

*15 September 2021*

# Process review of UKRI's research and innovation response to COVID-19

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Final report



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## Executive summary

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This report presents the findings of a process review of UKRI's research and innovation funding response to COVID-19. Areas of focus are its strategic rationale, governance, funding and process changes, operations and delivery, communications, assessment processes, and monitoring.

Our headline conclusion is that UKRI performed well in its function as a research and innovation funder under difficult conditions, having to process a substantially larger volume of applications at a much faster pace than would ordinarily be the case. Especially in the early months of the pandemic, UKRI rapidly funded a range of studies critical to the pandemic response. However, UKRI's COVID-19 response was negatively affected by three partially related factors:

- UKRI's target to process applications within a few weeks was missed across large portions of its portfolio. This was caused in part by the large volume of applications and consequent workload for staff and reviewers, but also by a funding shortfall in late summer of 2020, while HM Treasury was processing a business case to allow UKRI to re-allocate further funding to the COVID-19 response
- Beyond the early stages of the response, as government's research-needs expanded from immediate 'pandemic response' to a broader range of societal, economic, ecological and technological questions, UKRI had limited ability to engage in systematic priority-setting, i.e. of prioritising certain topics over others, or of using a range of different award types (including of different lengths to suit the urgency of different questions)
- UKRI's grants application and management system, JeS/Siebel, was deemed unfit for purpose by the UKRI leadership, especially due to its inability to rapidly design, launch and run bespoke funding schemes UKRI-wide and at scale, and so much of the COVID-19 response was conducted off-system. This entailed running and organising calls via email and spreadsheets. It also meant there was limited availability of portfolio monitoring data

We set out a number of recommendations in the concluding section of this report to help inform possible future crisis responses, some of which also pertain to post-pandemic business-as-usual. They include urgently replacing the JeS/Siebel system (as is already planned) with a system that enables rapid design and setup of bespoke schemes with individually tailored application formats and assessment processes, to create a small suite of different funding schemes for crisis-responses of all types, and to make use of these habitually (e.g. in smaller-scale crises). We also recommend closely replicating the governance structure used for the COVID-19 response for future large cross-council endeavours, and to ensure a rule-change on how UKRI can rapidly reallocate its budget in possible future crisis scenarios.

Below, we note our key findings in each of the main focus areas for this study.

### Strategic rationale

Originating in part from central government, UKRI's objective (or 'mission') in relation to COVID-19 was to fund research relevant to the stated, emerging and potential needs of government and other actors (e.g. public services, private enterprise) dealing with all aspects of COVID-19 and its wider implications, and to produce impact or useable/actionable knowledge within the lifetime of short-to-medium term awards.

To achieve this aim, UKRI sought to execute the funding response as rapidly as possible, to fund across the disciplinary spectrum, to communicate with central government, and to mobilise the UK research and innovation community.



This overall mission remained consistent throughout and reflects UKRI's overall organisational mission well. It is also similar to the stated objectives in response to COVID-19 of other research and innovation funders across the globe.

Importantly, UKRI's COVID-19 response broadly divides into two parts. The first largely took place in the early months of the pandemic and was in many ways a 'pandemic response' broadly comparable to previous responses to pandemics such as Ebola and Zika, albeit at a larger scale. The second part, which notably encompasses the Agile Call, presents a funding response not just to the pandemic itself, but to the wider societal emergency that unfolded, including questions around the economic, societal and technological consequences of COVID-19 and its countermeasures. While there were precedents and existing guidelines for the first part of the response, this second element presented a genuinely new type of funding endeavour: other than rapid response schemes of a small number of research funders in countries that have recently experienced other societal emergencies, there is little prior experience or guidance to draw on. This also means that the scope for lessons and future optimisation is especially large for this second part of the response.

### Governance

The first part of the COVID-19 response was largely led by UKRI's regular governance structures, with MRC leading much of the funding work, and through interaction between SAGE and UKRI/MRC. For the Agile Call, a cross-UKRI Coordination Group was set up as the central part of the COVID-19 response governance, aided by an advisory expert Taskforce and a Working Group representing the operational and administrative level of UKRI.

UKRI COVID-19 governance arrangements worked very well, especially in terms of facilitating cross-council work through the establishment of a central Coordination Group with substantial decision-making power. The overall leadership of the UKRI Chief Executive, and especially of the Coordination Group chair, was widely praised. Consultees for this study often noted that cross-council collaboration worked exceptionally well compared with previous endeavours.

UKRI succeeded in supporting a large body of work that was broadly relevant to all aspects of the pandemic. Particularly in the first phase of the response, consultation with central government enabled clear communication of research needs, and large platform and consortia studies could be established and funded quickly to support the immediate pandemic response.

In collaboration with the governing Taskforce, UKRI established a set of strategic priority areas for funding within the Agile call. However, as the scope of research-needs broadened, there was a lack of systematic priority-setting in terms of which topics required an especially rapid response (e.g. to be able to yield relevant results on timelines bound by pending policy decisions). While there were many lines of communication between UKRI and central government, these resulted in a general list of priority topics, but not in more detailed prioritisation and specificity in terms of what kind of timelines and impact-pathways were needed for different topics.

### Operations and delivery

UKRI excelled in terms of its service delivery. From external and internal perspectives alike, feedback on ease of application processes and robustness of assessment is overwhelmingly positive – award holders even tended to characterise UKRI's service delivery as better than during pre-pandemic 'business as usual'.

However, UKRI's efforts to deliver a rapid funding service came at substantial personal cost in the shape of severe workload for both UKRI administrative staff and the community of reviewers and panellists. Large numbers of consultees for this study used terms such as 'exhaustion' and 'burnout' when describing the effect of UKRI staff having to process a high volume of

applications so rapidly. Further, despite the substantial efforts put in by UKRI staff, the volume of applications and staff and reviewer capacity meant that the time-to-grant target of up to six weeks was missed frequently: our findings suggest that over a third of award holders waited more than 10 weeks for a decision.

These delays were especially pronounced in the Agile Call and were substantially exacerbated in the late summer of 2020 as UKRI was waiting for a decision by HM Treasury on a business case to reallocate additional budget to the COVID-19 response.

### Communications

UKRI successfully mobilised large parts of the UK research base, at first in the shape of rapidly identifying and supporting key parts of the research system in core tasks critical to the pandemic response, and then in a much broader sense, supporting a large body of awards relating to a wide range of issues around the pandemic and its wider implications. In total, over 6,300 applications were received across the main UKRI calls.

Our survey data also suggest that the aims of calls and investments, as well as UKRI's overall mission as described above, were clearly communicated both internally and to award holders. The open calls did attract a substantial amount of out-of-scope and/or unfundable proposals (alongside many good ones), but our research suggests this is attributable to factors other than UKRI's communication of aims to potential applicants.

### Funding and assessment processes

At the start of the pandemic, UKRI used a range of iterative processes to set up and fund the major consortia and platform studies critical to the pandemic response. For much of the remainder of the response, funding processes strongly resembled business-as-usual, with peer and panel review used throughout, and with minor differences between the Research Councils and small modifications in the later stages of the response. In effect, processes were accelerated, but not significantly simplified to aid that acceleration.

Several funders covered by our international review had schemes using alternative funding processes designed to reduce the peer review burden (including the burden on staff to organise it) or, for smaller and especially urgent investments, to bypass it completely. Other than for specific individual award investments and the recent COVID-19 Urgency Grants, UKRI undertook little experimentation and diversification of funding processes. In part, this is a result of the limited priority-setting (especially for the Agile Call), which left little scope to consider different award types (e.g. sizes, levels of urgency) with different processes for each.

### Monitoring and IT systems

Large parts of UKRI's COVID-19 funding response were conducted 'off-system', relying in large part on application submission via email and administration via MS Word and spreadsheet documents, until JeS/Siebel was brought back into most parts of the process in August 2020 (though it remains out of use for the COVID-19 Urgency Grants scheme launched in Jan 2021).

A main reason for this decision was that it was not possible with JeS/Siebel to set up a bespoke UKRI-wide COVID-19 response call rapidly, let alone a suite of calls that may have been suited to different levels of topical urgency and award 'types'.

It also meant a reduced availability of portfolio monitoring data (including EDI data) in the early and mid-stages of the COVID-19 response, which may have provided valuable evidence. The system is now active, and tailored surveys are being carried out on a regular basis to ensure progress reporting on all funded awards, so aside from comprehensive EDI and unsuccessful applicants data, UKRI is now well set up for the evaluation of the outcomes of the funded work.

# 1 Introduction

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This report presents the findings of a process review of UKRI's research and innovation funding response to COVID-19. This study was commissioned by UKRI and carried out by Technopolis between May and July 2021. It covers the research and innovation funding response from early 2020 to the spring of 2021 (i.e. up to the latest tranche of awards funded under the Agile Call).

The review focuses on process aspects rather than on the outcomes of the funded work. It also does not cover UKRI's work to stabilise and support the research system during the pandemic. This study was commissioned to gather evidence that will be used to help assess the effectiveness of UKRI's R&I response, and:

- Understand the environment within which UKRI was operating and place the changes made and decisions taken in context
- Summarise the actions taken by UKRI and place these actions in the context of the environment within which UKRI was operating
- Gather evidence and perceptions from key stakeholders on UKRI's R&I processes in terms of what was done, how and why
- Identify any organisational or environmental factors that enabled the COVID-19 response, how and why they enabled the changes as well as any that slowed or inhibited changes
- Identify and record any lessons learned, both to identify short-term changes that could be made as well as lessons for design and delivery that could be considered for the future

The terms of reference for this study state seven broad categories of enquiry, which have been used to structure this report: strategic rationale, governance, funding and process changes, operations and delivery, communications, assessment processes, and monitoring. We include further information on the study's aims and provisional review questions in Appendix H.

## 1.1 Approach and method

This is not an ordinary evaluation. Research and innovation funding initiatives typically have a pre-determined set of aims and a strategy to reach them. Traditional evaluations can judge their effectiveness using static comparators (e.g. a baseline, set of criteria or benchmark) against which judgements can be made. However, COVID-19 constituted a complex and unprecedented emergency: as the crisis unfolded with continually shifting priorities, and as pandemic-knowledge and mitigation strategies developed, all parts of society, public and private, had to adapt, adjust and 'find their feet'. The roles and research-needs of actors both inside and outside government evolved.

The usual means by which we might judge funding initiatives (e.g. comparison with other schemes, progress against fixed projected outputs and outcomes) therefore only apply here to a limited extent. Moreover, there was no pre-determined answer to the question of what role an organisation like UKRI ought to have in an emergency of this nature. Research funders in the medical sciences (within and beyond the UK) traditionally have established strategies for pandemic responses and have some experience of responding to pandemics (though not at the scale of COVID-19). However, this is not the case for most national, cross-disciplinary research and innovation funding agencies.

To conduct a review appropriate for these circumstances, our core approach has therefore been to, first, establish an understanding of UKRI's aims and objectives (its 'mission') in the COVID-19 crisis and, second, evaluate the implementation against that mission, mindful also of any evolutions and changes to UKRI's mission from early 2020 to the present.

The review involved the following method components:

- A review of the documents and data pertaining to UKRI's Covid response, supplied by UKRI to the study team. This review also included mapping of funding processes
- An online survey of lead investigators of all awards funded as part of the UKRI COVID-19 response investments (N=665). It yielded 442 responses, equalling a response rate of 66.5%
- A programme of 22 semi-structured interviews with members of the UKRI COVID-19 Taskforce, Coordination Group and Working Group, and selected additional individuals
- An online survey of UKRI administrative staff who worked on any UKRI COVID-19 response investments, but were not represented on any of UKRI's COVID-19 governance groups (N=164). It yielded 93 responses, equalling a response rate of 56.7%
- A review of six other funders' COVID-19 response: The German Research Foundation (DFG), The Japan Science and Technology Agency (JST), The Taiwan Ministry of Science and Technology (MoST), The National Research Council Canada (NRC, Canada), The Dutch Research Council (NWO), and the National Science Foundation (NSF, USA)

We note two methodological limitations: first, it was not possible to survey unsuccessful applicants to any of the UKRI COVID-19 response investments, as UKRI does not seek permission from unsuccessful applicants to share their contact information for evaluative studies of this kind. Second, there are substantial gaps in UKRI's internal data, owing to the fact that the earlier stages of the COVID-19 response were conducted 'off-system,' i.e. without the use of UKRI's Joint Electronic Submission and grant management system (JeS/Siebel). This affects the period up to the Summer of 2020, and means there is incomplete coverage of certain aspects of application information (e.g. success rates at different stages of assessment processes), and of Equality, Diversity and Inclusion (EDI) data. We return to this latter issue in the final main section of this report under the heading of monitoring and IT systems, as this is not only a methodological limitation, but also a substantive issue with UKRI's COVID-19 response.

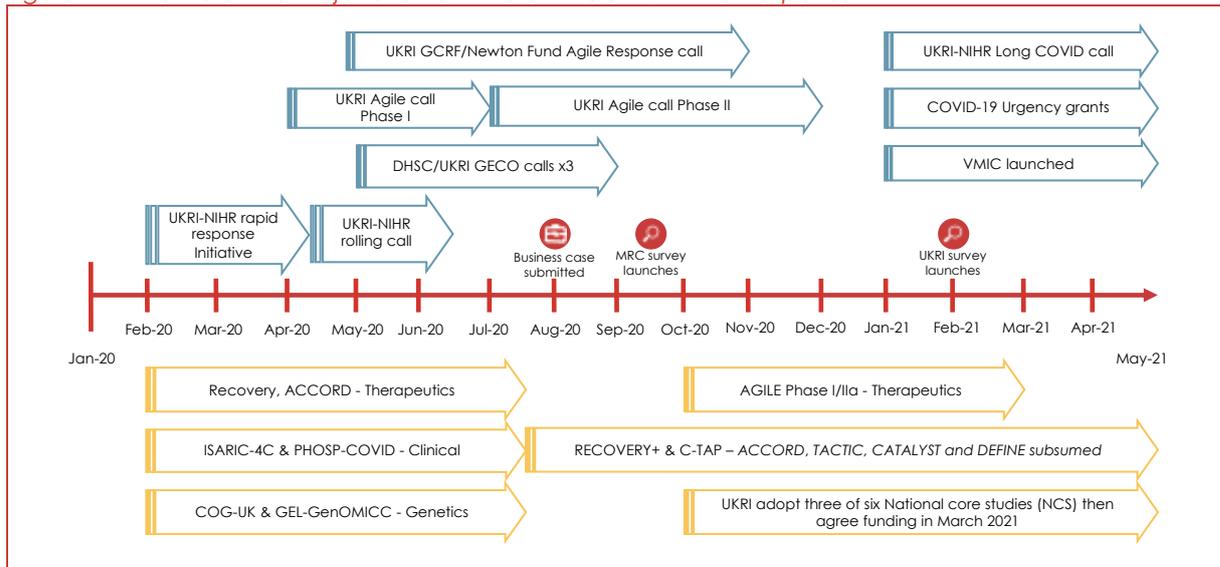
## 1.2 UKRI COVID-19 response investments at a glance

UKRI's funding response to the COVID-19 crisis involved the following components:

- Rapidly supporting several key centres and consortia at the start of the COVID-19 outbreak. These covered therapeutics (e.g. the RECOVERY trial into treatments for COVID-19 including the identification of Dexamethasone as a lifesaving treatment, and the UK COVID-19 Therapeutics Advisory Panel, UK-CTAP, though the latter did not begin until summer of 2020), clinical studies (e.g. UKRI and NIHR funded: clinical trials and GMP manufacture to aid the development of the Oxford/Astrazeneca vaccine; the International Severe Acute Respiratory Infection Consortium, ISARIC, in setting up a UK-wide Coronavirus Clinical Characterisation Consortium, ISARIC-4C; and the Post-Hospitalisation COVID-19 study, PHOSP-COVID), and genetics (e.g. the COVID-19 Genomics UK, COG-UK consortium and the Genomics England COVID-19 study on the Genetics of Mortality in Critical Care, GEL-GenOMICC)
- Setting up and running a joint Rapid Response initiative between UKRI and NIHR, launched in February 2020 with two specific calls (including vaccines, therapies and improving understanding of COVID-19), and then a rolling call from March 2020 to July 2020
- Setting up and running the UKRI COVID-19 Agile Research and Innovation response call (hereafter 'Agile Call'). It launched 31<sup>st</sup> March 2020 and ran until December 2020. Projects could last up to 18 months to address the health, social, economic and environmental impacts of the COVID-19 pandemic. The funding was issued through an agile funding process managed by the nine UKRI councils with oversight from a research and innovation Taskforce. This call is split into two phases: the first was conducted off-system in order to enable rapid launch, while the second phase operated through UKRI's usual JeS/Siebel system (with the exception of Innovate UK, which operates with its own funding system)

- Calls for international cooperation on COVID-19, including the Global Effort on COVID-19 GECO call and the UK-India COVID-19 response call, awards to international co-investigators from seven countries on key topics and the UKRI COVID-19 GCRF/Newton Agile Response (closed on 31 July 2020)
- UKRI also set up an accelerated process for existing UKRI-funded research projects (i.e. funded before the COVID-19 pandemic) to change scope and objectives. This did not constitute any additional investment as such, but allowed the usually lengthier process of mid-award scope-change to take place over just a few days or weeks, so that existing funded work in potentially important areas could become more directly relevant to challenges presented by the pandemic
- HMG commissioned six National Core Studies (NCS) to address priority operational and policy research questions. Three of these were adopted by UKRI and UKRI funds and oversees them, as they align with existing strategic objectives and COVID investments
- Since closure of the Agile Call (December 2020), the Research Councils continue to accept COVID-19 related proposals through business-as-usual routes, as well as through COVID-19 specific calls, notably a call on 'Long COVID' and the fast-track COVID-19 Urgency Grants for time sensitive and exceptional COVID-19 proposals, including for projects with a timeline of just three months

Figure 1 Timeline of the major events in the UKRI COVID-19 R&I response



Note: PHOSP-COVID, ISARIC-4C, COG-UK and GEL-GenOMICC are still active

Initially UKRI approved a £50m budget and Research Councils also spent from their business-as-usual funds until a business case was approved by HM Treasury in late September 2020. The UKRI business case secured HM Treasury approval to spend a further £120m of repurposed UKRI funding which was used to support both the UKRI COVID-19 Agile R&I response call and part of the UKRI-NIHR Rapid Response initiative.

There is a slight challenge in giving an exact and universally agreed figure for the total investment made in support of UKRI's COVID-19 response, with several complicating factors to take into account, including: whether or not to count the 'repurposed' existing awards, whether to count awards made by individual Research Councils after the Agile call ended (and if so, which ones) and whether to account for co-financing from other sources (e.g. DHSC, NIHR). Moreover, UKRI continues to fund new awards relating to COVID-19 (including through its business-as-usual response-mode funding), so in this sense there is no definitive figure.

However, we present below the figures for the main instruments that form the vast bulk of UKRI's COVID-19 response, along with award numbers where relevant.

*Table 1 Investment sizes and award numbers*

Programme	Total value	No. of awards	
<b>In scope for the process review</b>			
UKRI Agile R&I Calls	£172.5m	515	
UKRI/NIHR Rapid Response Initiative (UKRI/DHSC)	Call 1&2: £25.5m (UKRI: £12.6m) Rolling call: £46.3m (UKRI: £23.2m)	79	
GCRF/Newton Fund agile response call to address COVID-19	£14.5m (all UKRI)	40	
Global Effort on COVID-19 (GECO) Health Research (UKRI/DHSC)	£11.6m (UKRI: £5.8m)	19	
GenOMICC Consortium	£20m** (UKRI: £3m)	1	
COG-UK	£20.8m (UKRI: £6m)	1	
RECOVERY	RECOVERY (Phase I): 2.1m (supported through the UKRI/NIHR rapid response initiative call 1) RECOVERY+: £18m (UKRI: £9m) <u>Total: £18m (UKRI: £9m)</u>	1	
COVID-19 Therapeutics Advisory Panel (UK-CTAP)	£1m (all UKRI)	1	
ACCORD	Information currently not available	1	
<b>Fully or partially out of scope for the process review</b>			
Programme	Reason for (partial) exclusion from our study	Total Value	No. of awards
COVID-19 Africa Rapid Grant Fund - Newton	UKRI was not solely responsible for the processes undertaken to review these proposals	£3.8m (initial funding)	80
COVID-19 urgency grants (UKRI)	Not listed in the terms of reference for this study, but referenced in this report where relevant	Information currently not available (estimated at just under £0.8m)	10
Fund for International Collaboration (FIC) Strategic Opportunities Stream	UKRI was not solely responsible for the processes undertaken to review these proposals	MRC/ESRC with Department of Biotechnology (DBT) in India: £5m UKRI and the Japan Society for the Promotion Science (JSPS): £5m <u>Total: £10m</u>	-
Vaccine Manufacturing Innovation Centre (VMIC)	UKRI was not solely responsible for the processes undertaken to review these proposals	£200.2m (all UKRI)	1
National Core Studies (NCS)	UKRI was not solely responsible for the processes undertaken to review these proposals	£37m (all UKRI)	3
Repurposed funding	Not an actual investment by UKRI, but referenced in this report where relevant	£147m (all UKRI) [pre-existing investment]	305

## 2 Aims and objectives of UKRI's COVID-19 response

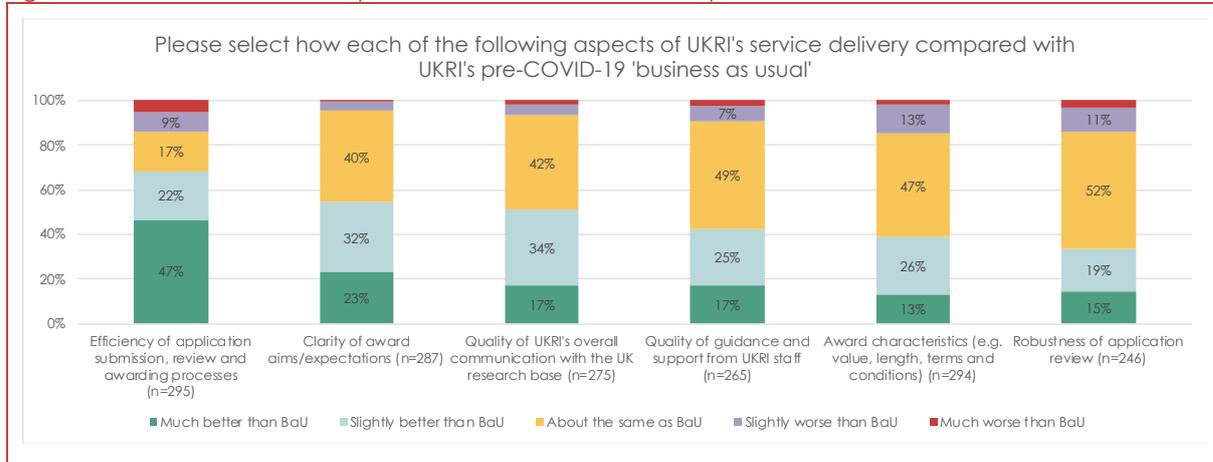
In this section, we describe the aims and objectives of UKRI's COVID-19 response, including some important differences between the main parts of the response. This effectively acts as our benchmark and criteria against which we can assess the implementation of the response. This section covers the 'strategic rationale' element of the terms for this study.

But before we address any specific points, we note at the outset that overall, the process-delivery of UKRI's response to COVID-19 is widely judged to have been a success story. The great majority of our interviewees are of this view in general terms. In particular, they consistently noted the level of cross-council collaboration, their view that substantial amounts of high-quality and relevant science had been funded, and that UKRI performed well in terms of its service-provision as a research funder.

This view is also reflected by award holders. Most significantly, awards holders who had previous (i.e. pre-COVID-19) experience of UKRI's funding processes in many cases judged the COVID-19 response processes to have been substantially better than UKRI's 'business-as-usual'. This applies to a range of areas including the robustness of review processes, clarity of award expectations, communications with the research base, and efficiency of the application and awarding process.

Especially on the latter point, the following sections of this report will highlight some serious challenges and lessons to be learnt. However, all such issues need to be placed in the wider context that overall, from both internal and external perspectives, UKRI excelled in terms of its service delivery as a research funder.

Figure 2 Award holders' comparison of UKRI's COVID-19 response to 'business as usual'



NB: respondents were instructed to consider as their benchmark for comparison any experience they had with UKRI research and innovation funding before the COVID-19 pandemic happened. In addition to a standard 'Don't know / not applicable' option, we added a specific 'Don't know / not applicable (no prior experience with UKRI)' option. Figures presented above exclude these options, hence the lower response numbers for each survey item.

### 2.1 Aims and objectives: UKRI's 'mission' in response to COVID-19

UKRI had no pre-existing strategy or 'brief' specifying what UKRI's role and objectives ought to be in a situation like the COVID-19 crisis. While there were some existing strategies for parts of MRC's activities, and while the Summer 2020 business case for Phase 2 of the Agile Call sets out a rationale for that investment, there is no over-arching document or pre-existing brief setting

out the role that UKRI as a multi-disciplinary national research and innovation funder ought to have in a situation like COVID-19.

Nevertheless, there is close agreement across our interviewees for this study on what UKRI came to understand as its 'mission'. This mission can be separated into its constituent parts, which effectively gives us a list of criteria against which we can evaluate its implementation.

In terms of its substantive objectives (the 'what'), UKRI sought:

- To **fund research on COVID-19 and its wider implications**, i.e. both on the immediate medical pandemic-response needs, as well as on the various knock-on effects of the pandemic, including socio-economic dimensions
- To fund research that would be relevant to the stated, emerging and potential **needs of government and other actors (e.g. public services, private enterprise) dealing with all aspects of COVID-19** and its wider implications
- To fund research that could **produce impact or useable/actionable knowledge** and that could do so **in the short-to-medium term**. In other words, the aim was not to fund research projects with long time-horizons, but also not simply to recruit hundreds of instant temporary scientific advisors able to dispense knowledge right away. In keeping with UKRI's overall organisational remit, actual research was to be funded

In terms of the broad ways of achieving this (the 'how'), UKRI also sought:

- To **mobilise the UK research and innovation community**, i.e. to support the major known groups and institutes capable of delivering the immediate research and innovation needs of a pandemic response such as diagnostics, clinical trials and therapeutics, but also to enable individuals, groups and institutes across the entire research and innovation base to identify themselves and their ability to contribute research to the crisis at hand
- To execute the funding response as **rapidly** as possible
- To fund **across the disciplinary spectrum**, supporting work from any individual discipline, but also from any combination of disciplines, as relevant
- To **communicate with central government** and other key actors in order to be able to fund research and innovation in response to their specified needs and questions
- To also have a strong bottom-up ethos (alongside some top-down components), in that the **onus was to be on the research and innovation community to suggest and specify** how best to respond to the needs and questions, how this could be done in the shortest possible timeframes, to independently form consortia, to draw on existing networks and opportunities to formulate robust impact pathways, and indeed to highlight potentially important questions and emerging issues not yet identified by central government

We stress that this mission was implicitly rather than explicitly defined. The above definition is based on close congruence of interviewees' understanding, rather than being adapted from any specific UKRI document. We opt for this approach because, as noted above, there is no existing source that defines UKRI's mission in the COVID-19 context in a comprehensive way (i.e. covering all aspects of the response and the organisation).

Our interviews show that the rationale and objectives for the overall UKRI response as described above were defined in the early days and weeks of the pandemic, through discussions between UKRI, Go-Science and the wider scientific community, and within UKRI through discussions among the senior management team and the individual Research Councils' boards and committees. However, they were never written down in a singular, over-arching public statement.

Whether UKRI's mission was the 'right' one will depend at least in part on eventual evaluations of outcomes and impacts of the funded activities. UKRI's mission in response to COVID-19 as expressed above certainly reflects UKRI's overall mission as an organisation, and its specific strategic aims to convene the UK research base, to fund excellent research and to enable funded research to achieve impact beyond academia.

We also note that the overall aims and shape of UKRI's COVID-19 response are broadly similar to those of the funders included in our international review. The rationale for all funders was to support research that can deliver solutions to both short and long-term problems caused by the pandemic. Funders more directly involved in funding health research (Canada's NRC, the Dutch ZonMw and Taiwan's MoST), made more targeted efforts of the kind seen at the start of UKRI's response, with some aligning research priorities to correspond with the WHO COVID-19 R&D Blueprint. But whatever the mechanism for deciding on research priorities, all funders also funded social science research, amongst other disciplines, to seek solutions to socioeconomic challenges caused by the pandemic. Multi and inter-disciplinary ambitions feature across the board, as do emphases on speed – both for allocating funding and for achieving results and impacts (see Appendix section G.1).

From these points of view, UKRI's 'mission', i.e. the overall objectives and aims of its response to COVID-19 appear suitable. Against this mission and its constituent parts, as described above, we can evaluate the implementation of that response. Our core evaluation question from this point onwards is therefore: with the mission such as it was, were the design and implementation of UKRI's COVID-19 response such that the mission could be carried out as well as possible?

## 2.2 Two distinct parts of the COVID-19 response

Throughout our research for this study, we also sought to identify any changes or evolutions to this overall mission that may have taken place. However, we find that the mission and its constituent parts as described above remained largely stable throughout the period covered by our study (though there was much evolution in terms of priority topics and funding processes, which we address below).

Nevertheless, we need to draw an important distinction at this point, as the organisation, governance and topical remits of different investments mean that there are effectively two distinct parts to UKRI's COVID-19 response:

- The first part mostly took place in the early months of the pandemic, although some subsequent investments must also be included (specifically the National Core Studies and some major platform and consortia studies funded in the latter half of 2020 such as RECOVERY+). This part of the UKRI COVID-19 response is thematically focused on pandemic response in the conventional sense of the term: focus areas included development of vaccines, therapeutics, diagnostics, and understanding the disease in a biological/genetic sense. Some social scientific aspects were included here as well, but only inasmuch as they could help build an understanding of the disease itself and how it spreads. This part of the response was largely driven by the MRC (though there was some input from others, e.g. from ESRC staff for the social science aspects<sup>1</sup>), and almost all investments made pre-date the main governance structure we discuss in the next section
- The second part of the response covers the Agile Call, as well as the international calls, and has a much broader thematic remit: rather than focusing on 'pandemic response' in the

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<sup>1</sup> The Dutch health research funder ZonMw took a similar approach: it managed the C-19 programme, which included both health and social sciences. ZonMw had limited experience in funding outside the health domain, and NWO (which usually funds social science research) supported ZonMw in the review process by suggesting peers to involve in the committees.

conventional sense, research funded through these investments addresses challenges not just around the pandemic itself, but around all the subsequent economic, societal, environmental and technological challenges and consequences stemming from the pandemic. Implicitly, this part of the response understands COVID-19 not only as a pandemic, but as a much broader and multi-faceted societal emergency. This element of the response was driven by all parts of UKRI with a centralised governance structure

Beyond thematic scope, governance and chronology, there are two further important distinctions between these two parts of the response. First, for the 'pandemic response' element, there were pre-existing strategies and documents that could give guidance on what to do. MRC itself had responded to pandemics in the past (notably to the ZIKA virus), and there are some generic standards for pandemic responses, including at the global level, e.g. recommendations and considerations from GloPID-R,<sup>2</sup> as well as the WHO's R&D blueprint,<sup>3</sup> which informed MRC in its activities. But for the task of responding to COVID-19 not just as a pandemic, but as a much broader societal emergency, there was no 'blueprint' for what a research funder ought to do.

Second, for many parts of the 'pandemic response' element, there were specific established research groups and institutes active in the relevant areas, who were able to set up consortia and networks rapidly. As part of the UKRI research community, they were in contact with UKRI from the outset and were supported. But as the emphasis expanded to broader medical, biological and public health questions, as well as to societal and economic implications, the task of 'mobilising the research and innovation community' also broadened substantially. There were far fewer instances of 'obvious' candidates to carry out research, and the topics of interest (including, e.g. crowd control, air quality, socio-economic effects of lockdown and school closures, etc) required communication with the entire UK research and innovation community and a far more agile approach to keep pace with increasing and evolving research-needs and priority-questions.

In short, the early stages involved a more targeted and delineated approach, whilst subsequent activities had substantially more breadth and therefore also required different processes and more collaboration among all parts of UKRI.

*Table 2 The two parts of UKRI's COVID-19 response*

	<b>Pandemic response</b>	<b>Societal emergency</b>
<b>Focus</b>	Therapeutics, diagnostics, treatments, understanding the disease and its spread	All aspects of the pandemic and its consequences (e.g. lockdowns, school closures, misinformation) on economy, society, environment, etc
<b>Main operationally responsible entity</b>	UKRI (via MRC)	All of UKRI
<b>Start of funding</b>	January 2020	March 2020
<b>Main funding instruments</b>	UKRI/NIHR Rapid response Platform & consortia studies (e.g. RECOVERY, COG-UK, CTAP)	Agile call
<b>UKRI investment*</b>	Approx. £60m	Approx. £170m
<b>Governance</b>	Mainly MRC	Mainly UKRI COVID-19 Coordination Group

<sup>2</sup> <https://www.glopid-r.org/>

<sup>3</sup> <https://www.who.int/teams/blueprint/covid-19>

	<b>Pandemic response</b>	<b>Societal emergency</b>
<b>Pre-existing strategy</b>	Previous pandemic responses (e.g. ZIKA), WHO R&D blueprint roadmap, pandemic response standards from GLOPID-R	None (though more strategic rationale established in the business case in Summer 2020)
<b>Evaluation work prior to this study</b>	Yes – internal evaluation and lessons learned work conducted by MRC	Minimal – some at Innovate UK
<b>Typical max. award length</b>	12 months	18 months

\*Includes only the investments that are within the scope of this study. Excludes non-UKRI co-investment.

In this report, we cover both these parts of UKRI's COVID-19 response. While some of our findings apply to both, there are important differences between the two, which we highlight where relevant.

Generally, we also place a greater emphasis in this report on the second part of the response ('societal emergency' as opposed to 'pandemic response'). In part, because it involves a greater investment size than the first part (at least in terms of those investments that are within the scope of our study). Furthermore, there has also already been some internal evaluative work conducted on the activities led by MRC at the start of the pandemic, while the Agile Call has not been subject to evaluative work.

Most importantly, while the first part of the response could benefit from the experience of previous pandemic responses and from international pandemic response standards, the second part presents genuinely uncharted territory in the sense that UKRI organised a type of funding activity it had not undertaken before, and for which there was no guidance.

As we show in the following sections of this report, this meant that the second part of the response encountered at least some difficulties which the first part did not. But it also means that the opportunity for lessons is greater here – not least because these can help inform not only future pandemic responses, but possible future societal emergencies of all types.

We also note from our international review of funders that UKRI was not unique in being faced with a genuinely unprecedented type of funding activity. What we define here as the second part of UKRI's response was uncharted territory also for several comparator funders that do not fund health research (Germany's DFG and the Dutch NWO). There was no pre-existing strategy, guidance or experience with anything similar in scale. Outside of the more closely delineated aspects of 'pandemic response', this was the first societal emergency lesson for many funders.

This however only applies to funders in countries where natural disasters or large-scale social emergencies have not happened in recent times. The picture is different in Japan, Taiwan, and the USA, where previous experience with natural disasters and other emergencies was relevant and helped to mobilise also for the pandemic – not least because funders could draw on existing rapid response schemes designed for societal emergencies, which had been used previously (e.g. for emergencies like Hurricane Katrina or the Fukushima disaster). We note these programmes in more detail in section 5.4 and provide full descriptions in Appendix G.

### 3 Governance

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In this section, we describe and assess the governance of UKRI's COVID-19 response, including its interface with central government.

UKRI set up a new governance structure in March 2020 to handle its COVID-19 response beyond the Rapid Response calls. This included establishment of the COVID-19 Coordination Group which met for the first time on 27th March 2020, followed by the establishment of a COVID-19 Working Group and an advisory UKRI COVID-19 research and innovation Taskforce in April 2020. UKRI's existing governance structures (i.e. UKRI Board and Executive Committee) continued to play key decision-making roles during the pandemic. The key groups and responsibilities in the COVID-19 response were as follows:

- **UKRI's Executive Committee** provides strategic advice to the UKRI Board and is the day-to-day coordinating body for UKRI activity. It provides leadership across the Councils and ensures collaboration on strategy and operational matters. The committee is chaired by UKRI's Chief Executive and includes the Executive Chairs of the nine UKRI councils. Beyond the investments made in the early stages of UKRI's Covid-response, the Executive Committee delegated its decision-making functions to the COVID-19 Coordination Group
- **The COVID-19 Coordination Group (CCG)** had a role to oversee the strategy and management of the UKRI Agile Call. Its main functions were to agree the scope and operational processes for the UKRI open call, represent their councils, where applicable, discuss operational difficulties and improvements; receive feedback on operation from the Working Group and make recommendations for action; review progress, regularly reviewing dashboard of data on funding decisions, and consider the portfolio of funded projects against the categories defined by the Taskforce; review spend against the funding pot and report regularly to the Taskforce and Executive Committee; implement advice from the Taskforce on portfolio balance and priorities; oversee public communication on the full portfolio of activities in UKRI to address COVID-19; agree the publicised list and advise on format; and manage risks, regularly review the risk register and agree mitigating actions. The group reported directly to the Executive Committee
- **The UKRI COVID-19 R&I Taskforce (CTF)** has a role to provide advice and support UKRI in the delivery of its COVID-19 R&I funding call. This has included the identification of priorities and opportunities for research and innovation projects aimed at addressing and mitigating the health, social, economic, cultural and environmental impacts of the COVID-19 outbreak. The role of the R&I Taskforce was also expanded in January 2021 to provide advice on the performance of the three National Core Studies (NCS) adopted by UKRI, and their alignment with the wider UKRI R&I portfolio.<sup>4</sup> The group reports to the UKRI CEO
- **The COVID-19 Working Group (CWG)** had a role to coordinate handling of proposals submitted to the UKRI open call on COVID-19; to share experiences of handling proposals submitted to the COVID-19 open call and advise on the handling protocols; and to feedback to the coordination group on progress, difficulties, suggestions for improvements. It reported to the COVID-19 Coordination Group

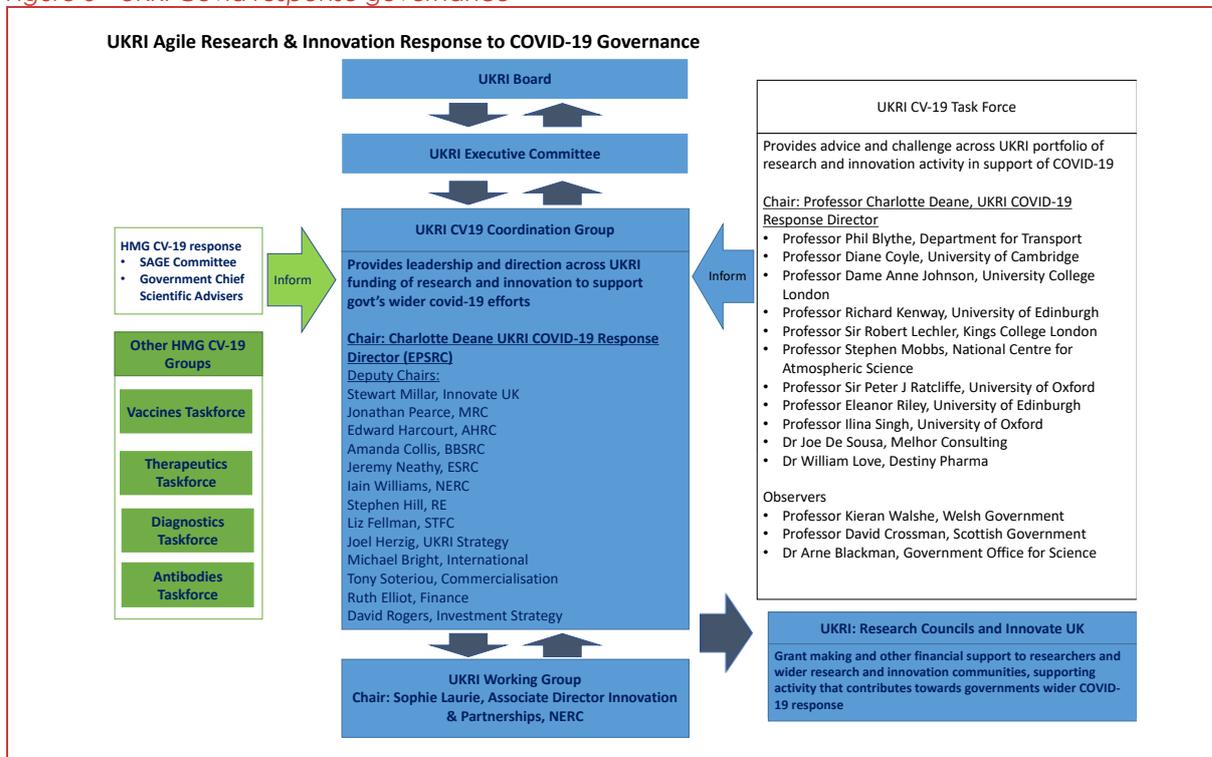
An additional critical aspect of the UKRI COVID-19 response governance was its interface with central government. The intention was to ensure input from central government and other

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<sup>4</sup> Note there is a separate proposed governance structure for oversight of the NCS detailed in an NCS governance document for the Covid 19 taskforce (January 2021). Source: UKRI Executive Committee Paper, 'COVID-19 Research and Innovation Portfolio Update May 2021'

relevant public actors outside UKRI into the Coordination Group's design and decision-making, both directly and through the Taskforce.

