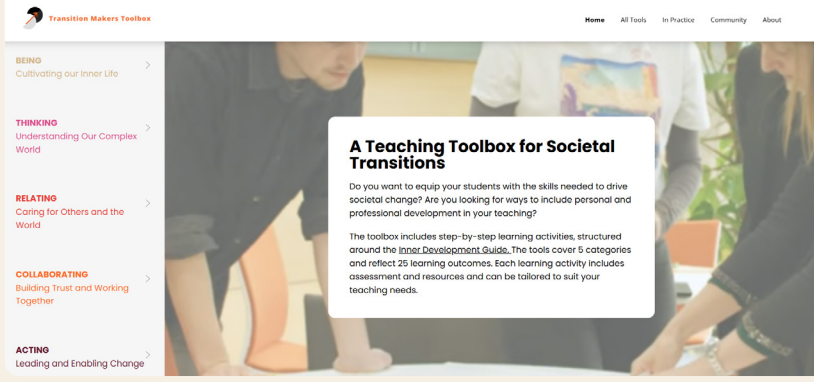
linkedin.com/in/isa-griffioen-42846232b

#28

Transition Makers Toolbox



Transition Makers Toolbox

A Teaching Toolbox for Societal Transitions

Authors: Billy van Zoomeren, Evelien van der Linden, Jasper ter Schegget, Gwenda Frederiks, Belle Jansen, Dimitra Mousa, Madison Carr, Pascal Frank, Ilja Boor, Sabine Uijln

Organisations: Institute for Interdisciplinary Studies (IIS), University of Amsterdam
EWUU Alliance (Eindhoven University of Technology, Wageningen University & Research, Utrecht University and University Medical Center Utrecht)

Supported by Teaching & Learning Centre of the University of Amsterdam and Liberal Arts and Sciences and University College Utrecht at Utrecht University

Why

The Transition Makers Toolbox was created to support higher education in addressing complex societal and sustainability challenges through inner development and transformative learning. While students often learn to analyse problems, there is less attention for imagination, reflection, collaboration and the human capacities needed for transitions. The Toolbox responds to this gap by offering practical educational tools connected to the Inner Development Guide (IDG). It helps educators create learning experiences that strengthen future thinking, creativity, empathy and systems awareness, enabling students to engage more actively and hopefully with societal change.

How

The Transition Makers Toolbox was developed through collaboration between teachers, educational developers and researchers across Dutch higher education institutions. The toolbox translates the Inner Development Guide into ready-to-use educational materials, including learning outcomes, step-by-step activities, assessment and supporting resources. The tools are designed for flexible use in courses, workshops and interdisciplinary education, and can easily be adapted to different educational contexts. Development took place through co-creation, experimentation in educational practice and continuous refinement based on feedback from educators and students.

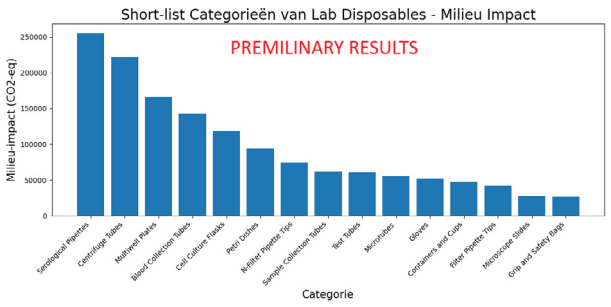
What

The Transition Makers Toolbox is an open platform for transition-oriented education that combines educational tools with workshops, teacher trainings, co-creation sessions and community events. Since 2023, hundreds of educators and educational developers have participated in Toolbox activities in the Netherlands and internationally. The project supports implementation of the IDG and affective learning in higher education through conferences, newsletters, implementation support and workshops. Since September 2025, the project entered a new phase focused on embedding the Toolbox more structurally in educational programmes and strengthening the growing Transition Makers Community.

transitionmakers.nl **innerdevelopmentgoals.org/guide** **linkedin.com/groups/12784783/**

iis.uva.nl/en/educational-innovation/projects/empowered-minds.html

#29



Impact assessment of laboratory disposables through purchasing data

Find and monitor hotspots in laboratory disposables to effectively target your reduction efforts

Authors: Renate Kat, Eke Snoeren, Bart Noort, Aram de Haas, Lynn Snijder, UMCNL Werkgroep - Thema 4

Organisations: UMCNL, Amsterdam University Medical Center, University Medical Center Groningen, University of Groningen

Why

Life science laboratories have a substantial environmental footprint due to their heavy reliance on disposable materials. Reducing this impact is challenging, as it requires significant time, resources, and coordination. Prioritization and monitoring are therefore essential to ensure efforts focus on the products with the highest environmental burden. In this project, we developed an automated method to identify high-impact disposables in academic hospital laboratories.

How

We created an automated analysis method that classifies purchased lab items, corrects packaging quantities, and estimates environmental impact based on material composition, size, sterility, and measured weights of proxy-products. A validation study will assess and refine the method's applicability to datasets from non-hospital research institutes. In parallel, focus groups with laboratory, sustainability, safety, and procurement experts are currently formulating recommended reduction strategies for the highest-impact products.

What

Preliminary results reveal that just 11 products account for 80% of the total CO_2 footprint of disposable use in academic hospital laboratories. The most impactful items include serological pipettes, centrifuge tubes, and multiwell plates. Once finalized, we intend to make the developed methodology publicly available, enabling other research organizations to assess and monitor the environmental impact of their own laboratory disposables.

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#30

SELs
Sustainable European Laboratories

Sustainable European Laboratories network (SELs)

Connecting European labs to promote sustainability, outreach, and shared resources.

Authors: All members of the organisations listed in number 2

Organisations: Green Labs Austria, Green Labs Netherlands, EMBL, SureCat, Green Labs Portugal, Green Labs UK (LEAN), Green Labs Ireland, FENS Kavli

Why

SELs was created to connect and empower people working on sustainable science by providing a collaborative European network for sharing knowledge, tools, and best practices. The initiative responded to the lack of structured exchange between labs and the difficulty of scaling local successes. Our motivation is to turn isolated actions into collective impact, enabling laboratories to embed sustainability into everyday research culture through collaboration, shared learning, and practical support.

How

SELs was implemented through a collaborative, network-based approach, bringing together existing green lab initiatives, research institutions, and individual practitioners across Europe. Rather than creating a centralised structure, SELs connects and amplifies existing efforts, enabling shared ownership and distributed leadership. We built the network through community engagement, workshops, webinars, and the Sustainable Research Symposium, where participating networks take turns organising.
Its main goals are to collect, integrate and share knowledge on sustainable practices, promote and support green lab initiatives in Europe, and facilitate collaboration between networks.

What

SELs is a European hub connecting existing green lab networks working on sustainable science. It strengthens collaboration between previously isolated initiatives and enables knowledge exchange across borders. A key achievement has been maintaining momentum from the Sustainable Research Symposium by ensuring continuity through a rotating role of participating networks, fostering ongoing dialogue and shared ownership. SELs also acts as a support point for the creation of new sustainability networks, helping emerging groups connect, structure, and grow. SELs has created a tailor training to support researchers and staff in implementing practical sustainability measures in laboratories.

sels-network.org **linkedin.com/company/sels-network** **youtube.com/@sustainableeuropeanlaborat1262**

#31

UMC Utrecht

The Great Freezer Reset

Implementing a transparent, low-carbon infrastructure for medical laboratory storage

Authors: Joep Sprangers and Kelly Nijhof
Organisations: UMC Utrecht

Why

Cold storage significantly impacts UMC Utrecht's footprint, yet a lack of central oversight creates dangerous blind spots. Without full registration, inefficient or under-maintained units often run "under the radar." This is critical because older, unregistered models can consume 4x more energy and use refrigerants 13,000x more harmful than CO_2. By bringing all units into a transparent system, we can identify and eliminate these hidden risks. This project ensures compliance with the Green Deal Sustainable Healthcare 3.0 and drives a cleaner, more sustainable future.

