

How you can make physics sustainable



Making physics environmentally sustainable requires changes at all levels — individual, institutional and systemic — and all physicists have the chance to act, regardless of career stage. What needs to happen, and how can you get involved?

Physics is a resource-intensive endeavour. Experiments, computation and conferences all require vast amounts of energy to sustain. In light of the climate emergency, the physics community can no longer continue business as usual. Apart from the moral imperative to act, as international policies and national laws start to push towards greener societies, physics too will have to become more climate friendly. Change is needed at all levels: from individual behaviour to an overhaul of the research landscape. How can this transformation happen in a way that's guided by the needs of the community?

Systemic change is possible, and vital. For example, writing in a [Comment](#) in this issue, Tamara Ben-Ari from Labos Ipoint5 in France describes how research reveals a correlation between academic career success and travel-related CO₂ emissions. This finding supports what many physicists attest to: lowering their carbon footprint by traveling less is costly in terms of access to collaborations and opportunities. Support for a more sustainable approach to travel requires leadership at many levels: hiring and prize committees need to find new ways to assess candidates, conferences need to find ways to make online and hybrid options work well, and so on. And as the system changes, further research from groups like Labos Ipoint5 can reveal what measures are working best.

But research into carbon accounting is only effective if policy decisions are made to reflect the results. Earlier this year we spoke to Denise Völker¹, the first Head of Sustainability at DESY, about her work to integrate climate-conscious decision making into the running of the facility. Big facilities can make changes with large impact: DESY, which uses about as much electricity each year as a small city, switched to renewables in 2023.

Another action at DESY has been to produce a sustainability assessment, as many other institutions have done. Doing so can be valuable, as the report can clarify what will be most effective in that particular context. However, as Astrid Eichhorn, chair of the ALLEA Working Group on Climate Sustainability in the Academic System, points

out in a [World View](#) in this issue, it's also possible — and necessary — to act already, without waiting for a detailed carbon accounting. Some actions are obvious low hanging fruit; others can be guided by data from institutions with similar profiles. And any delay sends the message that the climate emergency isn't so urgent after all.

Maybe you're reading this and are not in a position to change the policy of your research institution. What can you do? First, don't discount your ability to put pressure on those with more power, especially if you act together with others. As Völker told us, sustainability became a focus at DESY partly because of the pressure from young scientists there. You can also use your social status as a scientist to advocate for change in wider society, whether it's by educating those around you, lobbying your politicians, or taking direct nonviolent action. In a [World View](#) in this issue, Bernadette Rodgers, who left her job as Head of Science Operations at the Gemini South Observatory in 2014 to do more about the climate crisis, gives practical advice and encouragement along these lines.

At *Nature Reviews Physics*, we understand that the climate crisis demands urgent action. We are committed to doing what we can to reduce our own environmental impact, for instance by travelling by train rather than plane to conferences wherever possible². Our parent company, Springer Nature, is committed to net zero carbon emissions by 2040. As a journal, we are also committed to making our platform available for the physics community to discuss how to work in an environmentally sustainable way. Since we launched our [Nature Reviews Collection](#) on environmental sustainability in March³, we have published pieces on topics ranging from how to teach climate change in university physics classes⁴ to how physics can help understand the part of Earth's climate system consisting of snow and ice⁵, with more on the way. We encourage you to look at the Collection — but more importantly, to act now.

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References

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