

Do the science on sustainability now

The United Nations Sustainable Development Goals are not a priority for research in high-income countries. That must change.

When world leaders committed themselves to the United Nations Sustainable Development Goals (SDGs) in 2015, it felt like a real victory. For the first time, all member states declared that they had a collective responsibility to end poverty and protect the environment – globally and on their home turf.

Those aims might seem like a statement of the obvious. But world leaders had long been reluctant to accept the case for working together for sustainable development. In the richest countries especially, ending poverty was largely seen by many leaders as a matter for international aid. By contrast, many leaders of low- and middle-income countries (LMICs) considered environmental protection as a hindrance to their development. The SDGs – a series of 17 goals to be achieved by 2030 – signalled a change to such attitudes, an acceptance that ending poverty while protecting the environment is a shared responsibility.

Halfway to 2030, and things are not looking good. A target to get all children into primary schools and another to eliminate preventable deaths among newborns and under-fives are the closest to being met. But the COVID-19 pandemic has put even these out of reach.

There are many reasons for this failure, not least, a failure to adjust institutions of science and governance to meet the SDGs. Success requires the SDGs to be a top-level priority for all departments of government and especially ministries of finance – something that is all too rare. At the same time, research is key to knowing how to make the SDGs work. The failure so far to make progress is also a failure of the institutions of science, and especially funding agencies.

In the rich-world countries that are largely responsible for the bulk of anthropogenic climate emissions and loss of biodiversity, funding agencies and universities often talk about the necessity of meeting the SDGs. But a report by an international team of authors, led by researchers at the University of Sussex in Brighton, UK, University College London and the United Nations Development Programme based in New York City, shows that there is still a long way to go before policy and funding systems make the SDGs more of a priority for researchers.

According to *Changing Directions: Steering Science, Technology and Innovation Towards the Sustainable Development Goals*, since 2015 the rate at which research from high-income countries on, or about, the SDGs is being published has mostly either plateaued or is falling (see ‘Research swings’). It is continuing to increase for just 4 of the 17 goals: goal 1, no poverty; goal 2, zero hunger;

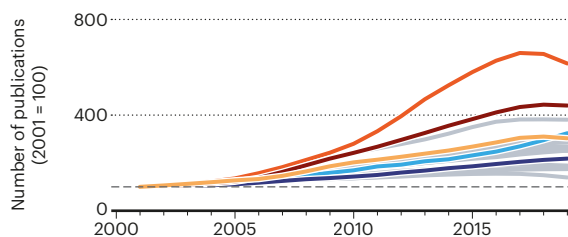
“Halfway to 2030, and things are not looking good.”

RESEARCH SWINGS

Overall, the volume of publications related to the United Nations Sustainable Development Goals has increased every year since 2001. But there's a sharp contrast in output between high-income countries and the lowest-income countries.

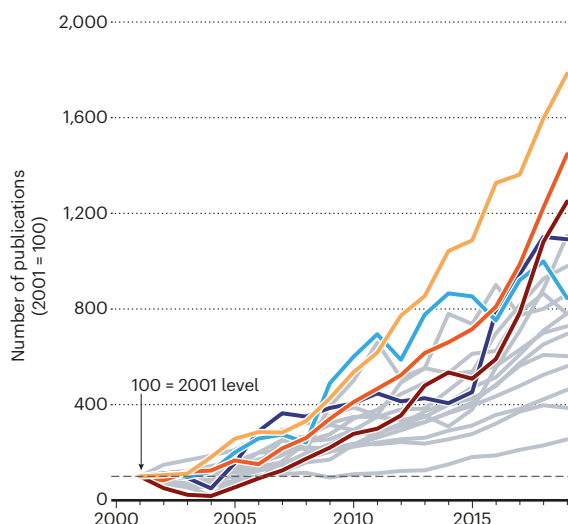
High-income countries

- Affordable and clean energy
- Responsible consumption and production
- No poverty
- Peace, justice and strong institutions
- Zero hunger
- Other targets



Lowest-income countries

- Peace, justice and strong institutions
- Sustainable cities and communities
- Responsible consumption and production
- Decent work and economic growth
- Reduced inequalities
- Other targets



goal 5, gender equality; and goal 10, reducing inequality. Research on goal 7, affordable and clean energy, has taken a sharp downturn since the pandemic. It's a different story for LMICs, where research-funding and policy systems are clearly more aligned with the goals, as the latest science report by the UN cultural organization UNESCO recognized last year (*Nature* **595**, 472; 2021). Two-thirds of research published in the poorest countries has some connection to the SDGs. That compares with around 35% in high-income countries, although these shares are rising slowly.