How

We implemented a two-phase strategy across all lab departments. In Phase 1 (Q4 2025), we prioritized ULT freezers, combining digital registration in Ultimo with the National Freezer Challenge to clean out contents. To accelerate impact, we secured Board of Directors support for a special replacement scheme for the most inefficient models. Phase 2 (2026) focuses on total transparency: achieving 100% registration of all cold storage, including refrigerants and temperature settings. This collaborative approach enables standardized monitoring and a systemic transition to energy-efficient cooling across the entire institution.

What

Our initiative has already engaged 10 departments to replace ~25 ULT freezers, saving energy equivalent to 130 Dutch households. But the real success is the "human" side: we've broken down silos. Labs are now sharing storage and optimizing capacity through improved racking and joint management. This prevents "comatose" freezers and wasteful redundancy. By turning individual assets into a transparent, shared system, we've created a blueprint for other institutions to reduce GWP emissions and foster collaboration. Others can learn from our model of combining data-driven replacement with hands-on, cross-departmental support.

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#32

Green DiSC: a Digital Sustainability Certification Scheme

Enrol into Green DiSC and reduce the environmental impact of your research and computing activities.

Authors: Loïc Lannelongue, Anica Araneta, Kirsty Pringle, Denis Barclay

Organisations: Software Sustainability Institute, Cambridge Sustainable Computing Lab, University of Cambridge, UK Research and Innovation

Why

While computing is an essential component of modern research, it comes with significant environmental impacts: the global carbon footprint of data centres is equivalent to the US commercial aviation, and individual projects can reach hundreds, if not thousands, of tonnes of CO2e. It is becoming increasingly apparent to scientists using computing that the resulting environmental effects should be taken into account and mitigated where possible. Green DiSC provides computational researchers and research-performing organisations with a trustworthy and impactful roadmap on how to tackle the environmental impacts of their work, while giving recognition for all the good work done in this space!

How

We collaboratively designed a certification scheme fit for the challenge: free, open-access, and community-driven. Working across scientific disciplines and with diverse stakeholders from the research ecosystem, we piloted and released different sets of criteria and iterated over the past two years to better address the needs of research actors. There are now three sets of criteria: Research Groups, Research Computing Infrastructure teams, and Central (Sustainability) Teams. These get continuously updated, and participants share resources on our forum to support other institutions.

What

Green DiSC is evidence-based, open-access, iterative, and community-led. We work with our community of enrollees and awardees to co-design and improve the criteria based on user feedback. First launched in 2024, there are now over 150 teams enrolled around the world -- 25 of which have completed the Bronze level. Soon we will be launching the Silver level and integrating into SPARKHub, an open-access platform for greening research. The criteria can be accessed on GitHub. Email us for any questions (info@greendisc.org) or join our monthly drop-in sessions on Teams where we answer questions about Green DiSC! Check our website to find out when the next session will be.”GWP emissions and foster collaboration. Others can learn from our model of combining data-driven replacement with hands-on, cross-departmental support.

software.ac.uk/GreenDiSC | info@greendisc.org | github.com/Cambridge-Sustainable-Computing-Lab/greenDiSC | bsky.app/profile/green-disc.bsky.social

#33

KNAW

Case – Scope 3 calculation of research chemicals and biologicals

Exploration of emission factors for research chemicals and biologicals (spend based CO_2e-footprint)

Authors: Sascha Jansz, Hannah van de Kerkhof

Organisations: Koninklijke Nederlandse Akademie van Wetenschappen, Hubrecht Instituut

Why

While computing is an essential component of modern research, it comes with significant environmental impacts: the global carbon footprint of data centres is equivalent to the US commercial aviation, and individual projects can reach hundreds, if not thousands, of tonnes of CO_2e. It is becoming increasingly apparent to scientists using computing that the resulting environmental effects should be taken into account and mitigated where possible. Green DiSC provides computational researchers and research-performing organisations with a trustworthy and impactful roadmap on how to tackle the environmental impacts of their work, while giving recognition for all the good work done in this space!”

How

We compared different emission factors databases and zoomed in on the PER 1p5, the database also used in the online tool by Labos 1point5. However, as the multitude of different chemicals and biologicals prevented us from linking or categorizing these to the French NACRES codes (which are not used in the Netherlands), we selected the emission factor described in the business segment for research laboratories. We fully recognize that using this spend based emission factor is (much) less accurate then linking each specific chemical or biological to its own emission factor and using activity based data. We will therefore regularly review possibilities to switch to a product based approach.

What

The described emission factor is currently used within our organization to calculate the CO_2e-footprint of research chemicals and biologicals. The CO_2e-footprint is then used to identify possible hotspots for improvement and to measure our impact on a yearly basis. The full case description can be requested through a LinkedIn message (https://www.linkedin.com/in/sascha-jansz/). We encourage you to contact us to share your feedback and/or data to further improve our calculation method. cross-departmental support.

linkedin.com/in/sascha-jansz

#34

A guidebook for sustainability in laboratories

Practical low-hanging fruit advice for sustainable research in continuously updated living document

Authors: Thomas Freese,* Renate Kat, Suzanne D. Lanooij, Tanja C. Böllersen, C. Maurits De Roo, Nils Elzinga, Meagan Beatty, Brian Setz, Roza R. Weber, Irene Malta, Timea B. Gandek, Arjen Krikken, Peter Fodran, Robert Pollice, Michael M. Lerch

Organisations: University of Groningen

Why

This initiative was started to help researchers and students identify practical and realistic ways to reduce the environmental footprint of laboratory research. While awareness around sustainable research has increased significantly, many researchers still lack accessible guidance on how to translate sustainability goals into everyday laboratory practice. Existing information is often fragmented, highly technical, or disconnected from daily workflows. The project addresses this gap by providing a concise, example-driven guidebook focused on actionable “low-hanging fruit” interventions that can be implemented quickly and safely across different research disciplines.

How

The guidebook was developed through collaboration of researchers, laboratory users, sustainability staff, and technical personnel from multiple disciplines at the University of Groningen. Practical examples, operational experiences, literature sources, supplier information, and existing sustainability frameworks were combined into a structured and easy-to-use resource. The document was intentionally written in a concise bullet-point format to maximize usability during laboratory onboarding and daily work. The guidebook was openly published as a living document on ChemRxiv, allowing continuous updates, community feedback, and expansion through contributions from more researchers.

What

The guidebook has helped increase awareness of sustainable laboratory practices and provided researchers with an accessible entry point for implementing practical sustainability measures in everyday research activities. It is primarily aimed at students, researchers, laboratory staff, and institutions seeking actionable ways to reduce waste, energy use, water consumption, and unnecessary resource use in laboratories. Because the guidebook is openly accessible and continuously updated, it can be adapted and used by research groups across disciplines and institutions. Researchers are encouraged to contribute additional ideas, examples, and improvements to help expand the initiative further.

doi.org/10.26434/chemrxiv-2023-g3lmq-v4

#35

Institute for Bioengineering of Catalonia

Institutional Sustainability Plan for Research Management

Transform research management through actionable sustainability practices

Authors: Inmaculada Moreno, Mar Chaguaceda, Isabel Oliveira; Cristina Arimany; Teresa Sanchis; IBEC Sustainability Committee

Organisations: Institute for Bioengineering of Catalonia (IBEC)

Why

This initiative was developed to address the often-overlooked environmental impact of research management activities. While laboratory sustainability is increasingly recognised, administrative processes such as purchasing, mobility, events, and digitalisation also contribute significantly to institutional carbon footprints. IBEC identified the need for a structured, institution-wide approach to embed sustainability into daily management operations. The initiative aims to reduce resource consumption, improve efficiency, and foster a culture of environmental responsibility across all departments.

