

Million Advocates for Sustainable Science
A Joint Initiative of My Green Lab and I2SL

May 2022

To U.S. federal funding agencies and U.S. research sponsors,

While science provides incredible benefits to people and society, the ways in which scientific research is conducted results in an immense global carbon footprint that contributes to the climate crisis and other environmental harm. [A recent study](#) (2021) found that the global biotechnology and pharmaceutical industry alone has a significant carbon footprint, more than the semiconductor industry and equal to nearly half the annual carbon output of the United Kingdom. Similarly, a [2019 report](#) found that the climate footprint of healthcare is two gigatons of carbon dioxide equivalent, which is 4.4% of global emissions. Furthermore, lab buildings consume 5-10 times more energy than office buildings of a similar size. There is immense opportunity, and urgent need, to change the way science is done on a global scale to reduce negative environmental impacts.

To drive wide-spread, systemic change to minimize the environmental footprint of scientific research, research sponsors (funders) must begin to set expectations for efficiency, resiliency, and sustainability *in the way scientific research is conducted*. Such expectations must be embedded within the research funding system in order to motivate more efficient use of resources (e.g., energy, water, equipment, chemicals, materials, lab space), create demand for more efficient and sustainable scientific products, and promote upgrades of existing laboratory buildings to be more energy efficient and less carbon intensive. The expectations will reduce the environmental impact of research. Moreover, these expectations will also enable funding of additional research projects because greater efficiency with sponsors' funding on a large scale will allow the support of more grants within the same budget. Signatories of this letter request action from research sponsors (including government, industry, non-profit, and others) to establish expectations for efficiency, resiliency, and sustainability within scientific research operations and facilities. Research sponsors should implement these changes in a way that avoids adding significant administrative burden to the research funding process.

The National Institutes of Health (NIH) is the largest funder of health research in the world, with a 2022 budget of \$52 billion, but there are also many other federal entities including the Department of Defense and the National Science Foundation that contribute significantly to the ability of scientists to do their critical research. In addition to what is stated above, it is clear that incentives are also missing from the U.S. federal research grant

funding process to motivate efficient, resilient, and sustainable actions to reduce the immense carbon footprint of the U.S. research enterprise. Furthermore, research institutions such as universities are not rewarded for being efficient with overhead costs (e.g., utility bills, waste disposal, and research space utilization) by the federal overhead rate calculation (i.e., Facilities and Administrative Costs or Indirect Cost Recovery), and in fact under the current system, *will receive less financial support from the federal government for overhead costs if they are more efficient*. As a result, while some scientists and institutions strive to be more efficient and sustainable, hurdles exist to realize systemic change when the U.S. federal research funding system disincentivizes efficiency through the overhead rate calculation process.

There have been several recent commitments made to connect efficient, sustainable science with the funding of research:

- United Kingdom Research and Innovation (UKRI) with a [2020-2021 research spend of £1.4 billion](#) published the [UKRI Environmental Sustainability Strategy](#) in 2020, committing to “embedding environmental sustainability across all...investment decisions by 2025.”
- The [UN Race to Zero](#) set a goal that 95% of labs in the pharmaceutical and MedTech sectors achieve My Green Lab Certification at the highest level by 2030.
- The U.S. Department of Health and Human Services, which encompasses the National Institutes of Health ([2022 budget of \\$52 billion](#)), put forth a Climate Action Plan for the first time in October 2021, with [Priority Action #3](#) being to “Develop Climate Resilient Grant Policies at HHS”
- The charitable foundation [Wellcome Trust](#) funds scientific research globally, backed by an investment portfolio of £38 billion, and in October 2021 hired their first [Climate and Health Director](#) to align with their new strategy which centers climate change, mental health, and infectious disease as major global health challenges.
- [Science Foundation Ireland 2025 Shaping Our Future](#) has an area of focus titled “Cohesive Ecosystem” that aims to “maximise the benefits of investment in research nationally” including an action to “support increased inter-institutional and national sharing of research infrastructure across academia and enterprise to increase the utilisation and efficiency of the funded research infrastructure.”

It is critical that the rest of the world’s scientific research funding and advocacy organizations follow suit rapidly, and that the above efforts deliver on their goals. We, the undersigned, call on research sponsors to directly incentivize research sustainability efforts and programs to ensure sustainability in science is the norm, not the exception.

Scientists, research institutions, and other research sustainability advocates can take action now and send a strong signal to research sponsors by implementing research sustainability initiatives into ongoing research projects and by including description of these types of efforts voluntarily into all grant proposals. Examples include:

- Using and advocating for shared research equipment
- Purchasing sustainable lab supplies, reagents, and equipment, including preferentially choosing energy and water efficient equipment
- Applying green chemistry principles across laboratory environments, including reducing or eliminating the generation of hazardous waste
- Pursuing My Green Lab Certification or another Green Labs Program
- Participating in the International Laboratory Freezer Challenge
- Being efficient with laboratory space utilization and upgrading existing lab space to be energy efficient by leveraging tools such as the [Smart Labs Toolkit](#) and [Laboratory Benchmarking Tool](#)
- Discussing research sustainability within mandated ethics courses for graduate students

Further ideas of how scientists can take action are on the International Institute for Sustainable Laboratories [Bringing Efficiency to Research Grants](#) website.

While these voluntary actions are critical to begin the process of transforming the research enterprise and building a culture of sustainability in science, ultimately, widespread systemic and permanent transformation of the scientific sector requires incentives and requirements by major research sponsors.

U.S.-based scientists, researchers, and other professionals signing onto this letter request action by U.S. federal research sponsors to set expectations for efficiency, sustainability, and resiliency within extramural research operations as suggested in the 2021 [Department of Health and Human Services Climate Action Plan](#) Priority Action #3.

We, the undersigned, call upon U.S. federal funding agencies and U.S. research sponsors to:

- Request information from researchers and institutions about research or lab sustainability initiatives in calls for proposals and grant applications
- Reward researchers and institutions that pursue sustainability or “green” initiatives, with a particular focus on independently assessed programs such as My Green Lab Certification

- Incentivize green labs programs, by asking about the dedicated staff that are focused on laboratory sustainability at academic institutions
- Reward institutions that encourage shared research equipment, efficient use of laboratory space, renovate existing lab buildings to be energy efficient to reduce carbon emissions, and reduce scope III emissions through procurement contracts
- Set a target date by which institutions are required to supply information about their robust laboratory sustainability programs in funding applications

Science can and should lead the world on developing solutions to climate change and other critical environmental issues, but we must simultaneously address our own footprint. Through a sustained effort of millions of scientists and advocates around the world, and the support of important research sponsors, a sustainable transformation of the scientific enterprise is at hand. Please join us in catalyzing these changes by signing in support of this letter.

Sincerely,

The Undersigned
Million Advocates for Sustainable Science