

Moedas's legacy — and what Europe must do next

The successor to the European Union's research chief must act to prevent budget cuts.

Carlos Moedas was little known outside Portugal when he took over as the European Union's research and innovation chief in 2014.

Now, at the end of his tenure, that is no longer the case. In five years, the engineer-turned-banker-turned politician has demonstrated thoughtful advocacy for research. He has listened to researchers and delivered — except on one issue where it really matters.

The funding settlement for Horizon Europe, the next research framework programme for all EU member states, has hit a roadblock. Moedas's successor, Mariya Gabriel, and Europe as a whole must work hard to fight cuts and potential delays to its start.

On the positive side of the ledger, it is because of Moedas that around €9 billion (US\$10 billion) — around one-tenth of the next round of European research funding — will be set aside for large collaborations in five global challenges or 'missions' — in climate change, cancer, oceans, smart cities, and soil and food. This was an idea that Moedas adopted after discussions with researchers, notably the innovation economist Mariana Mazzucato.

But a European research commissioner's core job — some would argue the most important one — is to protect the budget. Earlier this month, negotiations between EU member states on the next seven-year budget cycle (for 2021–27) stalled. The European Commission is asking for €1.135 trillion, including around €100 billion for research. Member states want to cut the total budget by between €35 billion and €85 billion. Facing such a shortfall, it isn't uncommon for those in charge of setting budgets to look to research for cuts.

Protecting research needs firepower — it requires support from heads of government, and especially from national ministries of finance. Moedas and his boss, commission president Jean-Claude Juncker, should have assembled high-level support much earlier, before we got to this point. The responsibility for ensuring that research does not bear the brunt of any cuts now falls to Gabriel.

An added complication is that, under the incoming commission, the department for research and innovation is being merged with that for education, youth, sport and culture. This expanded department is called Innovation and Youth — 'research' has been lost from the title — and Gabriel will have extra, and possibly competing, priorities, one of which is a trebling of the budget for the student-exchange programme Erasmus+.

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Moedas has been a popular commissioner, known as a team player and a conciliator — playing the 'good cop' to his former head of research Robert-Jan Smits's 'bad cop' in budget discussions. Smits describes Moedas as “a genuine, nice person who doesn't like to put people in an uncomfortable situation”. These are important qualities.

But the EU faces some significant challenges, and Gabriel will need to adopt a tougher persona. Economies are slowing; austerity has been painful and many governments want to spend more at home on social programmes. At the same time, budget planners will need to adjust for the potential absence of — or reduction in — the UK contribution to the EU.

If they want to see their EU research budgets protected, research organizations can help Gabriel by putting pressure on their national governments, especially finance ministries. Everyone needs to push harder to protect funding — so that the spirit and support that has helped make the EU a model for collaborative research can live on.

Brexit promises are premature

Government offers of new funds for UK scientists could be unaffordable.

There's a research group in Britain that has become a staple of the country's news shows, and it's called The UK in a Changing Europe. On most nights, the team of political scientists, economists and lawyers dispassionately responds to broadcasters' questions on the impact — economic, political and societal — of the United Kingdom's departure from the European Union.

The researchers, who are funded by the UK government's Economic and Social Research Council — but whose work is independent of the government's own policies — do not have an easy task. But it's an important one, in part because the government has not yet released its own detailed analysis of Brexit's impacts.

Lawmakers know that most researchers would like nothing more than for the United Kingdom to remain a member of the EU. That is one reason that The UK in a Changing Europe team, which is one of just a handful of independent analysts, is careful not to dwell on the impact of Brexit on the research community — but instead is keeping the focus on the bigger picture.

As this Editorial went to press, the EU had agreed to a request from the UK government to delay Brexit to 31 January 2020 — three months beyond the recent, 31 October, deadline. And with Prime Minister Boris Johnson and members of the Parliament at loggerheads over the terms of the exit, politicians were preparing for a general election. Researchers will have breathed a sigh of relief at avoiding an

October 'no-deal', but few will be rejoicing. In what the EU calls a "flexextension", Brexit could happen before 31 January if Parliament approves a deal.