Figure 3 UKRI Covid response governance



Source: Documentation provided by UKRI

### 3.1 The right kind of governance?

Our interviews with Coordination Group, Working Group and Taskforce members indicate that the governance structure of UKRI's COVID-19 response worked well. The great majority of interviewees felt it was suitably simple and that there was a clear delineation of responsibilities and a clear sense of who had what kinds of decision-making power.

There is also consensus that the expertise and types of background represented on the three main groups were appropriate. However, over and above expertise, interviewees particularly stressed the issue of leadership: there is strong agreement among our interviewees that internally, the overall shape of UKRI's COVID-19 response was driven by the Chief Executive at the time, Sir Mark Walport, and subsequently also by the chair of the Coordination Group and Taskforce, Charlotte Deane.<sup>5</sup> These two individuals (the latter in particular) were widely praised by interviewees for their leadership and for their efforts to ensure a coherent and well managed approach.

Based on our consultations, the specific individuals charged with leadership of the COVID-19 response may therefore have been just as important as the structure of governance itself. However, the governance structure did bring one further important advantage, namely the ability to facilitate cross-council work and coordination.

<sup>5</sup> These two individuals were frequently named by interviewees and administrative staff, so we name them here as well to suitably represent the views we heard.

UKRI's high level strategy and decision-making typically falls within the remit of the Executive Committee. However, the Executive Committee created the Coordination Group and devolved to it the main design and decision-making tasks for the COVID-19 response – not least because the Executive Committee had substantial other responsibilities, notably around supporting and stabilising the research system through the pandemic.

The Coordination Group was made up of a small number of central UKRI staff (e.g. Finance, Strategy, International), but consisted largely of senior individuals from each of the individual Research Councils (incl. IUK and RE). Combined, they were responsible for the coordination, design and decision-making around UKRI's COVID-19 response under the leadership of Charlotte Deane. Many interviewees felt that this extent of bringing together all constituent parts of UKRI was genuinely new and enabled a degree of cross-council collaboration not seen before.

A few interviewees agreed that in this sense, the COVID-19 response represented a major milestone in terms of the recommendations of the 2014 Nurse Review to ensure more cross-council cooperation to facilitate more multi- and inter-disciplinary research and address societal needs and emergencies.

Several interviewees highlighted some limitations, notably that the COVID-19 response was strongly multi-disciplinary but rarely interdisciplinary,<sup>6</sup> owing in part to the fact that Research Councils undertook most of the reviewing work individually. However, there was a strong consensus among interviewees that the extent of cross-council cooperation was greater in the COVID-19 response than in any previous funding activities.

In part, some interviewees attributed this to goodwill and sense of urgency brought about by the nature of the unprecedented crisis at hand, as well as to the aforementioned quality of leadership. However, according to most interviewees, the choice of placing a cross-council Coordination Group at the heart of the governance structure was a key factor.

We note that several funders included in our international review also opted to create a cross-disciplinary decision-making group, and to ensure a clear sense of leadership, in one case even in the shape of a specific person. The German DFG's Interdisciplinary Commission supported DFG in suggesting specific topics for COVID-19 research programme calls. Canada's NRC delegated a Vice-President to lead the Pandemic Response Challenge Programme and mobilised diverse disciplinary competence from NRC institutes. NRC also used a "Tiger team" approach to manage and coordinate their efforts and the human resources involved in the response. UKRI's approach to governance therefore somewhat reflects approaches taken elsewhere in terms of emphasis on centralised coordination and clear leadership responsibilities.

### 3.2 The interface with central government

A further important aspect of the governance was its ability to ensure communication between UKRI and central government (and with other actors involved in addressing the COVID-19 pandemic and associated issues). Such lines of communication were needed in order to ensure UKRI was funding work relevant to fulfil the research needs presented by the pandemic.

The interface with government occurred largely through Sir Mark Walport's position in SAGE, and later also through Charlotte Deane, once she was also included on SAGE part-way through 2020. However, several other senior individuals at UKRI also had contacts and

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<sup>6</sup> Multi-disciplinary means awards were funded across the disciplinary spectrum, potentially also involving awards from various disciplines studying the same topic. Interdisciplinary denotes fusions and combinations of different disciplines occurring within the same award, leading to new or innovative techniques as a result of such fusion.

communication with various parts of central government, including SAGE, the CSA network and other ministries and agencies. Additionally, ministerial scientific advisors, representatives of the devolved administrations, and GO-Science were represented on the COVID-19 Taskforce (as observers rather than members). There were therefore multiple lines of communication that could inform UKRI's Coordination Group on government research-needs. As the Taskforce also consisted in large part of university-based academics, it too was equipped to highlight further emergent and potential needs that perhaps were not yet visible to government, but identifiable from academic perspectives.

In the early days of the pandemic, there was frequent systematic exchange on individual awards between UKRI and central government. Especially for the large platform and consortia studies funded in early 2020, UKRI (often through the MRC) had a clear view on what kind of awards were needed and helped set these up accordingly. Our findings suggest that communication in these early days was specific and enabled the required studies to be set up quickly.

Later, and specifically for the Agile Call, the main output of these multiple lines of communication was a composite list of topics and questions requested by SAGE, the CSA network, other government departments and agencies, as well as through the UKRI COVID-19 Taskforce. This list evolved throughout the pandemic, with new topics of interest being added (and occasionally removed). It was published alongside UKRI's calls for proposals and was intended as a tool to help inform funding decisions. Beyond the very early stages of UKRI's response, the issue of relevance of funded work was in large part informed by this 'live' list of priority topics and questions.

In broad terms, this suggests a healthy and fruitful continuation of the interface between UKRI and government, and the centrality of a topic/question list provided a device for UKRI that had the potential to ensure general relevance of the work to be funded. Communication was frequent enough to ensure UKRI was able to establish several strategic priorities to fund and regularly update them. However, we find no evidence of further prioritisation among the evolving list of priority topics (e.g. in terms of urgency), or of more systematic deliberation of whether different questions might require different kinds of research endeavours. Several consultees for our study noted that some topics were related to time-bound real-world events (e.g. research related to the impact of the pandemic on the education system ideally needed to be able to inform policy or practice at key points in the school-year). Others constituted more open-ended needs, where there was still a degree of urgency, but where the relevance of funded research would not have been seriously undermined if it produced results after certain time-bound real-world decision-making points.

Our research does not allow for a judgement on whether this is attributable to government actors simply not being able to provide specificity, or due to a lack of more systematic convening, specifying and thematic prioritising at UKRI – both interpretations feature among our interviewees. We mention this issue to note that general relevance of UKRI-funded work to the unfolding pandemic was certainly facilitated from a governance point of view. However, it is less clear whether the UKRI-government interface resulted in enough specificity to enable priority-setting, either in terms of topics or in terms of the types of research and awards to fund (e.g. length of award, type of impact strategy). This has implications for a number of issues, one of which is UKRI's ability to tailor the design of awards and calls (other than in the early stages of the COVID-19 response) – an issue we cover in the next section of this report.

## 4 Award characteristics and relevance

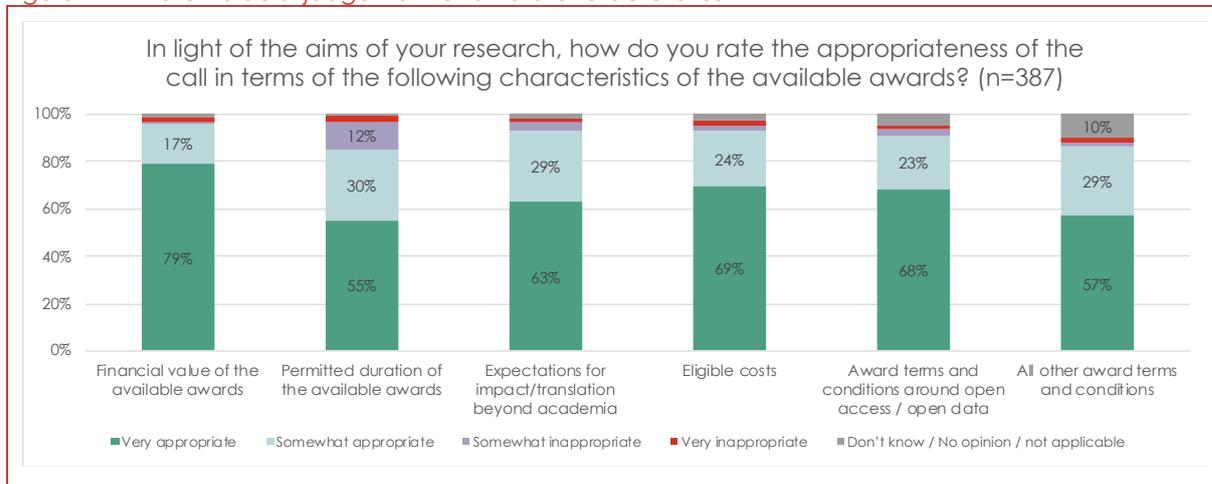
In this section, we cover the design and characteristics of the award types made as part of UKRI's COVID-19 response. This includes the issue of how well award and scheme aims were communicated both internally and to the research base, as well as 'physical' properties of the awards such as permitted size and duration. With UKRI's mission as described in the first main section of this report, our central question here is whether UKRI's award types were appropriately designed to best fulfil that mission.

### 4.1 Award design and communications

Award holders surveyed gave overwhelmingly positive feedback on the 'physical' characteristics of awards that were available as part of UKRI's COVID-19 response (award size, duration, eligible costs, etc). In our experience of evaluating research and innovation funding schemes in the past, such positive feedback is quite unusual: we would typically expect more critical voices around, for instance, maximum permitted award size or expectations to deliver impact, but this is not the case here.

Ninety survey respondents provided supplementary comments on their answer, often making minor points or simply underscoring general satisfaction. Seven of these specifically noted that in 'normal' circumstances, the need to produce impact within the lifetime of the award would not have been appropriate, but that in the context of the COVID-19 emergency, these parameters were absolutely right. There is a small but noticeable level of dissatisfaction around the permitted length of awards, which is an issue we address later on, but overall, there is very little evidence of any issues here.

Figure 4 Award holders' judgement of award characteristics



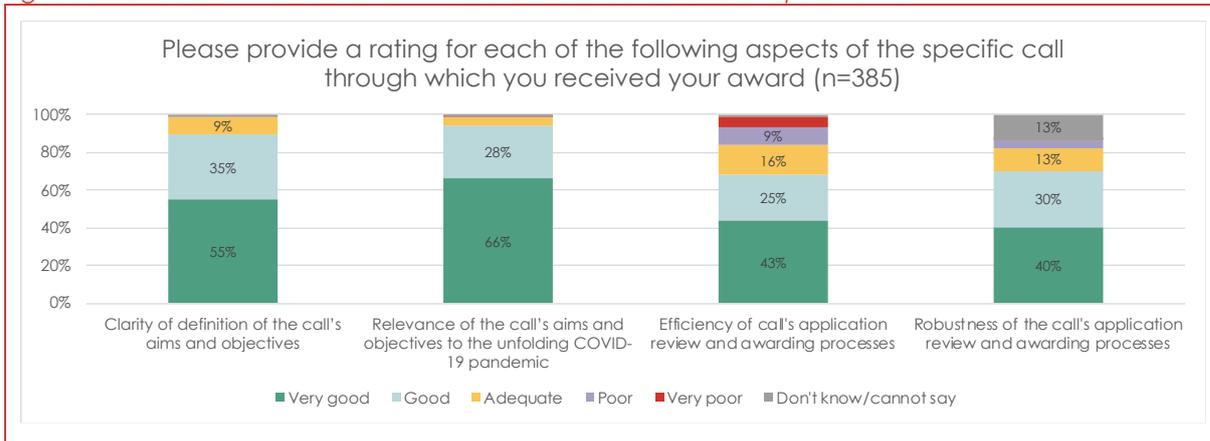
Source: survey of award holders conducted by Technopolis

Beyond these physical award characteristics, award holders also provide high to very high ratings both on the clarity of aims and objectives of the calls to which they applied, as well as on their relevance to the unfolding COVID-19 pandemic (NB: the survey results below also include items on the calls' operation, where feedback is less uniformly positive. We address these matters in subsequent sections).

We note that there is a methodological limitation here, in that we were not able to survey unsuccessful applicants for this study, as explained in the introduction to this report. Across the entire pool of applicants, views on clarity and relevance may be more varied. However, the

positive picture from our survey results additionally underlines the overall clarity and coherence of UKRI's mission at least for successful applicants. We noted at the outset that there is strong agreement on what UKRI was trying to achieve, even though there was no pre-agreed view on what role a national research funder ought to have in a situation like COVID-19. We did not explicitly ask award holders to detail their understanding of UKRI's aims and objectives, but in broad terms, a clarity of purpose filtered through from UKRI to the research base.

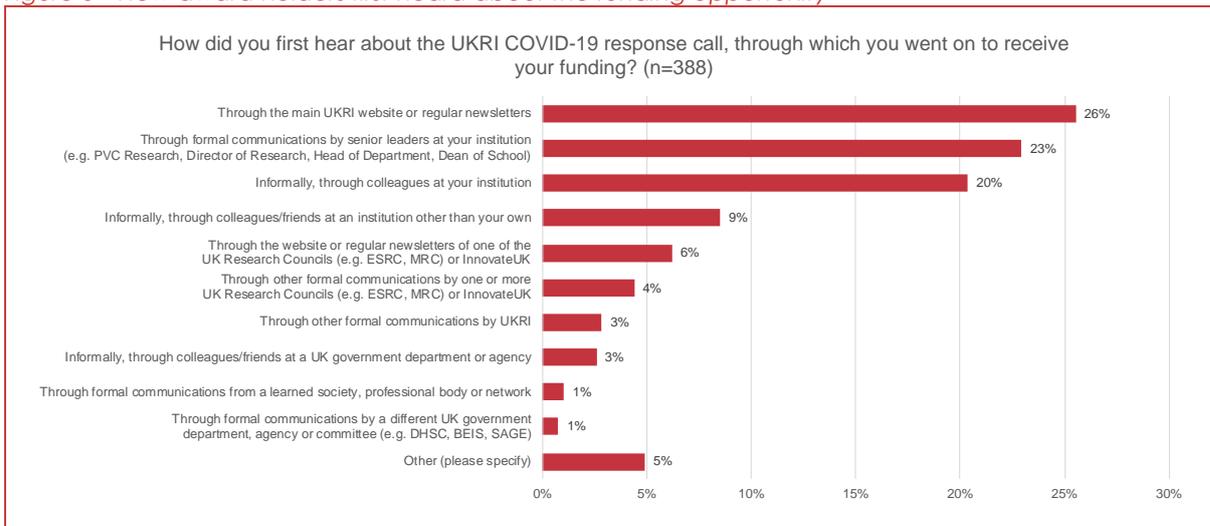
Figure 5 Award holders' overall assessment of UKRI's COVID-19 response calls



Source: survey of award holders conducted by Technopolis

UKRI's communications were beneficial here: our survey results also show that UKRI's central web site was the main initial channel through which award holders first heard about the available funding opportunities. Institutional leaders and informal word-of-mouth from colleagues also played a large part. However, other government organisations, scholarly societies, or even the individual Research Councils do not appear to have played major communication roles. In other words, there appears to have been a clear and somewhat uniform line of communication between UKRI and the research base, which was likely conducive to message-clarity.

Figure 6 How award holders first heard about the funding opportunity

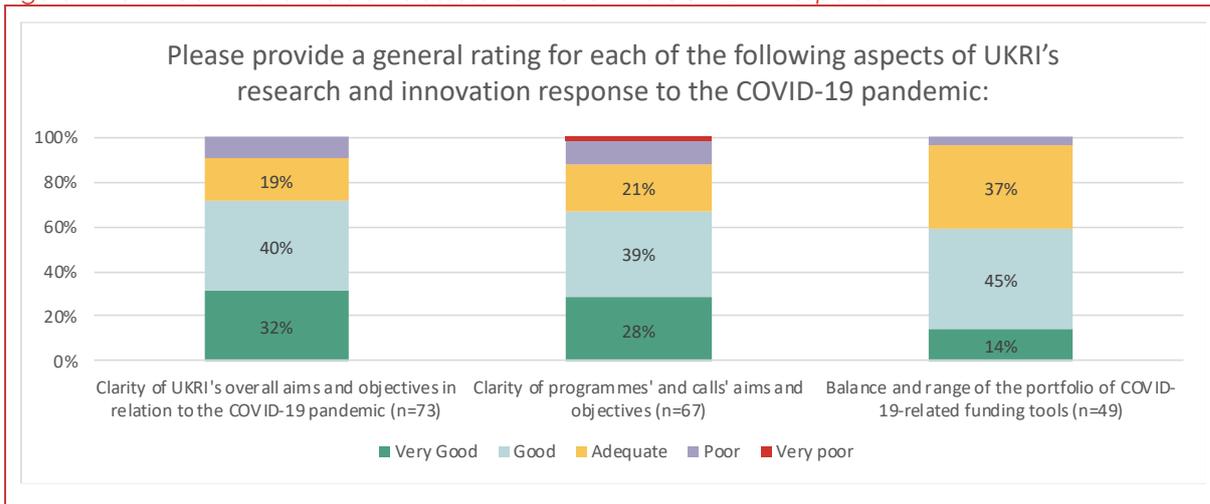


Source: survey of award holders conducted by Technopolis

The communication with the research base was also rated positively overall by most UKRI administrative staff who responded to our survey. The consistency in communication, transparency and regular updating of websites were the key drivers to UKRI's success in communications.

From this internal perspective, the message is also that the aims of UKRI and of individual calls were clear and the balance of tools about right. In short, a clarity of purpose is evident right across our consultations.

Figure 7 UKRI administrative staff's assessment of UKRI's COVID-19 response



NB: Figures exclude 'Don't know / not applicable' options

Other parts of our evidence-collection mean that we need to qualify this positive verdict on communication and clarity of aims. The various COVID-19 calls received many high-quality applications, but many of our interviewees and a small number of UKRI administrative staff noted that a lot of applications were unfundable or substantially out of scope. It is unclear how to reconcile this with these positive verdicts on communications and clarity from award holders, interviewees and administrative staff.

It is possible that the funding opportunities available may have led some parts of the research base to apply, even if their proposed work was not fully relevant to the scope of the calls, or the quality of their research plans not yet up to the required standard. Under pressure of time, it is also likely that many researchers, in an effort to contribute socially worthwhile insights to the crisis, would have looked to reorientate their current work and get submissions together as quickly as possible, leading to applications that did not have the required quality standard.

Our international review of funders highlights the salience of this possible explanation: Germany's DFG also observed that the quality of the proposals was poorer than usual. Success rates for their rapid Focus Funding scheme were lower, 20-25%, compared to 30% in bottom-up instruments. DFG explains this with a shorter proposal preparation time and potential implications of working from home, but DFG has also observed lower success rates in thematic calls before. According to DFG, self-selection works better in bottom-up competitions where the scientists come up with their defined research themes, and it does not work that well in thematic calls. The Dutch health-funder ZonMw did not point to high numbers of unfundable proposals, but noticed that some of the rapidly selected research projects needed adjustment during implementation. Several projects performed re-planning during the implementation because of the unanticipated problems during the rapid proposal development phase.

So whilst there may have been room for interpretation among some applicants, our evidence suggests clear communication of aims both within all levels of UKRI, as well as among those researchers who were actually funded, whilst a higher prevalence of out-of-scope and unfundable applications is likely attributable to factors besides communication.

On a final point, we do find a potential issue in terms of award characteristics around the awards' permitted duration. This relates back to the point made in the previous section about the breadth of topics that formed UKRI's list of research-needs related to the pandemic. UKRI did well in terms of communicating a sense of urgency and stipulating that funded work needed to produce impact or translation within the lifetime of the funded awards. The maximum permitted award lengths of 18 months (for the Agile Call) and 12 months (for the UKRI/NIHR Rapid Response) are also substantially shorter than, for example, UKRI responsive mode grants. We note also that a small portion of awards had shorter lifespans than this, but that these timelines were at the discretion of applicant's plans rather than of UKRI. Indeed, the information available indicates that the great majority of awards are at the very top-end of permitted duration.

*Table 3 Duration of awards*

Duration in months*	No. of awards	% of total (n=303)	Duration in months*	No. of awards	% of total (n=303)
1	2	1%	10	3	1%
2	2	1%	11	99	33%
3	1	0%	12	4	1%
4	1	0%	13	6	2%
5	12	4%	14	9	3%
6	1	0%	15	3	1%
7	3	1%	16	2	1%
8	8	3%	17	135	45%
9	4	1%	18	8	3%

Based on UKRI's public database of COVID-19 related awards. Of the 506 total awards listed (July 2021), 303 specify a start and end date, so the figures above are based on these. \*We count full months only. The great majority of awards in the 11 and 17-month categories only fall a few days short of 12 or 18.

As mentioned, some topics on UKRI's list related to urgent policy decisions, others not so much. Awards on some topics could therefore afford longer timelines and pathways to impact whilst others would have needed to demonstrate much more rapid pathways to ensure results that could be genuinely useful beyond academia.<sup>7</sup> The launch in January 2021 of the COVID-19 Urgency Grants in itself indicates that a greater range of pre-defined timeframes was necessary, as it introduces a specific award-type with a timeframe of 3-6 months, as opposed to the 12-month Rapid Response and the 18-month Agile Call awards. However, these shorter award types almost certainly also would have been useful before January 2021.

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<sup>7</sup> We note that this point relates largely to the Agile Call, not to the investments made at the start of the pandemic. Multiple different review approaches were used especially for the early platform and consortia studies, where there was a clear brief on what was needed, and iterative approaches were used (including for award timelines and pathways to impact), where the question was less whether to support something, and more how to support it, given importance for government.

The loosely prescribed award-lengths may not have been conducive to ensuring relevant results on helpful timelines in all cases. Other than the overall cap of 18 months (for the Agile Call), the level of flexibility of award lengths provided little need for applicants to consider when exactly results would be needed.

To be clear: this is not to say that funded awards were not useful. But the absence of different schemes with different maximum award lengths meant UKRI had less control than it could have had to respond to different levels of urgency, as required by different topics. We also stress that this does not apply to the awards funded at the very start of the response.

In part, a minimally prescriptive priority list therefore filtered through into minimally prescriptive award parameters. However, as we show in the later sections of this report, technical limitations at UKRI largely ruled out the possibility of designing, for example, a diverse suite of schemes and award types (instead of the relatively uniform Agile Call) to suitably distinguish between tightly defined rapid-response awards for the most urgent questions on one hand and more open-ended bottom-up ideas on the other.

## 5 Assessment processes

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In this section, we examine the funding processes (i.e. from application submission to notification of outcome) used in UKRI's COVID-19 response. This covers findings on process satisfaction and how well administration of the funding calls and assessment processes worked. A key theme in this section are the delays encountered by large portions of submitted applications, specifically in relation to UKRI's aim to process applications significantly faster than would normally be the case. A second main theme in this section is the partially connected issue of the excessive workload placed on UKRI staff. We explore the reasons for these issues, before considering how alternative process designs might have lessened the difficulties encountered by UKRI.

We present a full overview of the funding processes used in UKRI's COVID-19 response in Appendix F. These largely consisted of eligibility checks by UKRI staff, as well as traditional peer and panel review techniques commonly used in other UKRI funding. The major difference to business-as-usual was that these processes were to be substantially accelerated, and that they took place remotely (e.g. with online rather than physical panel meetings). We also note that the COVID-19 emergency gave the impetus to implement recommendations and suggestions from the 'Simpler and Better Funding' programme. These played a part in helping UKRI create a simpler interface for applicants with a reduced burden of supplementary information to include in applications.<sup>8</sup>

Our headline conclusion on UKRI's application, assessment and funding processes is that they were largely executed as well as possible in the circumstances and should be judged positively in many respects. However, there is substantial evidence that carrying out these processes with the volume of applications received placed a massive strain on UKRI staff. It also involved significant delay of many funding decisions: whilst application processing and assessment was sped up compared with 'business as usual', the target of turning applications around from submission to notification of outcome within 2-6 weeks was missed by large margins in most cases. These two issues are partially connected, but they are also respectively attributable to a few other reasons, which we explore below.

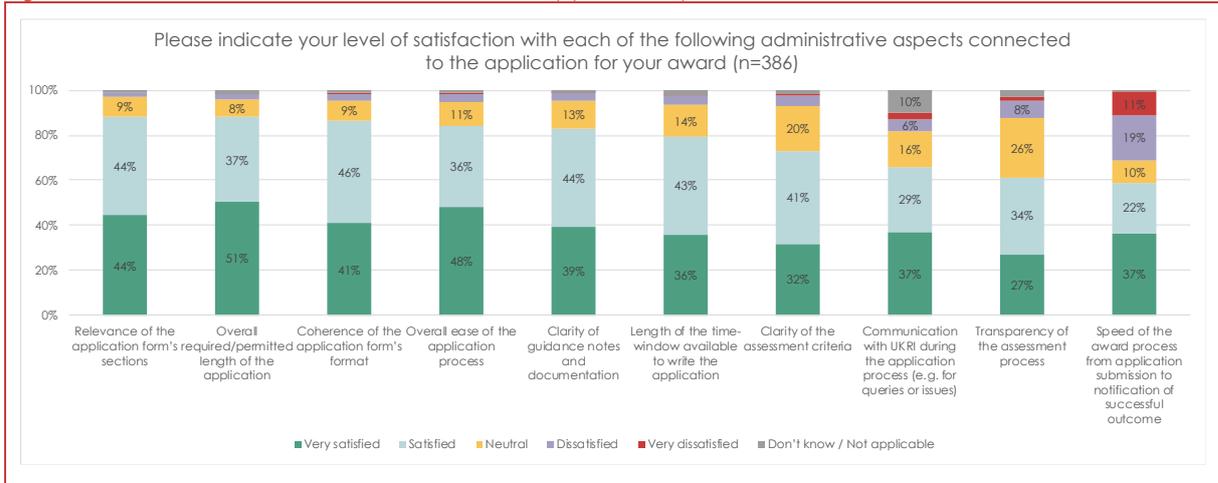
Our survey responses from award holders demonstrate high to very high satisfaction rates with many core aspects of the assessment processes, including the application format, clarity of criteria and overall ease of the process.<sup>9</sup> However, almost one third of award holders noted varying levels of dissatisfaction with the speed of the process of submission to notification of successful outcomes. At the same time, many award holders were also very satisfied with this aspect. As we detail below, there was substantial variation in terms of process speed, leading to a range of quite different experiences here.

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<sup>8</sup> We note that Germany's DFG also reduced the proposal length and simplified the application forms, but they were not entirely happy with the experience because reviewers spent more time looking up the information themselves. We heard similar views from UKRI but only from a very small number of people. The fact that UKRI had already undertaken substantial planning to re-design its application interface may well have ensured a smoother transition with fewer problems.

<sup>9</sup> The UKRI COVID-19 interventions of course differ from UKRI's business-as-usual as they were not designed to serve the research community as the primary purpose, but were intended to serve wider society by mobilising the UK R&I community to address a crisis. Nevertheless, it is important to look at award holders' satisfaction to assess the quality and speed of this mobilisation.

Figure 8 Award holders' satisfaction with the application process



NB: survey respondents were explicitly asked to answer in relation to UKRI, rather than in relation to any additional administrative elements that may have existed at their institution

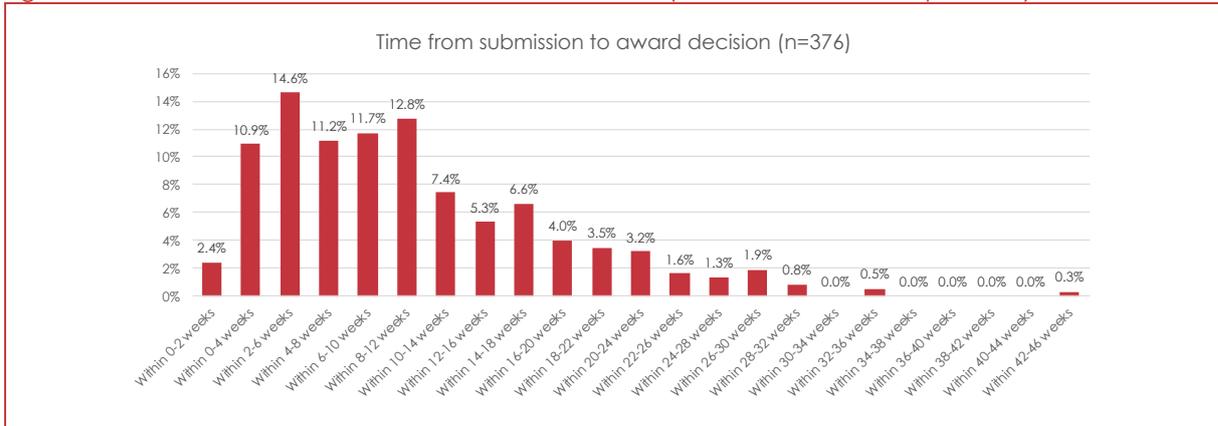
### 5.1 Delays to funding decisions – an appraisal

In the early stages of UKRI's COVID-19 response, the ambition (published as part of the calls) was to turn applications around within two weeks. Our interviewees noted that this rapidly turned out to be over-ambitious, so by the launch of Phase 2 of the Agile call, this was amended to six weeks.

Due to the off-system approach in the earlier parts of the response, there are no suitable data to calculate actual times-to-grant. However, we asked our survey respondents to specify when they submitted their applications and when they were informed of the outcome. To ease burden and account for the fact that exact dates may have been hard to remember, we asked respondents to specify by selecting from two-week blocks.

The responses to these survey items indicate that at maximum, only around 40% of applications (and likely fewer) were processed within six weeks, while over one third of applications took more than ten weeks to process.

Figure 9 Time from submission to notification of decision (all Councils and competitions)



Respondents were asked to specify their submission date and outcomes-notification date by selecting from 2-week blocks – we designed the survey this way to ease burden on respondents and ensure high response rates. It means we have only estimates for each date. When calculating the distance between two events, there is a possible 4-week margin in each individual case, so the data above are presented in 4-week periods, each overlapping by two weeks. There is no double-counting in these figures.

We further sub-divided these figures to assess whether the extent of delays differed between Councils and investments. The resulting figures are presented in Appendix section C.3.1. In brief:

- Long delays to decisions occurred mostly on the Agile Call: none of our survey respondents funded under the UKRI/NIHR Rapid Response reported to have waited longer than 10 weeks, while this is a frequent occurrence on the Agile Call. Long delays are also reported to be very rare on the GCRF/Newton Fund Agile Response call
- Instances of severe delays of funding decisions were also less common for ESRC-processed awards, while they were more frequent across the other Councils
- Reported dissatisfaction-levels with the time from submission to outcome-notification follow a very similar pattern

For many applications on the COVID-19 related investments, there was a great deal of acceleration. However, our survey results indicate that even the revised target of six weeks was missed in more than 50% of cases, often by substantial margins. The usual turnaround-time for UKRI responsive mode grant applications is around four months or in some cases slightly longer. With this benchmark, we note that around a quarter of COVID-19 response applications were processed in timeframes comparable to 'business-as-usual'.<sup>10</sup>

In part, these delays are attributable to the large volume of processing and reviewing work that far exceeded business-as-usual and put substantial strain on UKRI staff and the community of reviewers. We explore this issue below.

However, we also learnt through our programme of interviews that substantial delays were caused to final funding decisions in the late summer and early autumn of 2020 due to UKRI needing to wait for sign-off from BEIS and HM Treasury on a business case to re-purpose around £177m of UKRI's budget for the COVID-19 response funding. The timeline was as follows:

- UKRI wrote the business case and received internal approval for submission from the UKRI Executive Committee on **23<sup>rd</sup> July 2020**
- BEIS organised the Project and Investment Committee (PIC) to review the business case on the **12<sup>th</sup> of August 2020**
- BEIS confirmed approval at PIC on the **13<sup>th</sup> August 2020**
- Ministerial clearance for the Business Case was received on the **17<sup>th</sup> August 2020**
- HM Treasury next clearance step for Business Case approval. HMT did not confirm approval (subject to conditions) until the **28<sup>th</sup> September 2020**. This only allowed UKRI to commit £120 of the £177m requested through the Business Case

Information relayed to us from UKRI's Strategy Unit also indicates that UKRI itself began to prepare the business case as early as possible (and compiled it as quickly as possible): prior to July 2020, it was not yet clear how extensive the continuing demand from both government and the research base might be and, consequently, what additional level of funding would be required.

The Agile Call review process continued while the business case was being processed, but as UKRI's original £50m budget had been committed already, a backlog was created, where applications had been deemed suitable for funding, but could not be given the go-ahead. Such delays could be anything up to several months for some applications, and while we cannot directly attribute delays of individual funding decisions to this problem, estimates from

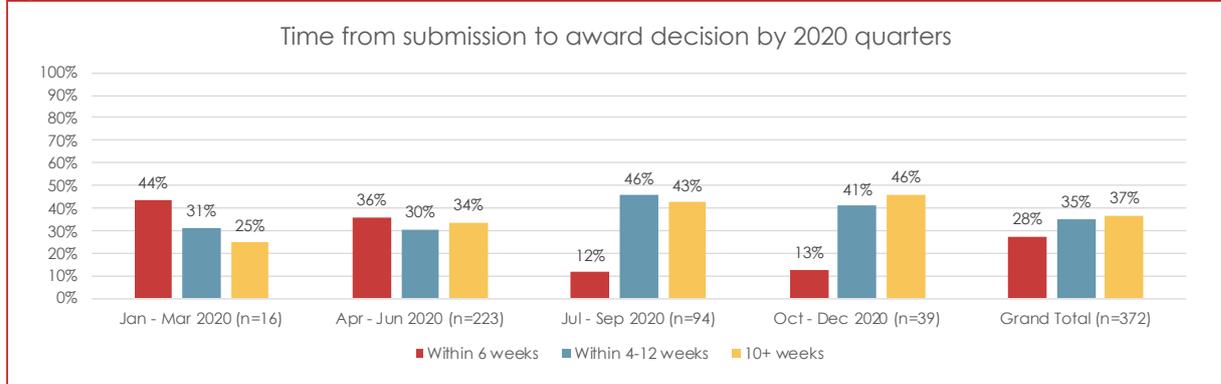
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<sup>10</sup> We note also that the figures from UKRI award holders are largely in line with the average approximate duration for comparator funders who relied on peer review — most report months rather than weeks. The exception are programmes where peer-review was partially or completely by-passed (see Appendix section G.1)

various Research Council representatives suggest that well in excess of 100 ‘provisionally’ successful applications were affected by this type of delay.

An analysis of our survey data by 2020-quarter (of application submission date) shows that delays became substantially more widespread from July 2020 onwards.

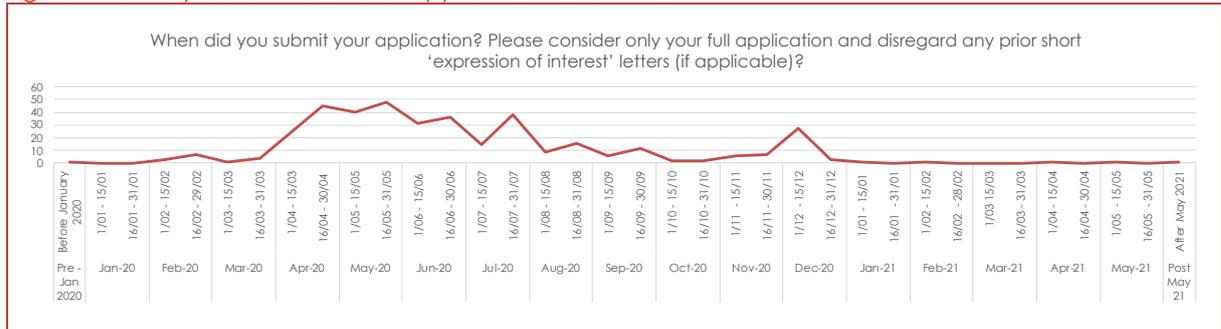
Figure 10 Time from application to award by quarters of submission date



Source: Award holders survey, includes all Councils and competitions. Note: excludes four respondents who submitted applications in 2021. As in the previous figure, the format our survey question requires 2-week overlaps between answer categories. There is no double-counting in these figures

From these findings, we cannot fully attribute the post-July delays in funding decisions to processing of the business case. However, the figures above are strongly consistent with our interviewees’ assessment that this played a substantial part. Further, our survey data indicate that the overall application volume was at its highest in April and May 2020, and dropped considerably after July 2020. This means that we can largely rule out the presence of a substantially increased workload from Summer 2020 onwards (compared with previous months).

