



# The sustainable paths we build together



**Successful solutions for a more sustainable world will only become broadly acceptable through vigorous and transparent debate across diverse perspectives. We are launching *Communications Sustainability* to host these discussions and to inform them with rigorous research.**

Sustainability is both a pressing policy goal and a scientific challenge. Whether it is the construction of a new water treatment plant or the rollout of next-generation batteries, the success of sustainable solutions depends on local context and acceptance as much as on technical expertise. Community members, scientists, policymakers, engineers, and business actors do not just bring in different views; together they create a shared future. Local stakeholders bring distinct knowledge, legitimacy, and agency that complements that of the experts and can make or break a project.

One case illustrates why inclusion and transparency matter: the controversial nuclear waste repository at Yucca Mountain. In 1987, the United States Department of Energy proposed the site in Nevada as a deep geological storage facility for nuclear waste. On paper, the proposal had clear advantages: it minimized overall fatality risks and offered a permanent solution. For many in the affected communities, however, these features were seen in a very different light, because they concentrate risks in a local, Indigenous population and make it impossible to revisit consent in the future<sup>1</sup>. The project stalled. Progress toward a solution was only achieved decades later when the 2010 Blue Ribbon Commission shaped a path forward in a more inclusive process<sup>2</sup> that was built on the success of publicly supported geological repositories in Canada, Finland, and Sweden<sup>3</sup>. Transparency about technical proposals helped build public trust, and continuous public input directly contributed to technical proposals with criteria of safety and acceptability<sup>4</sup>. As the Yucca Mountain case shows, communities do more than agree to solutions presented by experts: they can block or shape them, too.

Public participation can begin early in sustainability initiatives, for example, through



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citizen science projects where researchers and community members work closely together. Indeed, in a Comment in our first batch of publications, Fraisl and colleagues argue that making full use of citizen science is becoming a practical necessity<sup>5</sup>. They contend that global frameworks like the United Nations' Sustainable Development Goals (SDGs) need citizen science projects to safeguard the resilience of data collection: many of the indicators that inform progress towards the SDGs currently rest on governmental programs that increasingly face financial pressures. A framework for official statistics that treats citizen science data as an essential source of evidence, as opposed to an optional addition, could help ensure a durable foundation for monitoring progress. The question then is not whether researchers and governments should welcome public input but how

to do it with rigor, consistent quality, and accountability.

Long-term monitoring is one task where citizen scientists can provide important information. For example, Gnann and colleagues<sup>6</sup> build their insight—that larger particles of waste materials in the River Rhine are derived largely from consumer waste—on a 16-month-long monitoring effort that was performed by community members. The involvement of citizen scientists made it possible to collect and analyze 20,339 floating litter items, which revealed that earlier studies had substantially underestimated pollution levels: they relied on less resource-intensive and time-consuming methods, such as remote sensing or visual inspection.

Promising as citizen science is as an avenue for progress, the broadest range of perspectives and experiences must be included much more deeply

in order to achieve a sustainable world for all. In their Perspective article, Obura and collaborators set out a framework for achieving such integration<sup>7</sup>. They argue that sustainable development needs to be redefined: instead of the current notion of a one-way extraction pipeline from nature to the economy and on to society, they suggest framing sustainable development as a two-way flow of contributions between nature, the economy and social systems. Closing the feedback loop to include how society's values and choices influence the economy, and in turn, nature, brings in values that markets often ignore, such as care, reciprocity, and responsibility. These are values that are central to many Indigenous and local knowledge systems.

Sustainability thrives when expertise and lived experience intersect. *Communications Sustainability* aims to strengthen that intersection by providing an open, rigorous forum for the exchange of research and ideas across disciplines. Aiming for openness and transparency, we publish all articles fully open access and include the peer-review history with editor decision letters, reviewer reports, and author responses. Our editorial team includes editorial board members from a broad range of disciplines that bring the

voices of their communities, as well as professional, full-time editors who are trained in the rigorous editorial standards of the Nature Portfolio.

We hope to engage a broad range of perspectives on sustainability, wherever they come from. We are committed to publishing thought-provoking articles to deliver the best possible evidence. And we want to inform the fierce negotiations over natural, technical, economic and societal resources that the future is likely to bring. We invite the researchers and citizens of the world to join the discussion.

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