

Green Labs NL brings funders together to act for sustainability

Results of the workshop
'Sparking green movement
in the funding landscape'



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Abstract

While scientific research is central to advancing knowledge, including on how to tackle climate change, it is currently unsustainable. Research laboratories, particularly, are characterised by their huge environmental footprint, consuming large amounts of energy and generating substantial waste. The workshop 'Sparking green movement in the funding landscape', held in September 2023, convened grassroots initiatives, funders and planetary health experts to discuss how funding organizations can support a just transition toward sustainable research practices in the biomedical sector. Here, we present summaries of the five workshop presentations that highlight pioneering actions by funders to develop frameworks, agendas, and calls tailored to supporting green science practices. We also provide a list with relevant resources and reading materials (Appendix 1). Additionally, we summarize the main challenges and facilitators identified during event discussions. Facilitators include developing a shared sustainability vision for the biomedical sector and enhancing national and international collaboration. Participants proposed that funders should harmonize measures and support existing local and national green lab initiatives. Key challenges include knowledge gaps, unclear responsibilities, lack of organizational capacity, slow development of tailored research agendas, and lack of best practices. Despite these challenges, the workshop prompted funders to take concrete action, as evidenced by the post-event survey, which revealed a commitment to dedicating more time to the issue and implementing changes to policies and research agendas. Overall, these insights underscore the importance of further multi-actor gatherings and collective action to drive the urgently needed transition towards sustainable research practices.

Event overview and survey

The ‘Sparking green movement in the funding landscape’ workshop, organized by the Green Labs Netherlands Foundation in September 2023, was the first international event to bring together organizations from the Netherlands, the UK, and Germany to explore how funders can support a equitable transition toward sustainable scientific practices¹. The goals of this event were to (1) increase knowledge on the topic and collect relevant resources (See **Appendix 1**), (2) identify facilitators and challenges for fostering sustainable science practices by funding bodies, and (3) identify next steps for moving forward. Speakers from UKRI/MRC and Wellcome Trust were invited to display their pioneering work and share best practices in the UK. Additionally, speakers from Green Labs NL, the KNAW, and the UMC Utrecht covered topics planetary health, and climate and social justice, respectively. Presentations were followed by breakout sessions to identify facilitators and challenges for further movement. Six months after the event, a post-event survey was performed to acquire additional information and define event impacts (see section ‘Event impact’).

Participating organisations

Representatives from **Knowledge Centre Global Health (KCGH)**, **Dutch Research Council (NWO)**, **ZonMW**, **Oncode Institute**, **Dutch Climate Research Initiative (NWO-KIN)**, **Dutch Cancer Society (KWF)**, **Health~Holland**, **The Royal Netherlands Academy of Arts and Sciences (KNAW)**, **Ministry of Education Culture and Science (OCW)**, **EMBO**, **Wellcome Trust** and **UK Research and Innovation (UKRI)** were present, amongst others.

Figure 1



Pictures taken during the event ‘Sparking green movement in the funding landscape’.

Presentation abstracts

Introduction to Green labs NL and the event program

Hannah Johnson & Dr. Florijn Dekkers

Science plays a central role in advancing knowledge, including on climate-related topics. However, research practices – especially lab-based – have a significant environmental footprint due to high resource and energy demands, waste production, and travel-related emissions²⁻⁵. Despite this, the field continues to grow at a rate of 5% annually⁶. This underscores the need to foster knowledge, community, and frameworks for establishing a sustainable future for research practices, aligning with the mission of Green Labs NL. Green Labs NL was founded in 2021 to connect and support the growing number of local grassroots initiatives for sustainable transition in health research. The foundation is run by a group of highly motivated people who drive forward our mission: To accelerate the transition towards sustainable laboratory environment and scientific landscape in the Netherlands and beyond. Our activities include community and resource building, organizing events, giving talks and workshops and running national projects that focus on lab accreditation, waste and education. Recognizing that realizing a green transition necessitates systemic change involving all stakeholders, we have prioritized engaging funding organizations in the dialogue regarding their roles and responsibilities. This is the motivation behind our event, “Sparking green movement in the funding landscape,” which explores how funding organizations can facilitate the transition towards sustainable health research.