Figure 11 Survey data – volume of applications over time



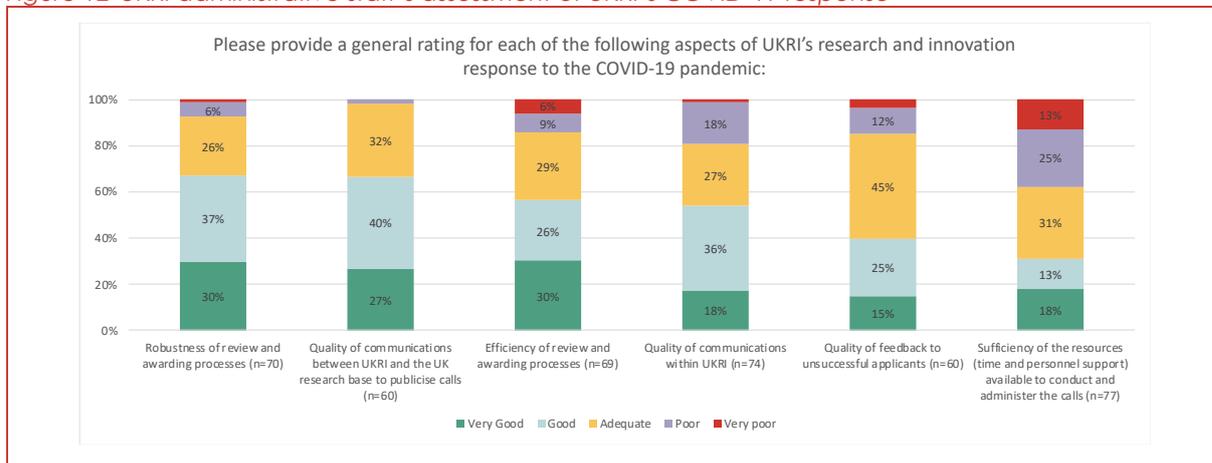
In short, the wait for an outcome on the business case almost certainly caused delays to funding decisions for many awards. However, even before the need for the business case arose, there is evidence of widespread delays, meaning that other, UKRI-internal factors also played a role. In the next sub-section, we therefore consider perspectives from UKRI administrative staff involved in the COVID-19 response calls to further explore these factors.

## 5.2 Perspectives from UKRI administrative staff

Feedback from UKRI administrative staff on the application review processes is generally good, though not quite as positive as from the award holders. Written comments received from UKRI

staff responding to our survey reported that the calls garnered many high-quality proposals from the right partnerships (though at the same time many noted that there were also plenty of below-par applications). Many respondents reported that the assessment process was robust and efficient, despite their rapid execution. Reviews were considered to be high-quality and fair.

Figure 12 UKRI administrative staff's assessment of UKRI's COVID-19 response



NB: Figures exclude 'Don't know / not applicable' options

Whilst administrative staff are broadly positive about the functioning of assessment processes, the survey results indicate that there was an issue around sufficiency of time and resources to conduct the processes. This was in fact a major theme throughout our research.

Across almost all free-text data entry fields of our survey of administrative staff, respondents noted extremely high levels of work-related stress (see Appendix section C.2.2). Respondents frequently mention widespread 'burnout' and 'exhaustion', as well as councils rotating staff when they were burned out.<sup>11</sup> Internal documents further confirm this (see Appendix A), and this view is also consistent with our interviews, including at the highest levels of UKRI. Additionally, some supplementary comments submitted to our survey of award holders indicate that the massive strain on staff was even visible from this 'outside perspective' (for example, when applicants needed to communicate directly with UKRI staff for problems or queries). Across the board, the view is that UKRI staff ensured a high-quality funding service, but at huge personal cost, and that managing such a workload with the available staff numbers in such a short time absolutely cannot be transferred to post-COVID business-as-usual.

We note that most funders covered in our international review reported similar issues. Germany's DFG management was concerned about staff burnout. The Dutch NWO and ZonMw, as well as Canada's NRC also reported significant workload pressures. Some perceived this as unavoidable to deliver this kind of crisis response. Others emphasised the need for very clear priority-setting and leadership to manage the workload.

However, the issue of workload pressure is not limited to UKRI itself: we asked UKRI administrators to rate the ease or difficulty of various aspects of the funding process in comparison to pre-COVID-19 'business as usual' (BaU). Mindful to capture any differences that may have come

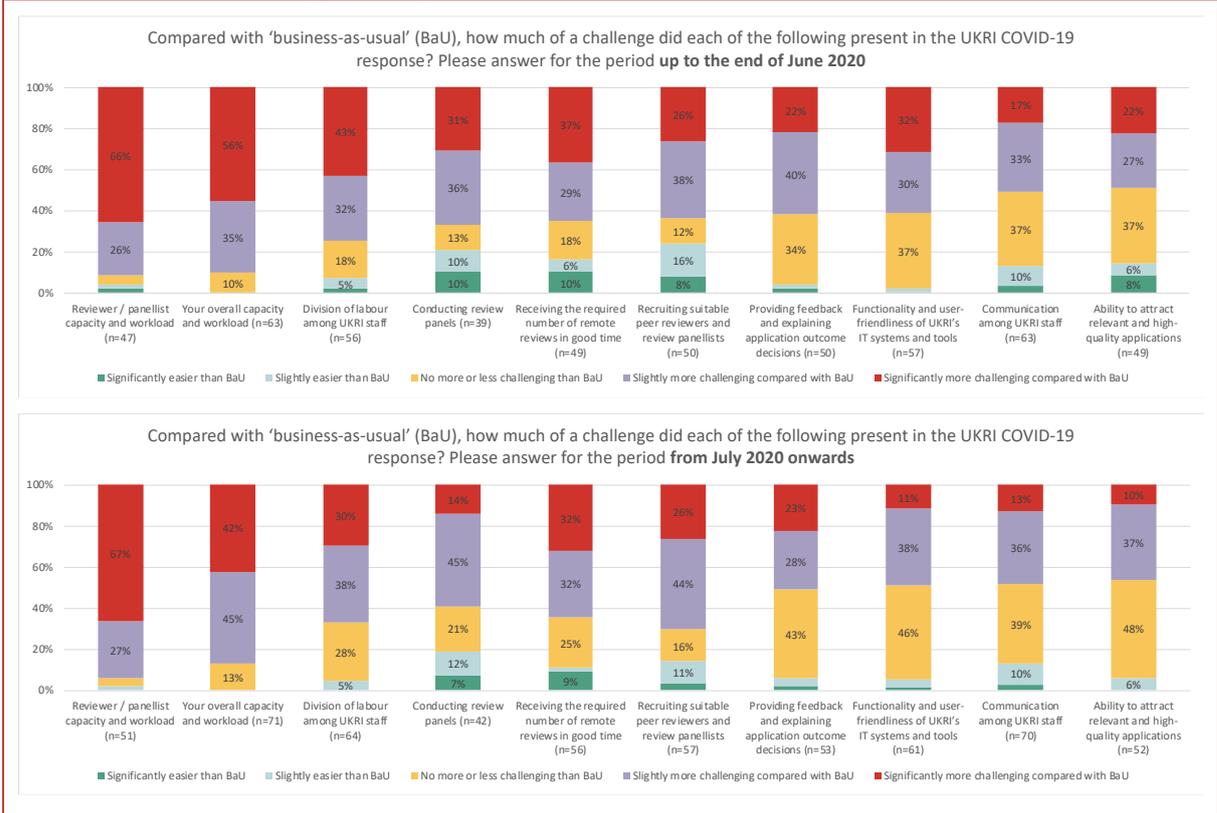
<sup>11</sup> These terms were used consistently and frequently by interviewees, survey respondents, and in some internal documentation. We therefore repeat these terms here to ensure proper representation of our data.

about for Phase 2 of the Agile Call, we asked them to answer separately for the period up to the end of June 2020, and for the time since then.

We note, firstly, that there is little difference in the extent of challenges pre- and post-July 2020. Although the overall volume of applications had decreased by this point and the JeS/Siebel system had been introduced to the process.

Secondly, our UKRI staff survey respondents rate the capacity and workload of reviewers and panellists as an even more substantial challenge than their own workload and capacity.<sup>12</sup>

Figure 13 UKRI staff challenges compared with business as usual



NB: Figures exclude 'Don't know / not applicable' options

Importantly, the extremely high reported workload appeared to have only a minor impact on UKRI's ability to carry out the assessment processes: 40% of respondents to our survey of UKRI administrative staff reported that the high workload for administrators and reviewers was unsustainable but that it did not negatively impact upon the robustness of the assessment processes. But some respondents found external reviews difficult to coordinate due to the demand and workload. Moreover, the quantifiable survey results above indicate a degree of challenge around recruiting panellists and reviewers and securing the required numbers of reviews. Administrators commended the goodwill of reviewers to assess so many proposals in a

<sup>12</sup> While the great majority of consultees for our study noted the extent of pressure and workload in general terms, a handful of interviewees and administrative staff also pointed out the specific difficulty of having to approach many more people than usual in order to secure reviews. Under normal circumstances, Research Council staff might contact four or five candidate reviewers in order to secure three reviews. But in the COVID-19 response, there were instances where staff had to approach in the order of 20-30 people to get the three reviews done in the time needed – in part due to the overall pressure on reviewers, but also because many people in similar fields were bidding, meaning there were also many conflicts of interest.

short timeframe, but that this would not have been as acceptable outside of an emergency response situation (see Appendix section C.2.2).

While a large part of the experienced delays in funding outcomes is attributable to the aforementioned budgetary issues, these issues around workload also contributed. The levels of stress and workload both for UKRI staff and for reviewers and panellists are the most serious issue we find in our assessment of UKRI's processes in response to COVID-19. However, this issue connects to some other areas of challenge. We explore these connections below.

### 5.3 Workload and delay – an appraisal of causes

The strain under which UKRI found itself in terms of workload is principally attributable to UKRI experiencing a large influx of applications. In total, over 6,300 applications were received across the main UKRI calls. In perspective, UKRI received 16,904 applications for research and innovation grants in the 2018/19 financial year ('business-as-usual'), so the COVID-19 response application volume (much of which had to be processed within two to three months) constituted over one third of UKRI's regular annual application volume.

The volume of applications also exceeded the available budget by a far greater margin than is usually the case: UKRI's overall success rate is around 27% (though this figure varies substantially depending on award type).<sup>13</sup> For the main COVID-19 response calls, the overall success rate stands at just over 10%.

*Table 4 Application success rates*

Call Name	Number of Applications	Number Rejected	Number Awarded	Success Rate
UKRI Agile call	4,010	3,492	515	12.84%
UKRI/NIHR Rapid Response	992	913	79	7.96%
UKRI NIHR GECO	850	831	19	2.24%
UKRI GCRF/NF Agile Response	511	471	40	7.83%
<b>Totals</b>	<b>6,363</b>	<b>5,707</b>	<b>653</b>	<b>10.26%</b>

*NB: the GECO call success rate is not indicative of the quality of the proposals received as more proposals may have been funded had there not been the changes to ODA funding which constrained the budget for this call. Therefore, a 2% success rate is arbitrary and does not fully represent the true picture.*

Whether this high volume of applications ought to be problematised in and of itself is a matter for debate. Many individuals consulted as part of our research noted that this high application volume shows that the UK research base was clearly strongly engaged, which was part of what UKRI was aiming to achieve. However, many also noted that the volume of applications was likely exacerbated by the broad remit of the calls. As noted in the previous section, breadth was critical in order to ensure the full spectrum of research-needs could be covered, but in some areas the scope was kept so broad that the ability of funded work to deliver helpful results within a helpful timeframe may have at least occasionally been compromised. This breadth of scope may then also have contributed to the high application volume and, consequently, to the issues around staff and reviewer/panellist workload.

<sup>13</sup> All comparator figures based on 2018/19 annual reporting: <https://www.ukri.org/wp-content/uploads/2020/10/UKRI-050920-AnnualReport2018-2019.pdf>

Around a quarter of respondents (12/50) to our survey of UKRI staff noted that the flexibility of the calls in terms of eligibility and scope was a positive for allowing more diverse research. However, around a quarter of respondents who commented on the matter felt the design of the calls meant that the remit of the call guidance was too broad and caused more administrative problems as a result of higher demand.<sup>14</sup> Conversely, many also described issues in terms of the evolving and changing list of priority topics, which caused some confusion for some applicants, resulting in out-of-scope proposals (see Appendix section C.2.2).

While our research yields some critical points about the broad scope of calls in terms of potentially diminishing relevance of the funded work, we stress that there is a tension here: on one hand there was the need to mobilise the research base and ensure that even ideas and emerging priorities not yet recognised by government could be supported; on the other, there was a need to ensure relevance to the pressing issues of the day.

Problematising the volume of submitted proposals would therefore not be appropriate, save for the fact that there were many low-quality applications alongside many high-quality ones.<sup>15</sup> However, in light of the large volume of applications, and because a large volume of applications was in many ways welcomed and somewhat in keeping with UKRI's overall mission, we consider in the next sub-section whether the funding processes were designed in such a way as to minimise the administrative and peer review burden.

#### 5.4 Funding-process design

From the perspective of applicants, some important simplifications were introduced compared with business-as-usual, at least in part through implementation of recommendations from UKRI's 'Simpler and Better Funding' programme, resulting in a simplified application form. However, for the application processing within UKRI there was acceleration, but very little simplification of funding processes. By and large, all the same steps that need to be carried out in business-as-usual application processes (e.g. responsive mode funding or similar) also needed to be carried out in the COVID-19 response processes, and there is little evidence that steps were taken to modify processes such that the burden on reviewers or administrators could be lessened.

We present descriptions of the funding processes for the various COVID-19 investments in Appendix F. We note additionally that individual Councils used a range of different processes for the Agile Call, and that some Councils made changes to their processes at various points. Councils used different combinations of standing panels and external peer reviews, and process changes at individual Council-level tended to give more decision-making power to panels. We provide a selection of processes and process-evolutions below to illustrate the range of processes and the types of process-changes that occurred in the Agile Call.

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<sup>14</sup> Earlier in this report, we presented evidence of widespread approval of the clarity of the aims of UKRI's COVID-19 related calls. We stress that those views came from internal staff and from award holders. There may have been many unsuccessful applicants who had a different view, or who may have decided to apply for many different reasons, even if their proposed research was not fully in scope or up to the required quality-standard.

<sup>15</sup> There is no comprehensive dataset of applications' review scores, owing to the off-system approach taken for much of the funding response (see section 6 of this report). We therefore cannot quantify the proportion of sub-par applications and base this finding instead on views from interviewees and other UKRI staff.

Table 5 Sample of Council selection processes

Council	Selection process
AHRC	<p><b>Prior to October 2020:</b></p> <ul style="list-style-type: none"> <li>• AHRC processed all proposals off-system, with two peer reviews obtained for each proposal. Conversations were had with PIs when further information was required (e.g. to ensure viability of projects given funding delays)</li> <li>• The peer reviewed proposals were assessed by an AHRC moderation panel, made up the AHRC executive team, who made final funding decisions</li> </ul> <p><b>From October 2020:</b></p> <p>AHRC held its first external moderation panel for the COVID call on 7th October. The process for proposal assessment was changed to the following:</p> <ul style="list-style-type: none"> <li>• Two peer reviews were obtained for each proposal, with no PI response allowed. Approximately 25-30 peer reviewed proposals were sent to the moderation panel each month</li> <li>• Panel membership was drawn from an experienced pool of panellists. Two introducers were assigned to each proposal and the panel collectively decided on a rank order for proposals. The ranked list from the panel went to the AHRC executive group to make the final funding decision, balancing panel ranking against ongoing priorities and portfolio coverage</li> </ul>
BBSRC	<ul style="list-style-type: none"> <li>• Proposal reviewed by three external peer reviewers</li> <li>• PIs were consulted to clarify any issues that were raised by the reviewers and BBSRC's Executive Leadership Team's (ELT)</li> <li>• Panel Assessment provided recommendations for funding</li> <li>• BBSRC's ELT subgroup made the final decision on funding</li> </ul>
ESRC	<p><b>April – July 2020:</b></p> <ul style="list-style-type: none"> <li>• Weekly panel meetings occurred from the 21<sup>st</sup> of April to the 31<sup>st</sup> of July. Members were drawn from a standing panel of 28 academics primarily from the Council and ESRC's Strategic Advisory Network (SAN)</li> <li>• Proposals were assessed by at least two panel members and the top ranked proposals were discussed by the panel</li> </ul> <p><b>August 2020 onwards:</b></p> <ul style="list-style-type: none"> <li>• Monthly panel meetings (although two meetings were required in September to address the large number of proposals submitted at the end of July)</li> <li>• The membership of the standing panel was expanded slightly to help meet demand</li> <li>• ESRC shared relevant applications with the CSA network for assessment of proposals' likely importance. CSAs were asked to assess proposals as 'Very Important', 'Important' or 'Not Important'. This score and written comments were fed into the assessment process. 36 of the ESRC funded projects were rated as 'Important / Very Important' by the network</li> </ul>
NERC	<p><b>August 2020:</b></p> <ul style="list-style-type: none"> <li>• NERC used its business-as-usual approach of a two-stage peer review assessment using internal and external reviews to inform decisions. Internal review was carried out to confirm the project was within their remit, had not been funded previously, and to suggest any areas to strengthen ahead of external peer review. Projects were either rejected, returned for amendment prior to review, or sent straight for review</li> <li>• Three external reviews were sourced. The reviews were considered by senior NERC staff and, if the reviews were of sufficient quality, a decision was made in line with the majority recommendation. In cases of split decision, a further review was sought or a NERC Peer Review Panel Chair was asked to moderate the reviews and make a recommendation</li> <li>• NERC has not always required a panel-based approach as the number of applications in their remit was small. This made it challenging to convene a single panel to work across multiple disciplines</li> <li>• Panels were convened when several similar proposals were submitted in quick succession. This was the case with five 'air quality' related proposals in August, with a panel held in late September</li> </ul>

Source: UKRI COVID-19 Coordination Group – UKRI Executive Committee paper May 2021: COVID-19 Research and Innovation Portfolio Update.

While there is some variation among different Councils' funding processes, they all contain the basic elements of traditional grant application review in the shape of peer and panel review.<sup>16</sup>

In terms of award holders' previously noted high levels of satisfaction with the assessment processes, we find almost no variation between the different Councils (for full analysis see Appendix section C.3.2), save for the aforementioned issue of time-to-grant.<sup>17</sup> Nevertheless, in terms of understanding whether processes were optimally designed to deal with large numbers of applications and counteract the workload involved in organising the COVID-19 response, our research yields a few critical points.

The first point in this respect is there is that there were inconsistent practices around 'sifting', that is, screening by UKRI teams to identify those applications that were judged to be of insufficient relevance or quality to warrant a formal review. All applications underwent an eligibility check, and we understand that this stage also involved use of UKRI's priority topic list to ensure relevance. However, as noted, the topics were kept broad, and other eligibility criteria had also been broadened (see Appendix F). Due to incomplete availability of data (an issue we discuss in the final main section of this report), we cannot definitively calculate how many applications were sifted prior to peer or panel review. Estimates we have obtained range from 4% of applications at NERC to 31% at EPSRC. In other words, there is substantial variation in the extent to which sifting occurred at all, and most (likely around three quarters) of the 6,300+ submitted applications proceeded to a full peer and/or panel review.

Had the remaining applications all been of high or very high quality, it would have been difficult for a greater number of applications to be sifted in order to ease the pressure on the review process. However, we have evidence from our interviews and from our consultation of UKRI administrative staff that while there were many excellent applications, there were also many unfundable applications that did proceed to peer and/or panel review. According to some interviewees, this extends to some applications for large awards that went as far as being reviewed by the COVID-19 Taskforce.

Even in the absence of stringent technical and thematic eligibility checks capable of identifying and rejecting a more substantial 'tail' of sub-par applications – and thereby easing the subsequent review and administrative burden – process design options are available that were not used. Our international review of funders highlighted several process changes aimed not just at accelerating but also at simplifying review processes and easing burden, and there are also options practiced within UKRI that appear to have gone un-used in this case.

Several Research Council have in the past used alternative and simplified assessment and review processes. One example is the ESRC's Transformative Research scheme, which has had four calls since its launch in 2012. It uses a two-page outline application, which is double-blind reviewed by a specific panel (i.e. no external reviews), followed by a presentation event. The EPSRC IDEAS programme (among others) used 'sandpit' events to convene researchers working in adjacent fields to jointly and rapidly come up with innovative proposals. Whilst replicating these exact approaches would likely not have been suitable in the context of COVID-19, we reference them here to show that UKRI had previous experience of running

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<sup>16</sup> UKRI/NIHR response started with straight to Panel for its Calls 1 and 2, then moved to use of a rolling call with a College of Experts to support peer review. Within this framework MRC also used iterative review with sub-committees of main review Panel, including interviews for consortia. Our comments here therefore largely apply to the Agile Call, though the previous investments also relied on combinations of peer and panel reviews, albeit with more experimentation.

<sup>17</sup> We cannot attribute these variations to the slight difference in funding processes, as many other factors may be behind the differing extent of delay among Councils (e.g. different pre-existing staff capacity and reviewer availability, as well as Council-specific 'reserve' budgets to compensate during the wait for the Agile Cal Phase 2 business case).

schemes with a reduced role for peer review. More broadly, several Research Council schemes in the past have also made use of two-stage application processes, where pre-proposals of 'expressions of interest' can help to ensure relevance and limit the peer review burden by reducing the number of full proposals submitted.

Other than for specific awards made at the very start of the pandemic, and up until the very late stages of UKRI's COVID-19 response (see below), no such alternative processes appear to have been used. This contrasts with many of the funders included in our international review, particularly in relation to awards of small financial size, where the benefits of deploying funding rapidly outweighed the risks of by-passing or limiting peer review:<sup>18</sup>

- The US NSF used an already previously tested RAPID funding mechanism. Proposals for the RAPID instrument must be short (maximum 2-5 pages) and justify why the proposed research is urgent. Proposals are reviewed and approved by NSF officers, rarely relying on external reviews
- The Dutch NWO introduced a new Fast-track Data programme. Its mission was defined by members of the three Domain Boards of the NWO and NWO staff. NWO built a special team consisting of staff able to focus full-time on the launch of the Fast-track programme, and the team managed to launch the call and select the proposals in two weeks. As with NSF's RAPID programme, NWO likewise relied on internal resources for project selection and by-passed peer-review, which was considered too time-consuming for the objectives of the funding measures
- To select the projects to fund within the Covid-19 research call, Taiwan's MoST largely followed the normal three-step project selection process, but included an extra filtering of pre-proposals to reduce the number of full proposals that require detailed review.
- Canada's NRC organised a rapid response, though still partially relying on peer-review. NRC's agile Covid-19 response involved peer-review in some parts. However, to speed up the process or where NRC had enough internal knowledge, NRC could make some decisions relying on internal expertise
- Japan's JST could launch a J-RAPID programme quickly, managed jointly with international funders, because the instrument had already been tested and was in routine use in disaster responses. The JST J-Rapid programme is designed only for emergencies, and JST uses social pressure to speed up the assessment process, demanding the immediate attention of external peer reviewers. The experts always respond very quickly as they are aware of the objectives of the funding instrument. JST skipped the joint evaluation process with partner funders in the J-Rapid programme to shorten the review process and relied on the partner funder's expertise in approving research teams for partnerships

In short, there are some known process modifications within UKRI to speed up assessment processes and reduce peer review and administrative burden, albeit they were often used only for small schemes and it is not clear whether they would have been transferable to the size and context of the COVID-19 response. However, other funders implemented various processes of this type – some already had specific schemes in place that had been designed for emergencies, others did not.

For most of UKRI's COVID-19 response, none of these things happened. However, as the response progressed into its latter stages, some time and effort-saving measures were used, as well as a more systematic diversification of funding processes:

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<sup>18</sup> We present an overview of international funders' COVID-19 response programmes in Table 26 (Appendix G), including the size of awards and whether or not peer review was used. All programmes described in the following bullet-list are presented in more detail in Appendix G.

In the first phase of the Agile Call, most Research Councils relied on external peer review and panel review. However, for Phase 2, most opted to place a greater focus on standing panels rather than commissioning several external reviews (see Table 5 above for the various changes that took place in different Research Councils). In Phase 2, a degree of prioritisation also took place: from August 2020, the time from submission to decision was stipulated as 4-6 weeks for 'standard' proposals and two weeks for 'urgent' proposals.

Most significantly, after the end of the Agile Call, UKRI launched the COVID-19 Urgency Grants scheme in January 2021 as 'an emergency route' for funding COVID-19 related research. It funded projects for short-term time-sensitive collection of data/samples or rapid turn-around analysis to inform urgent policy needs or to secure data for future research use. Proposals for projects up to £80k over 3-6 months were invited, and a two-stage application process was used. The first of these involved an expression of interest stage in the shape of a one-page application via email to their chosen Council to demonstrate:

- The time-critical nature of the research or data/sample collection
- A clear and rapid route to impact through existing partnerships
- How a normal grant timeframe is unsuitable
- Why they did not apply through any of the previously available UKRI COVID-19 funding schemes
- A clear plan to take the research forward, including, if necessary, through 'normal grant routes'

The Council chosen by the applicant then contacted the applicant to detail the next steps if their expression of interest was successful and was then responsible for reviewing the expression of interest. We find no further information on how projects were selected.

These processes implemented in the later stages of UKRI's COVID-19 response have three important advantages:

- They reduce peer review and administrative burden, both by screening out unsuitable applications via a short outline, and by moving in large part from external peer reviews to consolidated standing panels
- They entail a greater initial engagement with the relevance of applications, entailing rapid judgements on their relative urgency
- The COVID-19 Urgency Grants scheme (103 applications received, 10 awards funded since January 2021) also indicates a degree of diversification according to award size. The sizes of awards made under the Agile Call varied substantially (evidenced by the publicly available UKRI grants data on COVID-19 related awards). Yet, all went through roughly the same assessment process (notwithstanding the slight variations among Councils noted above), save for awards worth more than £800k, for which UKRI's COVID-19 Taskforce needed to provide additional review and signoff. Some UKRI administrative staff members in fact commented that the use of the same process to assess proposals at £10k and £1m was problematic and that the effort in reviewing could have been more proportional. By contrast, for the Urgency Grants scheme a simpler, shorter and internally conducted initial assessment process was set up specifically for very small awards

In short, process modifications to simplify assessment, to ease administrative and review burden, and to distinguish between different levels of urgency and different award sizes were minimal, and often only introduced towards the very end of UKRI's COVID-19 response.

We stress that this is not intended as an outright negative judgement. Other funders we reviewed noted that alternative processes entail a degree of risk-taking. At Canada's NRC, for example, there was a deliberate stated intention to invest in high-risk, high-reward research.

This in part necessitated alternative funding processes, and acceptance that some funded work may not produce the hoped-for results.

For context, it is worth noting at this point that there is a growing literature highlighting the limitations of peer review, some of which are relevant to the context of COVID-19 funding responses. The centrality of peer review for research funding is acknowledged as critical for identifying and funding the highest quality science. However, there is increasing recognition that conventional funding processes consisting of remote peer review and panel review tend to put especially innovative and 'transformative' ideas at a disadvantage, not least because these tend to entail a higher level of risk.<sup>19</sup> This is especially so in cases of high competition and low overall application success rates. There is also growing recognition of the overall burden of peer review on the scientific community,<sup>20</sup> and of the fact that peer reviewing all applications or relying exclusively on peer review does not necessarily lead to optimal funding outcomes.<sup>21</sup>

In light of these issues, funders had genuine choices to make around whether to limit and/or modify the use of peer review, both in order to reduce peer review burden where feasible, and to better ensure that riskier but potentially transformative proposals could be supported. The latter would likely only have been an appropriate ambition in some parts of the funding response.

In contrast to some funders covered by our international review, UKRI appears to have erred more on the side of caution, ensuring that full scientific review was carried out on all applications. This in itself has been a success, evidenced in our findings by the trust and approval of the integrity and robustness of funding process both by award holders and by UKRI administrative staff. However, we find no mechanisms for prioritising applications by thematic relevance or by urgency of individual topics, other than in some of the early consortia and platform studies by MRC and in the 'importance' ranking introduced by ESRC for the latter stages of the Agile Call. To be clear: this does not mean that relevant work was not funded or that urgent work was never able to commence on useful timelines. It means that there were few process aspects explicitly designed to aid such outcomes.

Germany's DFG had a similar approach to UKRI: it did accelerate the funding process, but continued to rely on peer-review with minor modifications (e.g. opting for written panel reviews for the first round instead of remote peer review to shorten decision-time for the rapid response Focus Funding instrument and integrating the Review Board with the Grants Committee). Although DFG managed to reduce the proposal evaluation time, it was still considered too

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<sup>19</sup> See e.g. Guthrie S., Ghiga I. & Wooding S. (2018). What do we know about grant peer review in the health sciences? [version 2; peer review: 2 approved] *F1000Research*, 6:1335; Langfeldt, L. (2006). The policy challenges of peer review: managing bias, conflict of interests and interdisciplinary assessments. *Research evaluation*, 15(1), 31-41; Nuffield Council on Bioethics. (2014). The findings of a series of engagement activities exploring the culture of scientific research in the UK. Nuffield Council on Bioethics.

<sup>20</sup> See e.g. Guthrie, S., Guerin, B., Wu, H., Ismail, S., & Wooding, S. (2013). Alternatives to peer review in research project funding. April 2013 Prepared for the UK Department of Health-funded Centre for Policy Research in Science and Medicine (PRISM). Rand Europe; Herbert, D. L., Graves, N., Clarke, P., & Barnett, A. G. (2015). Using simplified peer review processes to fund research: a prospective study. *BMJ open*, 5(7), e008380; Schroter, S., Groves, T., & Højgaard, L. (2010). Surveys of current status in biomedical science grant review: funding organisations' and grant reviewers' perspectives. *BMC medicine*, 8(1), 62.

<sup>21</sup> See e.g. Abdoul, H., Perrey, C., Amiel, P., Tubach, F., Gottot, S., Durand-Zaleski, I., & Alberti, C. (2012). Peer review of grant applications: criteria used and qualitative study of reviewer practices. *PLoS One*, 7(9), e46054; Clarke, P., Herbert, D., Graves, N., & Barnett, A. G. (2016). A randomized trial of fellowships for early career researchers finds a high reliability in funding decisions. *Journal of clinical epidemiology*, 69, 147-151; Graves, N., Barnett, A. G., & Clarke, P. (2011). Funding grant proposals for scientific research: retrospective analysis of scores by members of grant review panel. *Bmj*, 343, d4797; Mutz, R., Bornmann, L., & Daniel, H. D. (2016). Funding decision-making systems: An empirical comparison of continuous and dichotomous approaches based on psychometric theory. *Research Evaluation*, 25(4), 416-426.

long for an urgent crisis. It was felt that more radical approaches would have to be applied to respond faster.

From the international perspective, there appears therefore to be a trade-off between either rapid deployment of funding for relevant and strategically selected work using non-standard assessment methods, or ensuring full peer review at all times to guarantee high standards and avoid risk of failure. Funders that by-passed peer review completely generally did so only for programmes designed to fund the most urgent work and, critically, for small award sizes – in part because the risk of occasionally funding work that would not have withstood peer review is less problematic than would be the case in large investments, and is compensated by the ability to reach a funding decision as quickly as possible: the US NSF's RAPID programme has a maximum award size of US\$ 200k, the Canadian NRC's Pandemic Challenge Programme CA\$ 100k, and the Dutch NWO's fast-track data programme € 50k.

Aside from specific platform and consortia awards (including the National Core Studies), UKRI's COVID-19 response generally falls more on the latter end of this spectrum, although at substantial personal cost speed was also ensured in large part. However, there is a final question around whether UKRI would in fact have been at all able to determine the appropriate alternative, simplified funding processes in the early-to-mid stages of its COVID-19 response – or even a range of different processes for, say, differently sized awards, or awards with different levels of urgency. Firstly, because different levels of urgency were hard to designate, as explained earlier in this report. Secondly, because the unprecedented nature of the COVID-19 pandemic did not leave much time for extensive deliberation, and UKRI did not have an existing emergency funding scheme – few funders do, and in such cases, they exist for quite specific historical reasons and had been trialled in specific historical instances (e.g. Hurricane Katrina or the Fukushima disaster).

But thirdly, it is unlikely that UKRI had the technological facilities to rapidly set up and conduct a range of new and innovative application, funding and assessment processes optimally designed for the context of the pandemic. This brings us to the final main section of this report.

## 6 Monitoring and IT systems

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In this final main section, we cover UKRI's monitoring of COVID-19 related awards. However, our findings mean that we need in particular to discuss UKRI's IT systems more broadly.

We judge the long-term monitoring and data capture on UKRI awards related to COVID-19 to be in good health. However, our research highlights that there were severe problems around monitoring and around UKRI's IT systems as a whole throughout the early phases of the COVID-19 response, which had a number of serious implications.

### 6.1 Going off-system – reasons and consequences

Up until August 2020, UKRI's COVID-19 response application processes were run 'off-system'. In other words, the grant application and management system, JeS/Siebel, was not in use and calls were instead conducted using a manually created application proforma, submission via email and administration through MS Word documents and spreadsheets.

Whilst there is disagreement among our consultees for this study whether it was the correct decision to go off-system, many interviewees explained that there was no other way to launch the calls quickly. JeS/Siebel effectively does not allow setting up of cross-UKRI calls without attaching them to a 'lead Council' and moreover, even the modest process modifications (e.g. the simplified application format) would have taken many weeks or even months to fully operationalise. This meant that, in light of UKRI's need to respond to the pandemic at pace, the off-system approach was necessary.

The deficiencies of JeS/Siebel are well-explored. A study in 2018 to support a new research and innovation funding service (RIFS) for UKRI<sup>22</sup> highlighted that the system was outmoded (compared with the systems of many international comparator funders) and in urgent need of replacement. A particular weakness highlighted by that work is its inflexibility when it comes to setting up new schemes and alternative funding processes and/or application formats.

The full force of these deficiencies was felt in UKRI's COVID-19 response. The work from 2018 highlighted that many funders across the globe have found their IT systems wanting in recent years and have engaged to varying degrees and varying levels of success in improving and updating them. Whilst the funders included in our international review for this study occasionally reported some minor frustrations with their systems in their COVID-19 response, they were in all cases deemed adequate. JeS/Siebel, by contrast, was unfit for purpose. Variations on the metaphor of the COVID-19 response as the 'final nail in the coffin' for JeS/Siebel were used more than once across our programme of interviews.

By August 2020, the Agile Call was brought on-system, albeit with the re-introduction of a nominal lead-Council (EPSRC). As shown in the survey results presented in the previous section of this report, it is noteworthy that the re-introduction of JeS/Siebel in fact appeared at best only to have a marginally positive effect on the challenges faced by UKRI staff. We also note that the first application stage (one-page outlines) in the more recently launched COVID-19 Urgency Grants scheme still occurs off-system (i.e. via email).

While the off-system move was therefore necessary, it also caused several problems:

- Many UKRI staff members commented that the initial approach of using word documents and spreadsheets was unwieldy and inefficient

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<sup>22</sup> Kolarz, P., Bryan, B., Farla, K., Potau, X. & Simmonds, P. (2018). UKRI Research and Innovation Funding Service (RIFS) visioning work. Report by Technopolis for UKRI: <http://www.technopolis-group.com/wp-content/uploads/2018/07/UKRI-RIFS-Final-report.pdf>

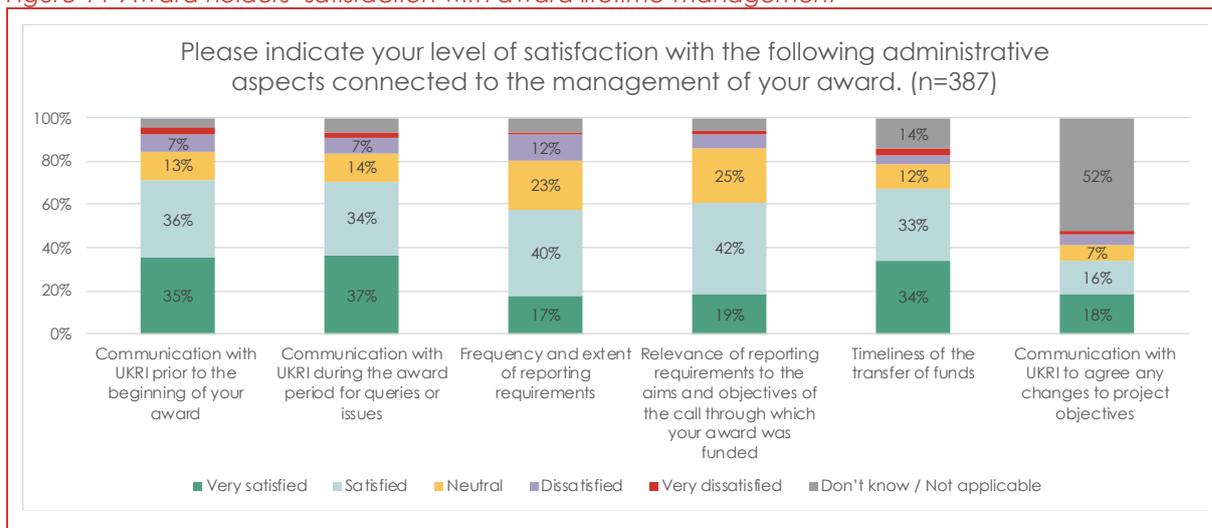
- There were isolated examples of a lack of operational coordination at the early stages. Running calls off-system via one email address invited confusion between Councils as to who was responsible for which applications
- Most seriously from a strategic point of view, manual management of M&E information meant that there was a lack of useful portfolio-level intelligence that could be quickly accessed to feedback into the funding process (e.g. to link up existing consortia, fill gaps)
- This also had implications for monitoring of equality, diversity and inclusion (EDI). We understand that for the first months of UKRI's COVID-19 response, it was impossible to collect these data centrally. There were efforts to capture such data at Council-level but we are unable to judge whether those data are comprehensive and readily comparable across the organisation

Due to the problems with JeS/Siebel, UKRI was therefore not only limited in its scheme design abilities, but also in terms of its ability to track the emerging portfolio of awards related to COVID-19 and associated information.

