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How Can We Achieve Europe's Ambitions in terms of Research?

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A year ago on 26 November 2021, the Competitiveness Council adopted Conclusions on the governance of the [European Research Area](#) (ERA) and a Recommendation for a Pact for Research and Innovation in Europe. The [European Research Council](#) (ERC) welcomed this positive step forward[1].

However, the Conclusions and the Recommendation are the latest in a long series of efforts to complete the ERA, an objective first declared in 2000 with subsequent relaunches in 2007, 2012 and a new roadmap agreed in 2015. What lessons can we learn from past attempts to achieve the ERA to ensure better results?

THE EUROPEAN RESEARCH AREA (ERA), THE BEGINNING

The ERA was launched in January 2000, in the year that the EU set itself the ambitious goal to become by 2010, "*the most competitive and dynamic knowledge-based economy in the world*", as part of its Lisbon strategy. One of the key planks of the strategy was to raise overall R&D investment within the European Union to 3% of GDP.

At the time of the launch the then Commissioner Philippe Busquin painted an alarming picture of Europe's relative international position in research and innovation compared to the US in particular.

He blamed this on underinvestment but also on the absence of a genuine European research policy: "*The European research effort as it stands is no more than the simple addition of the efforts of the 15 Member States and the Union. This fragmentation, isolation and compartmentalization of national research efforts and systems and the disparity of regulatory and*

administrative systems only serve to compound the impact of lower global investment in knowledge".

His idea was to create an "internal market" in research designed to strengthen cooperation, stimulate competition and optimise the allocation of resources, as well as to improve the coordination of national research activities and policies.

Of course, Commissioner Busquin was not the first to express such concerns. In the post-war period Europe found itself trying to catch up with the USA in terms of economic productivity, science and technology. This idea was perhaps most famously brought to public attention by Jean-Jacques Servan-Schreiber's book *Le Défi Américain*[2] ("The American Challenge") published in 1967. It presented the United States and Europe as engaged in a silent economic war which Europe appeared to be losing on all fronts, including in management techniques, technological tools, and research capacity. The book sold 600,000 copies in France and was translated into 15 languages. It was instrumental in drawing attention to the importance of transnational cooperation in Europe.

In 1972, the European Commission proposed to define and implement a Community research policy but the lack of a strong legal base hampered this effort. Because, whilst Community research activities were a key component of the Treaties establishing the European Coal and Steel Community in 1951 and the European Atomic Energy Community in 1957, there were no provisions related to research policy in the Treaty establishing the European Economic Community (EEC) in 1958.

Nonetheless, in the 70s and early 80s the European

[1] This text was originally published in the "[Schuman Report on Europe, State of the Union 2022](#)," éditions Marie B, Paris, May 2022.

Economic Community managed to fund some research to support other policies of the Community starting with research programmes on solar energy, the environment and "teledetection" of earth resources. The Single European Act, signed in 1986, finally enshrined research policy in the Treaty. It defined cooperation and coordination of national research policies as the objectives of the common research policy, provided a clear legal framework for the adoption of the Community framework programme for research, and offered additional tools for the implementation of research policies. The Treaty of Lisbon (2007) recognised research and space as a shared competence and made the completion of ERA a Treaty requirement.

EUROPE'S BACKWARDNESS

Yet, despite the growth of the EU's framework programme in terms of size and scope in the years after the Single European Act, by 2000 we seemed no closer to achieving a genuine integration of Europe's research efforts.

In 2002, the American academic Thomas Banchoff addressed the possible reasons for this in his paper "*Institutions, Inertia and European Union Research Policy*". In his introduction^[3], he wrote: "*European Union research policy presents a puzzle. In few areas have the international pressures for deeper integration been as great. Faced with the scientific and technological superiority of the United States, European leaders across the political spectrum have called – since the mid-1960s – for the co-ordination of national efforts to meet the American challenge and compete more effectively internationally. During the post-cold war 1990s, the strategic importance of science-based innovation in the context of the global knowledge economy moved research policy even further up the European agenda. Yet today national research policies in Europe remain largely insulated from one another. Almost all state support flows to national scientists and institutions, and barriers to cross-national researcher mobility remain high. Two decades marked by a successful drive towards economic and monetary union have not seen the emergence of an integrated European space for science and technology.*"

Banchoff offered two main explanations. The first was

what he called "intergovernmentalism", the fact that the Member States were naturally reluctant to give more powers to the European level and truly integrate their efforts. But he also highlighted a second, more surprising and counterintuitive barrier to integration. He argued that the consolidation and growth of the framework programme had itself hampered efforts to coordinate national efforts: "*Since the 1980s, increasingly large and complex programmes have absorbed the administrative and political energies of the Commission and generated clienteles attached to the status quo. European institutional legacies, and not simply national interests, have under-cut efforts to create a 'European Research Area' marked by the better coordination and integration of national policies.*"

It is possible then that European research policy had become stuck in a suboptimal equilibrium. On the one hand, Member State governments, despite their avowed openness to co-ordination, remained focused on the distributive mechanics of the framework programme and maximising their own share of funding (juste retour). On the other hand, the Commission itself found it much easier to fund European policy priorities directly via the framework programme than to try to coordinate recalcitrant national governments.

WHAT PERSPECTIVES?

Since then, various ERA coordination mechanisms have certainly led to some progress in areas such as research infrastructures, open science, international cooperation, gender balance in R&I, joint programming and the mobility of researchers.

