

## Downside up: Science matters equally to the Global South

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In a world where humans can push the climate system out of kilter, climate scientists must come from, consider and work for societies around the world.

A purely physical understanding of the climate system will not be enough to stop the climate crisis. As this perspective has entered mainstream thought over the past two decades or so, science funding has been made available for more applied research: research that considers societal needs and is not purely curiosity driven. A squeeze in research funding since the financial crisis of 2008 has meant that researchers based in the Global North have experienced pressures<sup>1</sup> that have always been a day-to-day reality in the Global South: a scarcity of resources that makes it more difficult to justify basic pure science.

Initiatives to shift the emphasis of research activities towards delivering science solutions for society, as opposed to simply communicating scientific findings to society, often meets with resistance among scientists: there is a fear that such a shift may diminish the attention given to blue-sky research. Nevertheless, the World Climate Research Programme (WCRP) is broadening its scope to supplement physical climate research with efforts “to develop climate information for decision-makers on a local to regional scale and, more generally, with bridging climate science and society<sup>2</sup>.”

Here I argue that we need to integrate a multitude of different perspectives to achieve progress on the most difficult problems facing the planet. We need people with different backgrounds, training and experiences to help make progress; we need to integrate the knowledge in the Global South with that in the wealthiest countries; and we need to bring together our compassionate, creative, human side with scientific analysis.

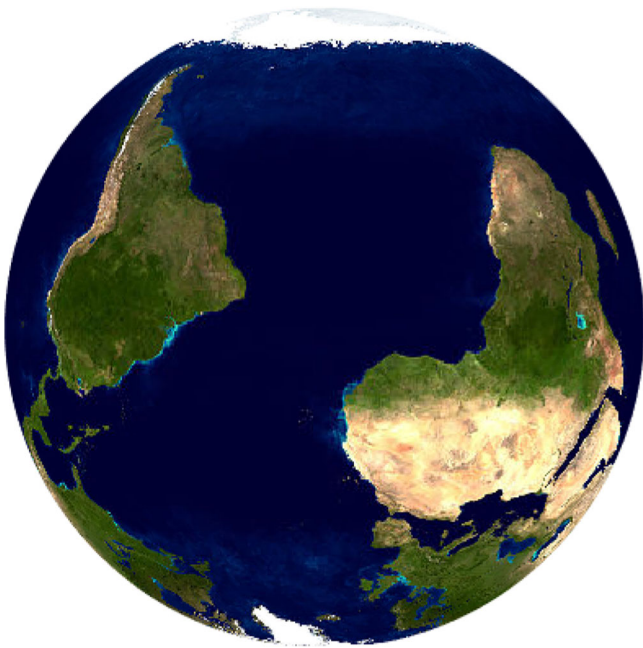
### Upside down

If on one hand, funding pressures made the Global South better at creatively answering questions that are directly relevant to society, on the other it kept scientists in the Global South from developing cutting-edge, ground-breaking theories in fundamental science. The Global North and South thus have different perspectives that complement each other, to the benefit of all (Fig. 1). One welcome initiative in this regard is the All Atlantic Ocean Research Alliance initiated by the European Union<sup>3</sup>. The Alliance launched a series of calls for scientists from South America and Africa to apply for grants together with their European and North American colleagues to study the Atlantic Ocean from different perspectives. Most importantly, one of the main goals of the Alliance, and a requirement for the calls, is to generate knowledge for social benefit. Such opportunities for scientists from countries at different levels of wealth to work together on equal terms may help to end the phenomenon termed “helicopter science”<sup>4</sup>, where scientists with funds fly to less wealthy countries to do their research without much interaction with, credit given, or benefit to local scientists.

### The science gambit

In a parallel to the lack of integration between the Global North and South, science suffers from a lack of inclusiveness and diversity. As has been said many times<sup>5,6</sup>, we will only resolve humanity’s most challenging problems, such as the climate crisis, if we can build on a large range

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**Fig. 1 Downside up.** Changing perspectives can lead to progress.

of ideas. We need people from different ethnicities, genders and social backgrounds with different life experiences. Yet I still see universities taking postgraduate students or hiring postdoctoral researchers and lecturers from minority groups only when they originate from renowned universities.

Admittedly, it might be riskier to take a student from an unknown university from a low- or middle-income country. They may have come through a less reliable education system and they may encounter language barriers. But without taking that risk, we will not have the same diversity of thought. And that is necessary to resolve our society's most pressing problems. Pseudo-inclusion of only those people from underrepresented groups who have already adapted is forcing our domineering way of thinking upon those that started from a different viewpoint.

In addition, the prevailing focus on quantitative metrics of evaluation, where the impact of a piece of research is measured almost entirely through the number of citations from our peers, exempts us of delivering science for society. Metrics can also reinforce established thinking and are often not helpful for bringing fair visibility to minority viewpoints. In our frantic hunt for metrics and competitiveness, we have not only detached ourselves from the social sciences and society but also lost perhaps our best social skills, our kindness, our compassion for the less fortunate.

### Next move

The IPCC Special Report on Global Warming of 1.5°C<sup>7</sup> has shown that we need to act quickly and drastically cut carbon emissions to avoid the most catastrophic effects. It has also become clear that even if high-income countries reach their net-zero targets we will not achieve the overall goal agreed in Paris without, for instance, preserving the tropical forests.

The current political landscape of low and middle-income countries in the tropics therefore matters. How societies around the world perceive the environment and climate matters more than ever. Science must adapt to combine curiosity driven science with science more relevant to society's needs. We must strive to help society to make decisions on how to act—individually, or collectively through policies.

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### Competing interests

The author declares no competing interests.

### Additional information

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