## 6.2 On-going monitoring and reporting

As JeS/Siebel was reintroduced, UKRI staff judge that some aspects of monitoring improved at least slightly. Award holders now also engage in regular reporting via the usual channels and appear to be broadly satisfied with the extent and relevance of their reporting duties.

Figure 14 Award holders' satisfaction with award lifetime-management



NB: survey respondents were explicitly asked to answer in relation to UKRI, rather than in relation to any additional administrative elements that may have existed at their institution

UKRI has more recently also made efforts to capture the data that could not be captured in the early days. In February 2021, a COVID-19 M&E survey was developed (from an initial survey set up by MRC) to collect results data from all grant holders under large parts of the UKRI COVID-19 portfolio. The intention is for the survey to be issued every three months and open for two weeks each time. It was designed to be as light touch as possible and to complement the requirement for grant holders to report outcomes data to Researchfish on an annual basis. Survey completion was mandatory for grant holders (as per the terms in their grant agreement).

The survey included six sections:

- Personal information to identify the project within the portfolio and to track responses

- Project progress against proposed milestones<sup>23</sup> at 3-, 6-, 12- and 18-month intervals (depending on project length) and mitigation plans for those not progressing as planned
- Insights and impacts - how project progress has addressed/is addressing issues arising from the pandemic. Whether projects leverage further funds or collaborations
- Engagement – to what extent projects disseminate findings to their target stakeholders
- Challenged and lessons learned – what went well and less well on the project
- Summary questions – compliance with the open data policy and general reflections

UKRI Analysis team provides a quantitative overview of all responses received across the portfolio of UKRI COVID-19 projects. Individual Councils then review the projects in their domain to provide qualitative insights focused on the narrative impacts and problems highlighted. The quantitative and qualitative inputs are then collated together to provide a robust overview of the portfolio and presented to the UKRI COVID-19 governance groups to inform future processes.

Over the course of our study, we have also had sight of a portfolio analysis of UKRI's funded work in response to COVID-19, and of several narrative summaries of the impact achieved by several individual awards. Aside from the issue of comprehensive EDI data from the early months of 2020 and the challenge of accessing unsuccessful applicants, UKRI is well set up for the evaluation of the outcomes of the funded work.

On the point of EDI data, we have obtained the fullest possible extent of information and present a full EDI analysis in Appendix D. In brief, we note the following findings:

- In most EDI categories, the pools of both applicants and awardees closely resemble UKRI's business-as-usual
- However, there were higher proportions of female COVID-19 applicant Principal Investigators (PIs) (+13%) and Co-Investigators (Co-Is) (+7%) compared to business-as-usual, and for awardee PIs (+14%) and Co-Is (+10%)
- The proportion of non-white Co-I applicants (22%) was the same as BaU, yet there was a much lower proportion of non-white Co-I awardees (10%) compared to business-as-usual (20%). The proportion of white Co-I awardees was 12% higher than business-as-usual (though there is no difference for PIs)
- Aside from this, there were only minor differences in the age, disability status and ethnicity of COVID-19 applicant and awardee PIs and Co-Is compared to business-as-usual

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<sup>23</sup> NB: projects funded at the beginning of the call may not have supplied this information in their application for funding, but this information was subsequently requested by email via the awarding RC.

## 7 Conclusions

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### 7.1 UKRI's funding response to COVID-19: an appraisal

In its response to the COVID-19 pandemic, UKRI sought to mobilise the UK research and innovation community as rapidly as possible to conduct research on COVID-19 and its wider implications across the disciplinary spectrum. Funded research was intended to produce impact or useable/actionable knowledge in the short-to-medium term (i.e. within the lifetime of relatively short awards) that would be relevant to the stated, emerging and potential needs of government and other actors dealing with all aspects of COVID-19 and its wider implications.

Whilst the funding activities responded to policy makers' needs (through interaction between UKRI and central government), there was also a strong bottom-up ethos, in that the onus was to be on the research and innovation community to suggest how best to respond to the needs and questions, to specify how this could be done in the shortest possible timeframes, to independently form consortia, to draw on existing networks and opportunities to formulate robust impact pathways, and indeed to highlight potentially important questions and emerging issues not yet identified by central government.

Judged against this 'mission', we reach a positive verdict on the shape of UKRI's response on several dimensions. In the very early stages, UKRI mobilised the research base, rapidly identifying and supporting key parts of the research system in core tasks critical to pandemic response (vaccine and therapeutic development, diagnostics, genetics, etc). Thereafter, UKRI mobilised the research base in a much broader way, responding not only to the pandemic itself, but to the multifaceted societal emergency that unfolded, evidenced by a large volume of applications on a broad range of topics relating to the pandemic and its wider implications.

UKRI also excelled in core day-to-day aspects of its service delivery as a research funder. From external and internal perspectives alike, feedback on ease of application processes and robustness of assessment is overwhelmingly positive – award holders even tended to characterise UKRI's service delivery as better than during pre-pandemic 'business as usual'.

Further, the governance arrangements for the COVID-19 response worked very well, especially in terms of facilitating cross-council work through the establishment of a central Coordination Group which had substantial decision-making power, and on which all constituent parts of UKRI were represented. The overall leadership of Sir Mark Walport and especially of Coordination Group chair Charlotte Deane were repeatedly praised. Especially the latter was likely a key success factor in the governance.

However, we find four major and partially related issues in the processes and organisation of UKRI's COVID-19 response:

- First, the largely successful delivery of the funding service during the pandemic came at a substantial personal cost in the shape of an extremely heavy workload on both UKRI staff and reviewers and panellists associated with the COVID-19 response
- Second, a significant portion of UKRI's funding decisions could not be taken within the intended timeframes, especially on the Agile Call. This was in part due to the aforementioned heavy workload, but also due to a shortfall of funds and a subsequent wait for a decision by HMT on a UKRI business case to reallocate additional budget to the COVID-19 response. This mostly affected funding decisions in late summer and early autumn 2020 and meant that over a hundred positive-funding decisions were substantially delayed
- Third, communications between UKRI and government took place and ensured general relevance of funded awards to many aspects of the pandemic. However, beyond the early months of the pandemic, there was little specificity to the priority areas defined through

these lines of communication. This meant that, outside of the specific large platform and consortia studies largely funded at the start of the pandemic, UKRI had little ability to prioritise different topics in terms of urgency, or funding different award types with bespoke timelines and impact strategies

- Finally, UKRI's grant application and management system, JeS/Siebel, was unfit for purpose, and so until August 2020, the COVID-19 response was largely conducted 'off-system'. A critical weakness was its limited ability to accommodate new bespoke funding schemes with bespoke application formats and assessment modulations, especially at a cross-council level, and to set up any kind of new scheme at speed. The resulting off-system approach entailed a reliance on application submission via email and administration with basic office software tools. It also meant that portfolio-level intelligence insight was hard to obtain while the funding response was in progress (including the availability of comprehensive EDI data). Additionally, both the inadequacies and the absence of JeS/Siebel undermined in large part the ability to even contemplate designing new and bespoke funding scheme types (let alone suites of several schemes) best suited for the task at hand

In short, at the operational level, UKRI performed as well as it could, and the same is largely true at the strategic level. In large part, its mission was fulfilled. However, there was limited specificity in strategic priority-setting, while it is unclear whether a higher level of such priority-setting could even have been operationalised in the shape of more bespoke process design. Meanwhile, the workload entailed by the combination of tight timelines and a substantial influx of applications was only countered with innovative funding processes to a very limited extent.

## 7.2 Recommendations and future perspectives

The pandemic has shown that UKRI (and other national research funders) ought to have some level of crisis-readiness. An important part of the remit of this study was therefore to draw lessons and recommendations to help UKRI in future crises and emergencies. For medical research funders and for funders in regions where severe natural disasters are common, this was at least in part already the case. For many large cross-disciplinary national funders like UKRI, this need only became apparent through COVID-19.

Our findings highlight some future actions that would heighten UKRI's (and potentially other funders') crisis-readiness. Some of these recommendations in fact go beyond the issue of possible future emergencies and also relate to UKRI's future 'business as usual'.

Our international review of funders was especially important for this task. As part of that review, we compiled a list of generic recommendations and good practice. These do not stand in any direct relation to UKRI as they are drawn from our analysis of other funders, but they may be of general interest both to UKRI and more broadly. We list those recommendations and elements of good practice in Appendix section G.1.10.

Some of our recommendations that are specific to UKRI are also informed by the more general findings from the international review, and we note below where this is the case. Our recommendations are as follows:

- **We recommend that the JeS/Siebel system be replaced as a matter of urgency.**  
Its deficiencies had been known for some time and their full force was felt in the COVID-19 response. The new system (whether off-the-shelf or custom-built) needs above all to be flexible in terms of the ability to set up a range of different schemes relatively easily and quickly (including supporting different assessment process types and application forms). It should also enable cross-council, UKRI-wide calls without the need for a 'lead-Council'. An important component will also be the presence of qualified staff able to help rapidly set up new schemes on the system

- **Future UKRI-wide R&I responses (whether in emergencies or not) could benefit from a governance structure broadly of the type used in the COVID-19 response.**

Specifically, convening a central decision-making body with oversight of all funded activities, where all constituent parts of UKRI are represented, and designating a clear leadership function with it (i.e. the chair) is an approach worth repeating in future

- **Where interface with government or other key stakeholders is necessary, funding activities should seek to engage in what may be termed 'systematic convening':** i.e. stakeholder needs ought not simply to be voiced and collected, but a degree of prioritisation should take place.

In emergency-situations, needs around timelines ought to be a critical part of this. We stress again that this did take place in the early days of UKRI's COVID-19 response when the research-needs were limited to the more focused task of 'pandemic response', but that this became more challenging as the scope of research-needs widened in the Agile Call

- **UKRI should design and maintain on-system a multi-purpose and rapid-response programme, and potentially use it even on a small scale somewhat regularly,** so that there is institutional knowledge of how to organise rapid response.

At the very least, this should include two distinct scheme types: one for very short and typically small awards on extremely critical, time-bound and specific questions, with minimal peer review components and a robust check for relevance of applications; one for rapid, but more medium-term awards with more bottom-up and exploratory dimensions, to be funded through a panel review process with some measures to reduce burden. Funders from regions that have experienced societal, medical and environmental emergencies in recent years are worth looking to (e.g. the US NSF and Japan's JST), as these funders often already have such schemes in place and have used them more than once

- To avoid budgetary problems of the type seen in its COVID-19 response, **a modification is needed to how UKRI's strategic budget is organised.**

The budget available for UKRI to repurpose without the need for a business case could be substantially increased, or a special 'emergency rule' put in place to repurpose budget more flexibly, to be specifically triggered in the event of future major emergencies. We note that although many other funders also spent substantial amounts on their COVID-19 response, none were burdened by the need for a business case. We note that this recommendation pertains to central government rules rather than to UKRI itself

- **UKRI should continue to ensure staff have high levels of scientific knowledge and knowledge of the wider context, enabling them where appropriate (e.g. for very small-sized awards for especially urgent questions) to take short-term decisions** without necessarily referring to external peer review, to be able to identify key research groups and to have an understanding of users and user needs

- Finally, we recommend **UKRI continue at a general level to cultivate a high-risk/high-reward ethos** in parts of its funding activities, both in terms of the research it seeks to fund and the processes used to do so, as it has done through several small bespoke schemes in the past. This is of course not relevant to all parts of emergency responses. But in conjunction with more conventional funding mechanisms where appropriate, it will help ensure rapid response funding can have a higher risk appetite, to support quick responses and to tackle the uncertainties inherent in crises of which the community has limited experience

## Appendix A Timeline of UKRI's COVID-19 response

This appendix summarises the key events of UKRI's R&I response to COVID-19. It is split into two periods:

1. **January 2020 – end of July 2020** – The initial rapid R&I response
2. **August 2020 – March 2021** – Consolidation and follow-up R&I actions

The beginning of the pandemic required the swift mobilisation of UKRI's communities and internal staff towards supporting COVID-19 research. The first seven months saw significant repurposing of existing UKRI funds to launch several open and international calls, platform studies and consortia, in collaboration with other UK and international funders.

*Table 6 UKRI R&I response to covid timeline - January 2020 – end of July 2020*

Month	UKRI R&I response
February 2020	<ul style="list-style-type: none"> <li>• <b>4<sup>th</sup> February</b> - UKRI-NIHR rapid response Initiative launches via two calls</li> <li>• <b>13<sup>th</sup> February</b> - UKRI-NIHR rapid response Initiative call 1 closes to new applicants</li> <li>• <b>27<sup>th</sup> February</b> - UKRI-NIHR rapid response Initiative call 2 closes to new applicants</li> </ul>
March 2020	<ul style="list-style-type: none"> <li>• RECOVERY and ACCORD trials begin</li> <li>• COG-UK is launched</li> <li>• <b>23<sup>rd</sup> March</b> - UKRI-NIHR rapid response Initiative calls 1&amp;2 - projects awarded</li> <li>• <b>31<sup>st</sup> March</b> - Phase I of the UKRI Agile call opens</li> </ul>
April 2020	<ul style="list-style-type: none"> <li>• <b>1<sup>st</sup> April</b> - UKRI-NIHR rapid response Initiative Rolling call opens</li> <li>• UKRI Agile call - UKRI's Executive Committee agreed to exceptionally approve the inclusion of international co-investigators</li> <li>• MRC develop a monitoring programme for the UKRI-NIHR rapid response Initiative</li> <li>• <b>21<sup>st</sup> April</b> - UKRI (via FIC) and the Japan Society for the Promotion Science launch their joint call</li> </ul>
May 2020	<ul style="list-style-type: none"> <li>• UKRI GCRF/Newton Fund Agile Response call and the DHSC/UKRI Global effort on COVID-19 (GECO) health research call launched</li> <li>• Genomics England (GeL) GenOMICC launched</li> <li>• TACTIC, CATALYST and DEFINE trials begin (one-off payments)</li> </ul>
June 2020	<ul style="list-style-type: none"> <li>• <b>22<sup>nd</sup> June</b> – First GECO call closes to new applicants</li> <li>• <b>30<sup>th</sup> June</b> - UKRI-NIHR rapid response Initiative Rolling call closes to new applicants</li> </ul>
July 2020	<ul style="list-style-type: none"> <li>• <b>1<sup>st</sup> July</b>: RECOVERY+ is funded for two years, building on Phase I of RECOVERY. UK-CTAP also funded for an additional two years to oversee RECOVERY+</li> <li>• Funding for ACCORD ends and trials within it are subsumed into RECOVERY+, along with TACTIC, CATALYST and DEFINE</li> <li>• <b>31<sup>st</sup> July</b>: Phase I of the UKRI Agile call closes to new applicants</li> </ul>

Source: Documentation provided by UKRI, Technopolis analysis

The second phase of UKRI's R&I response to COVID-19 began with a business case to BEIS for a second tranche of funds to build on earlier investments. This phase saw the funding of new instalments of the open calls, continuations of the platform/consortia studies, renewal of the VMIC, and the launch of a UKRI level M&E survey.

Table 7 UKRI R&I response to covid timeline - August 2020 – March 2021

Month	UKRI R&I response
August 2020	<ul style="list-style-type: none"> <li>• <b>10<sup>th</sup> August</b> – second GECO call closes to new applicants</li> <li>• <b>14<sup>th</sup> August</b> - Business case submitted for a second phase of the UKRI response (£177m)</li> <li>• Phase II of the UKRI Agile call opens, Je-S is used to manage proposals, time-to-decision is reduced from 14 days to 4-6 weeks (but the 14 day target is retained for 'urgent proposals')</li> <li>• COG-UK and GeL GenoMICC close</li> </ul>
September 2020	<ul style="list-style-type: none"> <li>• MRC launch their M&amp;E survey for the UKRI-NIHR rapid response Initiative, which later informs the overall UKRI COVID-19 M&amp;E survey</li> <li>• <b>20<sup>th</sup> September</b> – UKRI grant holders could switch their funding to COVID-19 related work</li> <li>• <b>28<sup>th</sup> September</b> – third GECO call closes to new applicants</li> </ul>
October 2020	<ul style="list-style-type: none"> <li>• UKRI agreed to adopt three of the six National Core Studies (NCS): (1) Data and Connectivity; (2) Longitudinal Health and; (3) Wellbeing, and Immunity</li> </ul>
November 2020	<ul style="list-style-type: none"> <li>• UKRI GCRF/Newton Fund Agile Response call closes to new applicants</li> </ul>
December 2020	<ul style="list-style-type: none"> <li>• <b>15<sup>th</sup> December</b> - Phase II of the UKRI Agile call closes to new applicants</li> <li>• <b>22<sup>nd</sup> December</b> – funds for VMIC approved by Vaccines Taskforce</li> </ul>
January 2021	<ul style="list-style-type: none"> <li>• <b>5<sup>th</sup> January</b> - COVID-19 Urgency Grants launches</li> <li>• <b>28<sup>th</sup> January</b> – Vaccines 'manufacturing and Innovation Centre (VMIC) launched</li> </ul>
February 2021	<ul style="list-style-type: none"> <li>• <b>1<sup>st</sup> February</b> – UK-CTAP remit extended to AGILE, REMAP-CAP and PRINCIPLE (in addition to both RECOVERY trials)</li> <li>• Last awards for the UKRI Agile call are made</li> <li>• COVID-19 M&amp;E survey launches</li> </ul>
March 2021	<ul style="list-style-type: none"> <li>• UKRI agreed funding of £37m for the three NCS' until the end of Quarter 2 FY2022/23 and launched two open calls drawing on the agreed funding (with a further training call planned) to support the work of the NCS'</li> </ul>

Source: Documentation provided by UKRI, Technopolis analysis

### Monitoring across the portfolio

**February 2021:** A COVID-19 M&E survey was developed (from an initial survey set up by MRC) to collect results data from all grant holders under the UKRI Agile COVID-19 portfolio. The survey will be issued every three months<sup>24</sup> and open for two weeks each time. The purpose of the survey was to support UKRI communications with budget holders in UK Government on the impact of the funding. It was designed to be as light touch as possible and to complement reporting to Research Fish grant holders were already doing. Survey completion was mandatory for grant holders (as per the terms in their grant agreement).

The survey included six sections:

3. **Personal information** to identify the project within the portfolio and to track responses

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<sup>24</sup> The survey was also sent to those whose grants had finished but not to those whose grants had been finished for more than three months. It is not clear why this was done.

4. **Project progress** against proposed milestones<sup>25</sup> at 3-, 6-, 12- and 18-month intervals (depending on project length) and mitigation plans for those not progressing as planned
5. **Insights and impacts** - how project progress has addressed/is addressing issues arising from the pandemic. Whether projects leverage further funds or collaborations
6. **Engagement** – to what extent projects disseminate findings to their target stakeholders
7. **Challenged and lessons learned** – what went well and less well on the project
8. **Summary questions** – compliance with the open data policy and general reflections

Survey results were processed by different groups. The portfolio level data was analysed by the UKRI Analysis Team and sent to the UKRI Team. Councils processed the survey responses and fed these into Research Fish, then to the UKRI Team who in turn sent results to the M&E Taskforce. High-level UKRI/NIHR and Innovate UK M&E data was collated and fed in at this point separate to the COVID-19 M&E survey. The data was then reviewed by the Taskforce and the survey was updated for the next round of data collection.

### Organisational learning

Though not within the review timeline, it is important to highlight that the UKRI Coordination Group conducted a 'lessons learned' exercise in April 2021. The aim of the exercise was to reflect on the experience of implementing the UKRI agile call to inform future such R&I responses. The relevant process lessons were:

- **Inter-council cooperation** – The R&I response had enabled UKRI to work across all its Councils and at all levels of governance, to a degree not achieved before
- **Resource management** – significant burn-out of Council staff occurred due the need to launch calls rapidly over the year. The Group suggested that a pre-agreed level of resource should be planned for in future and that decisions around changes to BaU should be made to facilitate more streamlined process (specific processes were not identified)
- **The right proposals at the right time** – The interest in the call was high with a very low success rate. The broad remit of the call resulted in many low-quality proposals which increased burden on UKRI staff, limiting their capacity to make useful links across proposals/projects. The rapid and iterative nature of award selection also meant that some projects were funded that were not necessarily the best overall. The Group noted that work should be done in future to better target certain communities and refine the scope to increase proposal quality and reduce staff burden. 'Open and closed cycles' were suggested to manage demand
- **Peer review** – the Group commented on the varying approach to peer review at the beginning of the call between Councils. A more consistent approach was recommended to improve fairness in the selection process
- **Engagement** – more engagement at the R&I organisation level (e.g. universities/businesses) as opposed to individuals was recommended by the Group. There were some issues in engaging with the network of Government Chief Science Advisors and the Government Office for Science, but success in engaging throughout with SAGE<sup>26</sup>
- **Working internationally** – the quick engagement with overseas funders to share information was seen as a success by the Group. An 'off-the-shelf' model to do more quickly in future was suggested

<sup>25</sup> NB: projects funded at the beginning of the call may not have supplied this information in their application for funding, but this information was subsequently requested by email via the awarding RC.

<sup>26</sup> the priority areas and question topics used in the call were shaped directly in line with the interests of SAGE



- **Systems** – having the call running ‘off-system’ not on Je-S was considered by the Group to be a mistake

The quote from the lessons learned summary document sums up the key takeaway from the session: *“The rapid approach taken for this process is not a model which can fit with business as usual.”*

## Appendix B Interview details

### B.1 List of interviewees

We conducted a total of 22 interviews for this study. For 20 of these (which was the planned number as per the terms of reference for this study), our target population consisted of the three main groups connected to UKRI's COVID-19 response governance and organisation: the Covid Taskforce, Coordination Group and Working Group. We secured two additional interviews, with Sir Mark Walport and Sir Patrick Vallance.

We prioritised the latter two individuals, as well as the Chairs of the three main groups and a small number of other individuals with particular responsibilities in terms of governance (representatives of the devolved administrations and former COVID-19 response coordinators). This accounted for eight out of the 25 individuals invited in total.

Aside from that, we opted for a random stratified sample, as this would reduce selection bias as much as possible: for the remaining interview places, we selected interviewees at random from each of the three groups, so that the same number of individuals from each group would be interviewed. For non-respondents or declined interview requests, we selected a new individual at random from the same group (e.g. if a Working Group member would decline an interview request, we would select a new Working Group member at random).

A total of three individuals either did not respond to our interview requests or declined to be interviewed, out of a total of 25 interview requests sent, yielding a response rate of 88.0%.

*Table 8 List of interviewees*

Interviewee	Reason for inclusion	Organisation (role)	Interview date	Interviewer
Amanda Collis	Covid Coordination Group	BBSRC (Executive Director Science)	29/06/2021 11am	Peter Kolarz
Charlotte Deane	Covid Taskforce & Covid Coordination Group (both Chair)	UKRI/EPSRC (Deputy Executive Chair)	22/06/2021 10am	Andrej Horvath
Chris Pook	Covid Taskforce	Government Office for Science (Senior representative)	15/06/2021 4pm	Paul Simmonds
David Pan	Covid Working Group	MRC (Interim Head of Programme, Covid-19)	29/06/2021 2pm	Peter Varnai
Derek Craig	Covid Coordination Group & Covid Working Group	EPSRC (Head of Regional Engagement/UKRI COVID-19 Research and Innovation Co-ordinator)	10/06/2021 3pm	Paul Simmonds
Elly Tyacke	Covid Working Group	BBSRC (National Call Coordinators)	1/07/2021 3pm	Billy Bryan
Jackie Hinton	Covid Working Group	BEIS (Previously UKRI COVID-19 R&I response coordinator)	18/06/2021 2pm	Paul Simmonds
Jeremy Neathey	Covid Coordination Group	ESRC (Director)	30/06/2021 3pm	Peter Kolarz
Joel Herzig	Covid Taskforce	UKRI (Strategy)	18/06/2021 1pm	Paul Simmonds

Interviewee	Reason for inclusion	Organisation (role)	Interview date	Interviewer
Jonathan Dorrian	Covid Working Group & Covid Coordination Group	UKRI (Strategy Advisor/UKRI COVID-19 Research and Innovation Support)	21/06/2021 2:30 pm	Andrej Horvath
Jonathan Pearce	Covid Coordination Group	MRC (Interim Director for COVID-19 Response)	29/06/2021 3:30pm	Peter Varnai
Kieran Walshe	Covid Taskforce	Welsh Government (Director of Health and Care Research Wales)	5/07/2021 5pm	Andrej Horvath
Liz Fellman	Covid Coordination Group	STFC (Head of Strategic Communications team)	21/06/2021 10am	Andrej Horvath
Mark Bradley	Covid Coordination Group	UKRI (Operations Director)	16/06/2021 3:30pm	Paul Simmonds
Mark Walport	UKRI Chief Executive & SAGE member	UKRI (Former Chief Executive)	28/06/2021 11am	Peter Kolarz
Naomi Beaumont	Covid Working Group	ESRC (Head of Health and Human Behaviour research)	29/06/2021 3pm	Andrej Horvath
Patrick Vallance	Government Chief Scientific Advisor	Government Office for Science (GCSA)	07/07/2021 1pm	Peter Kolarz
Richard Kenway	Covid Taskforce	University of Edinburgh (Professor of Mathematical Physics)	15/06/2021 9am	Andrej Horvath
Robert Lechler	Covid Taskforce	King's College London (Senior VC Health at KCL, President of the Academy of AMS)	30/06/2021 11 am	Paul Simmonds
Sadhana Sharma	Covid Working Group	BBSRC (Strategy and Policy Manager)	30/06/2021 3pm	Peter Varnai
Sophie Laurie	Covid Working Group Chair	NERC (Associate Director Interdisciplinary Capability)	16/06/2021 4pm	Andrej Horvath
William Love	Covid Taskforce	Destiny Pharma (Chief Scientific Officer)	2/07/2021 1pm	Paul Simmonds

## B.2 Interview guide

We present below our interview guide for this programme of interviews. We used a semi-structured approach, so that interviews could go 'off-script'. Firstly, so that any unforeseen topics and issues could be further explored if interviewees brought them up. Secondly, so that interviewees could talk in detail about those aspects of UKRI's COVID-19 response that they knew most about.

The questions and prompts listed in our interview guide are therefore not a cast-iron 'checklist' that was used uniformly for every interview. However, most of the 14 headline questions were covered with most interviewees, so that a saturation point of around 15 responses<sup>27</sup> was reached for every question.

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<sup>27</sup> See e.g. van Rijnsoever FJ (2017) (I Can't Get No) Saturation: A simulation and guidelines for sample sizes in qualitative research. PLoS ONE 12(7): e0181689. <https://doi.org/10.1371/journal.pone.0181689>



## UKRI Covid response Interview topic guide

<b>Name</b>	<b>[please include Prof/Sir/etc if applicable]</b>
Organisation	
Function	[e.g. UKRI Covid coordination group member]
Interview date/time	[format: dd/mm/yyyy; tt:tt]
Interviewer	
Special notes	[optional]

### **Preliminary points to share with interviewees:**

- Thank you for your participation!
- This process evaluation has been commissioned by UKRI and is being carried out by Technopolis. This evaluation does NOT focus on the interventions launched by UKRI to stabilise the research system in light of Covid-19, but rather specifically on UKRI's response in terms of supporting research and innovation into Covid-19. We are also primarily concerned with processes rather than outcomes or long-term impacts, though whether the processes are principally conducive to impacts is in scope.
- No attributable quotes will be used from these interviews. However, we ask permission to note the names of all our interviewees in the method annex to our final report
- Interviewees have the right to withdraw their participation at anytime

### **Instructions for interviewers:**

- Please complete all the details about the interviewee at the top of this page
- This interview tool contains 14 headline questions, each of which has several possible prompts. All are ultimately interesting for our study and we want information on every prompt across the whole interview programme. However, you are not expected to ask every prompt to every interviewee!
- Every interview should however cover most of the 14 headline questions
- Please develop an understanding of each interviewee's interest and expertise, and focus each interview on those questions, on which the interviewee is likely to have most to say
- Please add your interview notes under each of the 14 headline questions. Do not add separate notes under each sub-question bullet point
- Interview notes should be detailed, but do not have to be a verbatim transcription. Please use whatever convention suits you best to efficiently and effectively convey the information gained from the interview under each question heading
- Please place completed versions of this interview form in the designated SharePoint folder, always using the file name convention '3690 – Interview – [First name] [Surname]'

## Questions

*(Main questions are numbered; possible prompts/follow-ups in bullet points)*

1. Please can you briefly describe your role in relation to UKRI Covid response?
2. Please can you describe UKRI's mission or purpose in relation to COVID-19? In other words, what, in general terms, was UKRI's response to Covid intended to accomplish?
  - ...and how that mission was decided upon?
  - How was the scope / level of commitment defined?
  - Who was involved in deciding the balance of priorities?
  - How did UKRI decide on the limits of its efforts and where to leave matters to others
  - To what extent was the mission framed by the wider UK Government response?
  - To what extent were any other external views important in framing the response (e.g. the Cabinet, SAGE, the international community)?
  - What if any difficulties were encountered in deciding on the 'right' mission?
3. To what extent do you judge UKRI's overall mission, i.e. its goal-setting and aims in relation to Covid to have been appropriate, relevant and realistic?
  - Appropriate in terms of making best use of UKRI's core functions and instruments
  - Appropriate in terms of making the best use of public science
  - Realistic in terms of the influence it has and the resources at its disposal
  - Could UKRI's efforts have been better framed (either made more relevant to the problems at hand or more realistic in terms of what might be delivered) and if so, how might things have differed and why might that have been more effective?
4. Did UKRI's mission(s), i.e. its goal-setting and aims, evolve over time and if so how would you characterise the changing strategy in each of the key phases?
  - In the early days, up to June 2020
  - In the period July 2020 to December 2020
  - In the last 6 months, to June 2021
  - What was behind each of the key changes?
  - To what extent has UKRI identified key lessons and then been able to make the necessary changes (in flight, so to speak)?
5. How effective were UKRI's high-level governance arrangements?
  - Did UKRI get right the basic architecture?
  - Did the three main coordination structures (Coordination Group, Working Group & Task-force) cover all of the issues at hand?
  - Did UKRI get the right division of labour between the three groups, in terms of their specific responsibilities?
  - Did they work well together (synergistic)?
  - Were there any missing elements of leadership or oversight?

- How well were these governance groups informed by, or interacting with, SAGE and other parts of government?
  - How well were these governance groups informed by, or interacting with research and innovation activities across government and by other funders?
  - Were there any other important groups or individuals with significant decision-making power and/or oversight?
  - To what extent were key decisions in relation to UKRI's response to Covid-19 made outside of the 'core' governance architecture, and why was this? Did it matter?
  - Did any parts of UKRI struggle to contribute as they might have wished to these groups or their processes?
  - How and to what extent was the wider research community able to feed into the work of these various coordination groups?
  - To what extent was the wider research community reassured by UKRI leadership?
6. How do you judge the overall expertise and leadership ability represented on the main UKRI decision-making bodies?
- To what extent did UKRI have 'the right people for the job' within its existing in-house teams and supervisory bodies?
  - If there were any gaps, was UKRI able to identify and co-opt additional experts from elsewhere?
7. Was UKRI able to free-up key staff, releasing them from their previous, important responsibilities?
- Did UKRI have sufficient people / capacity to fulfil its ambitions in a timely way?
8. Please can you describe how budgets were secured for UKRI's Covid response and the various funding tools that formed a part of it?
- Was UKRI able to secure sufficient funds to fulfil its mission?
  - To what extent was UKRI able to redirect funding from within its existing budget, through for example repurposing existing commitments or delaying the launch of new initiatives?
  - To what extent was UKRI able to secure sufficient new funding from BEIS / HMT?
  - What was the heart of the business case for this new money?
  - Did the settlement influence UKRI's strategy (e.g. in terms of the number and type of initiatives that were launched)?
  - What might UKRI have done more of (or differently) had it managed to secure double the volume of new funds?
  - Where there any specific challenges around funding (e.g. timing, volume, conditions, etc.)?
9. Beyond UKRI's overall mission, how did the decision-making about the choice and design of the main UKRI-covid funding initiatives work?
- Who decided on what funding tools to initiate, their aims and how they would work?

- Was there much competition for funding and/or 'competition of ideas', including among the RCs/RE/IUK?
  - To what extent did UKRI manage to get enough of the research community working on important, COVID-related research and innovation?
  - To what extent did UKRI seek to encourage its research base – and the wider science community – to act earlier and more determinedly in their response to COVID (e.g. pushing for increased international collaboration and the early sharing of intermediate findings and research data; or redirecting research programmes at leading laboratories and research institutes)?
10. Time and resourcefulness were critical in the Covid response. In that context, which aspects of UKRI's Covid-response would you judge as most and least efficient?
- Please feel free to consider everything from framing the mission to securing funding through the application review and awarding process
11. Looking back, and in the context of an imperfect information landscape and a rapidly evolving context, is there anything you think could and should have been done differently?
- As above, please feel free to consider everything from the high-level mission-finding down to the application review and awarding process
  - [For any answers given]: should this therefore be done differently in the case of a future crisis?
12. Conversely, are there any aspects of UKRI's Covid response that you think should become a 'new normal' after Covid?
13. Overall, would you describe UKRI's covid response as a success story? Why/why not?
14. Are there any further points pertaining to UKRI's Covid response we haven't covered that you feel are relevant and would like to share? Or are there any questions we should have asked but did not?

## Appendix C Survey details

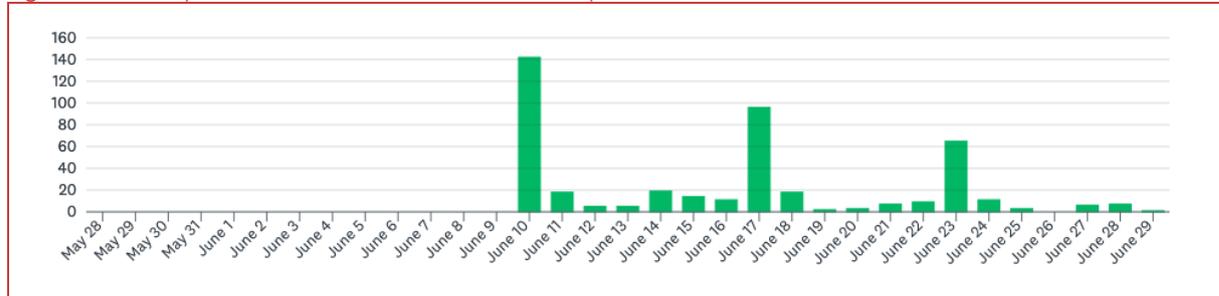
### C.1 Respondents and response rates

#### C.1.1 Survey of award holders

Table 9 Survey of award holders – headline response rate

Survey of UKRI COVID-19 response award holders					
<b>Total Population:</b>	<b>683 (664)</b>	<b>Survey responses:</b>	<b>442</b>	<b>Response rate:</b>	<b>66.6%</b>
<p>Population notes:</p> <p>Population includes all individuals who received awards (as lead investigator or equivalent) on the following UKRI COVID-response investments: The UKRI Agile Calls, UKRI Ideas to Address COVID-19 - Innovate UK, the UKRI/NIHR calls, GECO, GCRF/NF Agile Response, Vaccines Manufacturing Innovation Scale-up, Whole Genome Sequencing Alliance, GenOMICC, COG-UK, CoV-MAMS, later known as RECOVERY), ACCORD.</p> <p>12 invitations bounced and 7 respondents had opted out of receiving surveys, so 664 could be invited to take the survey.</p>		<p>Response notes:</p> <p>Responses were collected between 10/06/2021 and 29/06/2021, involving one initial invite and two reminders (see graph below).</p> <p>The population of respondents closely reflects the total population on all characteristics we are able to control for (see table below). The only caveat is that non-InnovateUK Agile call award holders are slightly overrepresented, whilst InnovateUK agile award holders are slightly under-represented. Aside from this caveat, this means that our survey data are likely strongly representative of the total population.</p>		<p>Response rate notes:</p> <p>For this population size, 224 responses would have been necessary to analyse for statistical significance at a confidence level of 95% and a confidence interval of 5. For a confidence interval of 3, 410 responses would have been necessary. Our response rate comfortably passes the former threshold and narrowly passes the latter. However, due to some respondents skipping questions, the latter is not fulfilled on every survey item presented in this report.</p>	

Figure 15 Survey of award holders – Timeline of response submissions



Source: SurveyMonkey

Table 10 Survey of award holders – response rates in detail

	Total population (N=683)		Response pool (n=442)	
<b>Funding instrument</b>				
Agile Call	403	<b>59.0%</b>	311	<b>70.4%</b>
UKRI/NIHR call	66	<b>9.7%</b>	41	<b>9.3%</b>
GECO	16	<b>2.3%</b>	6	<b>1.4%</b>
GCRF/NF Agile Response (UKCDR)	40	<b>5.9%</b>	25	<b>5.7%</b>
UKRI Ideas to Address COVID-19 - Innovate UK	132	<b>19.3%</b>	56	<b>12.7%</b>

	Total population (N=683)		Response pool (n=442)	
All others	26	3.8%	3	0.7%
<b>Research Council</b>				
AHRC	75	11.0%	57	12.9%
BBSRC	35	5.1%	28	6.3%
EPSRC	54	7.9%	40	9.0%
ESRC	195	28.6%	151	34.2%
Innovate UK	135	19.8%	56	12.7%
MRC (Agile Call only)	27	4.0%	21	4.8%
NERC & STFC	17	2.5%	14	3.2%
UKRI (incl. UKRI/NIHR investments)	145	21.2%	75	17.0%
<b>Gender (estimate)*</b>				
Female	n/a	35%	n/a	38%
Male	n/a	65%	n/a	62%

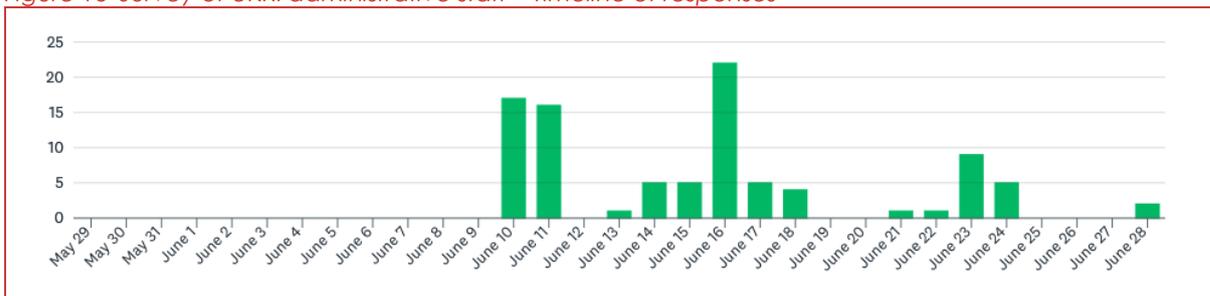
\*We do not have any information on applicants' gender (other than aggregate figures), so we took a random sample of 100 individuals from the total population and from the response pool respectively and created an estimate of gender balance based on first names. This is an imperfect technique and we stress that these are merely estimates. We opt for it only because there is no other way in this case to check for gender bias in the response pool. Mindful of this being an imperfect approach, the results do allow us to largely rule out the presence of any substantial gender bias in our results.

