

COVID AND HORIZON 2020: HOW CAN EUROPE BRIDGE THE GAP?



A SCIENCE|BUSINESS SPECIAL REPORT

On May 28, the European Commission tabled a monumental €1.85 trillion proposal for the next multi-year EU budget and post-COVID recovery plan, including €94.4 billion for Horizon Europe, its next Framework Programme for research and innovation.

Against this backdrop, however, it is easy to forget that the COVID-19 pandemic is forcing the Commission to take a range of urgent decisions that influence its current research programme, Horizon 2020, the thousands of scientists and organisations working on its projects, and the billions in funding which remain to be allocated.

The purpose of this Science|Business special report is to shine a light on some of the critical problems facing policy makers and research stakeholders alike. It tables a range of options which could help the Commission (in particular) and other agencies to minimise the short-term damage to R&D systems and industrial value chains, and even produce longer-term benefits. And above all, it highlights that Horizon 2020 decisions taken today matter to all R&D actors in Europe, with potentially far-reaching effects, and should not be overlooked as the EU negotiates its future.

DISCLAIMER

Between March and May 2020, Science|Business has organised a number of public and private meetings to discuss the impacts of the COVID-19 crisis on international research, development and innovation. This report is based broadly on those dialogues, but is ultimately a product of Science|Business. As such, the views expressed herein do not necessarily reflect those of individual members of its Network.

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The COVID-19 pandemic is causing huge upheavals throughout the European policy landscape. These are playing out in real time in Horizon 2020 (or “H2020”), the EU’s existing Framework Programme for research and innovation now entering its final cycle. It is forcing the European Commission to rethink its spending priorities, and in parallel it is dynamiting the carefully-laid plans of thousands of H2020 projects and grantees worldwide.

Unsurprisingly, the ripple effects spread beyond laboratories and up to the systems level. National funding agencies are frustrated over not being able to fund SMEs and industry sufficiently. Universities fear the impacts of COVID on international mobility, with everything that entails for recruitment of staff & students and cross-border research.

Meanwhile, prospective freezes on industry spending cast a shadow over current R&D partnerships, value chains and innovation clusters, and threaten to reduce career opportunities for the next generation of European scientists. And the rapid shift of billions of euros to COVID-related research leaves many other disciplines wondering what will be left for them once the dust has settled.

Some take the view that more attention should be focused on Horizon Europe, the next Framework Programme, which is scheduled to launch in January 2021. But today’s pending actions and decisions around H2020 matter. For one thing, even before COVID the Commission had budgeted around €14 billion of funding for this year (including some €600-700 million from third party countries) – the largest single tranche to date. For another, projects will be running on its terms and conditions until at least 2023, and potentially longer if there are substantial delays to finalising the next EU budget and recovery plan.

Against this backdrop, Science|Business has convened a number of public and private dialogues with leading lights in European R&D, and among the world-renowned research and innovation organisations that make up its Network. The purpose? To identify the critical issues facing Horizon 2020 beneficiaries today, and to define some practical ways for the European Commission to help them navigate through this period of unprecedented turbulence. This special report is the outcome of those discussions.

In this section, we highlight six areas of strategic concern for European R&D leaders as they scramble to respond to new COVID realities – including changes in the terms and conditions for delivering projects under Horizon 2020. From budget and contract issues to mobility, international cooperation and synergies between EU and national financing, Europe's R&D community is looking to Brussels for clarification, support and flexibility going forward.

Not for the first time, the European Commission finds itself between a rock and a hard place. The imperative of keeping the European science machine running smoothly is at the top of the list of priorities during the pandemic. But with many institutions and facilities operating at a tiny fraction of previous capacity, the way forward is uncertain and unclear.

Nonetheless, as evidenced by recent Science|Business dialogues, Europe's research community is still looking to the Commission for leadership and support. R&D decision-makers are concerned that without strong signals from Brussels about future priorities and opportunities, the law of diminishing returns will kick in to fill the vacuum – meaning that national systems, funds and programmes will decide to follow their own paths, or even reduce funding allocations.

