



# Remodelling research agendas

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Our remodelled research agenda suggests setting priorities that outline a clear framework for making decisions on current and future research activities. We propose collaborative and collective global approaches to maximize our joint efforts, especially among early-career researchers (ECRs), to remodel research agendas for the ultimate benefit of humanity.

In the face of our changing and complex world, the call for a remodelled research agenda cannot be overemphasized<sup>1</sup>. Our scientific ecosystem needs to be relevant to current national issues while remaining globally competitive. To do this, we need a level playing field with coordination, cooperation and co-management of resources at the core. This set-up, in turn, presents a platform for productive and time-efficient trans-, multi- and inter-disciplinary collaborations among research programs and supporting agencies. It is important to mention that future research trajectories consciously align to the [United Nations Sustainable Development Goals](#) (UN SDGs).

At the 2019 World Science Forum in Budapest (Hungary), we attended a [Young Leaders training session](#) and our working group looked at bridging the gap between science and society. Inspired by the Chain Bridge in Budapest — which, connecting Pest to Buda, is an iconic metaphor for joining communities — we chose this specific project; it was something close to all of our hearts, seeing first-hand how quickly the void between the science community and the non-scientific community was widening. Currently, that chasm is widening by unfiltered noises and resounding echoes from social media networks, propaganda and disinformation machinery (via modern media) and the moral outrage and hate speeches from groups and individuals (via digital platforms).

In light of this, we have observed a need for new research initiatives driven by collective leadership, supported by responsive collaboration and a shared vision. This Comment aims to stimulate and encourage coherence and unity to a disparate field of chemistry research (adaptable to other fields), and to make sense of all the current outputs so that this information, in turn, informs policy and practice. We believe this requires several interventions from research policy makers and the research culture prevalent in various policy levers, some of which are described below.

## A coherent framework

The first intervention is a coherent framework, in which STEM-III (innovation, infrastructure, and industrialization informed by science, technology, engineering,

and mathematics) responds to the local context and is of global importance, including achieving the UN SDGs. As a researcher, the ultimate goal is to translate our work to have real-life impact. Undoubtedly, increasing awareness-building in UN SDGs is pertinent to demonstrate real-life impact in local communities and at global level at large<sup>2</sup>. Inclusive innovation, resilient infrastructure, and sustainable industrialization (SDG 9) need to align with and effectively provide solutions for poverty eradication (SDG 1), zero hunger (SDG 2), decent work and economic growth (SDG 8), and reduced inequalities (SDG 10). Particularly, meeting the food demand and maintaining good health and well-being are some of the UN SDGs relevant to all humans. Any research effort targeting these inevitably contributes to local impact.

## Coordinated and co-managed infrastructure

There is a need for state-of-the-art infrastructure that is well-coordinated and co-managed, accessible to all and avoids duplicity. Although this infrastructure appears to be directly applicable 'only' to the middle and low-middle income countries, it has been and is being largely adopted by the global north (for example, A Toroidal LHC Apparatus diameter and Compact Muon Solenoid experiments at CERN's Large Hadron Collider). Despite the differences in status, universities in both industrialized and developing countries often encounter inefficient coordination and restricted access to essential equipment and infrastructure<sup>3,4</sup>. The recent model implemented by the [EUTOPIA European University](#), an alliance of 10 universities, presents an interesting example that demonstrates how coming together can be a means of mitigating inherent challenges within individual institutions regardless of their status and location. EUTOPIA European University has provided a collaborative and inclusive alliance for sharing expertise, space, experience, and infrastructure. It seems even more applicable in a developing world setting where resources need to be more efficient, and most importantly, more widely used. Pooled funding mechanisms with access to centralized data and laboratory services may boost the confidence of ECRs to venture into the unknown with courage and creativity. Above all,

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it will buy them the much needed time — a commodity that ECRs can't afford early in their career.

### Trans- and multidisciplinary approaches

We need to explore how UN SDGs provide an opportunity to drive and encourage sustainability through multi-, inter- and trans-disciplinary research across government funding agencies and the private sector in collaboration with universities and research institutes<sup>3,5</sup>. The ongoing pandemic, climate change, and migration are the three biggest challenges faced by humankind, and the scope of these research areas is so broad and complex that it requires resources and partnership from scientists, communicators, funders from the public and the private sector, and even the civil society<sup>6</sup>. What is even more important is the 'rapid' translation of public-funded research into the public system, which was not achieved until the recent pandemic<sup>7</sup>. The funding models need to be 'liquid' to involve multiple partners and preferably be devoid of 'solid' boundaries when it comes to scientific disciplines and applicability across various sectors. In Africa, the University of Pretoria created [Future Africa](#) (a research institute), which serves as a pan-African platform that aims to nurture an exceptional network of future leaders and is not divided by disciplinary fields or geographical locations.

### Equitable funding

Another aspect is to make science funding more equitable for ECRs irrespective of their resident status. Accessing research funds has always been a major challenge, with emerging scientists disproportionately affected, even before the COVID-19 era<sup>1,8,9</sup>. This applies primarily to ECRs and investigators making their way into a new geographical area. The majority of awards, accolades, prestigious memberships, fellowships, and funding applications are restricted to researchers with a specific citizenship or resident status, and hence are discouraging for, primarily, a global north–south or south–south transition.

Despite some overlaps, such as shared vision and decision-making, collective leadership should be looked at differently from collaborative efforts. Categorically, more emphasis on responsibility and accountability is required. It is also important for projects that will deliver direct impact to be funded. Overall, a better connection between researchers to society should happen to ensure societies observe the positive impacts of science in their daily lives, which will likely start a positive feedback cycle that can continue. It's time to remodel the research agendas for the ultimate benefit of humanity.

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### Competing interests

The authors declare no competing interests.

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EUTOPIA European University: <https://eutopia-university.eu/>

Future Africa: <https://www.futureafrica.science/index.php/about-us>

S.O.S. Booklet for Global Young Scholars: <https://www.interacademies.org/publication/sos-booklet-global-young-scholars>

United Nations Sustainable Development Goals: <https://www.un.org/sustainabledevelopment/>