### C.1.2 Consultations of UKRI administrative staff

Table 11 Survey of UKRI administrative staff – headline response rate

Survey of Laureate Award applicants					
Total Population:	165 (164)	Survey responses:	93	Response rate:	56.7%
Population notes: Population includes all UKRI administrative staff members who were involved in the organisation and running of any UKRI COVID-19 response calls, but were not represented on the Covid Taskforce, Coordination Group or Working Group No invitations bounced but one respondent had opted out of receiving surveys, so 164 could be invited to take the survey.		Response notes: Responses were collected between 10/06/2021 and 29/06/2021, involving one initial invite and two reminders (see graph below). The population of respondents closely reflects the total population on all characteristics we are able to control for (see table below). This means that our survey data are likely strongly representative of the total population.		Response rate notes: With a small population (N) of 164 it is not possible to analyse for statistical significance. However, this high response rate, combined with a strongly representative pool of respondents on all characteristics we are able to control for, ensures that our survey data can produce the strongest possible indicative and robust findings.	

Figure 16 Survey of UKRI administrative staff – Timeline of responses



Source: SurveyMonkey

Table 12 Survey of UKRI administrative staff – response rates in detail

	Total population (N=164)		Response pool (n=93)	
<b>Funding instrument</b>				
Delivery Support Administrator	10	6.1%	5	5.4%
Office Check	10	6.1%	6	6.5%
Portfolio Manager	29	17.7%	15	16.1%
Programme manager	12	7.3%	9	9.7%
Senior Portfolio Manager	14	8.5%	12	12.9%
All others	89	54.3%	46	49.5%
<b>Research Council</b>				
BBSRC	14	8.5%	10	10.8%
EPSRC	49	29.9%	27	29.0%
ESRC	38	23.2%	24	25.8%
MRC	17	10.4%	9	9.7%
NERC	6	3.7%	4	4.3%
STFC	9	5.5%	6	6.5%
UKRI – General	16	9.8%	9	9.7%
Others	15	9.1%	4	4.3%
<b>Gender (estimate)*</b>				
Female	n/a	64.5%	n/a	61.4%
Male	n/a	35.5%	n/a	38.6%

\*We do not have any information on applicants' gender (other than aggregate figures), so we took a random sample of 100 individuals from the total population and from the response pool respectively and created an estimate of gender balance based on first names. This is an imperfect technique and we stress that these are merely estimates. We opt for it only because there is no other way in this case to check for gender bias in the response pool. Mindful of this being an imperfect approach, the results do allow us to largely rule out the presence of any substantial gender bias in our results.

## C.2 Survey questions and raw results

### C.2.1 Survey of award holders

Please indicate that you give consent for Technopolis to process your response to this questionnaire for the purposes of this study only		
Answer Choices	Responses	
I give my consent for Technopolis to process my response to this questionnaire for the purposes of this study only	100.00%	442
	<b>Answered</b>	<b>442</b>
	<b>Skipped</b>	<b>0</b>

When did you first learn about the call to which you applied?		
Answer Choices	Responses	
Before January 2020	0.79%	3
1st of January - 15th of January (2020)	1.05%	4
16th of January - 31st of January (2020)	0.52%	2
1st of February - 15th of February (2020)	3.15%	12
16th of February - 29th of February (2020)	2.62%	10
1st of March - 15th of March (2020)	4.20%	16
16th of March - 31st of March (2020)	15.22%	58
1st of April - 15th of April (2020)	18.37%	70
16th of April - 30th of April (2020)	14.96%	57
1st of May - 15th of May (2020)	11.02%	42
16th of May - 31st of May (2020)	6.04%	23
1st of June - 15th of June (2020)	5.51%	21
16th of June - 30th of June (2020)	2.62%	10
1st of July - 15th of July (2020)	2.89%	11
16th of July - 31st of July (2020)	1.05%	4
1st of August - 15th of August (2020)	2.10%	8
16th of August - 31st off August (2020)	0.26%	1
1st of September - 15th of September (2020)	1.05%	4
16th of September - 30th of September (2020)	1.57%	6
1st of October - 15th of October (2020)	0.00%	0
16th of October - 31st of October (2020)	0.79%	3
1st of November - 15th of November (2020)	2.36%	9
16th of November - 30th of November (2020)	0.00%	0
1st of December - 15th of December (2020)	0.52%	2
16th of December - 31st of December (2020)	0.00%	0
1st of January - 15th of January (2021)	0.00%	0
16th of January - 31st of January (2021)	0.26%	1
1st of February - 15th of February (2021)	0.00%	0
16th of February - 28th of February (2021)	0.00%	0
1st of March - 15th of March (2021)	0.00%	0
16th of March - 31st of March (2021)	0.26%	1
1st of April - 15th of April (2021)	0.26%	1
16th of April - 30th of April (2021)	0.52%	2
1st of May - 15th of May (2021)	0.00%	0
16th of May - 31st of May (2021)	0.00%	0
After May 2021	0.00%	0
	<b>Answered</b>	<b>381</b>
	<b>Skipped</b>	<b>61</b>

When did you submit your application? Please consider only your full application and disregard any prior short 'expression of interest' letters (if applicable)?		
Answer Choices	Responses	
Before January 2020	0.26%	1
1st of January - 15th of January (2020)	0.00%	0
16th of January - 31st of January (2020)	0.00%	0
1st of February - 15th of February (2020)	0.77%	3
16th of February - 29th of February (2020)	1.80%	7
1st of March - 15th of March (2020)	0.26%	1
16th of March - 31st of March (2020)	1.03%	4
1st of April - 15th of April (2020)	6.19%	24
16th of April - 30th of April (2020)	11.60%	45
1st of May - 15th of May (2020)	10.31%	40
16th of May - 31st of May (2020)	12.37%	48
1st of June - 15th of June (2020)	7.99%	31
16th of June - 30th of June (2020)	9.28%	36
1st of July - 15th of July (2020)	3.87%	15
16th of July - 31st of July (2020)	9.79%	38
1st of August - 15th of August (2020)	2.32%	9
16th of August - 31st off August (2020)	4.12%	16
1st of September - 15th of September (2020)	1.55%	6

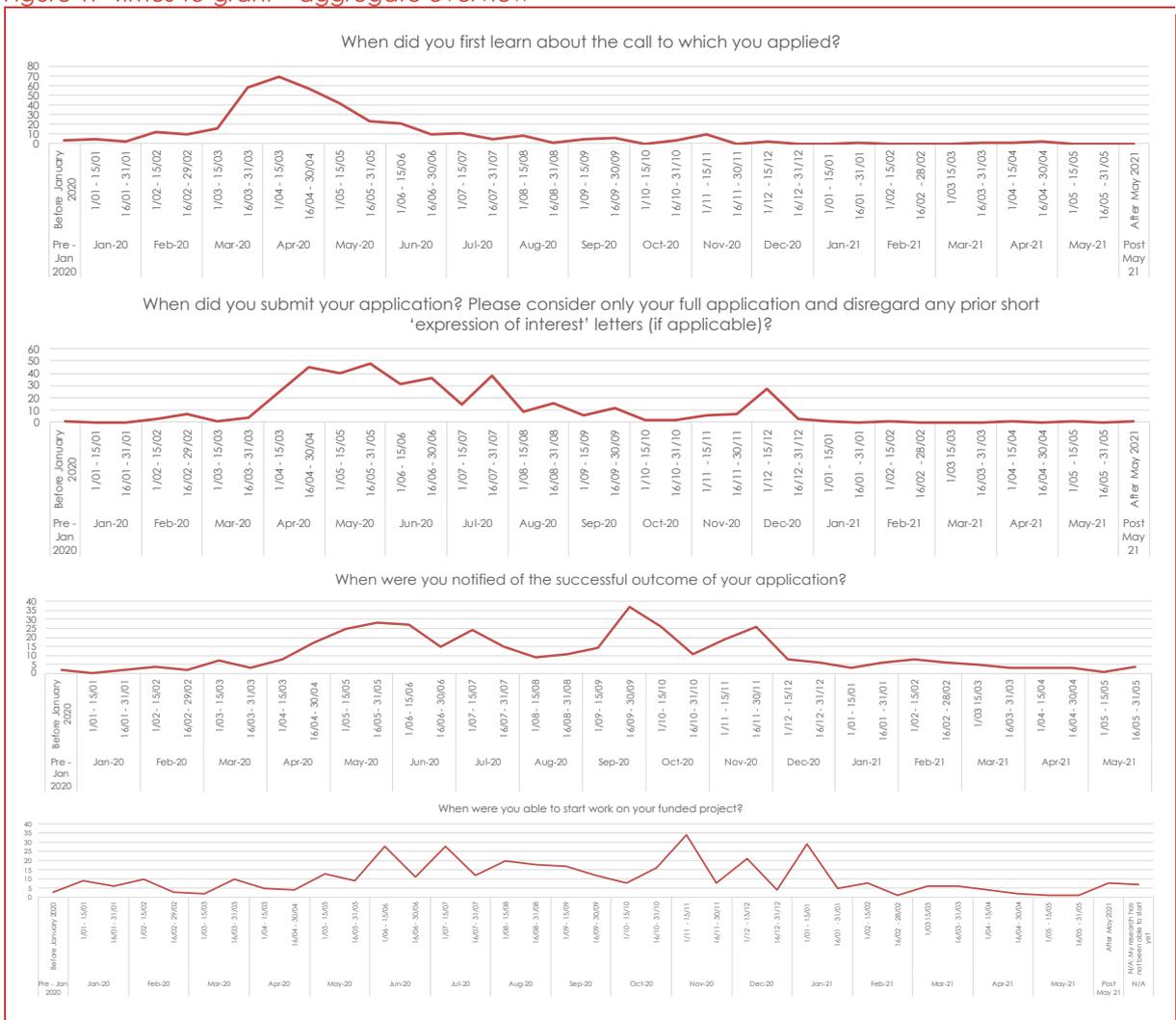
16th of September - 30th of September (2020)	3.09%	12
1st of October - 15th of October (2020)	0.52%	2
16th of October - 31st of October (2020)	0.52%	2
1st of November - 15th of November (2020)	1.55%	6
16th of November - 30th of November (2020)	1.80%	7
1st of December - 15th of December (2020)	6.96%	27
16th of December - 31st of December (2020)	0.77%	3
1st of January - 15th of January (2021)	0.26%	1
16th of January - 31st of January (2021)	0.00%	0
1st of February - 15th of February (2021)	0.26%	1
16th of February - 28th of February (2021)	0.00%	0
1st of March - 15th of March (2021)	0.00%	0
16th of March - 31st of March (2021)	0.00%	0
1st of April - 15th of April (2021)	0.26%	1
16th of April - 30th of April (2021)	0.00%	0
1st of May - 15th of May (2021)	0.26%	1
16th of May - 31st of May (2021)	0.00%	0
After May 2021	0.26%	1
	<b>Answered</b>	<b>388</b>
	<b>Skipped</b>	<b>54</b>

When were you notified of the successful outcome of your application?		
Answer Choices	Responses	
Before January 2020	0.26%	1
1st of January - 15th of January (2020)	0.51%	2
16th of January - 31st of January (2020)	0.00%	0
1st of February - 15th of February (2020)	0.51%	2
16th of February - 29th of February (2020)	1.03%	4
1st of March - 15th of March (2020)	0.51%	2
16th of March - 31st of March (2020)	1.80%	7
1st of April - 15th of April (2020)	0.77%	3
16th of April - 30th of April (2020)	2.06%	8
1st of May - 15th of May (2020)	4.37%	17
16th of May - 31st of May (2020)	6.43%	25
1st of June - 15th of June (2020)	7.20%	28
16th of June - 30th of June (2020)	6.94%	27
1st of July - 15th of July (2020)	3.86%	15
16th of July - 31st of July (2020)	6.17%	24
1st of August - 15th of August (2020)	3.86%	15
16th of August - 31st off August (2020)	2.31%	9
1st of September - 15th of September (2020)	2.83%	11
16th of September - 30th of September (2020)	3.60%	14
1st of October - 15th of October (2020)	9.51%	37
16th of October - 31st of October (2020)	6.68%	26
1st of November - 15th of November (2020)	2.83%	11
16th of November - 30th of November (2020)	4.88%	19
1st of December - 15th of December (2020)	6.68%	26
16th of December - 31st of December (2020)	2.06%	8
1st of January - 15th of January (2021)	1.54%	6
16th of January - 31st of January (2021)	0.77%	3
1st of February - 15th of February (2021)	1.54%	6
16th of February - 28th of February (2021)	2.06%	8
1st of March - 15th of March (2021)	1.54%	6
16th of March - 31st of March (2021)	1.29%	5
1st of April - 15th of April (2021)	0.77%	3
16th of April - 30th of April (2021)	0.77%	3
1st of May - 15th of May (2021)	0.77%	3
16th of May - 31st of May (2021)	0.26%	1
After May 2021	1.03%	4
	<b>Answered</b>	<b>389</b>
	<b>Skipped</b>	<b>53</b>

When were you able to start work on your funded project?		
Answer Choices	Responses	
Before January 2020	0.77%	3
1st of January - 15th of January (2020)	2.31%	9
16th of January - 31st of January (2020)	1.54%	6
1st of February - 15th of February (2020)	2.57%	10
16th of February - 29th of February (2020)	0.77%	3
1st of March - 15th of March (2020)	0.51%	2
16th of March - 31st of March (2020)	2.57%	10
1st of April - 15th of April (2020)	1.29%	5
16th of April - 30th of April (2020)	1.03%	4
1st of May - 15th of May (2020)	3.34%	13
16th of May - 31st of May (2020)	2.31%	9
1st of June - 15th of June (2020)	7.20%	28
16th of June - 30th of June (2020)	2.83%	11

1st of July - 15th of July (2020)	7.20%	28
16th of July - 31st of July (2020)	3.08%	12
1st of August - 15th of August (2020)	5.14%	20
16th of August - 31st of August (2020)	4.63%	18
1st of September - 15th of September (2020)	4.37%	17
16th of September - 30th of September (2020)	3.08%	12
1st of October - 15th of October (2020)	2.06%	8
16th of October - 31st of October (2020)	4.11%	16
1st of November - 15th of November (2020)	8.74%	34
16th of November - 30th of November (2020)	2.06%	8
1st of December - 15th of December (2020)	5.40%	21
16th of December - 31st of December (2020)	1.03%	4
1st of January - 15th of January (2021)	7.46%	29
16th of January - 31st of January (2021)	1.29%	5
1st of February - 15th of February (2021)	2.06%	8
16th of February - 28th of February (2021)	0.26%	1
1st of March - 15th of March (2021)	1.54%	6
16th of March - 31st of March (2021)	1.54%	6
1st of April - 15th of April (2021)	1.03%	4
16th of April - 30th of April (2021)	0.51%	2
1st of May - 15th of May (2021)	0.26%	1
16th of May - 31st of May (2021)	0.26%	1
After May 2021	2.06%	8
N/A: My research has not been able to start yet	1.80%	7
	<b>Answered</b>	<b>389</b>
	<b>Skipped</b>	<b>53</b>

Figure 17 Times-to-grant – aggregate overview



How did you first hear about the UKRI COVID-19 response call, through which you went on to receive your funding?		
Answer Choices	Responses	
Through the main UKRI website or regular newsletters	25.52%	99
Through the website or regular newsletters of one of the UK Research Councils (e.g. ESRC, MRC) or InnovateUK	6.19%	24
Through other formal communications by UKRI	2.84%	11
Through other formal communications by one or more UK Research Councils (e.g. ESRC, MRC) or InnovateUK	4.38%	17
Through formal communications by a different UK government department, agency or committee (e.g. DHSC, BEIS, SAGE)	0.77%	3
Through formal communications by senior leaders at your institution (e.g. PVC Research, Director of Research, Head of Department, Dean of School)	22.94%	89
Through formal communications from a learned society, professional body or network	1.03%	4
Informally, through colleagues at your institution	20.36%	79
Informally, through colleagues/friends at an institution other than your own	8.51%	33
Informally, through colleagues/friends at a UK government department or agency	2.58%	10
Other (please specify) <b>[Free text entry field]</b>	4.90%	19
	<b>Answered</b>	<b>388</b>
	<b>Skipped</b>	<b>54</b>

Please indicate your level of satisfaction with each of the following administrative aspects connected to the application for your award. Please answer in relation to UKRI, rather than in relation to any additional administrative elements that may have existed at your institution.														
	Very dissatisfied		Dissatisfied		Neutral		Satisfied		Very satisfied		Don't know / Not applicable		Total	Weighted Average
Overall ease of the application process	0.78%	3	3.63%	14	10.62%	41	35.75%	138	48.19%	186	1.04%	4	386	4.3
Relevance of the application form's sections	0.00%	0	2.08%	8	8.57%	33	43.90%	169	44.42%	171	1.04%	4	385	4.34
Coherence of the application form's format	0.26%	1	3.13%	12	8.62%	33	45.69%	175	40.99%	157	1.31%	5	383	4.28
Overall required/permitted length of the application	0.26%	1	2.34%	9	7.79%	30	37.40%	144	50.65%	195	1.56%	6	385	4.41
Clarity of guidance notes and documentation	0.26%	1	3.13%	12	12.53%	48	43.86%	168	39.16%	150	1.04%	4	383	4.22
Length of the time-window available to write the application	0.52%	2	3.90%	15	14.29%	55	43.12%	166	36.10%	139	2.08%	8	385	4.17
Speed of the award process from application submission to notification of successful outcome	10.91%	42	19.48%	75	10.13%	39	22.34%	86	36.62%	141	0.52%	2	385	3.56
Communication with UKRI during the application process (e.g. for queries or issues)	2.60%	10	5.71%	22	15.84%	61	28.57%	110	37.14%	143	10.13%	39	385	4.22
Clarity of the assessment criteria	0.78%	3	4.43%	17	19.79%	76	41.41%	159	31.77%	122	1.82%	7	384	4.04
Transparency of the assessment process	1.56%	6	8.05%	31	26.23%	101	34.29%	132	27.01%	104	2.86%	11	385	3.86
Please feel free to explain any of your answers to the above items: <b>[Free text entry field]</b>													157	
													<b>Answered</b>	<b>386</b>
													<b>Skipped</b>	<b>56</b>

Please indicate your level of satisfaction with the following administrative aspects connected to the management of your award:														
	Very dissatisfied		Dissatisfied		Neutral		Satisfied		Very satisfied		Don't know / Not applicable		Total	Weighted Average
Communication with UKRI prior to the beginning of your award (i.e. during the period following notification of your application being successful and the award beginning)	3.88%	15	7.49%	29	13.44%	52	35.92%	139	35.40%	137	3.88%	15	387	4.03
Communication with UKRI during the award period for queries or issues	2.33%	9	6.72%	26	13.70%	53	33.59%	130	36.69%	142	6.98%	27	387	4.17
Frequency and extent of reporting requirements	1.04%	4	11.98%	46	23.18%	89	40.10%	154	17.45%	67	6.25%	24	384	3.8

Relevance of reporting requirements to the aims and objectives of the call through which your award was funded	1.57 %	6	6.79%	26	24.80 %	95	42.30 %	162	18.80 %	72	5.74%	22	383	3.87
Timeliness of the transfer of funds	2.60 %	10	4.17%	16	11.72 %	45	33.33 %	128	33.85 %	130	14.32 %	55	384	4.35
Communication with UKRI to agree any changes to project objectives (Please select 'Not applicable' if no changes took place)	1.81 %	7	4.66%	18	7.25% 28	15.80 %	61	18.13 %	70	52.33 %	202	386	5.01	
Please feel free to explain any of your answers to the above items: <b>[Free text entry field]</b>													124	
													<b>Answered</b>	<b>387</b>
													<b>Skipped</b>	<b>55</b>

**In light of the aims of your research, how do you rate the appropriateness of the call in terms of the following characteristics of the available awards?**

	Very inappropriate		Somewhat inappropriate		Somewhat appropriate		Very appropriate		Don't know / No opinion / not applicable		Total	Weighted Average
Financial value of the available awards	1.81%	7	1.29%	5	16.54 %	64	79.07 %	306	1.29%	5	387	5.71
Permitted duration of the available awards	2.33%	9	11.92 %	46	30.05 %	116	54.92 %	212	0.78%	3	386	5.11
Expectations for impact/translation beyond academia	1.56%	6	3.91%	15	29.43 %	113	63.28 %	243	1.82%	7	384	5.49
Eligible costs	1.83%	7	2.35%	9	23.50 %	90	69.45 %	266	2.87%	11	383	5.61
Award terms and conditions around open access / open data	1.04%	4	3.12%	12	22.86 %	88	67.79 %	261	5.19%	20	385	5.65
All other award terms and conditions	1.84%	7	1.84%	7	28.68 %	109	57.37 %	218	10.26 %	39	380	5.65
Please feel free to explain any of your answers to the above items and/or note any further award characteristics you find to be especially good or especially problematic: <b>[Free text entry field]</b>											90	
											<b>Answered</b>	<b>387</b>
											<b>Skipped</b>	<b>55</b>

**Please provide a rating for each of the following aspects of the specific call through which you received your award.**

	Very poor		Poor		Adequate		Good		Very good		Don't know/cannot say	Total	
Clarity of definition of the call's aims and objectives	0.00%	0	0.52%	2	9.09%	35	34.81 %	134	54.81 %	211	0.78%	3	385
Relevance of the call's aims and objectives to the unfolding COVID-19 pandemic	0.26%	1	0.52%	2	4.17%	16	28.13 %	108	66.41 %	255	0.52%	2	384
Efficiency of call's application review and awarding processes	5.47%	21	9.11%	35	15.89 %	61	24.74 %	95	43.49 %	167	1.30%	5	384
Robustness of the call's application review and awarding processes	0.26%	1	4.17%	16	12.50 %	48	30.21 %	116	39.84 %	153	13.02 %	50	384
Please feel free to explain any of your answers to the above items: <b>[Free text entry field]</b>												69	
												<b>Answered</b>	<b>385</b>
												<b>Skipped</b>	<b>57</b>

**Please select how each of the following aspects of UKRI's service delivery compared with UKRI's pre-COVID-19 'business as usual' Please consider as your benchmark for comparison any experience you had with UKRI research and innovation funding before the COVID-19 pandemic happened.**

	Much worse than pre-COVID-19 'business as usual'		Slightly worse than pre-COVID-19 'business as usual'		About the same as pre-COVID-19 'business as usual'		Slightly better than pre-COVID-19 'business as usual'		Much better than pre-COVID-19 'business as usual'		Don't know / not applicable (no prior experience with UKRI)		Don't know / not applicable (other reason)		Total	Weighted Average
Clarity of award aims/expectations	0.53 %	2	3.16 %	12	30.53 %	116	23.95 %	91	17.37 %	66	11.84 %	45	12.63 %	48	380	4.41
Award characteristics (e.g. value, length, terms and conditions)	1.31 %	5	9.92 %	38	35.77 %	137	19.58 %	75	10.18 %	39	11.49 %	44	11.75 %	45	383	4.09

Efficiency of application submission, review and awarding processes	3.92 %	15	7.05 %	27	13.3 2%	51	16.7 1%	64	36.0 3%	138	11.7 5%	45	11.2 3%	43	383	4.54
Robustness of application review	1.83 %	7	7.05 %	27	33.6 8%	129	12.2 7%	47	9.40 %	36	12.0 1%	46	23.7 6%	91	383	4.51
Quality of guidance and support from UKRI staff	1.57 %	6	4.72 %	18	33.8 6%	129	17.3 2%	66	12.0 7%	46	12.3 4%	47	18.1 1%	69	381	4.43
Quality of UKRI's overall communication with the UK research base	1.31 %	5	3.66 %	14	30.2 9%	116	24.2 8%	93	12.2 7%	47	11.7 5%	45	16.4 5%	63	383	4.44
Please feel free to explain any of your answers to the above items [Free text entry field]															63	
															Answered	383
															Skipped	59

The most successful aspects of UKRI's response		
Answer Choices	Responses	
1) [Free text entry field]	100.00%	326
2) [Free text entry field]	84.97%	277
3) [Free text entry field]	61.66%	201
	<b>Answered</b>	<b>326</b>
	<b>Skipped</b>	<b>116</b>

The least successful aspects of UKRI's response:		
Answer Choices	Responses	
1) [Free text entry field]	100.00%	291
2) [Free text entry field]	60.48%	176
3) [Free text entry field]	33.68%	98
	<b>Answered</b>	<b>291</b>
	<b>Skipped</b>	<b>151</b>

Finally, please feel free to share any further thoughts or reflections you may have on UKRI's research and innovation response to the COVID-19 pandemic:	
Answered	130
Skipped	312
[Free text entry field]	

### C.2.2 Consultation survey of UKRI administrative staff

Please indicate that you give consent for Technopolis to process your response to this questionnaire for the purposes of this study only		
Answer Choices	Responses	
I give my consent for Technopolis to process my response to this questionnaire for the purposes of this study only	100.00%	93
	<b>Answered</b>	<b>93</b>
	<b>Skipped</b>	<b>0</b>

Please confirm your involvement with each of the 13 COVID-19-related programmes, calls and investments										
	Major involvement (several person-days per week at peak times)		Minor involvement (up to one person-day per week at peak times)		Minimal involvement (e.g. occasional discussion participant or minor advisory role only)		No involvement		Total	
	%	Count	%	Count	%	Count	%	Count		
UKRI agile call for research and innovation projects to address COVID-19 issues (excluding Innovate UK calls)	51.14%	45	26.14%	23	15.91%	14	6.82%	6	88	
UKRI agile call for research and innovation projects to address COVID-19 issues (Innovate UK calls only)	6.76%	5	1.35%	1	10.81%	8	81.08%	60	74	
DHSC/UKRI COVID-19 Rapid Response funding initiatives	9.59%	7	8.22%	6	13.70%	10	68.49%	50	73	
UKRI/DHSC - Global Effort on COVID-19 Health Research (GECO)	0.00%	0	1.43%	1	4.29%	3	94.29%	66	70	
UKRI GCRF/Newton Fund agile response call to COVID-19	6.85%	5	0.00%	0	12.33%	9	80.82%	59	73	
UKRI Investment in the Whole Genome Sequencing Alliance	0.00%	0	0.00%	0	0.00%	0	100.00%	72	72	
UKRI Investment in the GenOMICC Consortium	0.00%	0	0.00%	0	0.00%	0	100.00%	72	72	
Acceleration of the Vaccine Manufacturing Innovation Centre scale up	0.00%	0	0.00%	0	0.00%	0	100.00%	72	72	
ACCORD	0.00%	0	1.39%	1	0.00%	0	98.61%	71	72	
RECOVERY	0.00%	0	0.00%	0	0.00%	0	100.00%	71	71	
Repurposing of existing UKRI projects towards COVID-19 issues	9.33%	7	6.67%	5	24.00%	18	60.00%	45	75	
Major involvement in any other UKRI research and innovation COVID-19-response investments not listed above (please specify if applicable): [Free text entry field]									3	
									<b>Answered</b>	<b>89</b>
									<b>Skipped</b>	<b>4</b>

Please provide a general rating for each of the following aspects of UKRI's research and innovation response to the COVID-19 pandemic:														
	Very poor		Poor		Adequate		Good		Very Good		Don't know/cannot say		Total	Weighted Average
	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count		
Quality of communications between UKRI and the UK research base to publicise calls	0.00%	0	1.20%	1	22.89%	19	28.92%	24	19.28%	16	27.71%	23	83	4.49
Quality of communications within UKRI	1.22%	1	15.85%	13	24.39%	20	32.93%	27	15.85%	13	9.76%	8	82	3.76

Please provide a general rating for each of the following aspects of UKRI's research and innovation response to the COVID-19 pandemic:														
	Very poor		Poor		Adequate		Good		Very Good		Don't know/cannot say		Total	Weighted Average
Balance and range of the portfolio of COVID-19-related funding tools	0.00%	0	2.53%	2	22.78%	18	27.85%	22	8.86%	7	37.97%	30	79	4.57
Clarity of programmes' and calls' aims and objectives	1.23%	1	8.64%	7	17.28%	14	32.10%	26	23.46%	19	17.28%	14	81	4.2
Clarity of UKRI's overall aims and objectives in relation to the COVID-19 pandemic	0.00%	0	8.43%	7	16.87%	14	34.94%	29	27.71%	23	12.05%	10	83	4.18
Sufficiency of the resources (time and personnel support) available to conduct and administer the calls	12.05%	10	22.89%	19	28.92%	24	12.05%	10	16.87%	14	7.23%	6	83	3.2
Efficiency of review and awarding processes	4.88%	4	7.32%	6	24.39%	20	21.95%	18	25.61%	21	15.85%	13	82	4.04
Robustness of review and awarding processes	1.20%	1	4.82%	4	21.69%	18	31.33%	26	25.30%	21	15.66%	13	83	4.22
Quality of feedback to unsuccessful applicants	2.41%	2	8.43%	7	32.53%	27	18.07%	15	10.84%	9	27.71%	23	83	4.1
Please feel free to explain your answers to any of the above items [Free text entry field – see analysis below]													32	
The open responses to the administrator survey question on <b>general process ratings (Q3, n=28 open responses)</b> centred around three interrelated themes:													<b>Answered</b>	<b>83</b>
<ul style="list-style-type: none"> <li>Half of the respondents to the open question cited the <b>additional workload</b> over and above business-as-usual (BaU). This stemmed from the rapidity of the administrative response required for setting up the calls, dealing with applicant enquiries, handling proposals and running the selection processes. A quarter of the respondents to the question felt that better resource management and planning could have helped reduce this burden e.g. better defined support to those dealing with applications, more support during triage</li> <li><b>Unclear communication from the strategic level</b> – A fifth of respondents to this question felt the clarity of communication on the scope and aims of the calls from the central UKRI teams to administrators could have been better. Respondents felt that this translated to the scope of the calls being too broad, inviting more unsuitable applications and exacerbating the already high workload for staff</li> <li><b>Poor / not enough feedback to applicants</b> – One consequence of the increased strain on resources was that feedback to applicants either not always provided or was not of the usual quality expected. This led to administrators fielding complaints from applicants, further compounding the workload</li> <li>There were some positive comments from a handful of respondents who praised the <b>robust review processes</b> that were retained despite shortened lead times</li> </ul>													<b>Skipped</b>	<b>10</b>

Compared with 'business-as-usual' (BaU), how much of a challenge did each of the following present in the UKRI COVID-19 response? Please answer for the period up to the end of June 2020, and separately for the period from July 2020 onwards (you can provide the same answer for both of course):													
Up to end June 2020													
	Significantly more challenging compared with BaU		Slightly more challenging compared with BaU		No more or less challenging than BaU		Slightly easier than BaU		Significantly easier than BaU		Don't know / not applicable		Total
Ability to attract relevant and high-quality applications	14.29%	11	16.88%	13	23.38%	18	3.90%	3	5.19%	4	36.36%	28	77
Recruiting suitable peer reviewers	17.11%	13	25.00%	19	7.89%	6	10.53%	8	5.26%	4	34.21%	26	76

Compared with 'business-as-usual' (BaU), how much of a challenge did each of the following present in the UKRI COVID-19 response? Please answer for the period up to the end of June 2020, and separately for the period from July 2020 onwards (you can provide the same answer for both of course):

**Up to end June 2020**

	Significantly more challenging compared with BaU		Slightly more challenging compared with BaU		No more or less challenging than BaU		Slightly easier than BaU		Significantly easier than BaU		Don't know / not applicable		Total
and review panellists													
Receiving the required number of remote reviews in good time	23.68%	18	18.42%	14	11.84%	9	3.95%	3	6.58%	5	35.53%	27	76
Conducting review panels	15.58%	12	18.18%	14	6.49%	5	5.19%	4	5.19%	4	49.35%	38	77
Providing feedback and explaining application outcome decisions	14.47%	11	26.32%	20	22.37%	17	1.32%	1	1.32%	1	34.21%	26	76
Functionality and user-friendliness of UKRI's IT systems and tools	23.68%	18	22.37%	17	27.63%	21	1.32%	1	0.00%	0	25.00%	19	76
Reviewer / panellist capacity and workload	40.79%	31	15.79%	12	2.63%	2	1.32%	1	1.32%	1	38.16%	29	76
Your overall capacity and workload	46.05%	35	28.95%	22	7.89%	6	0.00%	0	0.00%	0	17.11%	13	76
Communication among UKRI staff	14.47%	11	27.63%	21	30.26%	23	7.89%	6	2.63%	2	17.11%	13	76
Division of labour among UKRI staff	31.58%	24	23.68%	18	13.16%	10	3.95%	3	1.32%	1	26.32%	20	76
Please feel free to explain your answers to any of the above items: <b>[Free text entry field]</b>												38	
												<b>Answered</b>	<b>80</b>
												<b>Skipped</b>	<b>13</b>

**From July 2020 onwards:**

	Significantly more challenging compared with BaU		Slightly more challenging compared with BaU		No more or less challenging than BaU		Slightly easier than BaU		Significantly easier than BaU		Don't know / not applicable		Total
Ability to attract relevant and high-quality applications	6.41%	5	24.36%	19	32.05%	25	3.85%	3	0.00%	0	33.33%	26	78
Recruiting suitable peer reviewers and review panellists	19.48%	15	32.47%	25	11.69%	9	7.79%	6	2.60%	2	25.97%	20	77
Receiving the required number of remote reviews in good time	23.38%	18	23.38%	18	18.18%	14	1.30%	1	6.49%	5	27.27%	21	77
Conducting review panels	7.79%	6	24.68%	19	11.69%	9	6.49%	5	3.90%	3	45.45%	35	77
Providing feedback and explaining application outcome decisions	15.58%	12	19.48%	15	29.87%	23	2.60%	2	1.30%	1	31.17%	24	77

From July 2020 onwards:													
	Significantly more challenging compared with BaU		Slightly more challenging compared with BaU		No more or less challenging than BaU		Slightly easier than BaU		Significantly easier than BaU		Don't know / not applicable		Total
	%	n	%	n	%	n	%	n	%	n	%	n	
Functionality and user-friendliness of UKRI's IT systems and tools	9.09%	7	29.87%	23	36.36%	28	2.60%	2	1.30%	1	20.78%	16	77
Reviewer / panellist capacity and workload	44.16%	34	18.18%	14	2.60%	2	1.30%	1	0.00%	0	33.77%	26	77
Your overall capacity and workload	38.96%	30	41.56%	32	11.69%	9	0.00%	0	0.00%	0	7.79%	6	77
Communication among UKRI staff	11.69%	9	32.47%	25	35.06%	27	9.09%	7	2.60%	2	9.09%	7	77
Division of labour among UKRI staff	24.68%	19	31.17%	24	23.38%	18	3.90%	3	0.00%	0	16.88%	13	77
Please feel free to explain your answers to any of the above items: <b>[Free text entry field]</b>												38	
												<b>Answered</b>	<b>80</b>
												<b>Skipped</b>	<b>13</b>

The open responses to the two questions above on how **challenging processes were during the UKRI COVID-19 response compared to BaU (Q4, n=30 open responses)** reflected the themes discussed in the third question:

- The **increased administrative workload** due to the rapid response and volume of applications was reported by 40% of respondents as a challenge. The effort of individual staff was said to be far above BaU. Some staff commented on the difficulty of balancing their normal duties and COVID-19 response duties post-July 2020. **Excellent teamwork** was considered to help abate the workload issue
- Just over 30% of respondents reported that **reviewers and panellists were overloaded** by requests to quickly review proposals / sit on panels each week (pre-July 2020). The workload continued to be too much for many even post-July 2020 and had a knock-on effect on the quality and timeliness of the feedback given to applicants. However, no respondent to this question suggested that the quality of the reviews was compromised
- The **functionality and user-friendliness of UKRI's IT systems and tools** were considered challenges by 20% of respondents (e.g. manual systems used pre-July 2020), who preferred BaU systems

**Programme/call design: this relates to the overall coherence, relevance and design of programmes and calls, including aims and objectives of the funding activities, the funding criteria, and award characteristics such as size and duration. We are interested in the design features themselves, and in how these design decisions were made. Please share your views around things that went well and things that did not go well. Please feel free to share anything you deem relevant:**

<b>Answered</b>	<b>51</b>
<b>Skipped</b>	<b>42</b>

**[Free text entry field – see analysis below]**

The were mixed views on **programme/call design (Q5, n=43)** from administrators. Around half of respondents felt satisfied overall that UKRI had designed the calls well and was able to fund the right research, given the time and resource constraints. A fifth commented that the design and operational processes improved as time went on and decision makers learned from the earlier calls (e.g. as coordination and communications between councils got better). The flexibility of the call designs in terms of the eligibility and scope was seen as a positive for allowing more diverse research, but some felt this led to a lack of coherence across Councils in terms of who would fund what proposal (e.g. the process did not handle multidisciplinary proposals well).

The other half of respondents were more critical. A quarter of respondents felt the top-down design of the calls (i.e. dictated from central UKRI teams) meant that the remit of the call guidance was too broad and caused more administrative problems as a result of higher demand. The shorter application form design was seen as a positive step to speed up application-to-decision time. The downside was that the shorter forms included less information for reviewers to make informed funding decisions, often requiring more information to be requested of applicants by administrators.

**Communications / interaction with the research base: this relates to publicised call documentation and communication of the funding opportunities to the UK research base, including how well the aims of the funding opportunities were communicated. Please share your views around things that went well and things that did not go well. Please feel free to share anything you deem relevant:**

<b>Answered</b>	<b>48</b>
<b>Skipped</b>	<b>45</b>

**[Free text entry field – see analysis below]**

The **communication with the research base (Q6, n=38)** was rated positively overall by most (60%) administrators responding to our survey. The measure cited most often was the level of demand the calls garnered with most proposals being eligible and within the calls' remits. The consistency in communication, transparency and regular updating of websites were the key drivers to UKRI's success in communications. The remaining 40% of

**Communications / interaction with the research base:** this relates to publicised call documentation and communication of the funding opportunities to the UK research base, including how well the aims of the funding opportunities were communicated. Please share your views around things that went well and things that did not go well. Please feel free to share anything you deem relevant:

respondents described issues (already identified in Q5) around the broad scope and eligibility of the call (stemming from changing strategic priorities within UKRI, which had to be updated regularly and caused some confusion for some applicants, resulting in out-of-scope proposals.