For those involved in Horizon 2020 projects, the current state of play provokes mixed feelings and reactions. On the one hand, there is appreciation for the urgency and speed of the Commission's response to the COVID crisis, and recognition of its efforts to provide more flexibility to H2020 grantees. On the other hand, R&D actors across Europe – whether in public or private sectors – see many months of uncertainty and insecurity ahead of them, and urgently want more clarity from the Commission on ways to cope with the disruption to ongoing projects.

Painting a broad picture, their concerns fall into six main categories:

1/ BUDGET & CONTRACT PROBLEMS

While the Commission has moved quickly to extend deadlines and to clarify how existing budgets and grant agreements can be reorganised, many fear it is not enough – a rearrangement of the deck chairs on the Titanic, so to speak. The central concern is that H2020 beneficiaries may soon hit a budgetary iceberg, leaving a financial hole below their water line. Extended deadlines almost inevitably mean increased costs, not least in staff salaries. And, while the Commission has said it will cover such costs as event or travel cancellations, to date there is no indication that it will systematically provide additional core funding to compensate for delays. This situation in Brussels is in stark contrast to that in Bonn, where the German Research Council recently announced €175 million in top-up funding for virtually any of its grantees whose staff or many other costs have been hit by COVID-19 delays.

By extension, reality is starting to bite hard for PhDs and early-stage researchers in many domains. Contracts are set to expire on original project timelines, while a looming recession threatens future R&D career opportunities. This should matter to policy makers across Europe – not just for the short-term risk of losing scientific talent, but also for the longer-term damage to the dynamism and competitiveness of research and innovation hubs across the continent.

2/ INDUSTRY RESOURCES

The crisis has also turned off supply taps throughout the private sector. Industry contributions, both financial and in-kind, are being suspended or withdrawn – from strategic value chain initiatives and public-private partnerships, to single H2020 projects and vital R&D training schemes such as Marie Skłodowska-Curie Actions.

These trends are leaving key actors in innovation ecosystems – such as universities, start-ups and SMEs – feeling especially vulnerable, given their reliance on the resources and expertise of larger technology-intensive companies. Put bluntly, nobody knows whether the R&D budgets which have enabled these ecosystems to flourish, and underpinned many an EU project, will be there in future.

By extension, there are growing frustrations with parts of the EU statute book – in particular around the definition and implementation of state aid rules – which national agencies see as hindering the level of support they can give, both to companies and to larger-scale R&D programmes which are coming under financial stress from COVID-related disruption.

3/ MOBILITY

Research mobility has essentially come to a halt against a backdrop of government measures to control the pandemic. This matters on different levels for H2020 (and of course its successor, Horizon Europe). R&D organisations indicate that longer-term visas and permits are becoming far more difficult to obtain for visiting experts and specialists.

Some question the future value in including non-EU actors in collaborative proposals if there is a realistic chance that lockdowns, border controls and even quarantine will return.

In parallel, flagship programmes with mobility in their DNA – such as Innovative Training Networks (ITNs) for early-stage researchers, plus the Individual Fellowships for more experienced scientists, which underpin the Marie Skłodowska-Curie Actions – continue to issue calls for proposals, despite deep uncertainties around future mobility restrictions if the COVID crisis continues or re-emerges.

All of this is not limited to research, of course. It is blindingly obvious that there will be huge knock-on effects on campus diversity, tuition revenues and the institutional business models that rely on them to varying degrees, and other big EU success stories, such as the Erasmus scheme.

As Robert-Jan Smits, the former EU R&D chief and current president of Eindhoven University of Technology, underlined in a recent Science|Business webcast: “A lot of universities, not only in the Netherlands, but in Europe and in the West as a whole, will be confronted with disruption of the flow of talented international students coming from China and India, and some predict it may last at least two to three years before this flow of top talent is coming back.”

4/ CROSS-BORDER COOPERATION.

Digital and communication technologies have certainly made it easier for researchers to cope with the pandemic, and in some ways have ushered in a new understanding of what is possible through virtual collaboration.

However, there are fears that the situation will have a negative effect when it comes to establishing new consortia for the final cycle of Horizon 2020 funding – not least for potential partners outside of Europe or in member-states with less established R&D ecosystems and support mechanisms.