How

The initiative was implemented through a participatory, cross-departmental approach involving all research management units and the IBEC Sustainability Committee. A structured assessment identified existing practices and new opportunities, leading to a comprehensive action plan. Key measures include digitalisation (e.g. electronic billing and signatures), enhance recycling (e.g. removing individual bins), sustainable purchasing, mobility policies, and greener event organisation. Actions are supported by indicators (e.g. paper use, trips) and monitored through a dedicated working group to ensure continuous improvement.

What

The initiative is currently being implemented across IBEC and targets all administrative and research support staff. It builds on existing achievements such as reduced paper use, digital tools, sustainable procurement measures and awareness programmes. The plan defines measurable indicators (e.g. paper consumption, travel, catering practices) and provides concrete actions that other institutions can replicate. Results include reduced resource use, improved digital workflows, and increased staff engagement. The framework is transferable and can guide other research institutions seeking to integrate sustainability into management practices.

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#36

Circolab NL - How can reuse be the standard on the lab?

Developing a service that cleans pipette tips for reuse

Authors: Bas Danz-Tuenter, Eva Nijeboer, Frank van der Zanden, Guido Smets, Stan Philipsen

Organisations: Fontys, SureLaboratories, Dispolab, Innovatiehuis de Peel, Sustainables, Maxima MC, Catharina ziekenhuis, Elkerliek ziekenhuis, Aquon, Jeroen Bosch ziekenhuis, Winclove, Greencycl

Why

The Circolab consortium finds its roots with the frustration around the enormous amount of lab waste. Single-use materials make up a significant portion of the waste. Its use is so ingrained in our practices that its incredibly difficult for a individual lab to move away from it. That's why Circolab is developing a proces that cleans disposables for reuse, without extra work for the labs themselves. Our first target is the pipette tip, but the approach will be applicable for other disposables.

How

With a subsidy of the province of Noord-Brabant, the members have the room to adjust the cleaning process, find applications and industries where reuse can be first implemented and look for social and legal challenges. Much of the research is done with the help of students of Fontys, guided by members of the consortium, both in courses and internships. The interdisciplinary research is focused on addressing the many challenges that arise from questions around the quality of the tip, logistics, implementation on the lab, legal affairs and the costs of the entire proces.

What

By combining the knowledge of the many consortium members, we've demonstrated that pipette tips can be cleaned and reused up to 20 times, for a variety of contaminants. LCA have been performed by students and show that its already more sustainable after 1 time reuse. Currently we're working on finding test cases for reuse and scaling up the cleaning process so the price of a cleaned pipette tip can approach or undercut the price of a new one. So if you see reuse possibilities within your lab or know of other labs that are looking for reuse, please let us know so we can create a more sustainable lab together!

innovatiehuisdepeel.nl/projecten/circolab/default.aspx

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#37

The Sustainability of Science

This book provides a comprehensive review and recommendations to make science more sustainable

Authors: Martin Farley (Editor)
Organisations: Royal Society of Chemistry Publishers

Why

The RSC approached me on editing a book, as to date there were no comprehensive books which looked at this topic. It meant that I was able to engage over 20 authors on highlighting their knowledge and expertise in a range of areas, going far beyond but including energy of laboratories. With this approach, we were able to go into real depth of investigating social justice, research quality, energy, and even activism approaches in assessing how to make science sustainable.

How

The book took over 4 years of writing and editing to complete, and was written freely by those who kindly gave their time. It is now completely open-access, with thanks to the RSC for accomplishing this. To do this, the writers took their energy to write comprehensive chapters (13), as well as a foreword by Professor Ben Feringa, and a short history of the sustainability of science as a topic by myself.

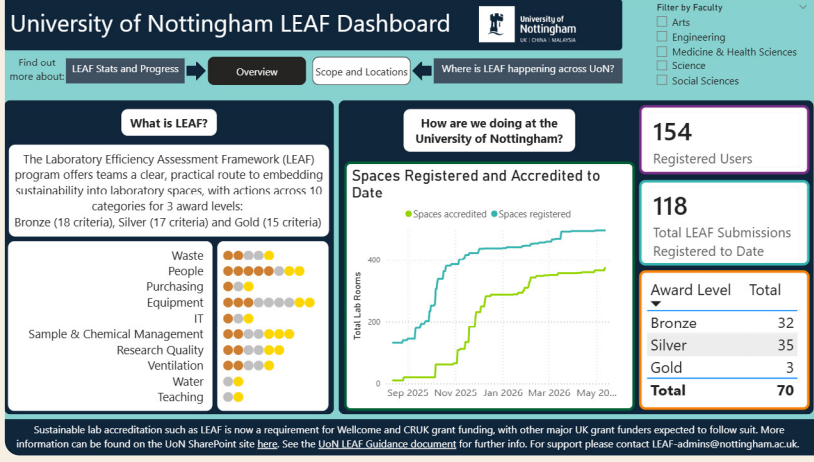
What

Now available freely on the RSC website, the book can be shared as a whole or as chapters. It's nearly 500 pages long with 13 chapters. Published in April, I myself have been using chapters as references for what actions we should take. For e.g. we used the chapter by Deirdre Black on technology to guide our approach to a sustainable digital research plan for UKRI.

books.rsc.org/books/oa-edited-volume/2503/The-Sustainability-of-ScienceHow-Science-Impacts

#38

University of Nottingham
UK | CHINA | MALAYSIA



Tracking LEAF uptake across the University of Nottingham

A Power BI dashboard built from university space data to visualise the evolution of LEAF engagement

Authors: Jess Streets

Organisations: University of Nottingham

Why

When I took over coordinating the LEAF scheme at Nottingham, my first questions were how many potentially LEAF-compatible labs are there across the university, and where are they located? If the goal was to drive to 100% uptake of sustainable laboratory accreditation in all relevant lab spaces, we first needed a clear picture of the breadth and diversity of labs across our campuses and medical sites. Mapping these spaces allowed us to begin targeted outreach, often discovering passionate individuals already implementing sustainability improvements in their labs, who then benefited from the structure of the LEAF framework to widen their impact.

How

The project started by creating a master list of all rooms in the university space database categorised as laboratories, workshops, cold rooms, etc. Whilst graphics and calculations could be generated in excel, Power BI was identified as a way of pulling all the data into an interactive format where users can see the big picture, and also dive into the details of a given building, campus, or even all the labs associated with a chosen faculty. The dashboard has evolved through iterative development and engagement with lab users, ensuring it remains simple to navigate, and shaped by the information our users requested be accessible.

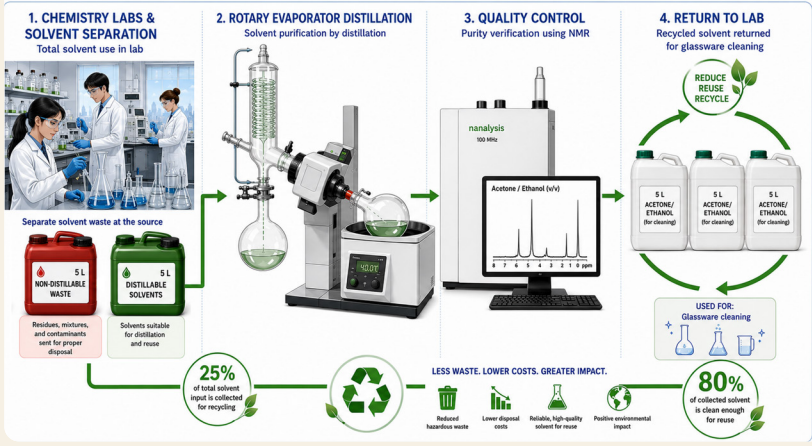
What

The dashboard allows internal stakeholders and lab users to visualise LEAF uptake across the university, and see the growth in engagement in terms of people and submissions registered. It also demonstrates areas with less LEAF engagement to encourage teams and users to communicate with colleagues they may know in those spaces. As well as being a tool for lab users, it can also be driven live in meetings with key stakeholders to showcase the current levels of participation, highlight progress and initiate conversations about where to target support and communications, and where greatest impact is already being realised.