**Applications received:** this relates to UKRI's success in attracting applications from the intended applicants/stakeholders, and the overall volume, quality and appropriateness of applications received. Please share your views around things that went well and things that did not go well. Please feel free to share anything you deem relevant:

Answered	54
Skipped	39

[Free text entry field – see analysis below]

The increased demand for and accessibility of the funding calls led to higher numbers of **applications received (Q7, n=45)** compared to BaU. Administrators responding to our survey reported that the calls garnered many high-quality proposals from the right partnerships, the best of which they believe were funded. However, half of the respondents felt that the reduced barriers to application led to many more irrelevant and low-quality proposals. Engagement with potential applicants (and their institutions) to help 'sense check' their ideas before submission was suggested as a solution that is commonly done as part of BaU.

**Assessment processes:** this relates to the process from application submission through to the final funding decision. (e.g. information requested in application, external peer review, panel assessment, identification of potential to deliver COVID-19-related impact within the lifetime of the award etc.). Please share your views around things that went well and things that did not go well. Please feel free to share anything you deem relevant:

Answered	57
Skipped	36

[Free text entry field – see analysis below]

Three key points were raised by administrators responding to our survey question on **assessment processes (Q8, n=49)**:

- Just over half of respondents reported that **the assessment process was robust and efficient**, despite time saving modifications (e.g. skipping peer review and only using panels). Reviews were considered high-quality and fair,
- There were isolated examples of **a lack of operational coordination at first**. Running calls 'off-system' at first via one email address invited confusion between Councils as to who was responsible for which applications. There was a feeling from a handful of respondents that the UKRI central team had not fully considered the implications of a ten-day window for processing proposals. Application and assessment **processes were said to have improved over time**
- 40% of respondents reported that the **high workload for administrators and reviewers** was unsustainable but that it **did not** negatively impact upon the robustness of the assessment processes. Seven respondents found external reviews difficult to coordinate due to the demand and workload. Administrators commended the goodwill of reviewers to assess so many proposals in a short timeframe; this would not have been as acceptable outside of an emergency response situation
- A fifth of respondents reported reviewers asking for further information from applicants due to there being **less space for detail on the short application form**. Some respondents added that the lack of (the usual) financial information on proposals made decision making more difficult for reviewers. Some suggested that the use of the same process to assess proposals at £10k and £1m was problematic and that the effort in reviewing could have been more proportional.

**Monitoring and reporting:** this relates to any of the following aspects: the information captured by UKRI's IT system(s) on individual applications; the arrangements around what information is captured on funded awards throughout their lifetime; the frequency and format of award holders' reporting duties; UKRI-internal monitoring arrangements, including the ability to gather intelligence on the full portfolio of funded awards. Please share your views around things that went well and things that did not go well. Please feel free to share anything you deem relevant:

Answered	42
Skipped	51

[Free text entry field – see analysis below]

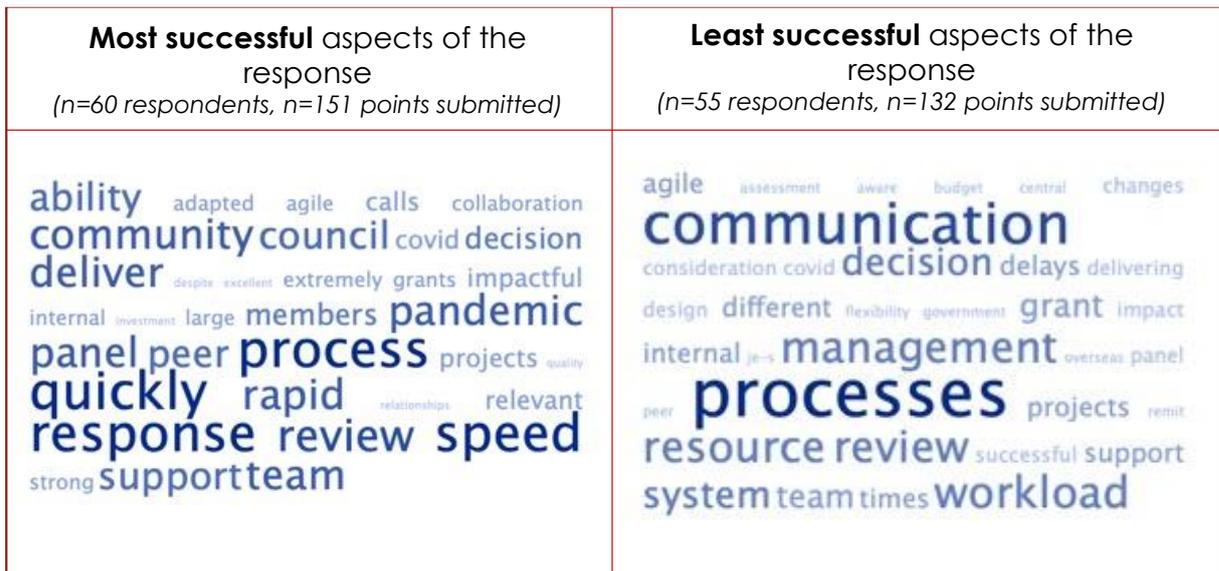
Half of the responses to our survey question on **monitoring and reporting (Q9, n=21)** found the use of an 'off-system' approach to M&E (i.e. not on Je-S, GIR) unhelpful. Many commented that the initial approach of using word documents and spreadsheets was unwieldy and inefficient, but that things have improved slightly over time (e.g. move onto Je-S and survey). The manual management of M&E information meant that there **was a lack of useful portfolio level intelligence** that could be quickly accessed to feedback into the funding process (e.g. to link up existing consortia, fill gaps). Those who mentioned the M&E survey were optimistic about how it could be used to inform future calls and evidence outcomes of existing projects.

**The most successful aspects of UKRI's response**

Answer Choices	Responses	
1) [Free text entry field – see analysis below]	100.00%	60
2) [Free text entry field – see analysis below]	90.00%	54

The most successful aspects of UKRI's response		
Answer Choices	Responses	
3) [Free text entry field – see analysis below]	61.67%	37
<p><u>Most successful</u> aspects of the response (Q10, n=60):</p> <ul style="list-style-type: none"> <li>• <b>Rapid response</b> – Two thirds of respondents to this question mentioned the speed of the R&amp;I response both in terms of launching calls and awarding funds</li> <li>• <b>Teamwork</b> – A third of respondents praised the way their immediate colleagues stepped up to the challenge of implementing such ambitious calls. Efficient cross-Council collaboration was also cited</li> <li>• <b>Robust assessment processes</b> – The quality of the assessment processes and reviewers was reported as successful by a quarter of respondents</li> <li>• <b>Objectives met</b> – Many respondents made comments around what the call had achieved (e.g. "Funding science to contribute towards combatting the pandemic"), which mirrored the objectives of UKRI's response. Some identified the breadth and quality of funded, including specific examples of impact (e.g. Oxford/AZ vaccine)</li> </ul>	<p><b>Answered</b></p> <p><b>Skipped</b></p>	<p><b>60</b></p> <p><b>33</b></p>

The least successful aspects of UKRI's response:		
Answer Choices	Responses	
1) [Free text entry field – see analysis below]	100.00%	55
2) [Free text entry field – see analysis below]	80.00%	44
3) [Free text entry field – see analysis below]	60.00%	33
<p><u>Least successful</u> aspects of the response (Q11, n=55):</p> <ul style="list-style-type: none"> <li>• <b>High workload</b> – Just over half of respondents cited the overworking of UKRI staff caused both the high demand and inefficient resource management</li> <li>• <b>Difficulty working across Councils</b> – A third of respondents experienced difficulty running calls across councils due to unlinked IT systems, differing funding processes and a lack of timely communication</li> <li>• <b>Application and assessment</b> – A minority (22%) of respondents felt that certain parts of the application and assessment processes were inefficient, though each respondent identified different processes (e.g. lack of time to provide feedback)</li> </ul>	<p><b>Answered</b></p> <p><b>Skipped</b></p>	<p><b>55</b></p> <p><b>38</b></p>



Finally, please feel free to share any further thoughts or reflections you may have on UKRI's research and innovation response to the COVID-19 pandemic.	
Answered	34
Skipped	59
[Free text entry field – see analysis below]	
<p>The final question of our administrator's survey asked respondents to share <b>any further thoughts on UKRI's R&amp;I response to the COVID-19 pandemic Q12, n=30</b>). There was an equal number of positive and negative responses, summarised below:</p> <ul style="list-style-type: none"> <li>• <u>Positive reflections:</u> <ul style="list-style-type: none"> <li>– 40% of respondents to this question felt that <b>the response had been successful</b>, despite operational challenges. These respondents commented that they were proud of what they and UKRI had achieved in rapidly responding to the pandemic</li> </ul> </li> </ul>	

Finally, please feel free to share any further thoughts or reflections you may have on UKRI's research and innovation response to the COVID-19 pandemic.

- A third of respondents praised the “superhuman” effort of colleagues and the level of teamwork within their Councils
- **Critical points:**
  - The **increased workload** for administrative staff was cited by just over a third of respondents, reflecting the findings of most questions in our survey
  - **Inefficiencies in the call process** (e.g. the agile call being open too long) and **poor communication** from the UKRI central team were cited by a few respondents (20%)

### C.3 Additional survey data analysis

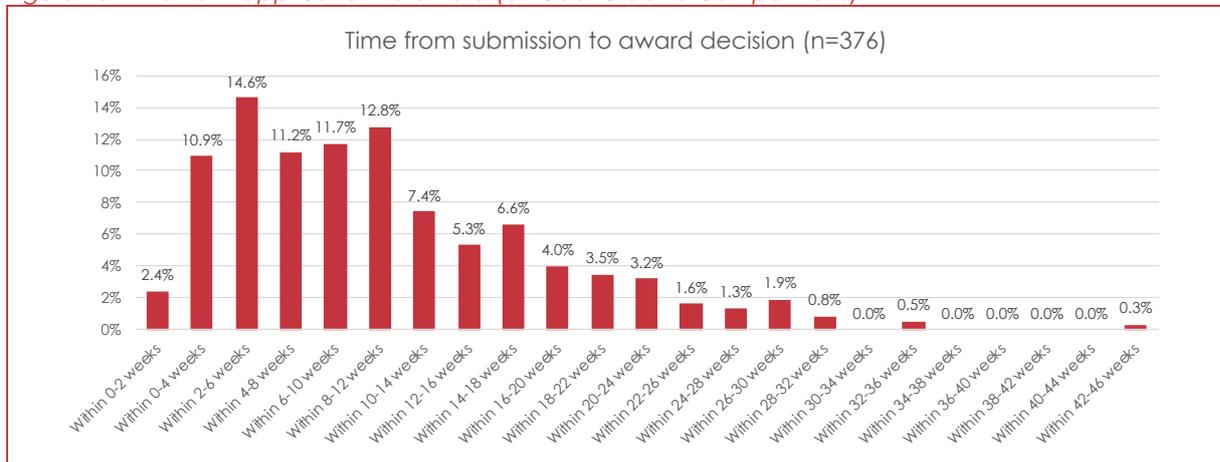
#### C.3.1 Award holder survey - Time from application to award

The data presented in the figures and table below summarise the award holders survey responses to questions on the time from application to award. Respondents could select from two-week blocks for each question e.g. application submitted between 1<sup>st</sup> - 15<sup>th</sup> of March 2020 and award decision received between 16<sup>th</sup> - 30<sup>th</sup> of April 2020. The number of selectable two-week blocks between the application period and awarded period selected by the respondent gives the application to award timeframe e.g. using the same example above, there are three selectable two-week blocks, meaning the timeframe was a minimum of four weeks and a maximum of eight weeks.

The key limitation of this data is that it is limited to two-week periods rather than exact dates, meaning that most of the resulting ranges presented are 30 days long. However, it does provide a broad indication of the time from application to award.

Decisions were provided to applicants within two weeks in 13% of cases in this dataset (possible in both ‘within 0-2 weeks’ and ‘within 0-4 weeks’ categories). Awards were made within 10 weeks in half of all cases, 40% were notified within 8-22 weeks, and only 10% in 20-46 weeks.

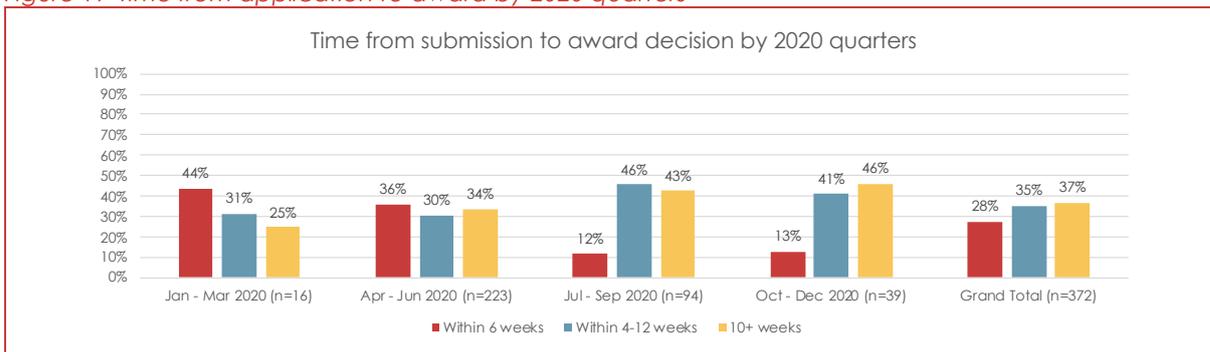
Figure 18 Time from application to award (all Councils and competitions)



Source: Award holders survey.

There appears to be a clear drop in awarding speed in the second half of 2020, when the responses are split into those who applied in each quarter of 2020 and when broader time periods are used.

Figure 19 Time from application to award by 2020 quarters



Source: Award holders survey, includes all Councils and competitions. Note: excludes four respondents who submitted applications in 2021.

The table below shows the same data as above but broken down by Councils and competitions and by the descriptive statistics of the number of time periods passed from submission to award. For example, the number of time periods that respondents could select between 1<sup>st</sup> - 15<sup>th</sup> of March 2020 and 16<sup>th</sup> - 30<sup>th</sup> of April 2020 was three (within 4-8 weeks).

The award holder survey data indicates that the time between application and award was within 8-12 weeks on average (median: within 6-10 weeks). UKRI/NIHR was able to turnaround applications the fastest on average (within 4-8 weeks), followed by ESRC and NERC. Respondents applying to AHRC (within 14-18 weeks), EPSRC and STFC reported the longest periods between application and award (NB: only two datapoints were recorded for STFC).

The Agile Call award holders reported an average of 8-12 weeks between application and award, the longest compared to other competitions. UKRI/NIHR (within 2-6 weeks) and GCRF/NF Agile Response (within 4-8 weeks) award holders reported the fastest awarding times on average.

Table 13 Time from application to award by Council (all competitions)

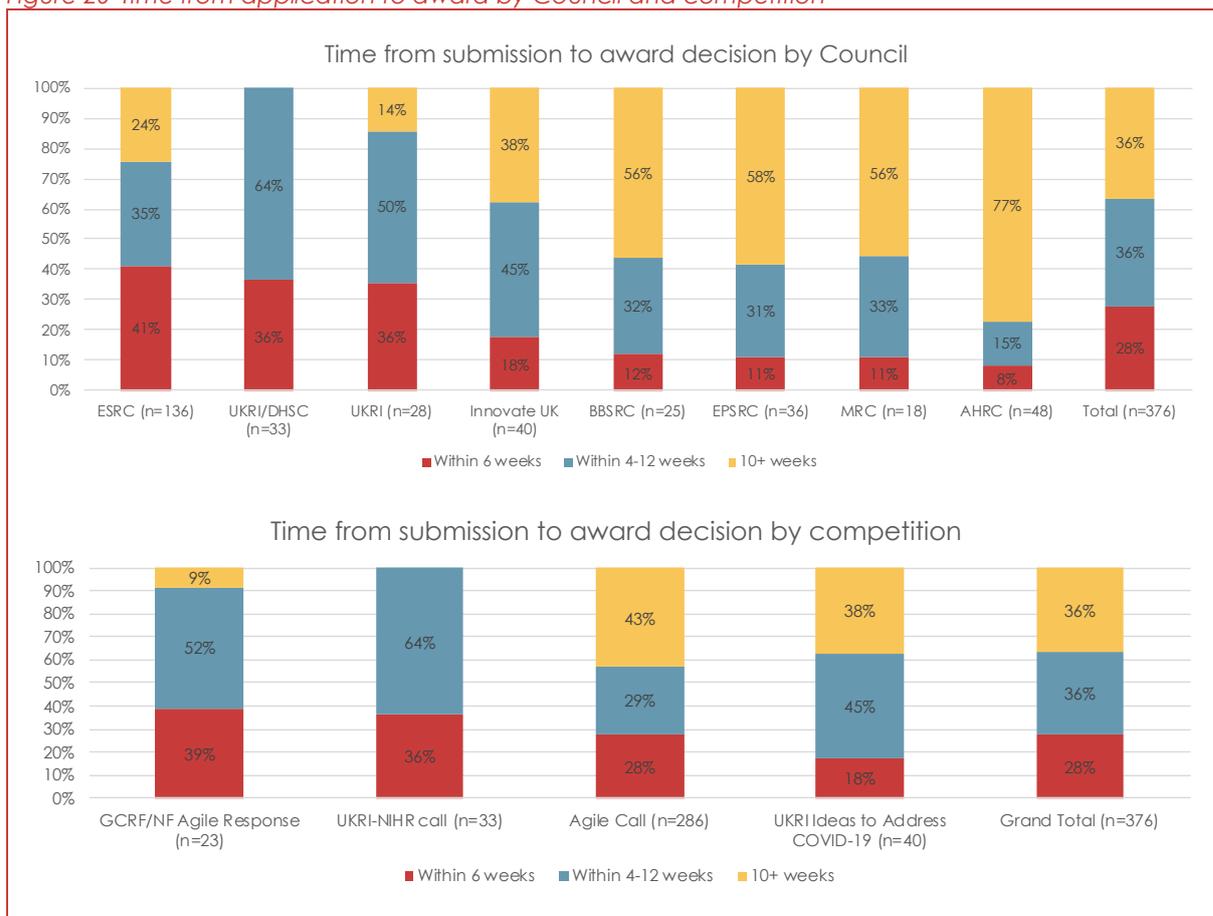
	Time periods passed from submission to award decision		
	Sum	Average	Median
<b>Council</b>			
AHRC (n=48)	426	8.88 (within 14-18 weeks)	9 (within 16-20 weeks)
BBSRC (n=25)	155	6.2 (within 10-14 weeks)	6 (within 10-14 weeks)
EPSRC (n=36)	269	7.47 (within 12-16 weeks)	6 (within 10-14 weeks)
ESRC (n=136)	523	3.85 (within 4-8 weeks)	3 (within 4-8 weeks)
Innovate UK (n=40)	189	4.73 (within 6-10 weeks)	4 (within 6-10 weeks)
MRC (n=18)	114	6.33 (within 10-14 weeks)	7 (within 12-16 weeks)
UKRI (n=28)	110	3.93 (within 4-8 weeks)	3.5 (within 4-8 weeks)
UKRI/NIHR (n=33)	96	2.91 (within 2-6 weeks)	3 (within 4-8 weeks)
<b>Competition</b>			
Agile Call (n=286)	1539	5.60 (within 8-12 weeks)	5 (within 8-12 weeks)

	Time periods passed from submission to award decision		
	Sum	Average	Median
UKRI/NIHR call (n=33)	96	2.91 (within 2-6 weeks)	3 (within 4-8 weeks)
GCRF/NF Agile Response (n=23)	84	3.65 (within 4-8 weeks)	4 (within 6-10 weeks)
UKRI Ideas to Address COVID-19 (n=40)	189	4.73 (within 6-10 weeks)	4 (within 6-10 weeks)
<b>Grand Total (n=376)</b>	<b>1934</b>	<b>5.14</b> (within 8-12 weeks)	<b>4</b> (within 6-10 weeks)

Source: Award holders survey. Note: Award holders under COVID-19 Genomics UK Consortium (COG-UK) and Whole Genome Sequencing Alliance did not answer this question. GECO, NERC and STFC removed as responses were too low to retain anonymity, but are included in total, average and median.

The view of the data changes slightly if the time periods are grouped as below. From this perspective, award holders from NERC, STFC and ESRC responding to our survey indicated the highest proportions of the fastest application to award times. Newton Fund / GCRF UKCDR and UKRI/NIHR call award holders recorded the most instances of receiving their award within six weeks of application.

Figure 20 Time from application to award by Council and competition\*



Source: Award holders survey. Note: Award holders under COVID-19 Genomics UK Consortium (COG-UK) and Whole Genome Sequencing Alliance did not answer this question. \*GECO, NERC and STFC removed as responses were too low to retain anonymity but are included in total.

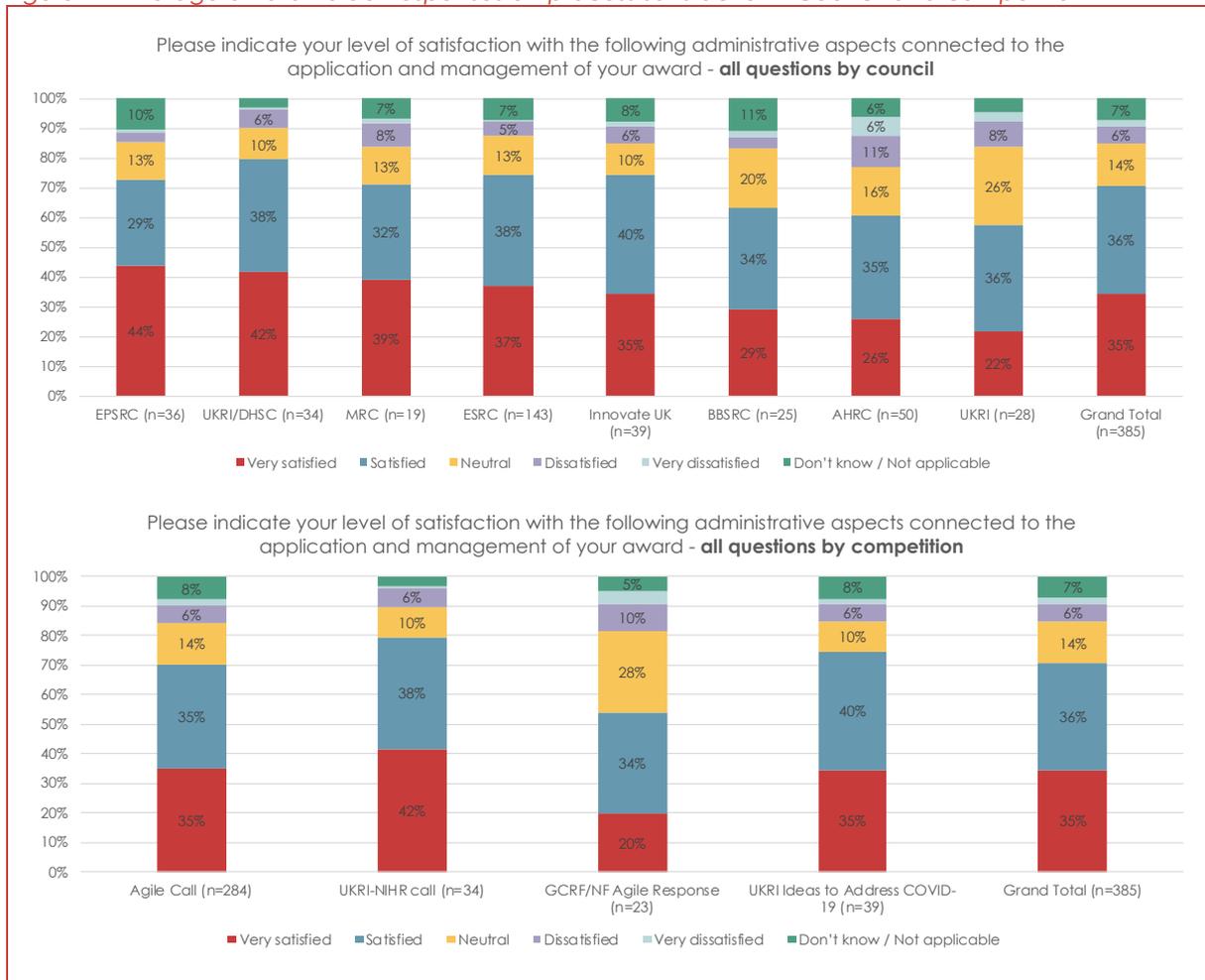
### C.3.2 Award holder survey - Satisfaction

The figures below present the average responses per Council and Competition to two overarching questions asking about award holders' satisfaction with various administrative processes connected to the application (10 sub-questions) and award management processes (six sub-questions).

Around 60% of the respondents were satisfied with various application and award processes on average across Councils, except for STFC, though only two respondents were award holders under that Council. Satisfaction across competitions was between 70-80%, except for the GCRF/NF Agile Response competition (54%).

UKRI/NIHR award holders under the same competition reported being satisfied more often (80%) than all other Councils, whereas the highest proportion of dissatisfied responses was from AHRC award holders (17%) and under the GCRF/NF Agile Response competition (14%).

Figure 21 Average award holder responses on process satisfaction - Council and competition\*

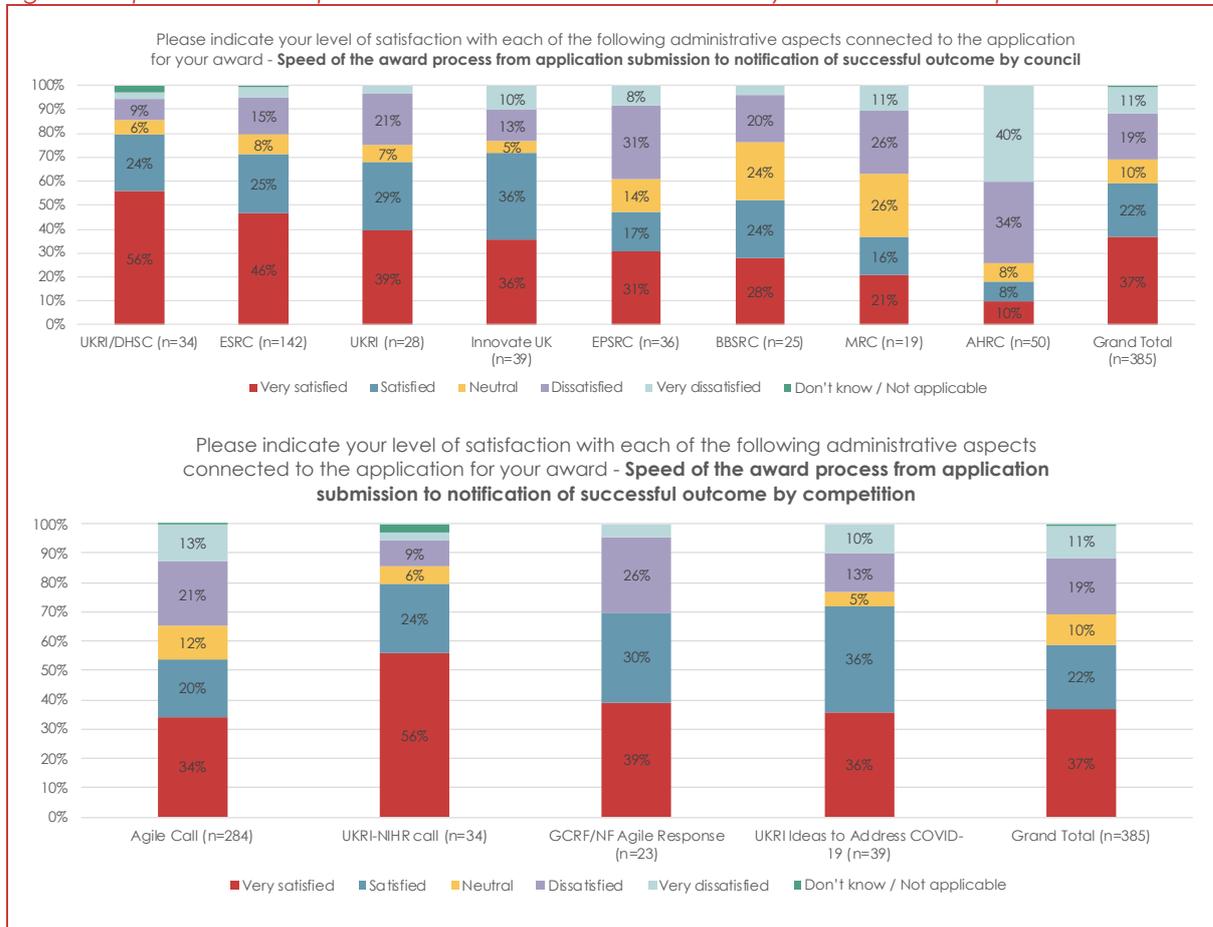


Source: Award holders survey. Note: This chart combines satisfaction questions. The n totals are averages. \*GECO, NERC and STFC removed as responses were too low to retain anonymity but are included in total.

There was particular dissatisfaction in the speed of the award process. Satisfaction rates differed the most across Councils compared to the other survey questions. Three-quarters of AHRC award holders were dissatisfied, two-and-a-half times more than the average across Councils. By competition, respondents under the UKRI agile call were the least satisfied (34%),

followed by those under the GCRF/NF Agile Response competition (26%). Respondents under the UKRI/NIHR were most satisfied overall (80%).

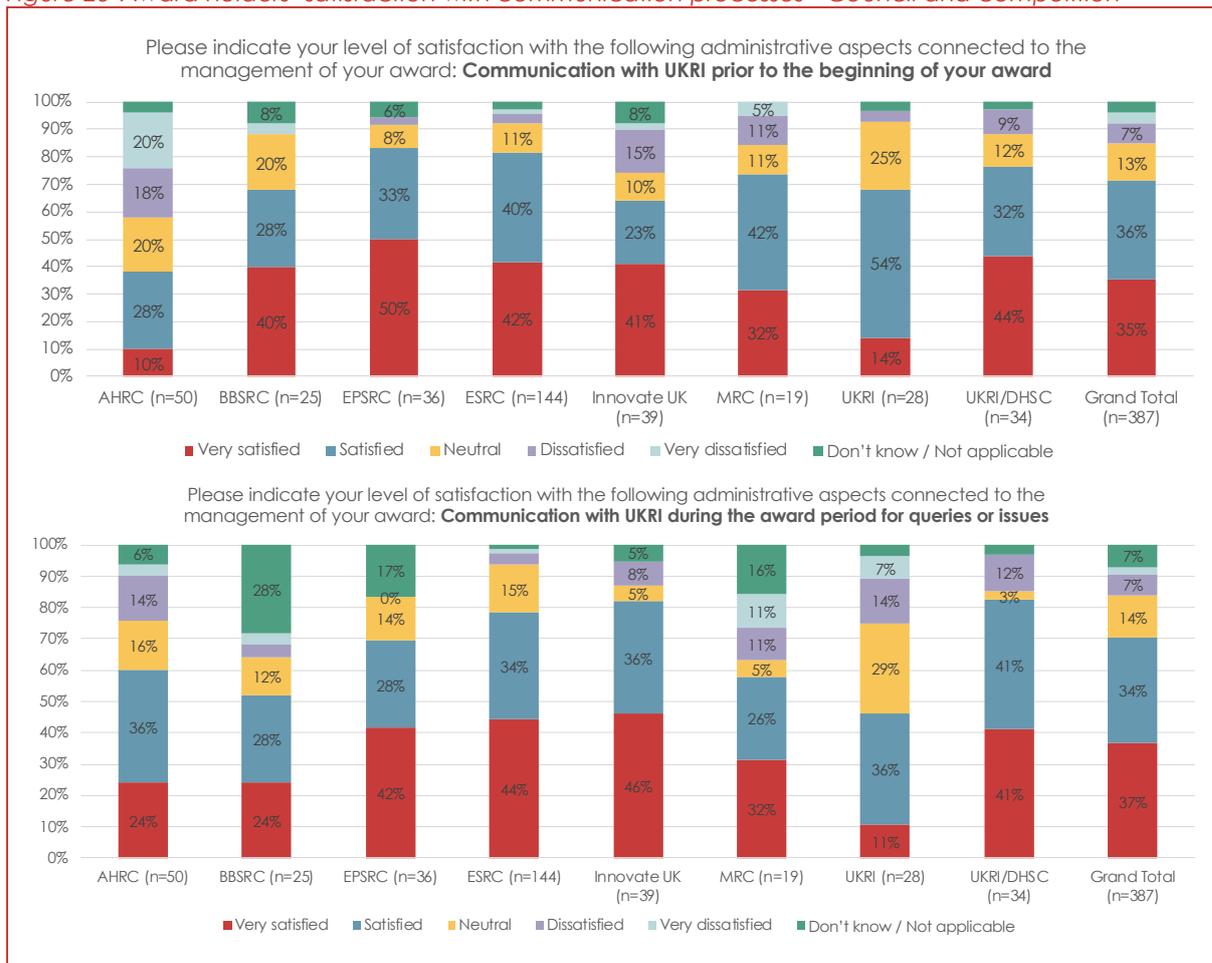
Figure 22 Speed of award process – Award holders' satisfaction by Council and competition\*



Source: Award holders survey. \*GECO, NERC and STFC removed as responses were too low to retain anonymity but are included in total.

Award holders' satisfaction with communications from Councils was high on average, though there was some variability in satisfaction across Councils in their communications before and after the awards were made. Satisfaction with communications was lower for AHRC and Innovate UK award holders before awards were made compared to during the award. The reverse was true for UKRI and MRC whose satisfaction ratings were higher pre-award compared to during the award.

Figure 23 Award holders' satisfaction with communication processes - Council and competition\*



Source: Award holders survey. \*NERC and STFC removed as responses were too low to retain anonymity but are included in total.

### C.3.3 Award holders survey – open questions

The open responses to the award holder survey question on **how respondents heard about their COVID-19 call (Q6, n=19 open responses)** identified additional sources including hearing about the call via Twitter and the KTN newsletter. Two respondents described having applied via the previous emergency grant procedure before being transferred to the COVID-19 specific call processes.

Responses to the open question on **satisfaction with the application processes (Q7, n=157 open responses)** focused mostly on the time from application to award:

- Most respondents described **longer than expected delays in time from application to award** compared to the UKRI website guidance. The implications of the delay tended to be around capacity planning – post-docs and wider teams were on ‘standby’ for several months waiting for decisions, which then affected teaching responsibilities in some cases. Many respondents then felt rushed to start their awards by UKRI, which was more difficult to do after the long delays e.g. post-docs had left, recruitment caused further delays
- There were **mixed feelings on the application process**. Some were happy with the streamlined process (shortened forms) and others found the process overly bureaucratic and opaque in terms of what was happening post-submission. Issues ranged from the

application form for the Agile Call being difficult to input information, to confusion around which Council was assessing applications and why

- Some respondents described being **confused by the Agile call and UKRI/NIHR call** in terms of remit (which to apply to) and because the closing dates were so similar

The issues around the **award management processes (Q8, n=124 open responses)** centred around the timing and reporting requirements:

- **The speed at which projects had to start (within 4 weeks of award) was problematic** for respondents. Factors such as university and school shutdowns, staff capacity planning and refocusing project activities after such long time-to-award delays all made the 4-week timeframe difficult. Many respondents described having to start their grant without signed grant letters, which were important for internal releases of funds for staff
- **Communication had improved compared to prior to the award.** Arrangements for making changes to the grants, adding different researchers and general queries were received well overall. However, there were many examples of significant delays to queries, particularly for extensions and other such adaptations to grant finances and timeframes
- **The reporting process was considered burdensome and sometimes duplicative.** The requirement to report via Researchfish, then later via UKRI's survey, was felt to be counterproductive given the rapid research required. Many felt that reporting was important but that it could have been streamlined in this case, rather than increased compared to BaU

Time and money were the key issues described in the open responses to the question on the appropriateness of award characteristics (**Q9, n=90 open responses**).

- The **award length was considered too short** (12-18 months) to fully deliver on award holders' intended impacts and to account for the numerous delays caused by COVID-19. Two-year awards or the possibility to extend the awards were suggested to guard against this issue in future.
- In hindsight, **many would have requested more funds.** Respondents described applying for funds quickly to do urgent work, then realising later (due to delays) that they would have asked for more funds if they had known how long the awarding process would take. Costs in general were found to be higher during COVID-19 than anticipated

The open responses to the question that asked respondents to rate specific parts of their call (**Q10, n=69 open responses**) reflected the responses to previous questions in terms of the delay in the application to award process.

Respondents comparing the COVID-19 call processes versus BaU (**Q11, n=63 open responses**) reported that although the processes were more efficient, they still took longer than indicated. Others praised the simplicity of the COVID-19 calls' scope and relative ease of application compared to BaU.

Most successful aspects of the response (**Q12, n=326 open responses**):

- Ability to provide a **rapid response** funding scheme to meet the challenges of the pandemic
- **Streamlined application process** to speed up and simplify the process
- **Flexibility** – few budget ceilings, breadth of topics invited, multidisciplinary, rolling call

Least successful aspects of the response (**Q13, n=291 open responses**):

- **Time from application to award**

- **Timing of awarding the project**, leading to some start-dates being backdated and projects being rushed to start (some without award letters)
- **Opaque award processes**, stemming from unclear communication from UKRI on how applications should be submitted, assessed and (notably) reporting requirements

Responses to the final question on further reflections (**Q14, n=130 open responses**) were mostly positive, praising UKRI's response despite the many challenges. Many suggested that mechanisms to join up projects working on complementary topics could be put in place. Many also recommended the use of the shorter application forms in future.

## Appendix D EDI analysis

The Equality, Diversity and Inclusivity (EDI) data presented here compare the proportions of applicants and awardees of UKRI's COVID-19 response grants to those of BaU UKRI funding from the most recent years where data are available. COVID-19 data were provided directly by UKRI and BaU data were sourced from UKRI's online diversity dataset.<sup>28</sup>

It is not possible to calculate success rates from the data. The available applicant data only include applications processed via Siebel<sup>29</sup> (COVID-19 Phase 1 applications were not processed via Siebel), whereas the award data capture the all awardees (no awardees are 'off-system'). Calculating a success rate would therefore be artificially high.

The COVID-19 applicant data were broken down by broad competition types, but awardee data were not. Therefore, the data presented here include all Councils and competitions.

In brief, there were higher proportions of female COVID-19 applicant PIs (+13%) and Co-Is (+7%) compared to BaU, and for awardee PIs (+14%) and Co-Is (+10%). There were minute differences in the age, disability status and ethnicity of COVID-19 applicant and awardee PIs and Co-Is compared to BaU. One exception was that there were 12% more white Co-I awardees compared to BaU.