In the absence of physical fora where R&D actors can meet, establish contacts and find research synergies, three main concerns emerge. First, that the quality and ambition of new proposals will suffer as a consequence of not being able to co-create ideas in the same room. Second, that it will be harder for partners to establish the levels of mutual trust to take on the requisite shared risks and legal obligations of a Horizon project. And third, that these conditions hand established networks and consortia an automatic, disproportionate advantage in applying for funding. Under these circumstances, it will be even harder for new entrants – from member-states as well as non-EU countries – to engage, identify partners and develop competitive proposals.

5/ BALANCE.

While COVID R&D is understandably attracting the lion's share of funding and policy attention today, many R&D stakeholders trust that the last cycle of Horizon 2020 will uphold the cross-disciplinary and thematic scope of its predecessors.

For example, the Commission's ongoing efforts to secure approximately €1 billion in funding for its special European Green Deal call may mean lower budget numbers for other interdisciplinary schemes, such as missions, in the months to come.

As such, European R&I communities would welcome greater clarity on how the Commission intends to strike a balance going forward – not least in terms of social sciences, arts and humanities (SSH) research. Although natural and life sciences may be struggling with the closure of laboratories and technology facilities, SSH researchers have their own issues, such as collections and archives that can only be accessed from specific physical buildings – including digital archives in some cases. With major financing now tabled for future pandemic preparedness, there are also concerns that new programmes will prioritise a relatively narrow group of disciplines – thus mirroring the profile of many scientific groups currently advising governments – while pushing behavioural and social sciences to the margins.

6/ SYNERGIES BETWEEN EU AND NATIONAL FINANCING

The final category is one that matters greatly for Europe's broader economic future: the survival of its young, research-intensive companies with high growth potential. The COVID crisis has spurred both EU and national funding agencies to pay increased attention to such scale-up enterprises, with major targeted efforts to channel more liquidity to firms needing to finance ongoing R&D activities.

But in the process, some vital inconsistencies between the two have been highlighted – perhaps most notably around the application of the EU’s state aid rules. At the heart of this is the EU’s definition of “undertakings in difficulty” (UiD): a well-intentioned measure brought in to stop countries from propping up companies that were not financially viable.

While the Commission has temporarily relaxed these rules in response to the pandemic, the definition and regulation continue to have the unintended consequence of preventing national agencies from supporting high growth and scaling business through notified schemes under the state aid framework. And it is important to note that the Commission itself does not apply the “UiD” test to firms it finances through its own instruments.

So why does this matter in the context of H2020 and Europe’s response to COVID-19? One obvious area is the European Innovation Council (EIC). As a result of the above, the very firms the Commission is championing through programmes like the EIC Accelerator are ending up excluded from national aid schemes, at a time when they need all of the resources they can get to realise their potential. Which, as most would agree, rather undermines the value of EU and national investments alike.

In this section, we suggest a range of options that could help the Commission minimise the short-term damage, and even produce longer term benefits. In short, more flexibility and resources are called for to see H2020 projects through to intended conclusions. International collaboration should be strengthened. New networking models and mobility need to be developed. Better synergies between European and national funding are needed, not least by addressing state aid barriers. Meanwhile, 'moonshots' and open science can help to intensify collaborations as well as find solutions for COVID-19 and other societal challenges.

@ CONTRACT FLEXIBILITY & TOP-UP FUNDING

Regardless of profile, sector, programme or instrument, R&D actors involved in Horizon 2020 are unanimous in calling for more flexibility with contracts and grant agreements, as well as additional financial help.

In the previous section, we outlined the problem of extended deadlines and budget overruns. While the Commission is speedily handling requests for project extensions of up to 6 months, it has been crystal clear on the cash front to date: "...the maximum grant amount indicated in Article 5 of the Horizon 2020 Model Grant Agreement **cannot be increased**".

Despite this seemingly immutable situation, one suggestion is that the Commission should consider advancing at least ten per cent of any final instalments of H2020 project financing. In principle, this would go some way to helping beneficiaries address liquidity problems, cover unforeseen costs and extend staff contracts in the short term.