Jessica Streets

#39

university of groningen / faculty of science and engineering



Recycling cleaning solvents in teaching labs

Reuse distilled acetone-ethanol mixtures for cleaning glassware

Authors: Damir Medunjanin, Sietse Tock, Simone Romanini, Christian Imboden, Iwan Merkelijn, Tjalling Canrinus, Niek Eisink

Organisations: University of Groningen

Why

On a yearly basis, our educational team provides practical chemistry education for up to 500 students. For the purposes of cleaning glassware, large amounts of about 1400 L of newly purchased acetone and ethanol are used and then disposed of, making it a significant waste of resources. This project of recycling cleaning solvents was started to reduce the environmental footprint of our practicals, reduce financial spendings and to raise student awareness that sustainable laboratory practices have an active role in diminishing their environmental impact.

How

The implementation of this project relies on collaboration with students, using in-house available equipment. During the introduction lecture, the students are briefed on this initiative, and tasked to collect used recyclable solvents into recycled canisters. Distillation of the collected solvents is done using standard rotatory evaporators with larger collection flasks and a high-end, digitally controlled vacuum pump. Quality control is performed with Q-NMR using an internal standard, to verify absence of toxic components. Approved recycled solvents are then reintroduced in the lab in special wash bottles, and students are encouraged to use them by their teaching assistants.

What

At the end of the pilot in the last academic year, we had collected 17% of all the solvents used in the practicals, and recovered 90% as usable solvents. This year, we had 230 L recycled solvent available, together with 1200 L of purchased solvents. Then we collected 25% of the solvents used and recovered 81% (280 L) of recycled solvents ready for next year. By reusing solvents, we have reduced the amounts we buy and dispose of, significantly reducing financial cost and CO_2 emissions. Our bottlenecks and challenges are collection rates, storage of the solvents, and time investment. If you want to implement similar systems in your labs, we are more than happy to share our protocols.

rug.nl/staff/departments/20105

#40

Green Labs Germany founding initiative

Initiative to form the association Green Labs Germany for transforming labs into sustainable labs

Authors: Narasimha Sushil, Hollyn Hartlep, Ilona Liesche, Marco Lange, Marie-Luise Lindow, Theresa Blanke, Bernadette Harwardt, Anja Wünsch, Bianca Schell, Anke Hahnenkamp

Organisations: Heidelberg University, German Cancer Research Center (DKFZ), University of Tübingen, University of Göttingen, Charité – University Medicine Berlin, University of Münster, University Halle-Wittenberg, Bundesanstalt für Materialforschung und -prüfung (BAM), University of Konstanz, University Medicine Greifswald

Why

This initiative was created to motivate laboratory staff, scientists, students etc. to adopt sustainable practices in the laboratory. While other countries have already formed associations, there is a gap to close in Germany. We want to see ourselves as a platform where scientists, students, employees of all laboratories and sustainability managers can network, receive information about Green Lab certification, exchange news, offer workshops. Best practice examples are to be linked on the platform to enable new starters to translate faster from the lab to the Green Lab.

How

Supported by the Volkswagen Foundation, and organised by the University of Göttingen in cooperation with the German Society for Sustainability in Higher Education (DG HochN), Charité – Universitätsmedizin Berlin, the Technical University of Berlin and the Technical University of Dresden, the first national conference on sustainable laboratories was hosted in Göttingen in January 2026, with 120 participants from 70 institutions across Germany. The result of the 2-day conference was a broad consensus among the participants to form Green Labs Germany inspired by Green Labs NL, Green Labs Austria and other European initiatives.

What

Since January, around 40 people have been meeting in several working groups to develop a statute, a mission and vision statement, marketing materials, and a governance structure. Theses processes are still ongoing; the foundation is planned for this year. Currently, the network consists of 41 active people from 26 institutions in Germany, who are jointly involved in the founding of the association.

linkedin.com/groups/17043005

#41

Upcycled Art for Sustainable Science

Collaborate with artists to transform lab waste into art that inspires action and builds community

Authors: Saki the Artist

Organisations: Green Labs Austria, Institute of Science and Technology Austria, University of Vienna

Why

Researchers are often already aware that there's a large carbon footprint associated with science. They may even know of mitigation strategies. But when being environmentally responsible feels like a chore instead of a passion, it is difficult to find motivation to choose sustainable research practices over convenience. This is where art comes in! Art has the power to inspire hope and generate interest and excitement for a cause, as well as to build community by inviting scientists to join in the creation process. The act of co-creation helps participants see that individual efforts can add up when everyone works together to make something beautiful.

How

In a pilot project, scientists from research institutes in Vienna, Austria collected single-use plastic lab waste such as gloves, pipettes, and centrifuge tubes (all free of contaminants). These were then transformed by a local artist into fine art: jewelry, ball gowns, and chandeliers. The project gave scientists a fun reason to sort their recyclable plastic waste, and the act of setting it aside for the artist made them more aware of their consumption. The final exhibited piece engaged other scientists who were previously unaware of sustainability efforts on campus. Following the success of the pilot project, the same model is being implemented at other institutes across the EU.

What

Art inspires change. Many scientists said that the completed art pieces made them more aware of how much plastic was being consumed. After the pilot project, one participating lab even switched from plastic petri dishes to glass! The project also demonstrated a major advantage of using art to raise awareness: art grabs people's attention and is easy to share online. A stunning photo of a chandelier made from used petri dishes gets everyone—scientist or not—more excited than an everyday article about plastic pollution. LinkedIn posts from the project are still being reposted and receiving comments from people who are looking to implement the strategy at their own institutes.

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#42

The Planetary Health Glasses

Who will you invite to wear the glasses?

Authors: Florijn Dekkers, Jopke Janmaat, Arte Groenewegen, Anjali Wijnhoven, Noortje Campman, Marit de Kort, Joes Janmaat, Manouk van de Klundert, Janneke Pala

Organisations: University Medical Centre Utrecht, Studio Sociaal Centraal, CO2-assistant, Knowledge Center for Global Health (KCGH)

Why

Planetary health – defined as a solutions-oriented, transdisciplinary field focused on the impacts of human disruptions to Earth's natural systems on human health and all life – has gained significant global momentum in recent years, with a growing worldwide community, dedicated journals, and educational frameworks. Creative tools that invite people into the conversation in a fun and meaningful way are key to building broad engagement and drive transitions.

How

Since its debut in 2023, the planetary health glasses have been used at diverse conferences, panels, and educational programmes as a conversation starter or tool helping participants envision new futures. They have even been worn by Dutch ministers. The glasses are available in several forms: as a digital 2D version, as wearable wooden glasses, and as 1.5-metre display model. The concept is shared under a Creative Commons Attribution-NonCommercial 4.0 International licence to encourage broad reuse.

What

UMCU's Planetary Health Integration Team uses these glasses specifically to advance the greening of research and education. They advocate for scientists to conduct research through a planetary health lens: recognising the interconnectedness of human and planetary health, embracing diversity, nurturing values such as compassion and gratitude, engaging stakeholders throughout the research process, practising open science, adopting environmentally responsible practices, and focusing only on research that addresses urgent knowledge gaps.