### D.1 Applicants

*Table 14 Age of applicants under UKRI's COVID-19 response vs total UKRI (2019/20)*

Age categories	Principal Investigator		Co-Investigator	
	COVID-19 (n=1,505)	UKRI (n=9,270, 2019/20)	COVID-19 (n=5,315)	UKRI (n=23,015, 2019/20)
Less than or equal to 29	1%	0%	1%	1%
30-39	21%	19%	23%	20%
40-49	37%	39%	35%	36%
50-59	28%	30%	28%	29%
60+	12%	11%	11%	13%
Unknown	1%	0%	1%	1%

Source: COVID-19 data supplied directly by UKRI, UKRI BaU data are from UKRI's online diversity dataset. Note: Age was calculated from the date of the decision on the grant. If a decision had not been made when the data was extracted, age was calculated as at time of extract.

<sup>28</sup> Age, disability status and gender data from: <https://www.ukri.org/our-work/supporting-healthy-research-and-innovation-culture/equality-diversity-and-inclusion/diversity-data/>. Ethnicity data from: <https://www.ukri.org/our-work/supporting-healthy-research-and-innovation-culture/equality-diversity-and-inclusion/diversity-data/detailed-ethnicity-data/#contents-list>

<sup>29</sup> Data is only included for applications processed through Siebel under the call names 'UKRI Agile COVID19 Outline', 'COVID 19 Rapid Response', 'GCRF Agile COVID 19 RR', 'Global Effort on COVID-19', 'UK-India Covid-19 Partnership' and 'UKRIGCRFUrgencyCovid 10/11/20'.

*Table 15 Disability status of applicants under UKRI's COVID-19 response vs total UKRI (2019/20)*

Disability status	Principal Investigator		Co-Investigator	
	COVID-19 (n=1,505)	UKRI (n=9,260, 2019/20)	COVID-19 (n=5,315)	UKRI (n=23,010, 2019/20)
Disabled	3%	2%	3%	1%
Not disabled	89%	92%	90%	92%
Not disclosed	8%	7%	7%	6%
Unknown	0%	0%	1%	1%

Source: COVID-19 data supplied directly by UKRI, UKRI BaU data are from UKRI's online diversity dataset.

*Table 16 Ethnicity of applicants under UKRI's COVID-19 response vs total UKRI (2018/2019)*

Ethnicity	Principal Investigator		Co-Investigator	
	COVID-19 (n=1,505)	UKRI (n=9,385, 2018/19)	COVID-19 (n=5,315)	UKRI (n=23,465, 2018/19)
White	75%	79%	71%	68%
Asian	13%	9%	14%	15%
Black	2%	1%	4%	3%
Mixed	3%	2%	4%	4%
Not Disclosed	6%	7%	7%	9%
Unknown	0%	0%	0%	0%

Source: COVID-19 data supplied directly by UKRI, UKRI BaU data are from UKRI's online diversity dataset. Note: White: British, Irish, Any other White background; Asian: Indian, Pakistani, Bangladeshi, Chinese and any other Asian background; Black: African, Caribbean and any other Black background; Mixed: White and Black Caribbean, White and Black African, White and Asian, and any other Mixed background.

*Table 17 Gender of applicants under UKRI's COVID-19 response vs total UKRI (2018/2019)*

Gender	Principal Investigator		Co-Investigator	
	COVID-19 (n=1,500)	UKRI (n=9,265, 2019/20)	COVID-19 (n=5,320)	UKRI (n=23,010, 2019/20)
Female	43%	30%	41%	34%
Male	55%	68%	57%	65%
Not Disclosed	1%	1%	2%	1%
Unknown	0%	0%	0%	0%

Source: COVID-19 data supplied directly by UKRI, UKRI BaU data are from UKRI's online diversity dataset.

## D.2 Awardees

Table 18 Age of awardees under UKRI's COVID-19 response vs total UKRI (2019/20)

Age categories	Principal Investigator		Co-Investigator	
	COVID-19 (n=410)	UKRI (n=2,710, 2019/20)	COVID-19 (n=1,430)	UKRI (n=6,970, 2019/20)
Less than or equal to 29	0%	0%	2%	1%
30-39	18%	18%	24%	20%
40-49	37%	37%	33%	36%
50-59	27%	32%	27%	30%
60+	12%	12%	10%	13%
Unknown	5%	0%	3%	1%

Source: COVID-19 data supplied directly by UKRI, UKRI BaU data are from UKRI's online diversity dataset. Note: Age was calculated from the date of the decision on the grant. If a decision had not been made when the data was extracted, age was calculated as at time of extract.

Table 19 Disability status of awardees under UKRI's COVID-19 response vs total UKRI (2019/20)

Disability status	Principal Investigator		Co-Investigator	
	COVID-19 (n=410)	UKRI (n=2,715, 2019/20)	COVID-19 (n=1,435)	UKRI (n=6,975, 2019/20)
Disabled	3%	1%	3%	1%
Not disabled	89%	92%	90%	92%
Not disclosed	8%	6%	6%	6%
Unknown	0%	0%	1%	1%

Source: COVID-19 data supplied directly by UKRI, UKRI BaU data are from UKRI's online diversity dataset.

Table 20 Ethnicity of awardees under UKRI's COVID-19 response vs total UKRI (2018/2019)

Ethnicity	Principal Investigator		Co-Investigator	
	COVID-19 (n=405)	UKRI (n=2,395, 2018/19)	COVID-19 (n=1,435)	UKRI (n=6,760, 2018/19)
White	83%	83%	82%	70%
Asian	8%	6%	6%	13%
Black	0%	0%	1%	3%
Mixed	2%	2%	3%	4%
Not Disclosed	5%	7%	7%	10%
Unknown	0%	0%	0%	0%

Source: COVID-19 data supplied directly by UKRI, UKRI BaU data are from UKRI's online diversity dataset. Note: White: British, Irish, Any other White background; Asian: Indian, Pakistani, Bangladeshi, Chinese and any other Asian background; Black: African, Caribbean and any other Black background; Mixed: White and Black Caribbean, White and Black African, White and Asian, and any other Mixed background.

Table 21 Gender of awardees under UKRI's COVID-19 response vs total UKRI (2018/2019)

Gender	Principal Investigator		Co-Investigator	
	COVID-19 (n=410)	UKRI (n=2,715, 2019/20)	COVID-19 (n=1,435)	UKRI (n=6,970, 2019/20)
Female	44%	30%	42%	32%
Male	54%	68%	55%	66%
Not Disclosed	2%	1%	2%	1%
Unknown	0%	0%	0%	0%

Source: COVID-19 data supplied directly by UKRI, UKRI BaU data are from UKRI's online diversity dataset.

## Appendix E Supporting documents

UKRI provided 428 individual sources of information, which we indexed, summarised and analysed. Most sources pertained to the UKRI Agile R&I Call and ACCORD, most of which were meeting papers. We did not receive any documents on the Innovate UK-led programmes.

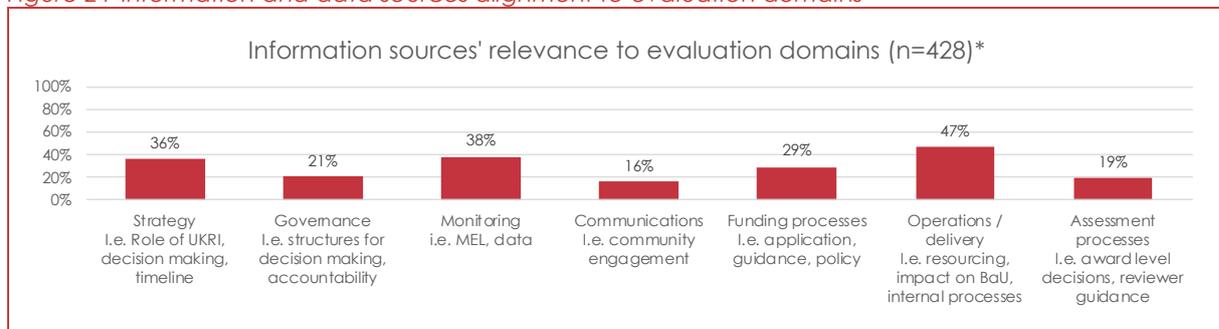
*Table 22 Sources of information by programme*

Programme	No. of sources
UKRI Agile R&I Calls	274
ACCORD	89
UKRI/NIHR Rapid Response Initiative	12
GCRF/NF Agile Response	11
Vaccine Manufacturing Innovation Centre	8
GenOMICC Consortium	7
External communications	4
Global Effort on COVID-19 (GECO)	4
MRC response to Covid-19	4
Whole Genome Sequence Alliance	4
COG-UK	3
RECOVERY	3
TRANSITION	2
COG, ACCORD, RECOVERY, GenOMICC	1
ED&I data	2
<b>Total</b>	<b>428</b>

Source: UKRI Information provided to Technopolis.

The figure below shows that most of the information provided by UKRI related to operations/delivery (describing processes), monitoring (including portfolio data) and strategy (high-level meeting minutes).

*Figure 24 Information and data sources alignment to evaluation domains*



Source: UKRI Information provided to Technopolis. \*Note: percentages total over 100% as one information source could span multiple evaluation domains.

Table 23 Indexed sources of information used in the evaluation

#	Programme/scheme/group (if applicable)	Source	Strategy	Governance	Monitoring	Communications	Funding processes	Operations / delivery	Assessment processes
1	COG, ACCORD, RECOVERY, GenOMICC	Key contacts COG UK ACCORD RECOVERY GenOMICC.xlsx							
2	UKRI/NIHR Rapid Response Initiative	Copy of Copy of DHSC-UKRI Covid Awards_v2.0_vFINAL.xlsx							
3	UKRI/NIHR Rapid Response Initiative	2019-nCoV Rapid Response Form_vFINAL.docx							
4	UKRI/NIHR Rapid Response Initiative	Archived UKRI NIHR Rapid Response Call Text Web Address.docx							
5	UKRI/NIHR Rapid Response Initiative	COVID-19 call 2 panel brief_v2.7.docx							
6	UKRI/NIHR Rapid Response Initiative	COVID-19 RR panel membership.pdf							
7	UKRI/NIHR Rapid Response Initiative	nCov Application Processing Guidance.docx							
8	UKRI/NIHR Rapid Response Initiative	nCoV call text vFINAL4.docx							
9	UKRI/NIHR Rapid Response Initiative	Presentation_vJP3.pptx							
10	UKRI/NIHR Rapid Response Initiative	Process Flow Diagram_v2.pdf							
11	UKRI/NIHR Rapid Response Initiative	COVID-19 Rapid Response Form_v4.0.docx							
12	UKRI/NIHR Rapid Response Initiative	Call Text_v1.1.pdf							
13	UKRI/NIHR Rapid Response Initiative	Archived UKRI NIHR Rolling Call Text Web Address.docx							
14	COG-UK	Re OFFICIAL RE Genomics consortium.msg							
15	COG-UK	Email from SMW re COG-UK support.msg							
16	COG-UK	200314_COG-UK_final.docx							
17	ACCORD	ACCORD Exec Group Terms of Reference v2.0 May 20.docx							
18	ACCORD	ACCORD Govt Announcement.html							
19	ACCORD	Status Report PhII Experimental treatments ACCORD 01Jul20.pdf							
20	ACCORD	Status Report PhII Experimental treatments ACCORD 01Jun20.pdf							
21	ACCORD	Status Report PhII Experimental treatments ACCORD 02Jul20.pdf							
22	ACCORD	Status Report PhII Experimental treatments ACCORD 02Jun20.pdf							
23	ACCORD	Status Report PhII Experimental treatments ACCORD 03Aug20.pdf							
24	ACCORD	Status Report PhII Experimental treatments ACCORD 03Jul20.pdf							
25	ACCORD	Status Report PhII Experimental treatments ACCORD 03Jun20.pdf							
26	ACCORD	Status Report PhII Experimental treatments ACCORD 04Jun20.pdf							
27	ACCORD	Status Report PhII Experimental treatments ACCORD 05Jun20.pdf							
28	ACCORD	Status Report PhII Experimental treatments ACCORD 06Jul20.pdf							
29	ACCORD	Status Report PhII Experimental treatments ACCORD 07Jul20.pdf							
30	ACCORD	Status Report PhII Experimental treatments ACCORD 08Jul20.pdf							
31	ACCORD	Status Report PhII Experimental treatments ACCORD 08Jun20.pdf							
32	ACCORD	Status Report PhII Experimental treatments ACCORD 09Jul20.pdf							
33	ACCORD	Status Report PhII Experimental treatments ACCORD 09Jun20.pdf							
34	ACCORD	Status Report PhII Experimental treatments ACCORD 10Jul20.pdf							
35	ACCORD	Status Report PhII Experimental treatments ACCORD 10Jun20.pdf							

#	Programme/scheme/group (if applicable)	Source	Strategy	Governance	Monitoring	Communications	Funding processes	Operations / delivery	Assessment processes
36	ACCORD	Status Report PhII Experimental treatments ACCORD 11Jun20.pdf							
37	ACCORD	Status Report PhII Experimental treatments ACCORD 12Jun20.pdf							
38	ACCORD	Status Report PhII Experimental treatments ACCORD 13Jul20.pdf							
39	ACCORD	Status Report PhII Experimental treatments ACCORD 15Jun20.pdf							
40	ACCORD	Status Report PhII Experimental treatments ACCORD 15May20.pdf							
41	ACCORD	Status Report PhII Experimental treatments ACCORD 16Jun20.pdf							
42	ACCORD	Status Report PhII Experimental treatments ACCORD 17Jun20.pdf							
43	ACCORD	Status Report PhII Experimental treatments ACCORD 18Jun20.pdf							
44	ACCORD	Status Report PhII Experimental treatments ACCORD 18May20.pdf							
45	ACCORD	Status Report PhII Experimental treatments ACCORD 19Jun20.pdf							
46	ACCORD	Status Report PhII Experimental treatments ACCORD 19May20 V2.pdf							
47	ACCORD	Status Report PhII Experimental treatments ACCORD 19May20.pdf							
48	ACCORD	Status Report PhII Experimental treatments ACCORD 20Jul20.pdf							
49	ACCORD	Status Report PhII Experimental treatments ACCORD 20May20.pdf							
50	ACCORD	Status Report PhII Experimental treatments ACCORD 21May20.pdf							
51	ACCORD	Status Report PhII Experimental treatments ACCORD 22Jun20.pdf							
52	ACCORD	Status Report PhII Experimental treatments ACCORD 23Jun20.pdf							
53	ACCORD	Status Report PhII Experimental treatments ACCORD 24Jun20.pdf							
54	ACCORD	Status Report PhII Experimental treatments ACCORD 25Jun20.pdf							
55	ACCORD	Status Report PhII Experimental treatments ACCORD 26Jun20.pdf							
56	ACCORD	Status Report PhII Experimental treatments ACCORD 27Jul20.pdf							
57	ACCORD	Status Report PhII Experimental treatments ACCORD 27May20.pdf							
58	ACCORD	Status Report PhII Experimental treatments ACCORD 28May20.pdf							
59	ACCORD	Status Report PhII Experimental treatments ACCORD 29Jun20.pdf							
60	ACCORD	Status Report PhII Experimental treatments ACCORD 29May20.pdf							
61	ACCORD	Status Report PhII Experimental treatments ACCORD 30Jun20.pdf							
62	ACCORD	Status Report PhII Experimental treatments ACCORD dated 1May20.pdf							
63	ACCORD	Status Report PhII Experimental treatments ACCORD dated 4May20.pdf							
64	ACCORD	Status Report PhII Experimental treatments ACCORD dated 5May20.pdf							
65	ACCORD	Status Report PhII Experimental treatments ACCORD dated 6May20 for ExecGp.pdf							
66	ACCORD	Status Report PhII Experimental treatments ACCORD dated 6May20.pdf							
67	ACCORD	Status Report PhII Experimental treatments ACCORD dated 7May20.pdf							
68	ACCORD	Status Report PhII Experimental treatments ACCORD dated 11May20 9am for Exec Gp.pdf							
69	ACCORD	Status Report PhII Experimental treatments ACCORD dated 11May20 9am.pdf							
70	ACCORD	Status Report PhII Experimental treatments ACCORD dated 13May20.pdf							

#	Programme/scheme/group (if applicable)	Source	Strategy	Governance	Monitoring	Communications	Funding processes	Operations / delivery	Assessment processes
71	ACCORD	Status Report Phill Experimental Treatments dated 12May20.pdf							
72	ACCORD	Temperature Chart Phill Experimental treatments ACCORD dated 30Apr20.pdf							
73	ACCORD	RE_ COMMISSION_ Delivery plan updates & scores.msg							
74	ACCORD	11-05-2020 5.A Treatments DRAFT_GB.docx							
75	ACCORD	5.B Treatments - Commission 03-05-2020 RC_GB.docx							
76	ACCORD	Fwd_ Updated Delivery plans_ 5A Treatments.msg							
77	ACCORD	5.A Treatments.docx							
78	ACCORD	Trial to Delivery Process Map 290520.xlsx							
79	ACCORD	Milestone Guidance.pdf							
80	ACCORD	FW_ Treatments_ Weekly Reporting.msg							
81	ACCORD	FW_ Reporting Next Week_ Treatments.msg							
82	ACCORD	Devolution Checklist.docx							
83	ACCORD	5A Treatments_20020601.docx							
84	ACCORD	5A Treatments Milestones.xlsx							
85	ACCORD	5A Treatments 010620.docx							
86	ACCORD	5A Treatments 010620_ACCORD Update.docx							
87	ACCORD	01-06-20 5A Treatments.docx							
88	ACCORD	RE_ Reporting Next Week_ Treatments.msg							
89	ACCORD	FW_ Reporting Next Week_ Treatments.msg							
90	ACCORD	100620 - Risk management.docx							
91	ACCORD	5A Treatments Milestones (1).xlsx							
92	ACCORD	5A Treatments Delivery Plan 080620 v2.docx							
93	ACCORD	5A Treatments 010620_ACCORD Update (1).docx							
94	ACCORD	Trial to Delivery Process Map 100620.xlsx							
95	ACCORD	FW_ Reporting Next Week_ Treatments (1).msg							
96	ACCORD	120620 v2 5A Treatments Milestones MM.xlsx							
97	ACCORD	5A Treatments Milestones MM.xlsx							
98	ACCORD	5A Treatments Delivery Plan 150620.docx							
99	ACCORD	Paper D - Summary of DHSC COVID-19 Scenarios 200617 Official Sensitive.docx							
100	ACCORD	Paper C Note on second wave 200617 Official Sensitive.docx							
101	ACCORD	High Level Risk Register.xlsx							
102	ACCORD	FW_ Reporting Next Week_ Treatments (2).msg							
103	ACCORD	Delivery Plan Addendum – Scenario planning.docx							
104	ACCORD	5A Treatment Delivery Plan.docx							
105	ACCORD	5A 120620 v2 Treatments Milestones MM (1).xlsx							

#	Programme/scheme/group (if applicable)	Source	Strategy	Governance	Monitoring	Communications	Funding processes	Operations / delivery	Assessment processes
106	RECOVERY	Formal letter on UK C-TAP.pdf							
107	RECOVERY	FINAL - DHSC-MRC MOU RECOVERY Phase II Therapeutic Trials reconfiguration mrc.docx							
108	RECOVERY	CT CTAP 2.2.21 .pdf							
109	TRANSITION	Phase 2 refocus June 2020.docx							
110	TRANSITION	2020-06-29 UKRI COVID-19 ACCORD - RECOVERY refocus_Final (002).docx							
111	Global Effort on COVID-19 (GECO)	Global Effort on COVID-19 (GECO) Health Research - Call Specification.pdf							
112	Global Effort on COVID-19 (GECO)	GECO_ProcessFlow.pdf							
113	Global Effort on COVID-19 (GECO)	GECO List of award holders.xlsx							
114	Global Effort on COVID-19 (GECO)	GECO for COVID ExCo.docx							
115	GenOMICC Consortium	RE Progress update from Genomics England and COVID-Human Response Programme.msg							
116	GenOMICC Consortium	RE GenOMICC-Genomics England Partnership Response Submitted.msg							
117	GenOMICC Consortium	RE GenOMICC-Genomics England Partnership Response Submitted Reply.msg							
118	GenOMICC Consortium	FW Update.msg							
119	GenOMICC Consortium	FW Progress update from Genomics England and COVID-Human Response Programme.msg							
120	GenOMICC Consortium	COVID-19 UK Host Genomics Proposal_FINAL.docx							
121	GenOMICC Consortium	COVID-19 UK Host Genomics and Trials Proposal.ppt							
122	MRC response to Covid-19	Monitoring and Evaluation of the RRI_fv.pdf							
123	MRC response to Covid-19	Explanatory note for MRC documents.docx							
124	MRC response to Covid-19	MRC COVID-19 response interim report ANNEX 4.2.docx							
125	MRC response to Covid-19	MRC COVID-19 response interim report ANNEX 4.1.docx							
126	External comms	UK funders learn from COVID-19 'white-water ride'.html							
127	External comms	RS COVID submission.pdf							
128	External comms	Fiona M Watt_ Covid-19—a new disease has forced a rethink of how we fund medical research - The BMJ.html							
129	External comms	MRC C19 interim report May 2021 - for UKRI internal v.1.docx							
130	UKRI Agile R&I Call	2020-04-08_UKRI C-19 Agile Responsive Fund_FULL Business Case_1.2							
131	UKRI Agile R&I Call	UKRI Post Agile Call Urgency Route.docx							
132	UKRI Agile R&I Call	UKRI grant repurposing.docx							
133	UKRI Agile R&I Call	UKRI Agile COVID-19 Application Instructions.docx							
134	UKRI Agile R&I Call	UKRI Agile Call Application Form v3.docx							
135	UKRI Agile R&I Call	UKRI Agile Call Application Form v2.docx							
136	UKRI Agile R&I Call	UKRI Agile Call Application Form v1.docx							
137	UKRI Agile R&I Call	COVID-19 Proposal Form - research - Phase 2 v1.docx							
138	UKRI Agile R&I Call	Applicant Instructions Je-S Phase 2.docx							
139	UKRI Agile R&I Call	UKRI Agile Call Phase 2 Process Evolution - Detailed - 090720.vsdX							
140	UKRI Agile R&I Call	UKRI Agile Call Phase 1 Process.vsdX							

#	Programme/scheme/group (if applicable)	Source	Strategy	Governance	Monitoring	Communications	Funding processes	Operations / delivery	Assessment processes
141	UKRI Agile R&I Call	Live Project Funding List Data Tracker data entry flow diagram.pptx							
142	UKRI Agile R&I Call	CV19CG Minutes 01 December_final.docx							
143	UKRI Agile R&I Call	CV19CG Minutes 2 June.docx							
144	UKRI Agile R&I Call	CV19CG Minutes 3 November .docx							
145	UKRI Agile R&I Call	CV19CG Minutes 5 May .docx							
146	UKRI Agile R&I Call	CV19CG Minutes 06 April 2021.docx							
147	UKRI Agile R&I Call	CV19CG Minutes 06 October.docx							
148	UKRI Agile R&I Call	CV19CG Minutes 07 April .docx							
149	UKRI Agile R&I Call	CV19CG Minutes 7 July .docx							
150	UKRI Agile R&I Call	CV19CG Minutes 08 September.docx							
151	UKRI Agile R&I Call	CV19CG Minutes 09 February 21.docx							
152	UKRI Agile R&I Call	CV19CG Minutes 9 June.docx							
153	UKRI Agile R&I Call	CV19CG Minutes 09 March 2021.docx							
154	UKRI Agile R&I Call	CV19CG Minutes 11 August.docx							
155	UKRI Agile R&I Call	CV19CG Minutes 12 January 21.docx							
156	UKRI Agile R&I Call	CV19CG Minutes 12 May.docx							
157	UKRI Agile R&I Call	CV19CG Minutes 14 April.docx							
158	UKRI Agile R&I Call	CV19CG Minutes 15 December.docx							
159	UKRI Agile R&I Call	CV19CG Minutes 15 July .docx							
160	UKRI Agile R&I Call	CV19CG Minutes 16 June.docx							
161	UKRI Agile R&I Call	CV19CG Minutes 17 November_final.docx							
162	UKRI Agile R&I Call	CV19CG Minutes 19 May.docx							
163	UKRI Agile R&I Call	CV19CG Minutes 20 April 2021.docx							
164	UKRI Agile R&I Call	CV19CG Minutes 20 October.docx							
165	UKRI Agile R&I Call	CV19CG Minutes 21 April .docx							
166	UKRI Agile R&I Call	CV19CG Minutes 21st July.docx							
167	UKRI Agile R&I Call	CV19CG Minutes 22 September.docx							
168	UKRI Agile R&I Call	CV19CG Minutes 23 February 2021.docx							
169	UKRI Agile R&I Call	CV19CG Minutes 23 June.docx							
170	UKRI Agile R&I Call	CV19CG Minutes 23 March 2021.docx							
171	UKRI Agile R&I Call	CV19CG Minutes 25 August .docx							
172	UKRI Agile R&I Call	CV19CG Minutes 26 January 21.docx							
173	UKRI Agile R&I Call	CV19CG Minutes 27 March.docx							
174	UKRI Agile R&I Call	CV19CG Minutes 27 May.docx							
175	UKRI Agile R&I Call	CV19CG Minutes 28 April.docx							

#	Programme/scheme/group (if applicable)	Source	Strategy	Governance	Monitoring	Communications	Funding processes	Operations / delivery	Assessment processes
176	UKRI Agile R&I Call	CV19CG Minutes 28 July.docx							
177	UKRI Agile R&I Call	CV19CG Minutes 29 June.docx							
178	UKRI Agile R&I Call	CV19CG Minutes 31 March.docx							
179	UKRI Agile R&I Call	DRAFT CV19CG Minutes 26 January 21.docx							
180	UKRI Agile R&I Call	International Update for COVID 19 Coordination Grp - 1 December 2020.docx							
181	UKRI Agile R&I Call	090421_UKRICOVID19_Taskforce_TOR.docx							
182	UKRI Agile R&I Call	140420_UKRICOVID19_taskforce_Invitationtojoin_v4.docx							
183	UKRI Agile R&I Call	141020_UKRICOVID19_Taskforce_TOR.pdf							
184	UKRI Agile R&I Call	150121_R&Itaskforce_membership.docx							
185	UKRI Agile R&I Call	220421_UKRICOVID19_Taskforce_TOR.docx							
186	UKRI Agile R&I Call	240920_UKRICOVID19_taskforce_Invitationtojoin_.docx							
187	UKRI Agile R&I Call	270121_UKRICOVID19_taskforce_Invitationtojoin_.docx							
188	UKRI Agile R&I Call	20201204_UKRI COVID-19 portfolio analysis-Open Call-DHSC-CD.pptx							
189	UKRI Agile R&I Call	ExternalTaskforce_Correspondancetracker.xlsx							
190	UKRI Agile R&I Call	RE_UKRI COVID-19 Research and Innovation Taskforce - Projects for comment.msg							
191	UKRI Agile R&I Call	UKRI_COVID19_R&I_Taskforce_ToR.pdf							
192	UKRI Agile R&I Call	Vaccine trust-hesitancy contacts.xlsx							
193	UKRI Agile R&I Call	FW_FAO_James Cooper - Brief on UKRI's COVID-19 Research and Innovation call.msg							
194	UKRI Agile R&I Call	Annex B2_230920_RItaskforce_minutes.docx							
195	UKRI Agile R&I Call	Annex B1_150920_R&Itaskforce_minutes_final.docx							
196	UKRI Agile R&I Call	Annex A2_150920_UKRI_COVID19_Portfolioanalysis.docx							
197	UKRI Agile R&I Call	Annex A1_150920_UKRI COVID-19 portfolio analysis-Open Call-DHSC.pdf							
198	UKRI Agile R&I Call	Annex A_COVID-19 Research List 1005.xlsx							
199	UKRI Agile R&I Call	AnnexD150620_SAGEpriorityresearchquestions_V2.docx							
200	UKRI Agile R&I Call	AnnexC_170620_SAGEPriorityConsortium.xlsx							
201	UKRI Agile R&I Call	AnnexB_Social science COVID activity 20200615 FINAL.pdf							
202	UKRI Agile R&I Call	AnnexB_15062020_UKRI_COVID19_Portfolioanalysis.docx							
203	UKRI Agile R&I Call	AnnexA_170620_UKRI_R&Iprojectlist.xlsx							
204	UKRI Agile R&I Call	1806_UKRI CEO_Briefing_R&ICOVID19_Final.docx							
205	UKRI Agile R&I Call	1706_UKRI CEO_Briefing_COVID19_.docx							
206	UKRI Agile R&I Call	Annex B_Project List 20 May UKRI_DHSC funding call.xlsx							
207	UKRI Agile R&I Call	Annex A_Project List 20 May Open Call.xlsx							
208	UKRI Agile R&I Call	2020-05-12_UKRI CEO_Briefing_COVID19_ResearchandInnovationcall.docx							
209	UKRI Agile R&I Call	2020-05-12_UKRI CEO_Briefing_COVID19_ResearchandInnovationcall_Final.docx							
210	UKRI Agile R&I Call	Researchquestions - LIVE.ias.docx							

#	Programme/scheme/group (if applicable)	Source	Strategy	Governance	Monitoring	Communications	Funding processes	Operations / delivery	Assessment processes
211	UKRI Agile R&I Call	RE_UKRI COVID-19 research and innovation taskforce - research questions.msg							
212	UKRI Agile R&I Call	Re_UKRI COVID-19 research and innovation taskforce - research questions_SM.msg							
213	UKRI Agile R&I Call	RE_UKRI COVID-19 research and innovation taskforce - research questions_RK.msg							
214	UKRI Agile R&I Call	RE_UKRI COVID-19 research and innovation taskforce - research questions_NJ.msg							
215	UKRI Agile R&I Call	Re_UKRI COVID-19 research and innovation taskforce - research questions_IS.msg							
216	UKRI Agile R&I Call	Re_UKRI COVID-19 research and innovation taskforce - research questions_DC.msg							
217	UKRI Agile R&I Call	List of immunology questions.msg							
218	UKRI Agile R&I Call	SM_Re UKRI taskforce - Research questions for COVID-19.msg							
219	UKRI Agile R&I Call	RL_Re UKRI taskforce - Research questions for COVID-19.msg							
220	UKRI Agile R&I Call	Re_UKRI taskforce - Research questions for COVID-191.msg							
221	UKRI Agile R&I Call	RE_UKRI taskforce - Research questions for COVID-19.msg							
222	UKRI Agile R&I Call	PR_Re_UKRI taskforce - Research questions for COVID-19-IS.msg							
223	UKRI Agile R&I Call	DC_Re UKRI taskforce - Research questions for COVID-19.msg							
224	UKRI Agile R&I Call	270420_Researchquestions.docx							
225	UKRI Agile R&I Call	RL_Re_UKRI COVID-19 R&I - Research Priorities for Gender Impacts of COVID-19 (2).msg							
226	UKRI Agile R&I Call	prRE_UKRI COVID-19 R&I - Research Priorities for Gender Impacts of COVID-19 (1).msg							
227	UKRI Agile R&I Call	IS_Re_UKRI COVID-19 R&I - Research Priorities for Gender Impacts of COVID-19.msg							
228	UKRI Agile R&I Call	ER_RE_UKRI COVID-19 R&I - Research Priorities for Gender Impacts of COVID-19.msg							
229	UKRI Agile R&I Call	DC_Re UKRI COVID-19 RI - Research Priorities for Gender Impacts of COVID-19.msg							
230	UKRI Agile R&I Call	BLRE_UKRI COVID-19 R&I - Research Priorities for Gender Impacts of COVID-19.msg							
231	UKRI Agile R&I Call	AJ_RE_UKRI COVID-19 R&I - Research Priorities for Gender Impacts of COVID-19.msg							
232	UKRI Agile R&I Call	02062020_UKRI_R&Iprojects.xlsx							
233	UKRI Agile R&I Call	02062020_UKRI_COVID19_Portfolioanalysis.docx							
234	UKRI Agile R&I Call	02062020_R&I_Taskforcehighlights.docx							
235	UKRI Agile R&I Call	200520_R&Itaskforce_membership.docx							
236	UKRI Agile R&I Call	020620_R&Itaskforce_readout.docx							
237	UKRI Agile R&I Call	Wellcome Trust HSS COVID-19 Projects.4 May 2020.docx							
238	UKRI Agile R&I Call	Council (20) 07 - Covid-19 Activity.docx							
239	UKRI Agile R&I Call	04052020_Researchquestions.docx							
240	UKRI Agile R&I Call	04052020_COVID-19Researchprojectlist.xlsx							
241	UKRI Agile R&I Call	050520_R&Itaskforce_minuets.docx							
242	UKRI Agile R&I Call	050520_R&Itaskforce_agenda.docx							
243	UKRI Agile R&I Call	091220_R&Itaskforce_UKRI Open Call Applications.pptx							
244	UKRI Agile R&I Call	091220_R&Itaskforce_UKRI COVID-19 portfolio analysis-Open Call-DHSC.pptx							
245	UKRI Agile R&I Call	091220_R&Itaskforce_UKRI COVID-19 portfolio analysis-Open Call-DHSC.pdf							

#	Programme/scheme/group (if applicable)	Source	Strategy	Governance	Monitoring	Communications	Funding processes	Operations / delivery	Assessment processes
246	UKRI Agile R&I Call	091220_R&ITaskforce_MovingToBaU-Keeping urgency stream.docx							
247	UKRI Agile R&I Call	091220_R&ITaskforce_agenda.docx							
248	UKRI Agile R&I Call	091220_R&ITaskforc091220_R&ITaskforce_COVID monitoring update.docx							
249	UKRI Agile R&I Call	Copy of 2020-15-06 SAGE Priority Consortium Tracker_v0.4_16 September 2020.xlsx							
250	UKRI Agile R&I Call	AHRC investment management summary.msg							
251	UKRI Agile R&I Call	191020_COVID19_Researchpriorities .docx							
252	UKRI Agile R&I Call	150920_UKRI COVID-19 portfolio analysis-Open Call-DHSC.pdf							
253	UKRI Agile R&I Call	141020_UKRICOVID19_Taskforce_TOR_Update.docx							
254	UKRI Agile R&I Call	141020_UKRI_COVID19_Portfolioanalysis.docx							
255	UKRI Agile R&I Call	141020_RItaskforce_minutes-final.docx							
256	UKRI Agile R&I Call	141020_R&ITaskforce_agenda.docx							
257	UKRI Agile R&I Call	141020_Potentialhighlights.docx							
258	UKRI Agile R&I Call	2020-10-08_UKRI CEO Submission_UKRI_COVID-19_Researchandinnovationcall.docx							
259	UKRI Agile R&I Call	2020-10-07_UKRI CEO briefing_COVID19_Researchandinnovation.docx							
260	UKRI Agile R&I Call	150920_R&ITaskforce_minutes_final.docx							
261	UKRI Agile R&I Call	150920_UKRI COVID-19 portfolio analysis-Open Call-DHSC.pptx							
262	UKRI Agile R&I Call	150920_UKRI_COVID19_Portfolioanalysis.docx							
263	UKRI Agile R&I Call	NERC Portfolio analysis.docx							
264	UKRI Agile R&I Call	Portfolioanalysis_Data.xlsx							
265	UKRI Agile R&I Call	Copy of AHRC CEO Briefing Portfolio Analysis 08.10.20.xlsx							
266	UKRI Agile R&I Call	CEO brief 08.09.20 (003).docx							
267	UKRI Agile R&I Call	Ahrc ukri ceo brief on covid19.msg							
268	UKRI Agile R&I Call	NERC COVID Air Quality highlights.docx							
269	UKRI Agile R&I Call	FW_ CEO Briefing and Portfolio analysis.msg							
270	UKRI Agile R&I Call	Copy of 01 Portfolioanalysis template NERC Sept 2020.xlsx							
271	UKRI Agile R&I Call	01 Portfolioanalysis_template NERC Sept 2020.xlsx							
272	UKRI Agile R&I Call	STFC.docx							
273	UKRI Agile R&I Call	AnnexB_15062020_UKRI_COVID19_Portfolioanalysis.docx							
274	UKRI Agile R&I Call	15062020_UKRI_COVID19_Portfolioanalysis.docx							
275	UKRI Agile R&I Call	160620_SAGELargepriorityconsortia.xlsx							
276	UKRI Agile R&I Call	160620_R&ITaskforce_agenda.docx							
277	UKRI Agile R&I Call	150620_UKRI_R&Iprojects.xlsx							
278	UKRI Agile R&I Call	150620_UKRI_InternationalresponsetoCOVID-19.docx							
279	UKRI Agile R&I Call	150620_SAGEpriorityresearchquestions_V2.docx							
280	UKRI Agile R&I Call	090620 COVID-19 ExCo_draft_taskforce 16 June.docx							

#	Programme/scheme/group (if applicable)	Source	Strategy	Governance	Monitoring	Communications	Funding processes	Operations / delivery	Assessment processes
281	UKRI Agile R&I Call	UKRI COVID-19 research and innovation taskforce - Agenda .msg							
282	UKRI Agile R&I Call	200121 COVID19 EDI Data .xlsx							
283	UKRI Agile R&I Call	170221_UKRI_MonitoringandEvaluationSurvey.docx							
284	UKRI Agile R&I Call	170221_RItaskforce_minutes_final.docx							
285	UKRI Agile R&I Call	170221_R&Itaskforce_agenda.docx							
286	UKRI Agile R&I Call	171120_UKRI_COVID19_Portfolioanalysis.docx							
287	UKRI Agile R&I Call	171120_RItaskforce_minutes-final.docx							
288	UKRI Agile R&I Call	171120_R&Itaskforce_agenda.docx							
289	UKRI Agile R&I Call	061120_UKRI_COVID19_ResearchPriorities.pdf							
290	UKRI Agile R&I Call	UKRI COVID-19 research and innovation taskforce.msg							
291	UKRI Agile R&I Call	SAGE sub-group research priorities.msg							
292	UKRI Agile R&I Call	190820_R&Iprojectlist.xlsx							
293	UKRI Agile R&I Call	180820_RItaskforce_minutes_FINAL.docx							
294	UKRI Agile R&I Call	180820_R&Itaskforce_agenda.docx							
295	UKRI Agile R&I Call	Portfolioanalysis_Data.xlsx							
296	UKRI Agile R&I Call	COVID monitoring survey 080121.docx							
297	UKRI Agile R&I Call	Copy of UKRI COVID EDI Data External.xlsx							
298	UKRI Agile R&I Call	200121 COVID19 EDI Data.xlsx							
299	UKRI Agile R&I Call	200121_UKRI_MonitoringMockReportv1.pptx							
300	UKRI Agile R&I Call	200121_Taskforcechairsbrief.docx							
301	UKRI Agile R&I Call	200121_RItaskforce_minutes_final ER.docx							
302	UKRI Agile R&I Call	200121_R&Itaskforce_agenda.docx							
303	UKRI Agile R&I Call	200121_NCS Governance_v0.1.docx							
304	UKRI Agile R&I Call	091220_R&Itaskforce091220_R&Itaskforce_COVID monitoring update.docx							
305	UKRI Agile R&I Call	COVID_19 Data Monitoring source - Version for Taskforce 21 April - Distributed.xlsx							
306	UKRI Agile R&I Call	210420_RItaskforce_Readout.docx							
307	UKRI Agile R&I Call	210420_R&Itaskforce_agenda_FINAL.docx							
308	UKRI Agile R&I Call	NCS Narrative.docx							
309	UKRI Agile R&I Call	EMG Priority Research Questions Draft_SAGE -TWEG additions July.docx							
310	UKRI Agile R&I Call	COVID-19 Priority Research Questions SPI-M.docx							
311	UKRI Agile R&I Call	COVID-19 Priority Research Questions - COG-UK (Vaccines Q Only).docx							
312	UKRI Agile R&I Call	AIP List 22.09.20.xlsx							
313	UKRI Agile R&I Call	150920_UKRI_COVID19_Portfolioanalysis.docx							
314	UKRI Agile R&I Call	150920_UKRI COVID-19 portfolio analysis-Open Call-DHSC.pdf							
315	UKRI Agile R&I Call	150920_R&Itaskforce_minutes_final.docx							