Meanwhile, another line of argument runs that the Commission should explore every avenue to find top-up funding for existing H2020 projects. The EU's successful mobilisation of billions to fight COVID – in the blink of an eye, relative to customary Brussels processes – has created the impression, rightly or wrongly, that a new modus operandi for budget reallocation (on a 'needs must' basis) is now possible.

One of the principal justifications for this approach is risk mitigation – and in particular the prospect of beneficiaries invoking force majeure and prematurely ending their work to avoid the financial burdens involved. Beyond the loss of prospective data, results, insights and impact, a legal and financial labyrinth may await, bringing the Commission and grantees into conflict over existing contracts, allocated funds and unmet obligations.

One 'neat and tidy' way out of this dilemma may simply be for the Commission to allow ongoing projects to finish without submitting all key deliverables committed to in their Grant Agreements. This approach appeals to pragmatists, who also feel that it will help the Commission focus more attention on a smooth transition to Horizon Europe. (That said, others take a more cynical view that it might allow some projects off the hook, for not having been able to deliver in the first place. But this risk is no doubt something that will be carefully managed by Commission policy officers.)

Another option is to 'hardwire' more flexible parameters into existing grant agreements to facilitate cost reallocation – not least for fixed costs such as personnel, equipment and use of infrastructure.

While budgets can already be moved around, many beneficiaries would welcome having complete freedom, under such exceptional circumstances, to reallocate irrespective of the original work plan and budget, and without having to go through formal Commission review and approval processes. This may be especially suitable around H2020 programmes such as Innovation Actions, where prototyping, demonstration and large-scale product validation – whose timelines and outcomes can be highly variable – are often at the core of project design.

@ KEEPING INDUSTRY ON BOARD

In the case of industrial involvement in H2020 programmes and R&D partnerships, extra funding is called for to sustain the input of technology, facilities and know-how, as well as more flexibility on the type of inputs companies may make. A shift from 'in-cash' to 'in-kind' contributions could be explored for companies of all sizes, as well as other entities – such as foundations, city and regional development agencies, and science and innovation clusters – which may be experiencing budgetary pressures as a consequence of the pandemic.

A second potential action ties in with the EU's temporary relaxation of state aid regulations, and how this can most effectively support existing R&D partnerships and projects. Under the current rules, a considerable amount of red tape and protocols kick in if member states surpass €150 million in the aid schemes they have already notified to the Commission.

Given the urgency of getting Europe's economies and industrial value chains through the COVID crisis, many feel that these boundaries need to be revisited. In particular, the Commission could suspend, or even remove, its current requirements of providing formal notification and evaluation plans around the €150 million threshold.

The argument runs that in such exceptional circumstances, the speed and scale of response to the crisis also matter exceptionally. Thus, allowing countries to enlarge the amount of financing within established instruments or calls, minus the time-consuming process of navigating complex technocratic review systems at EU level, would be a simple solution to an otherwise complicated problem.

@ MAINTAINING MOBILITY

The ripple effects of today's crisis on researcher mobility will endure – at least until the global science community delivers a portfolio of effective vaccines against the coronavirus. European R&D organisations will need to adjust to a major drop-off in international talent and recruitment, for the foreseeable future. But in the immediate future, the Commission will need to rethink its flagship instruments, criteria and incentives for the final cycle of H2020.

First and foremost, clarity, flexibility and creativity are called for around the last cycle of "excellent science" programmes under Pillar 1 of H2020, given the possibility that COVID-related mobility controls will be in place, to varying degrees, for the next few years.

While this applies primarily to Marie Skłodowska-Curie Actions (MSCA), the other key blocks in Pillar 1 – the European Research Council, Future & Emerging Technologies and Research Infrastructure schemes – also include significant aspects of mobility and human capital development, and will be similarly affected.

R&D organisations everywhere would welcome contingency guidelines on replacing on-site work experience and training modules with virtual equivalents. In some ways, the Commission could treat the next cycle of MSCA projects – especially Individual Fellowships, and to a lesser degree Initial Training Networks – as a test bed for more agile contracts and budgets which take the prospect of future lockdowns into full account.