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kcgh.nl/en/symposia/ectmih-2023

#43

Transitioning Toward Sustainable Medical Laboratories

Beyond Compliance: Redefining Sustainability in Medical Diagnostics and Research

Authors: Kelly Nijhof, Marie-Joan Glashouwer, Rachel van der Sman, Aram de Haas

Organisations: UMC Utrecht, Erasmus MC, LUMC, Amsterdam UMC (Green Labs NL)

Why

The healthcare sector is at a crucial turning point: medical laboratories must move beyond isolated sustainability initiatives toward structural system transformation. In practice current standards and regulations laboratories do not yet sufficiently align with climate goals, while resource scarcity and supply-chain dependencies continue to grow. To bridge this gap, we must shift from ad-hoc actions to a coordinated, circular approach. By identifying European and national policy barriers and providing guidance based on practical insights, this initiative enables laboratories to accelerate their transition and evolve into resilient, future-proof accelerators of the healthcare system.

How

We advance this transition by working with representatives from all seven university medical centers and consulting relevant stakeholders to analyse legislation, standards and operational constraints. By mapping systemic barriers and defining actionable options for both the short and long term, we clarify where change is possible. Strengthening cross-departmental collaboration and improving insight into supply-chain impacts positions laboratories to act as a driving force for circular and resilient healthcare.

What

This transition report reflects how medical laboratories can contribute to a healthcare system in which resilience, continuity, and ecological responsibility are interconnected. By including the supply chain, it addresses sustainability across the full spectrum of operations. Beyond applying current standards, structural choices are needed to anchor sustainability in daily practice. Designed for a wide range of stakeholders - from policymakers and management to quality officers, procurement, laboratory staff and suppliers - the report aims to be as comprehensive as possible, focusing primarily on diagnostic and medical research labs. The full report will be published this summer.

greenlabs-nl.eu/resources/diagnostic-labs

#44

Guidelines for Socially Responsible Research

A checklist, tools and reflective questions for open, honest and sustainable practice-based research

Authors: Arte Groenewegen, Anjali Wijnhoven, Jopke Janmaat, Marit de Kort, Florijn Dekkers, et al.
Organisations: UGreen Labs NL, de CO2-assistent, UMC Utrecht

Why

In practice, it appears that, despite good intentions, research often fails to meet society's needs. For instance, research is regularly conducted into questions that could actually already be adequately answered by existing literature; marginalised groups are often excluded from research; and (bio) medical research is associated with a significant negative environmental impact. This guide is intended to make (future) researchers aware of the complexity and responsibility involved in scientific research.

How

This guide has been written for students and lecturers, but is valuable for anyone involved in (bio) medical research. With practical tools, reflective questions and concrete examples, the guide helps students and researchers to view their research from different perspectives and make informed choices throughout the research process. In this way, it supports the development of research that is not only scientifically robust, but also fair, inclusive and environmentally sustainable.

What

The guidelines are currently (being) implemented across multiple programmes within the Faculty of Medical Sciences at UMC Utrecht, including both medical education and research programmes.

kcgh.nl/nl/publicaties/maatschappelijk-verantwoord-onderzoek-doen

#45

E-learnings Just and Sustainable Science and Laboratory Practices

Two interactive and engaging educational modules on responsible research practices

Authors: Florijn Dekkers, et al.

Organisations: Green Labs NL, CO2-assistent, University Medical Center Utrecht

Why

This initiative was launched to develop short, modular e learnings on sustainable laboratory research and responsible scientific practice. The interactive modules are designed to be easily integrated into existing courses and educational programmes, while introducing students and early career researchers to key themes in responsible research. Although tailored to learners encountering scientific research for the first time, the modules are relevant for anyone involved in scientific research or laboratory work.

How

Green Labs NL collaborated with the Planetary Health Impulse Team (PHIT) at UMC Utrecht to develop these e modules. Together with experts from a wide range of disciplines and professional fields, they combined scientific expertise, educational experience and practical insights to create accessible and relevant learning materials on responsible and sustainable research practices.

What

The E-learnings “Just and Sustainable Science Practices” and “Just and Sustainable Laboratory Research” are openly available on the KCGH platform and also implemented across Europe. On the KCGH platform, you can also find a version specifically tailored to the UK.

elearning.kcgh.nl

#46

Green Medicine: Research Based Education for Sustainable Healthcare

Learn how students research the links between climate, health and healthcare systems

Authors: Tim Stobernack, Hugo Touw, Maarten Manten, Niels Toussaint, Sifra Eigenraam

Organisations: Radboud University Medical Center, Radboud University

Why

Healthcare contributes substantially to climate change, yet sustainability is still rarely integrated into the education of future professionals. This interdisciplinary elective was created to address that gap. Students from medicine, dentistry, and biomedical sciences explore healthcare through the lens of planetary health, learning that everyday medical decisions—such as treatment choices—carry environmental consequences. The course responds to the need for professionals who can assess healthcare not only on clinical effectiveness, but also on environmental impact. Its aim is to broaden students' perspectives and embed sustainability into their academic thinking early on.

How

The course was developed as an interdisciplinary educational initiative. It originated during COVID 19, when online lectures enabled contributions from clinicians, researchers and policy experts. Since then, it has evolved iteratively, with students contributing to content and case development. Teaching combines lectures, excursions and inquiry based project work, covering topics from pandemic risk and climate psychology to avoidable healthcare. In small groups, students study real healthcare cases—such as the environmental impact of cardiovascular treatments—using literature, simplified impact calculations and stakeholder input to develop evidence informed recommendations.

What

The initiative produces student led research outputs such as presentations, one pagers, and inventories of medical disposables. These are shared with researchers and clinicians during a mini symposium at the end of each course edition, and were also used by the students in conversations with policymakers. The course has been offered multiple times and promotes sustainability awareness throughout students' further studies. While primarily aimed at medical, dentistry, and biomedical science students, the approach is transferable to other disciplines. Educators and healthcare professionals can engage through guest lectures or by providing real world healthcare cases for student projects.

https://www.ru.nl/en/research/research-news/green-medicine-enrichment-for-every-doctor

#47

Trusted Used Lab Equipment

Find lab equipment, buy with confidence

Authors: The QuestPair team
Organisations: QuestPair

Why

Second-hand laboratory equipment is often hard to find, compare, and trust. Available instruments are scattered across sellers worldwide, often poorly described and rarely standardised, making it hard for buyers to identify suitable options. Even when used equipment is available, its quality, condition, compatibility, and reliability can be difficult to assess. This creates uncertainty and delays in purchasing, and can prevent good equipment from being reused. QuestPair improves the findability and evaluation of second-hand lab equipment, helping buyers identify reliable options with greater confidence while supporting sustainable laboratory practices and a more circular research economy.

How

QuestPair is being built by a multidisciplinary team of scientists, data scientists, and software developers through iterative commercial development. We combine laboratory expertise with structured data workflows to collect, clean, enrich, and compare equipment information across brands, models, specifications, condition, and supplier stock. Working with resellers and buyers, we refine listing quality, clarify requirements, and verify suitability before purchase. This evidence-led, transaction-driven approach turns market complexity into practical buying support and creates a scalable route for laboratory equipment reuse.