Planetary health: A new field of research, education, and practice

Prof. Dr. Johan Mackenbach

Planetary Health is a new field of research, education, and practice that focuses on the relationship between global environmental changes and human health. The global environmental changes addressed include not only climate change but also loss of biodiversity, air, water, and soil pollution, and other large-scale changes in the natural environment caused by human activities that can affect human health. According to scientific literature and the opinions of many experts, if global environmental changes continue unabated, they could have disastrous consequences for human health worldwide. Countermeasures are therefore indicated, both in the form of mitigation (counteracting global environmental changes) and in the form of adaptation (for example, to limit the health consequences). The health sector has an important responsibility in this regard, firstly because of its own contribution to global environmental changes, but also because of the contribution the health sector can make to combating the negative health consequences of these changes. This also entails a substantial research agenda, which has been outlined in a recent report by the KNAW⁷ in a large number of research themes and specific knowledge gaps.

MRC Environmental Sustainability Programme: Supporting research & innovation to become environmentally sustainable.

Dr. Susan Simon

The Medical Research Council (MRC) is a part of UK Research & Innovation (UKRI), one of the largest funding organisations within the United Kingdom. UKRI has published its Environmental Sustainability Strategy in 2020 with a target to arrive at a Net Zero position by 2040 – ten years prior to the government mandate. MRC established an environmental sustainability programme that is seeking to address all relevant aspects in the organisation – our research facilities, but also our supply chain, laboratory operations and wider engagement with the research community. In 2022 we funded research into solutions for both medical research and medical practice that could help the community to improve their methods and reduce the impact on the environment⁸, which has been quite successful with three of the most impressive studies being presented in April (29.04.2024) in London at a conference with the National Health Service (NHS) and National Institute of Health & Care Research (NIHR). Furthermore, we have undertaken a wide-ranging review⁹ of the wider medical research community to understand how we as a funder of this research can support our community in the endeavour to undertake research with minimal impact on the environment, which is so important to the health of the wider population. This review has identified clear actions for the organisation to take to do just that and also align with our responsibility as a funder under the Concordat for the Environmental Sustainability of Research and Innovation Practice¹⁰, which the UK research and innovation sector supported on.

Wellcome Trust: Towards environmentally sustainable health research

Talia Caplan and Anne Taylor

Talia Caplan and Anne Taylor presented the work Wellcome is doing to support the drive towards environmentally sustainable health research. The talk covered three main areas: Scoping of Tools, Funding Opportunities, and Terms and Conditions. Wellcome commissioned a report by RAND Europe to identify initiatives across the research sector that aim to measure and/or reduce the environmental impact of health research. 146 initiatives were identified¹¹. Several gaps and challenges surfaced through this work. For example, strong networks in high-income countries exist to support sustainable research in wet labs. However, no similar networks were identified for computational research, clinical settings or qualitative research. And no relevant networks were found in low- or middle-income settings. It was noted that many sustainability considerations were found to be in alignment with other priority areas for Wellcome, such as reproducibility, open science and support for an inclusive research culture. Meaning, sustainability should increasingly be considered a core part of conducting high-quality, ethical research. Off the back of this work, Wellcome is exploring how best to catalyse the advancements in sustainable research practices that the sector needs most. Funding will address some of the key gaps identified within our report. Development of a comprehensive environmental sustainability policy for grant holders¹² was shared. Considerations around the level at which to place these conditions (individual versus institutional), what is reasonable to ask of applicants and how the impact on costs could be managed were discussed. An emphasis was put on the need to start somewhere and begin to challenge the sector to do more. Wellcome anticipates this policy will evolve as the field and tools develop.