There are also concerns that – with international networking opportunities reduced to a bare minimum – most of the remaining H2020 funding will be hoovered up by the powerhouses of western Europe, either individually or within their current elite networks. To counter this, the Commission could toughen up, and more strictly enforce, requirements for the inclusion of EU-13 and accession country partners in the final cycle of collaborative projects. Alternatively, if this represents too hot of a political potato, then it could at a minimum create more specific calls or topics which directly benefit R&D actors in these regions, in keeping with the overall ethos of widening already embedded in H2020.

On a more upbeat note, across various Science|Business dialogues participants have called for the EU to protect and sustain the cross-border incubation of excellent science which has characterised past Framework Programmes.

So what might this look like in practice? As a starting point, Commissioner Mariya Gabriel has been tasked by President Von der Leyen with revitalising the European Research Area (ERA). The crisis has highlighted the value of digital connectivity – so any plans for the revised ERA should surely feature high quality, online networking platforms as a central pillar.

By extension, the Commission could seize the chance to greatly expand – and improve the user-friendliness – of its existing tools for finding R&D partners. How might platforms such as CORDIS be improved by insights from the ERA corona platform, as well as initiatives such as the #EUvsVirus hackathon? If the EU can both simplify and strengthen its research connectivity platforms, it will do wonders to boost the appeal of engagement for an international audience of prospective partners.

@ STRENGTHENING EUROPE'S DIGITAL INFRASTRUCTURE.

In recent Science|Business dialogues, it has been argued that the EU and member-states now have a window of opportunity to push ahead with transformative investment in Europe's digital infrastructures, data networks, 5G and other advanced telecommunication technologies.

The final cycle of H2020 work programmes could make this an immediate priority – as could a renewed framework for the Digital Europe programme, which had slipped off the radar screen in recent months. By extension, the scientific response to the crisis has cast long-term, large-scale initiatives such as the European Open Science Cloud (EOSC) in a fresh – some would say more positive – light.

To find a solution for the virus, pieces of puzzles are being assembled from around the world, with unparalleled volumes of data and knowledge flowing together. Maintaining and accelerating this approach could revitalise the European Research Area, boost international cooperation, enhance quality of data analysis, and be fundamental to future research addressing COVID impacts and other societal problems.

When completed, the EOSC will offer a virtual ecosystem of data where different scientific disciplines are linked together. As such, there are calls for the Commission to ensure that the EOSC continues to cooperate and consult the research community on technical issues as well as interoperability, supported by a lean and decentralised management structure.

@ REWARDING VIRTUAL COOPERATION

The COVID experience has brought digital and information technologies to the fore in unprecedented ways. Regardless of domain, scientists have been obliged to find new methods to conduct research, manage projects and maintain networks. Virtual collaboration is no longer a theoretical option; it has become the default setting.

And some leading research organisations are already planning for their headline summits and conferences in 2021 to be delivered online. In the more immediate future, the Commission's own Research and Innovation Days in September will most likely be virtual. Given the value of physical networking at this event in pre-COVID times, DG Research has a challenge – but huge opportunity – on its hands if it can use digital technologies to empower thousands of stakeholders worldwide to connect and exchange scientific ideas.

It might be a fitting legacy, therefore, if the last cycle of H2020 redefines impact in ways that acknowledge the benefits of digital collaboration, and somehow rewards them in the assessment of future proposals – for example, in terms of cost and time savings, for individuals and institutions; in advancing the development, sharing and uptake of digital technologies (across public, private and civil sectors); and, of course, helping to reduce Europe's environmental footprint.

All of the above would appear to fit very well with the objectives of the European Green Deal, the EU's new digital and industrial strategies, and even the future interoperability of its health systems.

@ SYNERGIES BETWEEN EUROPE'S ENTERPRISE SAVIOURS.

As outlined above, the EU and its member states share a very clear, common goal: to sustain enterprises large and small through this unprecedented period of disruption, so that they are still around to make a full contribution to Europe's post-COVID recovery.