What

QuestPair helps professional buyers and suppliers worldwide find, assess, and trade trusted used laboratory equipment. It is used by numerous companies and organisations in fields ranging from materials science to biotechnology, demonstrating demand for reliable second-hand instruments. Our customers include laboratories, research organisations, procurement teams, universities, start-ups, manufacturers, and equipment resellers. Explore questpair.com to discover available instruments, offer surplus equipment for resale, or tell us what your organisation is looking for. Together, we can extend instrument lifetimes, reduce waste, and create a more resource-efficient ecosystem for lab equipment.

questpair.com

youtube.com/watch?v=M9C8OafvbJE

#48

CLEAR-Path: Measuring the Environmental Impact of Healthcare

A practical and validated framework for sustainable healthcare pathways

Authors: Tim Stobernack, Hugo Touw, Simone Cornago, Wouter Hehenkamp, Niek Sperna Weiland, Floris Teunissen, Susanne Waaijers-van der Loop, Rosalie van Zelm, Laura Golsteijn, Anneke Kwee

Organisations: Radboud university medical center; Amsterdam University Medical Center; National Institute for Public Health and the Environment (RIVM); Radboud University; PRé Sustainability; Health Care Evaluation and Appropriate Care (ZE&GG)

Why

Healthcare contributes substantially to environmental pollution, yet reliable and comparable methods to assess the impact of healthcare pathways are lacking. Existing life cycle assessments (LCAs) often differ in scope, data quality, and indicators, making results difficult to compare or apply in practice. CLEAR-Path was initiated to develop a standardized and practical methodology for pathway-level LCA in healthcare. The project addresses the growing need for scientifically robust environmental data to support sustainable healthcare, appropriate care, and future policy and decision-making.

How

CLEAR-Path combines expertise from hospitals, environmental scientists, policymakers, and LCA specialists. The methodology is developed using modular life cycle inventory “building blocks” for common healthcare activities such as procedures, diagnostics, and hospital stays. The project includes stakeholder engagement, Delphi-based consensus building, uncertainty analysis, and validation against detailed process-based LCAs. Real-world case studies in surgery, dialysis, and gynaecology are used to test reproducibility and feasibility across healthcare settings.

What

The project recently received funding and started in May 2026. CLEAR-Path will deliver a standardized methodology, reusable inventory modules, practical templates, and guidance for pathway-level LCAs in healthcare. The target audience includes healthcare professionals, sustainability teams, policymakers, and researchers. By reducing methodological variability and data burden, the project aims to make environmental assessment more accessible and comparable across hospitals. Results and tools will be shared through publications, workshops, and collaborations with healthcare networks.

rug.nl/news/2025/11/ug-launches-first-pilot-for-lab-plastic-monostreams-recycling-in-the-netherlands?lang=en

#49

From Lab Plastic Waste to Recyclable Monostreams

Join us in scaling single-polymer lab plastic recycling across research institutions

Authors: Alexandra Matei, Nils Elzinga, Silke Bonsing-Vedelaar, Arjen Krikken, Andre Zandvoort, Ronald Visser, Paulien Uilenreef-Nauw

Organisations: University of Groningen, Faculty of Science and Engineering

Project partners: Amsterdam UMC, RIVM, PRé Sustainability, ZE&GG, Radboud University

Why

Laboratories generate large volumes of single-use plastic, contributing to a non-circular economy. In biological safety risk 1 labs, consumables made of different polymers are usually collected together, autoclaved and incinerated. Yet many items are single-polymer plastics, such as polystyrene and polypropylene, which can be recycled into valuable raw materials if kept separate. Once mixed and sterilised, however, they are difficult to separate. We developed a protocol for polymer-specific separation before autoclaving, addressing a practical gap: labs often support sustainability, but lack the time, clarity and central coordination to implement recycling workflows themselves.

How

The project was initiated by Green Labs, with contributions from the Green Office, Health, Safety and Environment (HSE), Facility Support, participating labs and the waste management company. The team mapped common consumables, suppliers and polymer types in an eligible biology lab, then defined safe preparation steps and clear in-scope and out-of-scope items with HSE. With this information, the working group developed a general written protocol to be used as a blueprint. The feasibility of the protocol was validated through a pilot across multiple labs. Each lab received a tailored kit with item-specific stickers, repurposed containers and lids, colour-coded bags and practical guidance.

What

Our team created and validated a practical workflow for separating lab plastics by polymer type before sterilisation and disposal. So far, over 100 kg of separated polystyrene and polypropylene monostreams have been collected across 21 lab rooms, including teaching practicals. Because these plastics were already autoclaved before pickup, the workflow does not require additional autoclave cycles or energy use. The pilot is now being extended faculty-wide, with dedicated containers for each stream provided by the waste management company. As the first initiative of its kind in the Netherlands, we aim to support wider adoption by sharing protocols, resources and lessons learned.

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#50

Introduction video for lab sustainability

Introducing new colleagues to sustainable lab practices with a short video

Authors: Jorik van Rijn, Lianne Suurenbroek, Tito Candelli, Anja Krippner-Heidenreich, Hannah Johnson, Marlinde van den Boogaard, Green Labs Maxima

Organisations: Princess Maxima Center for pediatric oncology

Why

Sustainability needs to become integrated in our daily lab work. We believe the best moment to introduce colleagues to lab sustainability would be when they start working in our institute. Therefore, our aim was to make an introduction video for lab sustainability.

How

The first step was to come up with topics that we wanted to include in the video. We had brainstorm sessions in our monthly Green Labs Maxima meetings. The focus of the video would be on lab related topics but we would also briefly mention data storage.

Topics that we decided to include, were:

- Waste streams
- Switching off equipment
- Freezers & fridges
- Water consumption
- Other good lab practices
- Experimental design
- Green IT / data storage

For these topics a script was made, discussed and then the actual filming of the items started. Afterwards, voice-overs were recorded and all content was edited to the final version!

What

Our lab sustainability introduction video is now available for all our (new) colleagues on an internal portal. It is also included in the checklist for new employees.

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#51

Making the lab greener with Daisy

Practical sustainability from ideas to action

Authors: Charitomeni Angeli, Alex Argyrou

Organisations: Chemical and Pharmaceutical Biology, Groningen Research Institute of Pharmacy

Why

After achieving several major sustainability improvements in our lab, we wanted to continue building awareness and encourage others to take action as well. We need to care for the planet, and scientists have an important responsibility in this effort. Even when our research contributes to greener solutions, laboratory work still produces large amounts of waste, energy consumption, and environmental impact. Through Daisy our aim is to inspire researchers to adopt more sustainable practices through simple everyday actions and to think critically about how we work in the lab. Sustainability should become as natural as wearing a lab coat in the laboratory!

How

We started an online newsletter Daisy, published every two weeks to share and promote sustainable laboratory practices within our department. The content is based on discussions with other scientists, published recommendations, and practices we learned from previous laboratories. Through the newsletter, we inform all department members, including master's students, about practical sustainability tips, announcements, and practices that need improvement or correction. We also share sustainability-related events and communicate new systems or workflows introduced in our different labs to encourage and support members in adopting the best possible practices.

What

Daisy is aimed at everyone in the department, from bachelor's students to postdocs, since we deeply believe that there is always room to learn and improve sustainable practices regardless of experience level. The collaboration with the technicians when needed is helping us to implement our new ideas into practical changes in the lab. So far, we have reduced plastic waste, energy consumption from laboratory equipment, increased the reuse of consumables, implemented a chemical registration and storage system to minimize unnecessary waste, and raised awareness about proper laboratory waste management.

#52

Taighde Éireann
Research Ireland

Sustainable Laboratory Certification Pilot Programme

Sharing experience of supporting researchers to obtain sustainability certification for laboratories

Authors: Research Ireland: Ruth Kelly, Aoife Lucid, Marion Boland, Peter Clifford, Reza Tavangar; Impact Laboratories: Jack O'Grady

Organisations: Research Ireland - Taighde Éireann

Why

Research Ireland initiated this Programme to:

- Enhance awareness and improve the uptake of green research practices;
- Evaluate mechanisms supporting researchers to implement green research practices;
- Ensure that the research it funds is conducted in a sustainable manner;
- Encourage impactful engagement and genuine improvements in sustainable research practices;
- Equip researchers with the resources and support needed to implement, embed, and maintain more
- sustainable ways of undertaking their research;
- Take a first step towards behavioural change and a cultural shift in research environments; and
- Empower researchers to take the leadership in adopting sustainable practices.