The framework programme has also evolved. Since their inception the EU framework programmes have supported transnational collaboration on predetermined topics and subjects in applied research fields corresponding to the EU's major policies in the fields of health, energy, the environment and others. But in 2007 under the seventh framework programme, there was a radical departure when the ERC was set up to fund basic research carried out by individual researchers without predetermined priorities. The creation of the ERC was designed to help Europe to produce the very best cutting-edge science in

[3] "*Institutions, Inertia and European Union Research Policy*", *Journal of Common Market Studies*, December 2002

new and rapidly emerging fields.

On the occasion of the ninth framework programme ([Horizon Europe](#)) the [European Innovation Council](#), modelled on the ERC, was set up (after a pilot programme under [Horizon 2020](#)) in view of providing support in a similar bottom-up way to Europe's emerging entrepreneurs and start-ups.

So this is good news, but we certainly cannot say that the original vision of the ERA has been realised. And the original goal remains valid. The EU level still has relatively limited legal powers and budget for research and innovation. Improving the excellence and efficiency of Europe's research and innovation system can therefore only come about by achieving the original aims set out by Commissioner Busquin.

This is now more urgent than ever. Europe has never caught up with the US as a scientific leader. For example, in 2018 the European Union produced around 21% of the scientific publications published in the world with the US on 17%. But if we look at the world share of the most influential top 10 highly cited scientific publications, then the US share increases to 31% compared to the European Union on 21%.

And now China has emerged on the world stage as a formidable strategic competitor. In the two decades since the launch of the ERA, it is China and not the EU that has managed to achieve its goals of becoming a global leader in science, strategic technology areas and industries.

The output of China's science system has been increasing exponentially since the turn of the century and in the last decade the quality of Chinese science has also been rapidly improving. A [report](#) by the EU's Joint Research Centre estimates that China overtook the EU in producing top 1% most highly cited publications sometime around 2017.

This is a massive wakeup call for Europe's policymakers. Europe cannot afford to be complacent at this critical moment. Decisive actions are needed now, so that in another two decades time we will not be lamenting that Europe is a scientific follower dependent on others for the key knowledge and technologies its citizens need.

It remains crucial to raise Europe's level of investment in R&D in order to keep up with our global competitors but also if we want to meet the European Union's ambitious political objectives in areas such as climate change, digitization and health: all areas where research and innovation are key.

Overall EU research investment at 2.3% of GDP (2020) is still far from the 3% target. The USA still spends considerably more than the EU with \$657bn in 2020, followed by China with \$526bn, and then the EU on \$440bn.

Beyond investment we cannot neglect the critical foundations of the ERA. First and foremost, researchers are at the heart of the research process. We must ensure that research remains an attractive career for Europe's brightest talents. A major part of this is to ensure that there is enough freedom and support for researchers to pursue their own research questions. And as a matter of urgency, we need to plot out a sustainable career path for young researchers.

The Member States need to take a long-term perspective to strengthen their own research and innovation capacity. It is essential for any research funding system to provide sufficient base funding for universities and research institutions as well as reasonable opportunities for researchers to receive project funding. The pandemic has shown more than ever that effective research funding systems must also allow sufficient room for frontier research. If we look at the journey which got us to the mRNA vaccines against Covid-19, we can see that it took many years of work by dedicated scientists all around the world. Not only to understand the existence and purpose of mRNA, but also to find a way to reliably deliver the new vaccines. These vaccines were an "overnight success" many decades in the making!

Without understanding, often built up over decades, there can be no real solutions to problems. Furthermore, solutions can come from unexpected places. Science advances as a broad front. New findings in one area can open up new opportunities in different areas. Putting all our resources into certain priority areas can

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therefore harm our chances of achieving progress, even paradoxically in those priority areas. Research therefore should not be constrained by a goal-driven focus on achieving current political priorities, but be given the freedom to pursue promising paths wherever they appear.

We should also not put ignore the emphasis of past ERA policy on driving up the quality of the European research system. Widening excellence and helping to build capacity are worthy goals but they must complement, and not replace, efforts to strengthen Europe's existing centres of excellence.

Historically, research and innovation have tended to cluster in certain specific locations. The knowledge generated in these centres then diffuses throughout the economy to everyone's benefit. There is therefore a strong argument that Europe's research and innovation funding should be concentrated more, not less. The framework programme is the obvious vehicle for focusing our efforts and building critical mass, but this cannot work if we insist on spreading its resources across ever larger numbers of partners, a tendency calls "*research saupoudrage*" by the Belgian economist Luc Soete.

There are significant disparities in real GDP per capita between Member States, ranging from €82,250 in Luxembourg to €6,380 in Bulgaria. These differences are much larger than between the different states in the US. We cannot see and should not therefore expect a uniform distribution of research capacity across the European Union. However, this discrepancy allows the less well-off Member States to enjoy catch-up growth. This is why

for years the Central and Eastern European States have been the fastest growing economies in the EU despite having some of the lowest R&D intensities. Take Poland for example. As of 2019, before the pandemic, the Polish economy had been growing steadily for 28 years and the country increased its GDP seven-fold since 1990.

By reinforcing Europe's centres of excellence, we can produce the cutting-edge knowledge needed for economies on the technological frontier to grow further and for Europe to remain a leader at global level. At the same time, with the support of the EU's Single Market and extensive regional funds, we are laying the groundwork for the future growth of the less research-intensive regions.

Most of all then, achieving the ERA requires a change of mind-set. We need to move away from a zero-sum attitude so as to avoid the traps described by Thomas Banchoff. We need to understand that the research and innovation happening in another country or region can be the basis for future growth in our own country or region. The EU has the talent and the resources to lead the world in research and innovation. But as of today, these remain thinly spread and fragmented across 27 different systems and thousands of research institutions. If we can finally succeed in aligning these efforts this will provide the best possible foundation for tackling the challenges of an unpredictable future.

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