Many new funding programmes and instruments are being deployed at national level to provide this life support, but there are plenty of structural barriers to address, if these are to be fully complementary with the EU's own efforts. At the top of the list, is the proposal that the Commission should reconsider some key components of its General Block Exemption Regulation rulebook – or "GBER" for short – as quickly as possible, in order to give national agencies the ability to gear up financing to R&D customers that need it most.

In practical terms, this could include a couple of important changes, either temporary or permanent. The first is to modify the 'incentive rule' in the GBER (Article 25), which currently prevents states from increasing their investment in collaborative R&D projects once these have already begun. Given the need for rapid injections of capital across the board, national agencies should be able to provide buffers and additional resources to those under the most acute pressure.

The second relates to the Commission's temporary relaxation of the state aid rules in response to the COVID crisis. Under this new Framework, companies which would have been considered 'in difficulty' before 31 December 2019 are currently excluded from receiving financial support. But given the near-universal impact of COVID across economic activity in all sectors, the view is that this should be removed to allow as many firms as possible to get the help they desperately need.

Horizon 2020 ends, in theory, in just seven months' time. So why should we continue to pay it close attention when its successor, Horizon Europe, is due to launch in January 2021? In part, because the problems cited in this report are not temporary; they will shape H2020 projects until 2023 or 2024, and thus will influence the effectiveness and impact of billions of euros of R&D financing.

In addition, there is always the prospect of political deadlock around the Commission's new budget and recovery plan proposal. If member-states and the European Parliament fail to reach a (miraculously) quick agreement, we may be stuck with the current funding rules throughout 2021, and with less money in the pot due to the UK finally closing its chequebook and further pandemic-related reallocations. So, again, measures taken today are likely to have a significant impact for years to come.

Meanwhile, the scientific response to COVID-19 will continue to overshadow the R&D agenda, occupying the minds of policy makers, funders and researchers alike. It seems clear that H2020 will incorporate further actions and calls to advance the fight against the coronavirus.

One concrete proposal is for the Commission to continue with the existing priorities in H2020, but to allocate a percentage of the budget to some form of COVID-inspired 'moonshot' initiative, with a prospective focus on emerging and re-emerging diseases. Another option, potentially complementary to the first one, would be to identify the most pressing consequences of the COVID crisis and for the EU to define missions to solve them.

Given the systemic impacts of COVID-19, R&D leaders would strongly support the clear integration of social, economic and environmental sciences into any initiative – thereby also ensuring that critical financing continues to flow into disciplines and domains that have been classified as 'non-essential'.

Looking ahead to Horizon Europe and the long post-COVID recovery phase, there are various ideas for ways in which the Commission can lighten current requirements, while embracing a *de minimis* spirit of bottom-up, decentralised models and programmes. In a recent Science|Business meeting, for example, participants discussed how EU-funded research might look in future without the conventional block diagramme and work package structure of classic Horizon projects.

One suggestion is for the Commission to work more closely with national and regional innovation agencies and research and technology organisations (RTOs), to ensure a more effective translation of EU policy actions into local and member state contexts. Such actors will have vital roles to play in rebuilding and strengthening industrial value chains, as well as the depth of experience guiding companies in distress through the crisis. By extension, the Commission has an indicative timeline to review existing state aid policy and regulations through to 2022. As the COVID peaks subside across Europe, it would seem an opportune time to accelerate these, involving a broader spectrum of national agencies, and to act quickly to address the discrepancies and inconsistencies exposed by the crisis.

Another is to revisit the requirements and criteria for some of its headline programmes, not least mobility-oriented ones such as the Marie Skłodowska-Curie Actions. The level of disruption offers the Commission – and other R&D stakeholders – a chance to redefine the nature of work-based experience. Beyond the promotion of new models of e-working, there is an opportunity to experiment with and invest in new e-training and e-learning formats as well.

It should also not be forgotten that the EU plays an essential role in supporting R&D ecosystems beyond its borders, and that its help may be more acutely needed than ever in the years to come. The Commission is encouraged to increase the range and diversity of collaboration spaces that support international science partnerships – not least given the prospect of headline events such as its Research and Innovation Days going virtual this autumn. And as the COVID crisis has shown, the principles of open access and open data have enormous value – to science, governments and society – and should be upheld as we prepare for the future.

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