

THIS WEEK

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Come together

Cross-continent collaboration in the sciences has become the norm. We must ensure that disadvantaged regions are not left out.

Amid the pledges to exercise and to keep a tidier office or bench space, scientists who wish to get on in 2016 should make a simple resolution for the new year: broaden your horizons. Think beyond the conventional format of the academic paper and experiment with new ways to present data and results. Look past the historical boundaries between academic subjects to the emerging landscape of interdisciplinarity. And, perhaps most importantly, embrace the growing trend of international collaboration.

The benefits of international partnership are clear. Cross-border research receives more attention than does insular work and its publications attract more citations. The promise to global science is obvious, too: publicly funded research increasingly looks for impact and pay back, and many of the most immediate problems that science can help with are not defined by national borders.

Issues of sustainability, health, access to food and water, stable ecosystems — the ‘grand challenges’ — are the products of complex chains and relationships, natural causes and human effects, across diverse yet connected regions. Solutions, and the science to seek these solutions, must sprout from a similar network: diverse yet connected.

The *Nature Index 2015 Collaborations* supplement published in November demonstrates the trend towards collaboration (see go.nature.com/nji2gb). Some 70% of the academic papers analysed from the University of Cambridge, UK, for example, featured a co-author from a different country. It also demonstrates the shifting foundations for these international projects, which no longer need to be anchored to the usual big players of Europe’s leading lights, Japan and the United States. Scientists in Spain and Portugal are forging productive alliances with colleagues in South America. Australian researchers are increasingly looking to team up with scientists in the Asia-Pacific region.

This reflects the new, broader geopolitics of the twenty-first century — a change neatly illustrated by the climate-change agreement signed in Paris last month. Nations such as China, India and Brazil — previously defined in climate talks as poor developing countries — have taken on a more equal share of the responsibility for the struggle against global warming, to match their emerging higher status.

ON THE OUTSIDE LOOKING IN

Not all scientists are benefiting from this era of cooperation. And, as bibliometrics specialists Jonathan Adams and Tamar Loach wrote in the *Nature Index* supplement, the cost of missing out can be severe (see J. Adams and T. Loach *Nature* **527**, S58–S59; 2015). “If collaboration is linked with high impact, then research groups who are not part of the collaborative network risk being left behind, marginalized by a lack of access to the cutting edge of research in their field.”

Where these excluded scientists live and work will come as no surprise. Africa remains under-represented in this new world, more heavily so if the relatively strong part played by South Africa compared with the rest of the continent is taken into account. Yet challenges

do not come much larger than those experienced in the patchwork of political, social and economic systems that make up the African continent. And as the Ebola virus outbreak has demonstrated, the problems of Africa — as well as having immediate and devastating local impacts — also challenge the rest of the world.

How can research and the growing strength of international collaboration reach more developing nations? How can we ensure that the products of scientific research reach the bulk of humanity who would benefit the most?

“The long-term solution to inequality of opportunity is equality of investment.”

It is no coincidence that China’s arrival on the global scene and as a desired partner comes on the tail of massive domestic investment in research. Many nations in Africa (and elsewhere in what is known as the global south) cannot or do not want to put serious money into science, and academic market forces — like it or not — will continue to drive parties in the global north elsewhere in search of synergies.

Instead, scientific investment by rich nations in poor countries and regions has long been tied to the development agenda. As such, it is, rightly, not judged on scientific output — papers and citations — alone. But alliances of unequal partners can be notoriously awkward, and so it has proved with research funded in this way. Post-colonial paternalism gave way to scientific aid, but that change did not challenge the donor-recipient dynamic and the polarizing problems it sets up in projects and relationships. In this model, those from the north who pay the bills too often decided the research agenda and how success will be defined, and those from the south were too often expected to fit in, provide the data and be grateful for the opportunity.

Plenty of players — from government funders and philanthropic bodies to institutions and individual project leaders — are taking admirable steps to call attention to this kind of inequality and to address it. Those efforts deserve praise and support.

The long-term solution to inequality of opportunity is equality of investment. For now, researchers involved with such asymmetric collaborations must ensure that they do not take advantage. As horizons expand, so must the professional codes and ethical safeguards that reward input with appropriate credit and govern the fair and equitable use of data and materials.

There must also be broader awareness that, just as there is more to research than papers, there is more provided to a partnership than conventional resources such as cash and equipment. The *Nature Index* supplement profiled an international project that published a genetic analysis of humans, chimpanzees and their lice. It quoted a Ugandan author on the paper as saying that it would have been impossible without the support of research partners in the United States and Europe, because the Ugandan group did not have the necessary technology. That is true. But then the partners did not have the necessary chimps. ■