Climate justice within planetary health and sustainability research funding

Dr. Joyce Browne

Climate justice is a foundational principle within Planetary Health. Climate justice addresses the causes and consequences of climate change and biodiversity loss, and ensures our actions and use of resources today do not jeopardize the future generation's ability to be healthy. It should therefore guide the policy process and decisions – whether this is about adaptation, mitigation or grant making. Recently, the European Environment Agency (EEA)¹³ provided guidance on how to do this practically, and recommended to ingrain considerations for three dimensions of justice: distributional justice (i.e. how we divide costs and benefits), procedural justice (i.e. fairness within the procedures, decision-making and institutions, recognition of the underlying systemic injustices). In addition, for researchers and grant makers a specific consideration for epistemic justice (i.e. fair practices in the production, use and circulation of knowledge) is important. Key questions that should be asked and answered are therefore: (1) How can we organize knowledge production, utilization, and circulation to ensure this is effective, just, participatory and transformative? (2) How can we ensure future generation, low- and middle income countries' populations, people in the Dutch Caribbean, non-human species, ecosystems and nature have a meaningful voice in decision making about research and its translation into policy and practice? (3) How can we create the right incentives and competencies among researchers for transdisciplinary collaborations to ensure we reduce the 'know-do' gap and accelerate implementation of evidence-based policy and practice?

Facilitators and challenges

A wide range of participant comments were collected during the breakout sessions. These comments were categorized to identify key facilitators and challenges for further advancing the movement of funders supporting green science practices.

Facilitators

(Inter)national collaboration

Funders operate within large networks that offer valuable opportunities to establish collaborations for shared insights and resources. They are in a pole position to initiate agreements between different research stakeholders to enhance the impact and reach of individual initiatives. Funders should learn from each other to avoid the inefficiency of every organization or country inventing its own solutions. Furthermore, shifting the focus from competition to collaboration in grant acquisition fosters a more supportive research environment.

Harmonized action

There is a need for development of a shared (inter)national vision and agenda on sustainable lab research to ensure alignment of actions and cooperation for all relevant actors, including funders, institutions and ministries. Funders are aware of the authority they possess to set expectations for funding recipients; establishing broad agreements enables funders to collectively request similar standards. Central coordination and support, possibly funded by the European Commission, is needed. However, these longer-term developments should not prevent individual organizations from pursuing opportunities that can be addressed directly.

Support of bottom-up initiatives

There is an ever-growing number of local (e.g., laboratory green teams), national (e.g., Green Labs NL, LEAN, Green Labs Austria, and Labo's 1.5), and international (e.g., SELs) green lab initiatives. These initiatives are critical for developing and validating green lab tools and can form an important bridge between the work floor and funders or other organizations. While they have some initial energy and are eager to gain expertise and contribute to progress, most of their efforts are based on volunteer work. Funders should therefore find ways to support these bottom-up initiatives so that they can thrive and grow.

Existing goals, framework, and policies

There are already frameworks and policies in place for guiding and supporting the movement (also see Appendix 1). Examples include the Dutch Climate Research Initiative (NWO-KIN), which aims to accelerate the climate transitions, and the Ministry of Education Culture and Science (OCW) that has a policy for 'greening of science' and is engaged in international conversations with Science Europe to put this topic on the agenda. Also, the KNAW advisory report is also a valuable tool for further developing research agendas.

Learning by doing

Given the urgency of the topic, we should commence action today. As part of a pioneering movement, we should adopt an iterative and reflective approach, enabling us to learn from mistakes. Drawing from examples within the field, such as those from the UK, we can replicate best practices or gain insights from other industries regarding effective decision-making processes.

Advocacy

Leaders in the science field, such as hospitals, universities, and research organizations, should express that they consider this topic a priority.

Passionate community

People who work in the community driving forward sustainability usually display a profound drive, passion, and collaborative spirit.

Challenges

Knowledge gaps

Hesitance to act is fuelled by the unknown. Questions relate to how sustainability can be measured, how the right research should be prioritized, how to incentivize scientists to do the right thing without adding too much extra burden in grant applications, how to follow up and measure implementation of criteria in applications, how to harmonize action within and across countries, and how to coordinate most effectively.