How

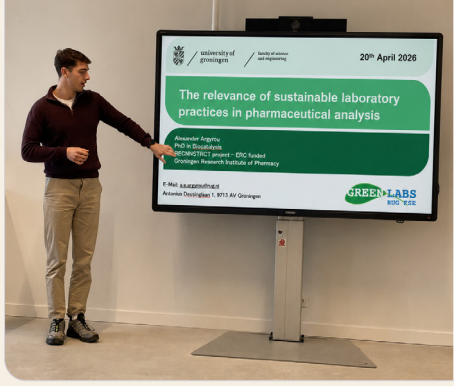
This Programme was delivered in two phases. Phase 1, involved researchers from across our portfolio. 82 research spaces joined and were provided with support from a structured process for implementing improvements for sustainable research practices through the MGL certification. For the first time the MGL process was expanded from wet labs only to include dry labs also. Following Phase 1, an Independent Evaluation was undertaken, including a survey of all participants, to inform next steps of MGL certification (MGL 2.0) and Research Ireland. Phase 2, aimed to expand certification beyond wet/dry STEM labs, and to implement the learnings from the Evaluation. Phase 2 is still on-going.

What

This Programme has provided insights into the merits of such an approach. It generated significant learnings for funders, certification providers, the research community, and the higher education institutions. Certification was shown to be a motivator for researchers to improve their practices, with many agreeing that it should be made mandatory for funding. Dedicated support and structured process were identified as key strengths of the Programme. Feedback included the need to provide a more tailored and fine-tuned approach for some research environments, more time and access to funding to implement necessary changes, as well as more support/ resources at institutional and national level.

media.researchireland.ie/wp-content/uploads/2025/07/Research-Ireland-Sustainable-Lab-Cert-Evaluation.pdf

#53



Sustainable Pharmacy Education: From Mindset to the teaching lab

A case study on implementing sustainability into an undergraduate Pharmacy course

Authors: Alexander Argyrou, Nienke Dongstra, Eduard Post
Organisations: University of Groningen, Groningen research institute of Pharmacy (GRIP)

Why

Each year, over 200 students begin their pharmacy journey at the University of Groningen, driven by a passion to improve patient health and solve society's biggest challenges. Yet there is a paradox at the heart of this education... The very practices used in educating generate significant material, energy, and water waste indirectly causing harm to healthy people. Until recently, this contradiction went unaddressed. Sustainability was absent from the curriculum, leaving students unequipped to reflect on the environmental footprint of their own work. This case study reviews how it was implemented into the curriculum.

How

We piloted a three-step sustainable education framework in a 1st year Pharmaceutical Analysis course.

1. Environmental Awareness: Students received an introductory lecture on the University's own sustainability assessment. Sustainability was also embedded directly into the lab manual.
2. Lab Environment: The LEAF (Laboratory Efficiency Assessment Framework) Bronze certification application was submitted, auditing chemical stocks and identifying and reducing wasteful lab components.
3. Experimental Design: With 200+ students running 4 experiments with 2 repeats each, waste adds up fast. We systematically reviewed all consumables and introduced a fixed rinsing volume.

What

This initiative is humble in its beginnings, but is designed to be scalable across the whole course.

- Every 1st year Pharmacy student now receives dedicated sustainability education, a first for the programme, with plans to extend this across courses in years 1–4.
- The teaching lab has been awarded LEAF Bronze certification, giving students a professionally recognised, sustainable environment to learn in.
- Rinsing waste has been reduced by an estimated 90% through fixed volume protocols, with further material savings achieved through streamlined consumable use.
  Finally a student survey is currently underway and will capture attitude shifts and engagement levels.

#54

GREEN CHEMISTRY FOR SUSTAINABILITY

The Global “Green Chemistry for Sustainability” Platform

Join to share resources and connect with the green chemistry and engineering community

Authors: Paul Anastas, Adelina Voutchkova, Lars Ratjen, Christiana Bridell, Julie Manley, Saskia van Bergen

Organisations: American Society Green Chemistry Institute (ACS GCI), Yale University – Center for Green Chemistry and Green Engineering, Beyond Benign

Why

We bring together the global green chemistry community - connecting people, knowledge, and resources to drive innovation and accelerate the commercialization of safer, more sustainable chemical solutions. chemistryforsustainability.org was developed to serve as a shared home for practitioners, researchers, entrepreneurs, and decision-makers who want to turn sustainable chemistry from promise into practice. By spotlighting real-world needs, surfacing trusted know-how, and catalyzing partnerships across sectors, the platform helps reduce duplication, speed scale-up, and move safer alternatives into markets—advancing healthier products, resilient supply chains, and a cleaner future.

How

Developed with key actors within the green chemistry community, chemistryforsustainability.org was built as a practical, user-centered platform—shaped by stakeholder input to make it easier to find people, programs, tools, and opportunities in one place. The site’s structure was designed to connect across silos (academia, industry, startups, NGOs, and government), turning scattered information into navigable pathways for action. By curating resources, elevating shared priorities, and enabling connection, it was developed to help ideas move faster from research to scale-up and real-world impact.

What

Chemistryforsustainability.org has established a shared hub for the green chemistry field with a growing user base of 2,000+, helping researchers, students, entrepreneurs, corporate R&D teams, investors, NGOs, and policymakers discover initiatives, resources, and collaborators. The platform makes it easier to navigate “”who’s doing what”” across sectors globally. Users can engage by searching for partners and tools, submitting resources and innovations, messaging collaborators across sectors, and finding events, job openings, and alternatives. Anyone can join for free, contribute expertise, and help amplify opportunities and success stories to strengthen the wider green chemistry community.

chemistryforsustainability.org **linkedin.com/company/chemistry-for-sustainability/posts/?feedView=all**

#55

Sustainability Statement

Mandatory Statement on the ecological sustainability of the research process as part of application

Authors: Ina MATT
Organisations: Austrian Science Fund (FWF)

Why

Applicants are asked to reflect on measures to reduce CO_2-emissions, waste, and the use of natural resources within their research process. An orientation guide is available to help applicants prepare their statements. The objective of the statement is to raise awareness and build up expertise on sustainable research practices. The measures proposed should not limit the generation of knowledge.

How

The statement is part of the FWF's sustainability strategy concerning the sustainable implementation of research projects. Following a review of best practices from other RFOs, input from various stakeholders and experts, the FWF implemented the statement in December 2025.

What

This initiative drew on the experience of the German Research Foundation (DFG) and its initiative to reflect on ecological sustainability aspects in the planning and implementation of research projects, which was implemented in March 2024. Following a one-year pilot phase, the FWFs Sustainability Statement will be evaluated.

