

john marks **view from the top**

From ERA to GLOREA: global cooperation is to our advantage

With a nod and a wink to *gloria*, the European Science Foundation stages an international conference in Strasbourg this week that will look at the European Research Area from an international perspective—and so introduce the concept of a Global Research Area, or GLOREA.

The ESF line is that European science is part of the global science endeavour, so why isn't the ERA's creation approached from a global perspective?

Traditionally, when it comes to innovation or to addressing specific societal problems, national or European priorities determine the type of investments in science—but that's old hat. Increasingly, globalisation allows companies to detach production facilities from research benches. The response is to have a reservoir of highly educated workers whose excellence is measured by the global yardstick. Let's think about the issues.

Frontier research questions are more and more interdisciplinary; just look at areas such as cognition, the study of the evolution of languages or the life sciences. Answers demand collaboration of the best groups, which are not necessarily only in Europe, let alone in a single country. Research on climate change or sustainable development requires, by its nature, global co-operation of a broad spectrum of disciplines in the natural, social and human sciences. Also, there's the increasing role of expensive research infrastructure. ITER, the fusion power project, and CERN, the particle physics laboratory, are clear examples of the global dimension of infrastructure. Increasingly, networks of smaller equipment or databases, which together constitute a research infrastructure, become indispensable. The distributed database of the European Social Survey is such an example, while the global observing systems for climate change research represent another, quite different example. But there's more to it than that.

From the arena of political debate to the pages of the Commission's Green Paper, the ERA's international dimension has mostly been approached from the perspective of competition between the blocks—Europe, the US and Japan—or from the perspective of the role

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of intergovernmental organisations, such as the OECD and Unesco. But this politico-economic angle is just one dimension. For the ESF's members, and for the scientific community as a whole, creating the best conditions for excellence and for advancing frontiers in science is another. And there's more.

The centre of gravity of science in many areas has shifted from Europe to the US—you have only to look at the growing gap in numbers of Nobel prizes awarded to each region. But for how long will even the US remain ahead? Countries, such as Singapore, Korea, India and China, are making huge investments in science. Research foundations in Asia have seen their budgets grow by more than an order of magnitude, as I heard during a visit to South Korea in November. There's even the prospect of an Asian Research Area, mirroring the ERA ideals.

From an economic perspective, this could be seen as a threat. From a scientific perspective, it is an opportunity for more intensive co-operation.

Strengthening European science will make Europe a more attractive partner. But we need to work at it. While we have excellent researchers, we lack the conditions that allow them to perform, which is where the ERA could help. And we want an environment that encourages foreign teams to work with the best teams that Europe can mobilise, independent of the country in which team members work, which is where Europe's contribution to a GLOREA could help.

For non-Europeans, Europe presents a rich but fragmented picture. Just look at us. The ESF spans 30 countries, and at least 60 of 78 member organisations fund research in some way. Imagine what this means for the NSF representatives trying to collaborate in Europe. Try to imagine what it means for our colleagues from agencies in the developing world who are trying to set up co-operation agreements with Europe. Joining the forces of national agencies in Europe together through the ERA would make European science more accessible and hence more attractive as a partner for co-operation.

What would my ideal ERA look like in, say, 10 years from now?

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- An education system, starting at primary school level, that stimulates pupils to choose a career in sciences, engineering or humanities.
- A single European labour market for researchers, with attractive career prospects globally for young and experienced researchers.
- World-class research infrastructures in areas of European scientific strength, based on solid peer-reviewed science cases.
- A European pattern of excellent research institutions, regionally anchored but not determined by national borders.
- Open access to research that has been funded from public sources, and permanent access to primary research data.
- Open competition for funding based on individual excellence, building on the European Research Council.
- Strategic research and researcher-driven programmes that are agreed and funded irrespective of national boundaries on the basis of excellence.
- Benchmarking of 'national' researchers and national research systems through instruments such as common international peer review and output/impact evaluation.
- An effective innovation system with, for instance, incentives and support for setting up new business, interaction and exchange between public sector research and private sector research.
- Open to the world: science is a global effort. European strengths should be embedded in global cooperative (and competitive) frames, where different approaches are needed for old (such as US, Japan, Australia), emerging (Asia) and developing regions.

All of this requires sufficient funding, where global comparison is the yardstick. It's a tall order, especially when we look at our achievements to date.

Looking back over the past seven years since the concept emerged in Lisbon, why have we made so little progress with the ERA? And what are the chances that it will go better from now on?

For a start, there is a far greater awareness of the urgency of the initiative at all levels, political and within research organisations. Globalisation in economics and in science, as outlined above, are key drivers. Universities and other research institutions have

accepted the need for performance ratings; just look at the Exzellenz Initiative in Germany, and the Centres of Excellence in many countries. Furthermore, the increased cost and scale of frontier research, in areas such as genomics, climate change and other large interdisciplinary programmes, are drivers for greater efficiencies. Governments are increasingly keen on avoiding unnecessary duplication and wasteful fragmentation, and they should realise that the national competitive edge is best ensured through European competition, as so well exemplified by the European Research Council. Successive Framework Programmes, through instruments such as the ERA-NETs, certainly contributed to building a European scientific community that finds it easier to set up co-operation across national borders (despite the bureaucratic hurdles).

During the 30 years of its existence, the ESF has been working with its members to help build an ERA. Networks of scientists, the main instrument until a few years ago, is no longer enough. ESF members want us now to use joint foresight as a basis for agreeing on common research agendas and on priorities. One such ESF initiative, Forward Looks, was created to influence the national spending of the ESF's members, which amounts to around 25 billion euros a year, and where appropriate guide the Commission.

For the promotion of excellence at European level, the ESF collaborated with EuroHORCs, which brings together the heads of European research councils, to establish the European Young Investigator Awards EURYI. Apart from 95 highly prestigious awards, EURYI is an example of common pot funding of 100 million euros where more than one third of the money will be spent in another country. The ERC has now taken on this initiative.

Science-led collaborative research programmes require finding efficient ways of joining national funding without creating big centralised budgets. ESF's collaborative research programmes, EuroCORES, are an experiment in achieving exactly that. Five-years-worth of experience has demonstrated the scientific need and has attracted non-European participation. The streamlining of the national decision procedures on funding requires more work. European level common peer review is a potentially powerful tool to benchmark national researchers and national research organisations. ESF and EuroHORCs have started working on that, based on the experiences gained in EuroCORES and EURYI.

Creating the ERA is not something that can be left to either the Commission or to governments. The ERA is a joint responsibility for all organisations dealing with science in Europe, acting in partnership. EuroHORCs and the ESF are committed to take their share in the building of the ERA. The ESF Conference points to the necessity, and value, of doing this with a global perspective.

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