Lack of agenda and calls

There is currently a limited number of agendas and calls available that aim to make science more sustainable. Classical processes for developing agendas and calls might be too slow in urgent crises, and faster funding should be explored. NWO-KIN is exploring and searching for such innovative ways of funding.

Capacity

To advance within organizations and the field, there is a need for sufficient funds and dedicated time for people. This requires managerial support. People state they do not have sufficient time to keep track of developments in the field and set up collaborations to avoid fragmentation of actions.

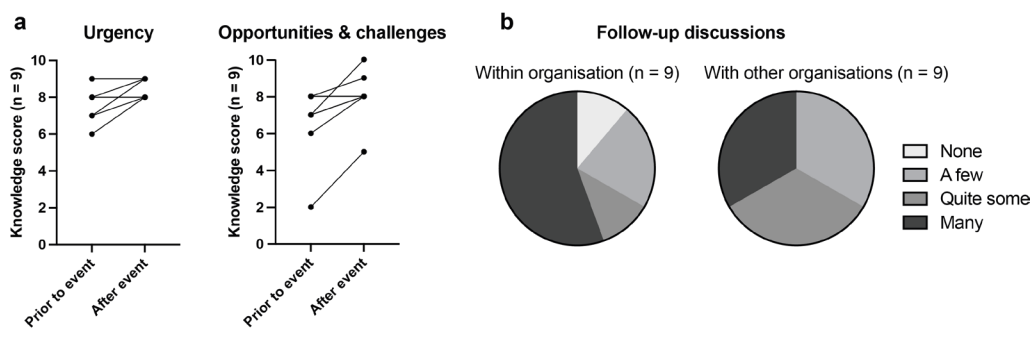
Undefined Responsibilities

Research impacts the environment, and addressing these impacts is the responsibility of actors across the sector. It is currently unclear where responsibilities lie for the ministry, funders, research institutions, or other organizations. The same challenge exists within organizations. Taking sustainability measures within organizations is often still voluntary, and policy goals are often not mandatory.

Event Impact

As defined by the event survey held 6 months after the event, while many attendees possessed a solid background knowledge, the event deepened their understanding of both the necessity of sustainable health science as well as the opportunities and challenges for funders to support this transition (Fig. 2a). Furthermore, attending the event stimulated quite some to many follow-up discussions within or between organizations for most responders, while the minority of responders indicated none to a few follow up conversations (Fig. 2b). In addition, most responders agreed or strongly agreed that attending the event led to networking with other organizations. Importantly, attending the event has stimulated concrete implementation of actions, including the addition of the topic to meeting agendas (5/9 responders), extra dedicated hours to the topic (4/9 responders), and a change of policy, implementation into a research agenda, development of tailored calls (1/9 responders), development of a vision document (1/9 responders), or development of a culture change program (1/9 responders).

Figure 2



The event increased knowledge of participants and led to follow-up discussions

(a) Graphs showing knowledge score (1 – 10) increase of both the necessity of just and sustainable science practices (left panel) as well as the opportunities and challenges for funders to support this transition (right panel). Each dot represents a post-event survey-responder (n = 9). (b) Pie charts showing the extent of follow-up discussion within or with other organisations. Data were collected through an event survey held 6 months after the event.

Conclusion & outlook

By bringing together multiple organizations from the Netherlands, the UK, and Germany, Green Labs NL was able to lay the foundations for more international collaboration and provided important insights for advancing funders' support of sustainable research practices. The presentation abstracts of UK funders highlighted pioneering initiatives to promote green science. However, achieving the required systemic change is currently challenged by existing knowledge gaps, unclear stakeholder responsibilities, and the typical slow development of tailored research agendas. A key necessity discussed at the workshop is developing a shared sustainability vision. It was also brought forward to further stimulate collaboration between all stakeholders, harmonizing actions, and to clearly define the responsibilities of actors. The importance of grassroot initiatives for initiating change was highlighted and that funders and other stakeholders should support them. The event not only provided relevant knowledge and resources (Fig. 2a and Appendix 1), but also prompted funders to undertake concrete actions. Together, these insights underscore the importance of bringing together grassroots initiatives, funders, governmental policymakers, and research institutions, to work for the needed transition towards equitable and sustainable research practices.