And if a deal such as the one Johnson and the EU have agreed is ultimately passed, the worst case is that Britain leaves the free-trade area known as the customs union. Free movement of citizens to and from the EU and Britain will end, and Britain's researchers might no longer be able to obtain funding from certain EU research programmes.

That is the scenario policymakers are planning for. But as this journal – along with organizations representing researchers, such as the Royal Society – has repeatedly said, fracturing more than four decades of joint working between the United Kingdom and its nearest neighbours will damage both science and society.

Aware of these concerns – and especially of the need to maintain scientific connections – the Johnson government has been talking up post-Brexit wins for research.

It plans a more favourable visa regime for students and researchers, and is shaping new funds, including a UK version of the United States' Defense Advanced Research Projects Agency. There's also talk of a generous European Research Council-style fund for UK researchers, should access to the EU scheme no longer be possible, and more funds to collaborate with the United States. And there's confidence among some policymakers that the world's researchers will continue to want to work with, and in, Britain.

Such confidence is premature. A more welcoming visa regime and extra funding will help to placate some of researchers' concerns, but new cash depends on how much the UK Treasury department has to spend, and that relies on two things that the country does not control. The first is how much Britain will have to pay the EU for any future relationship. The second – and more important – factor is that any funding increase for research needs the UK economy to continue to grow. Although the Treasury has carried out detailed economic-impact analyses of future growth, the chancellor of the exchequer, Sajid Javid, is not yet releasing the results.

But thanks to modelling from UK in a Changing Europe, we know that, under Johnson's proposals, income per capita is projected to be 2.5% lower on average than if Britain remained an EU member, based on economists' projections of income from trade and reduced immigration. The team also says that when trade falls, which it will in the initial period after Brexit, that also reduces productivity. After factoring productivity losses into the models, post-Brexit income per capita could be between 2.3% and 7% lower.

These figures call into question assumptions that Brexit will bring an economic dividend. And without such a dividend, the government will probably struggle to keep its promises of increased research funding.

As the Brexit saga rolls on, researchers need to continue their objective analyses of its potential impacts, and to call out what could be prematurely optimistic promises. They must highlight the risks to research and ensure that none of these issues is trampled on in the stampede to get a deal in place.

 The slow growth of India's tiger population is a rare good news story."

Open data could save more tigers

India has a duty to give researchers access to the raw data on this threatened species.

On Global Tiger Day in July, India's government announced a victory. It declared that the nation is home to 2,967 wild tigers – a major increase on the 1,872 animals recorded in 1972.

Centuries ago, tens of thousands of tigers roamed the world. Today, only six sub-species remain and the International Union for Conservation of Nature estimates that there are no more than 3,159 individuals in the wild. But, after centuries of hunting and habitat destruction, India's tigers seem to be turning a corner. However, as we report on page 612, there's much more that could be done.

To begin with, tiger-conservation work must be improved in more of India's 50 tiger reserves – the current effort is concentrated in just a handful. And the government must give scientists at India's universities access to the reserves and the raw data on which its tiger estimates are based.

At present, scientists cannot access the full data that the government collects during the national tiger census, which is conducted every four years. This is in spite of the fact that India's National Data Sharing and Accessibility Policy states that scientific data collected using "public funds" should be made available to those with a legitimate research interest.

If researchers were allowed to see the raw numbers, they could independently verify tiger population estimates. Such verification is essential to knowing whether conservation measures are working. It could also allow scientists to project population trends over time, and estimate birth and death rates. These measures would help officials in the government forestry department to assess populations more accurately and act quickly if they foresee a risk of local extinction. Such action might have helped to prevent the complete loss of tigers from three reserves that the 2018 census reports.

Researchers are also keen to get involved in, and improve, the census itself. The four-yearly survey is a gargantuan effort. The 2018 one covered 381,400 square kilometres and amounted to nearly 594,000 human-days of work. It logged 35 million photographs taken with hidden motion-triggered cameras, yielding almost 77,000 images of tigers.

But instead of trying to count tigers across such a vast area, individual reserves – where 70–85% of India's tigers are thought to be found – could be sampled more often, and automatic image recognition used to process the pictures.

The slow growth of India's tiger population is a rare good news story in international conservation. But the Indian government could be doing more. It must trust independent scientists with the raw data, so that one of Earth's most iconic species can survive long into the future.