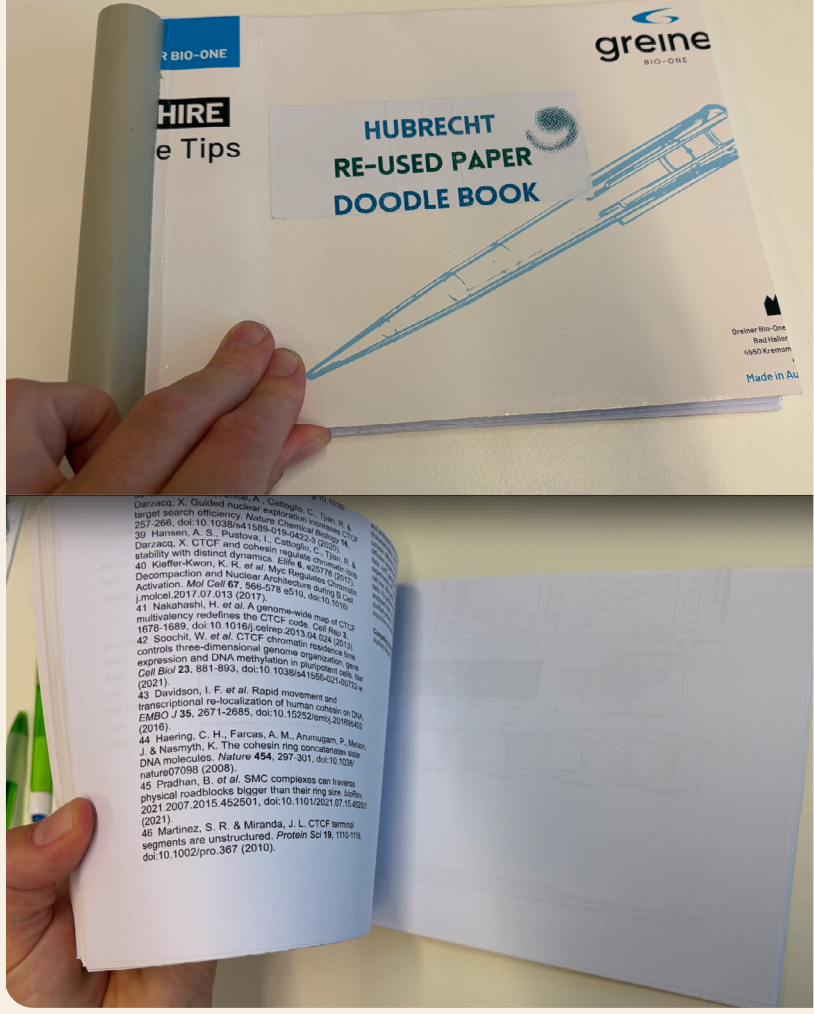
fwf.ac.at/en/about-us/what-we-do/sustainability/

#56

Notebook of recycled paper

Fun way to reuse paper waste

Authors: Hannah van de Kerkhof
Organisations: Hubrecht Institute



Why

We are all aware that printing less paper is better. And however we do much more digital these days, we still need to print forms and articles from time to time. We all dispose these in the paper bins for recycling, but when they only contain printing on one side, the back can still be used to write down notes.

How

We collected paper from the paper waste that only had prints on one side. When we had collected enough (about 9 months later) we cut all the papers in half, resulting in A5. Then we also cut A5 from some paper packaging material to become the cover of our booklets. Our technical department found some old PCV tube that with a long cut could be clung around the papers and the cover. When full, the PVC tube can be removed and new papers can be inserted.

What

We have made about 30 so far, it's not a lot but it's a fun way to also raise awareness around printing double-sided and using less paper. We used the books as thank you gifts for speakers at one of our sustainability events, so there it also prevented buying anything new!

linkedin.com/in/hannahvandekerkhof

#57

Accelerating Ethical and Reliable Science Through Non-Animal Research

Building dialogue, awareness and adoption of innovative non-animal NAMs in research

Authors: Emeline Gougeon, Lilas Courtot, Anaïs Macabet
Organisations: Comité scientifique Pro Anima / Pro Anima scientific Committee

Why

The Pro Anima Scientific Committee was created to accelerate the transition toward more ethical, human-relevant and sustainable biomedical research and chemical risk assessment. Despite major scientific advances, animal experimentation remains widely used, although it is costly, time-consuming and often poorly predictive of human biology and disease. At the intersection of science, ethics and One Health, our initiative addresses the urgent need to improve awareness, accessibility and adoption of non-animal New Approach Methodologies (NAMs). We aim to bridge communities, encourage dialogue and support the shift toward innovative non-animal research practices.

How

Since 1989, Pro Anima Committee has developed a multidisciplinary scientific platform connecting researchers, industry representatives, regulators, institutions and the public around non-animal science. Our actions include a quarterly scientific review featuring international experts, weekly monitoring of NAM-related scientific and regulatory developments, public live talks encouraging open dialogue, and training initiatives supporting stakeholders in the transition toward innovative methodologies. By combining scientific communication, education and networking, we help create a collaborative ecosystem fostering sustainable and human-relevant research.

What

Pro Anima has become a pioneering and recognized scientific hub for non-animal research in France. Our initiative reaches academic and private researchers, regulatory stakeholders, media and the broader public. We actively contribute to raising awareness and facilitating discussions on NAM adoption through accessible scientific information and community engagement. Our NAM-focused LinkedIn network gathers more than 480 members. Scientific stakeholders can contribute by joining our growing NAM community and collaborating through events and knowledge sharing, while citizens can support the transition toward sustainable science through advocacy, visibility and donations.

linkedin.com/in/emeline-gougeon-b9229aa3
linkedin.com/in/lilas-courtot-48902386

proanima.fr/en
linkedin.com/company/comit%C3%A9-scientifique-pro-anima

#58

Science In Transition: towards a futureproof research & science system

Explore, connect, learn from and contribute to the multi-stakeholder programme Science in Transition

Authors: Stephanie Holst, Jelte Verberne, Mirko Lukacs, Anne Marie de Beaufort
Organisations: Dutch Climate Research Initiative (KIN) - Dutch Research Council (NWO)

Why

The climate crisis demands a fundamental shift in how science is conducted; faster research and other ways of researching. Traditional approaches fall short when addressing complex transition challenges. A scientific practice is needed that is sustainable, transdisciplinary, inclusive of diverse knowledge, and rooted in transition thinking. This systemic shift is a shared responsibility of institutions, researchers, funders, governments and societal partners. This programme promotes collaboration on transformative, action oriented research and studying new forms of partnerships, funding and recognition. By connecting dots, we reduce fragmentation and increase impact.

How

Science in Transition supports project funding and joint national projects.

Calls: 1) Sustainable Science Fund - sustainable research practices, sharing methods and knowledge, increase visibility. 2) Transformative Practices and Processes for Climate Transitions -methods linking scientific and practical climate knowledge.

National projects: systemic transition to more sustainable education, research and science: including a transition analysis to identify the accelerators and barriers and the establishment of a Coordination Structure (overarching, unifying force that brings initiatives and stakeholders together, sparks new collaboration and embeds sustainability in policy and practice)”

What

The programme targets scientist to national policy makers and encourages their active transdisciplinary collaboration.

The project proposals could also be submitted by/ with societal organisations. There will be several interactions between the applicants to encourage exchange and visibility. Keep track of the website!

At national level, the process of co-creation in establishing the Terms-of-Reference for the transition analysis and coordination structure have brought together a diverse community and organisations committed to sustainability. The results of the transition-analysis will be made available early summer on the KIN and NWO websites. “our growing NAM community and collaborating through events and knowledge sharing, while citizens can support the transition toward sustainable science through advocacy, visibility and donations.

hetkin.nl/en/programmes/science-in-transition **vedaresearch.nl** **duurzaamheid@nwo.nl**

#59

A Greener Way to Share Your Thesis

Bringing together digital accessibility and the tradition of giving something physical

Authors: Hannah van de Kerkhof
Organisations: Hubrecht Institute

Why

Completing a PhD is a major achievement, and naturally you want to share your thesis with many people. Sharing it digitally can save a significant amount of paper and also makes the thesis easier to access and find later on. At the same time, it is still nice to have something physical to hand out to friends, colleagues, and family.

How

Printing cards with a QR code linking to your digital thesis is a simple and more sustainable way to share your work with others. The card can feature the same cover design as your thesis and can also include information about your defence, celebration, or contact details. You could also add a note that a printed version of the thesis is available on request for those who would like a physical copy.

What

We have several PhD students, including Joana (the one shown in the picture), who came up with this idea and used cards to share their thesis. They really enjoyed designing the cards and appreciated being able to share something festive and tangible while still saving paper.

Seeds
for Change