Sustainability considerations for workshop organisation

The event was held at the Social Impact Factory, located near the Utrecht Central Station in the Netherlands to facilitate travel via public transport. The catering predominantly featured plant-based options, and name badges were sourced from a collaborating organization. Moreover, gifts for speakers and moderators included seed bombs and tree plantings. The post-event survey indicated that all survey-responders reached the event either by bike or by train, indicating low environmental impact of traveling.

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Data accessibility statement

Six months after the event, a post-event survey was performed to define event impacts. Data were collected anonymously and processed using GraphPad Prism. This project contains underlying survey data. Data access may be obtained by submitting a request to the corresponding author of this paper.

Ethical approval statement

This study adhered to the ethical guidelines outlined by the University Medical Center Utrecht for research involving human participants. Participation was voluntary, and by participating in the survey, respondents provided implied informed consent for the use of data. All data were collected anonymously to protect the privacy of participants. Since the data were fully anonymized and no personally identifiable information was collected, the General Data Protection Regulation (GDPR) does not apply to this study, and no Institutional Review Board (IRB) approval was required.

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 13. [Delivering justice in sustainability transitions](#). European Environment Agency
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Appendix 1. Relevant links and reading materials

KNAW

- Report on [Planetary health: an emerging field to be developed](#).

Wellcome Trust

- Report on the [current state of initiative aimed at reducing the environmental impact of health research](#). *146 tools and initiatives were identified, many of which are being driven by the voluntary efforts of concerned researchers.*
- Wellcome's [Environmental sustainability policy for grantees](#).
- [Concordat for the Environmental Sustainability of Research and Innovation Practice](#). *UK research and innovation sector have co-developed this voluntary concordat, which represents a shared ambition for the UK to deliver cutting-edge research in a more environmentally sustainable way.*
- [Lancet Countdown](#). *Tracking the connections between public health and climate change.*

MRC/UKRI

- [UKRI sustainability Strategy](#).
- MRC funding call - [Environmental sustainability in life sciences and medical practice](#).
- [UKRI position statement on carbon offsetting](#).
- MRC Landscape Review. [Transitioning to environmentally sustainable life Science – challenges and opportunities](#).
- Conference on [research outputs](#) on environmental sustainability.

Health~Holland

- [Mission Document Health and Care](#).

Marie Skłodowska-Curie Actions

- [Green Charter](#) - a code of good practice for individuals and institutions who are in receipt of MSCA funding.

The Deutsche Forschungsgemeinschaft (DFG, German Research Foundation)

- Press release, June 30, 2023 - "[DFG anchors ecological sustainability ideas in funding activities](#)".

The Academy of Medical Science

- Academy FORUM workshop executive summary - [Enabling greener research](#). Co-hosts; *Medical Research Council (MRC)*, and *National Institute of Health and Care Research (NIHR)*.

EMBO

- Summary multi-stakeholder workshop "[Funders' role in promoting environmentally sustainable lab research](#)" May 2024.

Royal Society of Chemistry

- Funding call for sustainable science initiatives with the [aim to accelerate the chemical sciences community's journey to environmentally sustainable research and innovation](#).

Climate justice publications and articles

- [Unequal distribution of cause and effects of climate crisis: a global matter of equity and justice \(NtvG\)](#)
- [Rechtvaardigheid in klimaatbeleid. Over de verdeling van klimaatkosten \(WRR\)](#).
- [Klimaatrechtvaardigheid als basis: 'Je moet het licht laten schijnen op de hele keten.'](#)



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