The research published in *Changing Directions* was funded by UK Research and Innovation (UKRI), which is the main public funder for the United Kingdom's researchers. At the report's launch last week, UKRI committed to

ADAPTED FROM: CHANGING DIRECTIONS: STEERING SCIENCE, TECHNOLOGY AND INNOVATION TOWARDS THE SUSTAINABLE DEVELOPMENT GOALS

studying the findings, a welcome first step. The body needs to work at speed with counterpart agencies in other high-income countries to act on the report's recommendations.

One such recommendation is that countries should establish a global observatory for periodically reporting on their progress in transitioning their research-funding systems towards the SDGs. That would require funding data to be released alongside publication data, and reporting could take place whenever countries meet to review their progress relative to the SDGs – similar to how countries report their progress relative to climate targets.

Another quick win could be to stop counting SDG science funding as aid money and classify it as mainstream science funding. As a concept, the SDGs are not aid. But when aid funding gets cut, as happened in 2021 in the United Kingdom, research that benefits the SDGs also suffers.

Overall, the report must be seen as a wake-up call. As yet, the world is failing in its progress towards the SDGs. There will come a time when more world leaders realize that the goals need to be a priority. Science needs to be ready for when that happens.

There can be only one choice in Brazil's election

A second term for Jair Bolsonaro would be a threat to science, democracy and the environment.

When Brazil elected Jair Bolsonaro as its president four years ago, this journal was among those that feared the worst. "The election of Jair Bolsonaro is bad for research and the environment," we wrote (*Nature* 563, 5–6; 2018).

A populist and a former army captain, Bolsonaro charged into office denying science, threatening Indigenous peoples' rights, promoting guns as a solution to security concerns and pushing a development-at-all-costs approach to the economy. Bolsonaro has been true to his word. His term in office has been disastrous for science, the environment, the people of Brazil – and the world.

This weekend, Brazilians will go to the polls in the second round of one of the country's most important elections since the end of the military dictatorship in 1985. Bolsonaro is standing for re-election for the Liberal Party. His opponent is Luiz Inácio Lula da Silva, the Workers' Party leader who was president for two terms between 2003 and 2010. In the first round of the election, held on 2 October, Lula beat Bolsonaro into second place, but by an unexpectedly

narrow margin. He failed to win an overall majority, forcing the two into a run-off election.

Bolsonaro's record is eye-popping. Under his leadership, the environment has been ravaged as he rolled back legal protections and disparaged Indigenous peoples' rights. In the Amazon alone, deforestation has nearly doubled since 2018, with yet another increase expected when Brazil's National Institute for Space Research releases its latest deforestation data in the coming weeks.

Like his populist former US counterpart Donald Trump, Bolsonaro ignored scientists' warnings about COVID-19 and denied the dangers of the disease. Bolsonaro also undermined vaccine programmes, questioning the safety and effectiveness of the jabs. More than 685,000 people in Brazil have died from COVID-19. The economic crisis that followed the pandemic hit Brazilians hard.

Other similarities have been drawn between Trump and Bolsonaro – both have sought to undermine the rule of law and slash the powers of regulators.

Funding for science and innovation was waning when Bolsonaro took office, and has continued to fall under his leadership, to the point that many federal universities are struggling to keep the lights on and buildings open. Science and academia served as easy foils in an anti-elite offensive that mirrored the culture wars of the United States.

This contrasts with the situation around a decade or so before he came to power, when the Workers' Party made big investments in science and innovation, strong environmental protections were in place and educational opportunities were expanded. Furthermore, thanks in part to a massive cash-transfer system for the poor, called Bolsa Familia, people on low incomes saw gains in wealth and opportunity.

Brazil brandished its reputation as an environmental leader by ramping up environmental law enforcement and curbing deforestation in the Amazon by around 80% between 2004 and 2012. For a time, Brazil broke the link between deforestation and the production of commodities such as beef and soya beans, and it looked as if the country could pioneer its own brand of sustainable development. Much of that progress has since been undone.

In contrast to Bolsonaro, Lula has not sought to fight researchers. He has pledged to achieve 'net zero' deforestation and protect Indigenous lands if elected. But Lula is not without baggage. He spent 19 months in jail as a result of a corruption investigation that implicated government officials, including Workers' Party leaders. But in 2019, the Brazilian supreme court determined that Lula and others had been improperly imprisoned before their appeal options had been exhausted. Lula's convictions were annulled in 2021, clearing the way for him to run for president again.

No political leader comes close to anything like perfect. But Brazil's past four years are a reminder of what happens when those we elect actively dismantle the institutions intended to reduce poverty, protect public health, boost science and knowledge, safeguard the environment and uphold justice and the integrity of evidence. Brazil's voters have a valuable opportunity to start to rebuild what Bolsonaro has torn down. If Bolsonaro gets four more years, the damage could be irreparable.

If Bolsonaro gets four more years, the damage could be irreparable."