#	Programme/scheme/group (if applicable)	Source	Strategy	Governance	Monitoring	Communications	Funding processes	Operations / delivery	Assessment processes
316	UKRI Agile R&I Call	2020-15-06 SAGE Priority Consortium Tracker_v0.4__9 September 2020.xlsx							
317	UKRI Agile R&I Call	R&I Taskforce 250620-CD.docx							
318	UKRI Agile R&I Call	Barran (Central Tracker No CVRI&I 620)_FundingRecommendation18Jun2020.pdf							
319	UKRI Agile R&I Call	280720_R&I taskforce_agenda.docx							
320	UKRI Agile R&I Call	250620_UKRI_R&I projects.xlsx							
321	UKRI Agile R&I Call	250620_R&I taskforce_agenda.docx							
322	UKRI Agile R&I Call	250620_priorityareas.docx							
323	UKRI Agile R&I Call	090620 COVID-19_Next Steps.docx							
324	UKRI Agile R&I Call	270421_UKRICOVID19_Taskforce_TOR.docx							
325	UKRI Agile R&I Call	270421_UKRICOVID19_PortfolioTaxonomy.docx							
326	UKRI Agile R&I Call	270421_UKRICOVID19_Monitoringandevaluationsurvey.docx							
327	UKRI Agile R&I Call	270421_R&I taskforce_agenda.docx							
328	UKRI Agile R&I Call	270421_CV19opencall_MonitoringandEvaluationreport.pptx							
329	UKRI Agile R&I Call	270421_CV19opencall_MonitoringandEvaluationreport.pdf							
330	UKRI Agile R&I Call	27072020_R&I Projectlist.xlsx							
331	UKRI Agile R&I Call	280720_RI taskforce_minutes-cd.docx							
332	UKRI Agile R&I Call	280720_R&I taskforce_agenda.docx							
333	UKRI Agile R&I Call	2020-15-06 SAGE Priority Consortium Tracker_v1.0.xlsx							
334	UKRI Agile R&I Call	Research questions - not current version.docx							
335	UKRI Agile R&I Call	Research questions - not current version_JD.docx							
336	UKRI Agile R&I Call	Research questions - NOT CURRENT VERSION .docx							
337	UKRI Agile R&I Call	271020_UKRI_COVID19_ResearchPriorities.pdf							
338	UKRI Agile R&I Call	271020_UKRI_COVID19_ResearchPriorities.docx							
339	UKRI Agile R&I Call	171120_UKRI_COVID19_ResearchPriorities1.docx							
340	UKRI Agile R&I Call	171120_UKRI_COVID19_ResearchPriorities.pdf							
341	UKRI Agile R&I Call	061120_UKRI_COVID19_ResearchPriorities.pdf							
342	UKRI Agile R&I Call	061120_UKRI_COVID19_ResearchPriorities.docx							
343	UKRI Agile R&I Call	Holmes et al. Lancet Psychiatry MQ-AMS mental health science research priorities.pdf							
344	UKRI Agile R&I Call	COVID-19 AMS Domains Leadership Letter - SD 1 April 2020.docx							
345	UKRI Agile R&I Call	AMS-BSI Expert summary_ the state of the art in COVID-19 immunology, and current knowledge gaps.pdf							
346	UKRI Agile R&I Call	CV19WG Minutes 301120.docx							
347	UKRI Agile R&I Call	CV19WG Minutes 290620.docx							
348	UKRI Agile R&I Call	CV19WG Minutes 270720.docx							
349	UKRI Agile R&I Call	CV19WG Minutes 270420.docx							
350	UKRI Agile R&I Call	CV19WG Minutes 250121.docx							

#	Programme/scheme/group (if applicable)	Source	Strategy	Governance	Monitoring	Communications	Funding processes	Operations / delivery	Assessment processes
351	UKRI Agile R&I Call	CV19WG Minutes 220620.docx							
352	UKRI Agile R&I Call	CV19WG Minutes 220221.docx							
353	UKRI Agile R&I Call	CV19WG Minutes 200420.docx							
354	UKRI Agile R&I Call	CV19WG Minutes 190421.docx							
355	UKRI Agile R&I Call	CV19WG Minutes 180520.docx							
356	UKRI Agile R&I Call	CV19WG Minutes 150620.docx							
357	UKRI Agile R&I Call	CV19WG Minutes 150420.docx							
358	UKRI Agile R&I Call	CV19WG Minutes 141220.docx							
359	UKRI Agile R&I Call	CV19WG Minutes 130720.docx							
360	UKRI Agile R&I Call	CV19WG Minutes 110520.docx							
361	UKRI Agile R&I Call	CV19WG Minutes 110121.docx							
362	UKRI Agile R&I Call	CV19WG Minutes 080221.docx							
363	UKRI Agile R&I Call	CV19WG Minutes 060420.docx							
364	UKRI Agile R&I Call	CV19WG Minutes 040520.docx							
365	UKRI Agile R&I Call	CV19WG Minutes 010620.docx							
366	UKRI Agile R&I Call	CV19WG Meeting 240820.docx							
367	UKRI Agile R&I Call	CV19WG Meeting 210920.docx							
368	UKRI Agile R&I Call	CV19WG Meeting 191020.docx							
369	UKRI Agile R&I Call	CV19WG Meeting 100820.docx							
370	UKRI Agile R&I Call	CV19WG Meeting 161120.docx							
371	UKRI Agile R&I Call	CV19WG Meeting 070920.docx							
372	UKRI Agile R&I Call	CV19WG Meeting 051020.docx							
373	UKRI Agile R&I Call	CV19WG Meeting 021120.docx							
374	UKRI Agile R&I Call	UKRI COVID19 Governance Structure.pptx							
375	UKRI Agile R&I Call	Additional TC's for grant award letters v6_Covid-19 rapid response calls.docx							
376	UKRI Agile R&I Call	Working Group Terms of Reference .docx							
377	UKRI Agile R&I Call	UKRI_COVID19_R&I_Taskforce_ToR.pdf							
378	UKRI Agile R&I Call	CV19 Coordination Group ToR.docx							
379	UKRI Agile R&I Call	UKRI COVID19 Communications Campaign and Activities.docx							
380	UKRI Agile R&I Call	UKRI Agile Call Selection of Case Studies for CV19 Randl response.docx							
381	UKRI Agile R&I Call	UKRI COVID-19 Councils contacts.xlsx							
382	UKRI Agile R&I Call	Current COVID19 Governance Membership.xlsx							
383	UKRI Agile R&I Call	110221 UKRI Agile Call COVID Award Holders list.xlsx							
384	UKRI Agile R&I Call	Innovate UK Project List with contact details.xlsx							
385	UKRI Agile R&I Call	UKRI RC Funding C19 Projects Updated.xlsx							

#	Programme/scheme/group (if applicable)	Source	Strategy	Governance	Monitoring	Communications	Funding processes	Operations / delivery	Assessment processes
386	UKRI Agile R&I Call	ExCo Paper for Technopolis.docx							
387	UKRI Agile R&I Call	ExCo Annex 3 - Case Studies from the CV19 Randl response.docx							
388	UKRI Agile R&I Call	Lessons learned Coordination Group Input.docx							
389	UKRI Agile R&I Call	Lessons Learned Brief.docx							
390	UKRI Agile R&I Call	UKRI COVID19 Monitoring Survey FAQs.docx							
391	UKRI Agile R&I Call	MandE COVID Process Flowchart.pptx							
392	UKRI Agile R&I Call	M&E Email to award holders.docx							
393	UKRI Agile R&I Call	Data from COVID-19 Open Call Monitoring Survey.xlsx							
394	UKRI Agile R&I Call	C19 Open call survey V7 Live 20210312.docx							
395	UKRI Agile R&I Call	Analysis report C19 open call.pptx							
396	UKRI Agile R&I Call	UKRI Agile Call Award Holders Web List.xlsx							
397	UKRI Agile R&I Call	UKRI ExCo confirmation - STFC.msg							
398	UKRI Agile R&I Call	UKRI ExCo confirmation - RE.msg							
399	UKRI Agile R&I Call	UKRI ExCo confirmation - ESRC.msg							
400	UKRI Agile R&I Call	UKRI ExCo confirmation - BBSRC.msg							
401	UKRI Agile R&I Call	RE_ UKRI COVID-19 Business Case approval timeline.msg							
402	UKRI Agile R&I Call	BEIS PIC Approval Confirmation.msg							
403	UKRI Agile R&I Call	BEIS Confirmation of HMT conditions.msg							
404	Whole Genome Sequence Alliance	200314_COG-UK_final.docx							
405	Whole Genome Sequence Alliance	Email from SMW re COG-UK support.msg							
406	Whole Genome Sequence Alliance	Re OFFICIAL RE Genomics consortium.msg							
407	Whole Genome Sequence Alliance	COG UK Consortium Members.xlsx							
408	GCRF/NF Agile Response	UKRI GCRF_NF Agile Call Web page - V1.3 edits.pdf							
409	GCRF/NF Agile Response	REVIEWER GUIDANCE - UKRI GCRF and Newton Fund COVID-19 Agile Call.pdf							
410	GCRF/NF Agile Response	Panel Guidelines for Assessing Gender Equality (1).pdf							
411	GCRF/NF Agile Response	PANEL GUIDANCE - UKRI GCRF and Newton Fund COVID-19 Agile Call - V2.0 (1).pdf							
412	GCRF/NF Agile Response	GCRF_NF UKCDR COVID19 Research Project Tracker Submission.xlsx							
413	GCRF/NF Agile Response	GCRF Newton Fund Agile call - Panel Attendees.pdf							
414	GCRF/NF Agile Response	GCRF Newton Fund - COVID-19 call Proposal Form V2 – Update 29 June (10).docx							
415	GCRF/NF Agile Response	DRAFT GCRF_NF Agile call - Internal process.pdf							
416	GCRF/NF Agile Response	ASSESSMENT CRITERIA - UKRI GCRF and Newton Fund COVID-19 Agile Call.pdf							
417	GCRF/NF Agile Response	Agile Call EIA V1.pdf							
418	GCRF/NF Agile Response	Copy of GCRF_NF Agile - Contact Details							
419	Vaccine Manufacturing Innovation Centre	105193 VMIC - GFA Variation No 1 (executed 111220).pdf							
420	Vaccine Manufacturing Innovation Centre	210526 VMIC UKRI-IUK Variation Agreement 2_final.pdf							

#	Programme/scheme/group (if applicable)	Source	Strategy	Governance	Monitoring	Communications	Funding processes	Operations / delivery	Assessment processes
421	Vaccine Manufacturing Innovation Centre	FW 10th Dec Investment Panel Papers.msg							
422	Vaccine Manufacturing Innovation Centre	Good news from the BEIS Investment Panel.msg							
423	Vaccine Manufacturing Innovation Centre	VMIC - Acceleration & Pandemic response PAF1565 v3 (030620).xlsx							
424	Vaccine Manufacturing Innovation Centre	VMIC - Additional Funding PAF1790 (050521).xlsx							
425	Vaccine Manufacturing Innovation Centre	VMIC - BEIS-UKRI MOU (Signed - 280120).pdf							
426	Vaccine Manufacturing Innovation Centre	VMIC Contacts.xlsx							
427	ED&I data	Output Table Awards - EDI Summary COVID Call (002).xlsx							
428	ED&I data	Output Table Applications - EDI Summary COVID Call v2 (002).xlsx							

Source: UKRI Information provided to Technopolis.

## Appendix F UKRI's COVID-19 response funding processes

This appendix presents a mapping of funding processes across the UKRI R&I response to COVID-19. These fall into six types of intervention. This version of the mapping so far includes descriptions of the open calls, platform and consortia studies and short summaries of the deployment of existing capabilities, BaU routes and operational and policy studies.

Table 24 Types of UKRI R&I response interventions

Type	Interventions	Summary
<b>Open calls</b>	<ul style="list-style-type: none"> <li>The UKRI COVID-19 Agile Research and Innovation response call</li> <li>The UKRI/NIHR Rapid Response calls</li> </ul>	Launched to attract new ideas and teams to the challenge of COVID-19 using rapid streamlined processes
<b>International calls</b>	<ul style="list-style-type: none"> <li>GCRF/Newton Fund agile response call to address COVID-19</li> <li>Global Effort on COVID-19 (GECO) Health Research – UKRI/DHSC</li> <li>COVID-19 Africa Rapid Grant Fund - Newton</li> <li>Fund for International Collaboration (FIC) Strategic Opportunities Stream</li> </ul>	International efforts leveraging R&I partner efforts to develop solutions to the pandemic. GCRF/Newton and FIC predated the pandemic
<b>Platform and consortia studies</b>	<ul style="list-style-type: none"> <li>Testing of candidate therapeutic agents (UKCTAP and RECOVERY+, managed by UKRI and funded in partnership with NIHR) and viral (COG-UK, funded in partnership with NIHR and Wellcome) and host genetics (GEL-GenOMICC, funded in partnership with DHSC)</li> </ul>	To support the national response at the very start of the pandemic
<b>Operational and policy studies</b>	<ul style="list-style-type: none"> <li>HMG commissioned six National Core Studies (NCS) to address priority operational and policy research questions. Three of these studies (Data and Connectivity, Longitudinal and Immunity) have been adopted by UKRI,</li> </ul>	The three adopted studies aligned with existing strategic objectives and COVID-19 investments made by UKRI
<b>Deployment of existing capabilities</b>	<ul style="list-style-type: none"> <li>Accelerated process for existing UKRI-funded research projects (i.e. funded before the COVID-19 pandemic) to change scope and objectives. Reduced the lengthy process of mid-award scope-change to take place over just a few days or weeks</li> </ul>	This did not constitute any additional investment but allowed existing funded work in potentially important areas to work on challenges presented by the COVID-19 pandemic
<b>Business-as-usual routes</b>	Research councils continue to accept COVID-19 related proposals through business-as-usual routes since the closure of the COVID-19 specific calls. A fast-track COVID-19 Urgency route for time sensitive and exceptional COVID-19 proposals is also still available, including for projects with a timeline of just three months.	

### F.1 Open calls

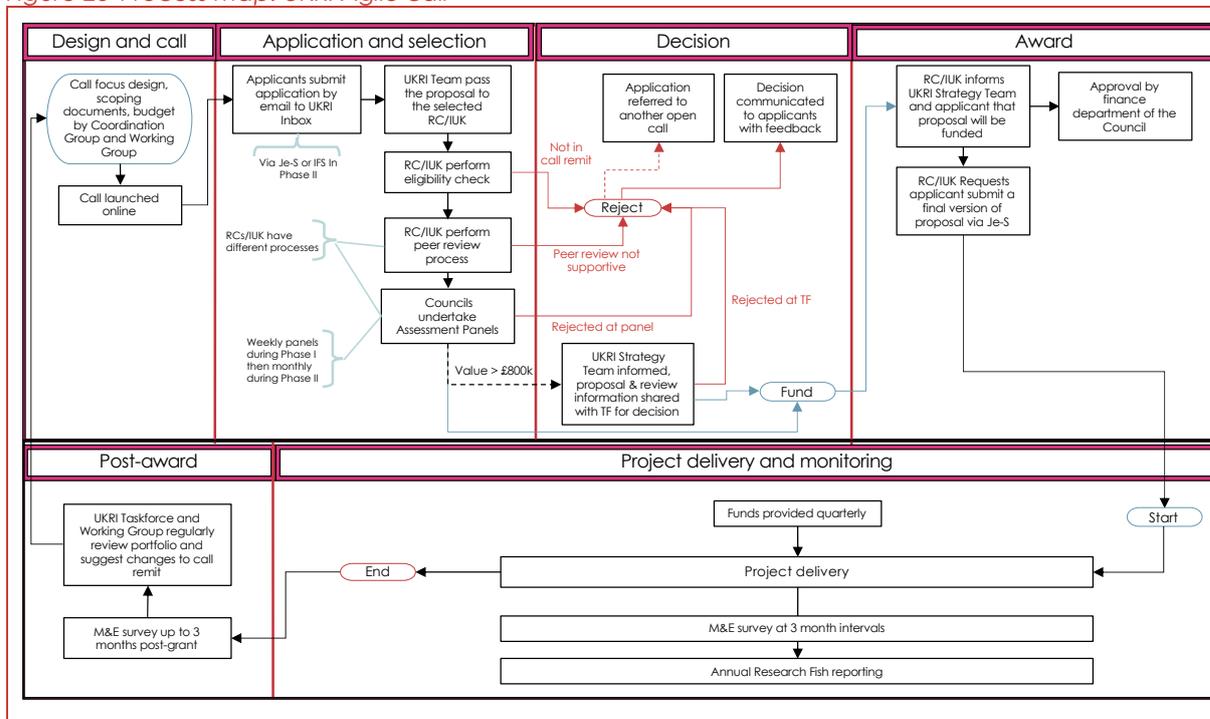
This section presents the processes for the open calls: UKRI agile call, COVID-19 urgency grants, SHSC/UKRI rapid response initiative, and Innovate UK competition for COVID-19 focused innovation.

#### F.1.1 UKRI Agile call (UKRI open call for COVID-19 focused research)

The UKRI COVID-19 Agile Research and Innovation response call (hereon “the call”) was designed to address the health, social, economic and environmental impacts of the COVID-

19 pandemic.<sup>30</sup> The funding was issued through an agile funding process managed by the nine UKRI councils via the UKRI Coordination Group. Oversight came from the UKRI Research and Innovation (R&I) Taskforce as well as feedback from the UKRI Working Group on the operational aspects of the call. The Coordination Group reported to the Taskforce and UKRI's Executive Committee.

Figure 25 Process map: UKRI Agile call



## Design

The UKRI Coordination Group was tasked with agreeing the scope and management of the call.<sup>31</sup> The Group had to fund projects within the funding priorities defined by the Taskforce (TF)<sup>32</sup> who regularly reviewed the balance of the portfolio. The Group sought also input on research questions from across government: the Scientific Advisory Group for Emergencies (SAGE), the Government Office for Science (GO-Science) and the Chief Scientific Adviser (CSA) network. The input from those groups was sought regularly and discussed/actioned during Coordination Group meetings.

The call ran from the **31st of March 2020 until the 15th of December 2020** across two phases:

- Phase I (March - August 2020):** This phase focused on funding research to address critical questions arising from the COVID-19 crisis to support the immediate national response. UKRI worked within its delegation framework to allocate £50m from existing budgets to fund Phase I of the call. No end date or budget was disclosed for the call given the scale and unknown duration of the crisis

<sup>30</sup> UKRI COVID-19 Coordination group - ExCo paper May 2021: COVID-19 Research and Innovation Portfolio Update

<sup>31</sup> UKRI (2020) Covid-19 Coordination Group - terms of reference (V1. 8 June)

<sup>32</sup> Priorities were listed under headings such as 'greening the recovery' with more specific research areas under each.

- **Phase II (August – December 2020):** The second phase aimed to fund further R&I that would have an impact over an 18 months period and support an R&D led recovery. An additional £176.8m via UKRI's National Productivity Investment Fund (NPIF) allocation was secured for:
  - A second phase of the rolling agile call (70% - £120m)
  - A 'directed funding mechanism' to support strategic initiatives and priorities, identified through consultation with SAGE and the UKRI COVID-19 Taskforce, as well as through emerging opportunity areas arising through the agile fund (30% - £50m). This mechanism funded projects such as GEL-GenoMICC and COG (not discussed here, see F.1.4)
  - £6.8m in associated delivery costs, including £500k for monitoring and evaluation (M&E)

The subsections below detail the processes for both phases of the UKRI agile call unless otherwise specified.

### Call and application processes

**March 2020:** Phase I of the call launched using a rolling response format. Proposals for projects 12-18 months in duration were submitted by email to a central UKRI team using a shortened application form (three pages plus two-page annex). No budget minimum or maximum was stipulated as to “*not put a constraint on ideas*”.<sup>33</sup>

The UKRI COVID-19 Working Group was tasked with coordinating the handling of proposals submitted to UKRI's open calls on COVID-19. The Group was made up of staff in Councils who handled the processing of applications to the COVID-19 call. The Group's role was to share experiences of handling proposals and advise on handling protocols. The Working Group advised and reported to the Coordination Group.

Both phases used a shortened application format to streamline the application and decision-making processes. Applicants to the UKRI Agile call were asked to submit:

- A short application form asking applicants to:
  - Describe their approach and put it in the context of the national response to COVID-19
  - Explain the level of urgency, and why the activity was important at that point in time
  - Demonstrate that the proposal had “*the necessary critical mass to make a difference*”
  - Demonstrate a clear route to impact within the timescale of the project
  - Name the team and describe their ability and capacity to deliver
  - Show that work could begin within four weeks of the funding decision
  - Give an estimate of the budget and resources required
  - Explain why it was not possible to resource the proposed work by repurposing existing funds they might already have available
  - Provide evidence that the host institution or business supports the proposal and that the research can be carried out under present institutional or business restrictions
  - Confirm whether the research required any access to the health and care system and if so, how the work will comply with the NIHR single national process for prioritisation of COVID-19 research studies
  - If relevant, include requests for access to UKRI experimental, analytical or computational capabilities. Applicants can also request UKRI support for accessing

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<sup>33</sup> Awards ranged from £10k to £1.8m.

pooled research staff from UK facilities, including research software engineering support and staff data scientists

- Provide a CV for the Principal Investigator (PI) and any Co-Investigators (Co-Is). Each CV was to provide relevant publications and grants, and information indicating their suitability to lead/support the research (one page each)
- An optional document of supporting figures, GANTT chart and/or data tables (one page)
- A completed 'regulatory requirements' form to indicate the necessary ethical approvals

All the above was to be combined into one PDF and sent to a central UKRI team via email.<sup>34</sup> The team would then forward the application on to the Council(s) selected by the applicant.<sup>35</sup> Councils decide between them who handles the proposal if the applicant selects multiple Councils. The application guidance stated that PIs would have a response on the proposal within 10 days "*in most circumstances*".

The submission process changed from the 31<sup>st</sup> of July 2020 for **Phase II** of the call. Applicants instead submitted their proposals via the Joint Electronic Submission (Je-S)<sup>36</sup> system (that feeds into Siebel<sup>37</sup>) for the Research Councils or via the Innovation Funding Service (IFS) system for Innovate UK. The format of the proposal itself (e.g. the form, criteria) was unchanged.

UKRI aimed to consider the needs of all potential participants as part of the call. This included undertaking equality assessments to document the opportunities to address inequalities and impacts and mitigations. UKRI also monitored success rates by different characteristics (sex, age, ethnicity and disability).<sup>38</sup>

### Eligibility

Eligibility checks were conducted by the Council handling the proposal.

Anyone normally eligible to apply for UKRI funding could apply to the UKRI agile call.<sup>39</sup> This includes any company that would normally be eligible for Innovate UK grant support. This is a much wider approach to eligibility compared to other UKRI funding mechanisms<sup>40</sup> (e.g. limiting access to early career researchers or Council supported centres only). Proposals were also accepted from Public Sector Research Establishments (PSREs) who have engaged previously with UKRI's Strategic Priorities Fund (SPF). PSREs had to apply for PSRE status to be eligible to receive funding. This is another departure from UKRI's BaU.

Researchers holding existing UKRI standard grants could apply to switch their funding to address the objectives of this call. Only one bid could be under submission from a researcher/business at any time but were free to become part of wider consortia or join with existing efforts.

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<sup>34</sup> [CV19researchinnovation@ukri.org](mailto:CV19researchinnovation@ukri.org)

<sup>35</sup> Applicants could indicate under which UKRI council their proposal fell under the remit of. They had a choice of selecting 'primary or secondary' for each council

<sup>36</sup> External facing UKRI application system for academic researchers

<sup>37</sup> Siebel is UKRI's internal application management system

<sup>38</sup> UKRI (2020) Full Business Case for UK Research & Innovation's Agile Research & Innovation Response to COVID-19.

<sup>39</sup> Broad UKRI eligibility criteria: <https://www.ukri.org/apply-for-funding/before-you-apply/check-if-you-are-eligible-for-research-and-innovation-funding/who-can-apply-for-funding/#contents-list>

<sup>40</sup> for example, the Small Business Research Initiative being delivered by Innovate, as part of their Covid-19 response package, targets small businesses specifically

**April 2020:** UKRI's Executive Committee agreed to exceptionally approve the inclusion of international co-investigators on proposals to the call (except under Innovate UK) if the research was "of relevance to the UK".<sup>41</sup>

Proposals could be from any subject area but had to address the prioritised list of themes and question for the call informed by SAGE, CSAs and the UKRI COVID-19 Taskforce (e.g. 'greening the recovery').

Match funding was not an explicit requirement of this call though it was admissible. For any industry led projects above the state-aid de minimis limit (£175k), the industry partner had to contribute match funding (20-50% of project costs, depending on company size and project).<sup>38</sup>

Proposals had to address at least one of the following to be considered eligible for funding:

- *"New research or innovation with a clear impact pathway that has the potential (within the period of the grant) to deliver a significant contribution to the understanding of, and response to, the COVID-19 pandemic and its impacts.*
- *Supports the manufacture and/or wide scale adoption of an intervention with significant potential*
- *Gathers critical data and resources quickly for future research use*
- *Builds capability in areas that will be necessary to deliver a significant contribution to the understanding of, and response to, the COVID-19 pandemic and its impacts"*<sup>42</sup>

UKRI would transfer proposals to other open calls if a proposal did not fit under this agile call. Proposals considered out of scope were:

- Funding to mitigate the effects of the pandemic on specific institutions and businesses
- Longer term research proposals that address the COVID-19 emergency or future pandemics that don't meet the urgency guidelines. These would go via response mode calls instead
- Proposals more appropriate to other existing funding calls and/or other research funders
  - The call guidance document signposted applicants to the UKRI/NIHR COVID-19 Rapid Response Initiative if the proposal had the potential to directly deliver a public health impact within the next 12 months and had not already been submitted to the initiative's earlier calls

Ineligible proposals were rejected by the Council under which the proposal was submitted who conduct eligibility checks. The rejection decision was communicated to applicants with feedback unless proposals were referred to other open calls. The UKRI Central Team was notified of all rejection or referral decisions.

Workshops were envisaged for applicants proposing similar projects to reduce duplication and to identify ways of working together.<sup>38</sup>

### **Selection processes**

The selection processes were similar between Councils in that peer review and assessment panel meetings were used, as is standard for the majority of UKRI funding. A broad description

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<sup>41</sup> 21 grants listed international Co-Is on their proposal, spanning 15 different countries. The majority of international Co-Is were in the Netherlands, Ireland, Australia, and the USA. Source: UKRI COVID-19 Coordination group - ExCo paper May 2021: COVID-19 Research and Innovation Portfolio Update

<sup>42</sup> UKRI (2020) Phase I application guidance - Get funding for ideas to address COVID-19.

of the standard selection process is presented here, though we present a summary of individual differences between Councils and changes to the process in Appendix A.

The selection stages were as follows:

- **Peer review** - a minimum of three external peer reviewers were identified by the Council via Je-S and are sent the proposals for review with a request to turn funding recommendations around in five days. The whole peer review process lasted around two weeks and was done on a rolling basis (i.e. the clock started when an application was submitted). The assessment criteria were: quality of research proposed, value for money, justification for resources requested, project/work plan and KPIs, the track record of the applicants
- **Assessment panel meetings** – External panels were convened by the Council to assess the proposals that passed peer review. There was a minimum of three 'introducers' per proposal and made funding recommendations. The panel process lasted around five days. There were two types of panels:
  - 'Individual council' panel – Each Council held assessment panel meetings according to their standard approach with some adaptations (see section 5.4 of the main report)
  - 'Multi-disciplinary / fast-track' panel – in **Phase II**, Applicants could make a case for 'fast-tracking' their proposals. If accepted, fast-tracked proposals skipped the peer review stage and went straight to a 'multi-disciplinary / fast-track' panel
- If the grant value was over £800k the UKRI Strategy Team was informed, and the UKRI COVID-19 Taskforce took the final decision on whether or not to fund
- Proposals that were recommended for funding by the Councils were sent for sign-off to the UKRI Coordination Group and approved by the finance department of the responsible Council.

### Awarding processes

From **August 2020**, the time from submission to decision was stipulated as 4-6 weeks for 'standard' proposals and two weeks for 'urgent' proposals.<sup>43</sup>

The call received 4,004 proposals (requesting ~£2bn), 488 of which were funded (~12% success rate).<sup>44</sup> The Phase II business case states that 17% of Phase I applications were funded which dropped in Phase II as the remit of the call narrowed and the Taskforce became more selective. The last awards were to be made by February 2021.<sup>45</sup>

Funding was awarded at 80% of full economic costs (fEC). Funds were provided quarterly in arrears to an agreed profile and reconciled against a final expenditure statement at the end of the grant.

### Delivery and project monitoring processes

A central UKRI 'Master Tracker' was used to monitor proposals and awards from the UKRI agile call, the UKRI/NIHR open call, COVID-19 awards through BaU funding, and any repurposed COVID-19 funding. Newly funded projects were added to the UKRI website each week.<sup>46</sup>

**February 2021:** A COVID-19 M&E survey was developed (from an initial survey set up by MRC) to collect results data from all grant holders under the entire UKRI COVID-19 portfolio.

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<sup>43</sup> UKRI (2020) Full Business Case for UK Research & Innovation's Agile Research & Innovation Response to COVID-19.

<sup>44</sup> Andrej's summary. The Phase II business case states that 17% of Phase I applications were funded.

<sup>45</sup> UKRI (2020) Full Business Case for UK Research & Innovation's Agile Research & Innovation Response to COVID-19.

<sup>46</sup> UKRI - Live Project Funding List Data Tracker data entry flow diagram. Supplied to Technopolis by UKRI.

Grant extensions were only considered under exceptional circumstances (in line with the Equality Act 2010) and were dealt with on a case-by-case basis.<sup>47</sup> UKRI had the right to ask project teams to become part of a bid with a wider consortium or join established projects.

### Close-out and post-award processes

The UKRI COVID-19 Agile response business case submitted to BEIS in August 2020 lists £6.8m in operational costs<sup>48</sup> (i.e. staff time) and at least £500k from 2020/21 to 2022/23 for M&E costs, including those already described for monitoring in the previous sub-section. Reviews of the portfolio via the Coordination Group and Taskforce were planned to occur when £30m, £60m, £90m, £120m and £150m of funding had been allocated mitigate overlaps in the portfolio.<sup>49</sup>

Grant holders were asked to inform the UKRI communications team at least 24 hours in advance of the publication (either via a peer-reviewed publication, a pre-print or a press announcement) of project results. Grant holders were required to share their research data and findings as rapidly and widely as possible, including with public health and research communities and the World Health Organization. This was to be done in accordance with the statement on sharing research relevant to Covid-19.<sup>50</sup>

#### F.1.2 COVID-19 urgency grants

**January 2021:** The COVID-19 Urgency Grants call was launched as 'an emergency route' for funding COVID-19 related research.

- **Design:** The call funded projects for short-term time-sensitive collection of data/samples or rapid turn-around analysis to inform urgent policy or secure data for future research use.
- **Call and application process:** the call opened on the 5<sup>th</sup> of January 2021 with no specified closing date. Proposals for projects up to £80k (80% FeC) over 3-6 months were invited. A two-stage process was used:
  - **Expression of interest:** Applicants were first required to submit a one-page application via email to their chosen Council to demonstrate:
    - The time-critical nature of the research or data/sample collection
    - A clear and rapid route to impact through existing partnerships
    - How a normal grant timeframe is unsuitable
    - Why they did not apply through any of the previously available UKRI COVID-19 funding schemes
    - A clear plan to take the research forward, including, if necessary, through 'normal grant routes'
  - The Council chosen by the applicant contacted the applicant to detail the next steps if their expression of interest was successful
- **Eligibility:** Applicants had to be based at research organisations eligible for UKRI funding. Applicants had to be able to start within a month of the decision. Ineligible proposals were:
  - Projects that could have been funded by any previous UKRI COVID-19 funding scheme
  - Projects that could be funded through a standard funding opportunity from any Council

<sup>47</sup> UKRI (2020) Additional terms and conditions for COVID-19 rapid response calls.

<sup>48</sup> This amounted to around 4% to the total requested in the business case for Phase II.

<sup>49</sup> UKRI (2020) Full Business Case for UK Research & Innovation's Agile Research & Innovation Response to COVID-19.

<sup>50</sup> <https://wellcome.ac.uk/coronavirus-covid-19/open-data>

- Research that duplicated existing funded research
- Funding to mitigate the effects of the pandemic on specific institutions and businesses, and longer-term research that addresses the COVID-19 emergency or future pandemics
- Business-led projects
- Resubmissions of previously submitted proposals.
- Extensions to current activities (e.g. already funded under the agile call)
- **Selection processes:** The Council chosen by the applicant was responsible for reviewing the expression of interest. There was no further information on how projects were selected
- **Awarding:** Awards were rarely made as the call was only to be used in exceptional circumstances.
- **Post-award and monitoring:** There was no information on how projects were monitored beyond that grant holders were consulted via the COVID-19 M&E survey

### F.1.3 UKRI/NIHR rapid response initiative

The Department for Health and Social Care (DHSC), through the National Institute of Health Research (NIHR), and UKRI jointly launched a rapid response initiative to fund UK-led academic, SME and wider industry research that would develop vaccines, therapeutics, diagnostics or address the epidemiology, spread, containment or underpinning knowledge of COVID-19.

The initiative received 992 proposals, 79 of which were funded (7.9% success rate) at a total value of £71m funded 50:50 between MRC and NIHR.<sup>51</sup> In comparison, MRC reported that: “an MRC Board, employing an automated system, standard procedures, and an experienced team of staff, would process ~600 applications over the course of a year with success rates around 10%.”<sup>52</sup>

Sixty awards received less than £1m, 12 received between £1m-£4m and seven awards received over £4m. This call funded, amongst others, the Oxford/AstraZeneca Vaccine, RECOVERY, IASRIC-4C and PHOSP-COVID<sup>53</sup>.

The initiative comprised an initial two calls followed by one rolling call. The three interventions are summarised in the process map below. A narrative on the processes of the initial two calls is presented first (as they happened in parallel) followed by the rolling call.

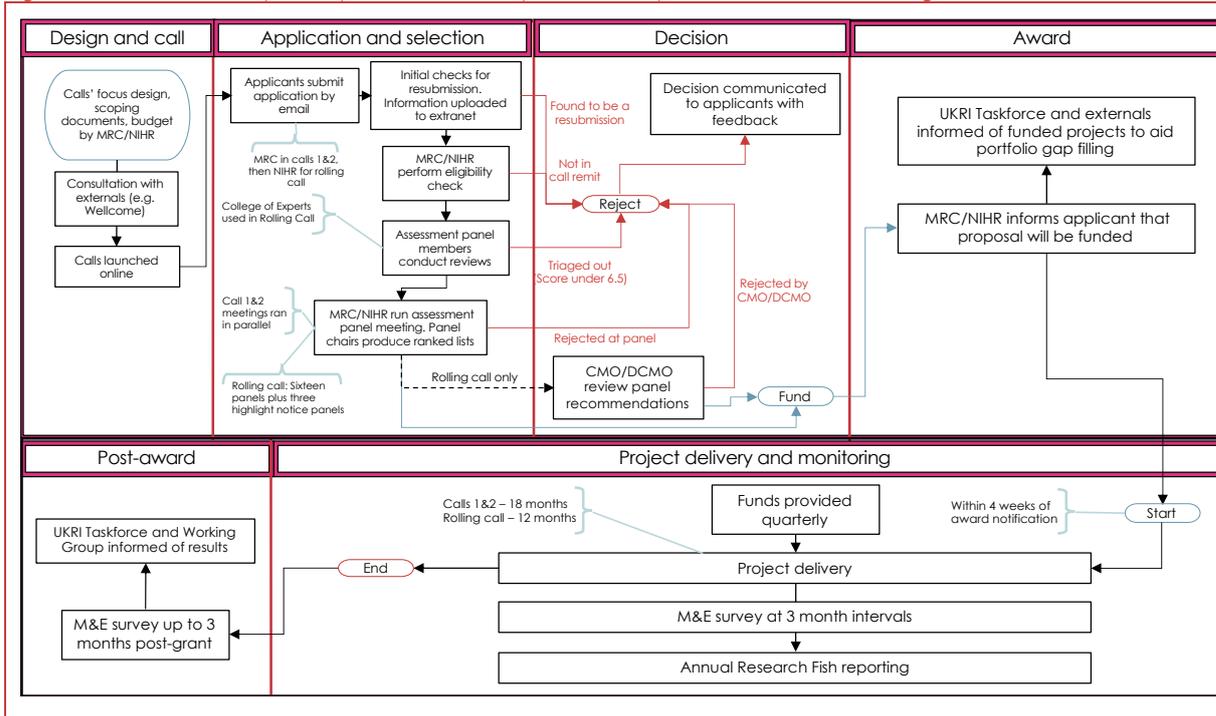
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<sup>51</sup> UKRI/NIHR portfolio data provided to Technopolis.

<sup>52</sup> MRC COVID-19 response interim report (<https://mrc.ukri.org/documents/pdf/covid-19-response-interim-report/>) - ANNEX 4.2 COVID award funding process.

<sup>53</sup> UKRI COVID-19 Coordination group - ExCo paper May 2021: COVID-19 Research and Innovation Portfolio Update.

Figure 26 UKRI/NIHR rapid response initiative process map – Calls 1&2 and rolling call



### The two UKRI/NIHR rapid response calls

#### Design

The two rapid response calls were intended to contribute to the global COVID-19 response by collaborating with and being informed by the WHO's Global Coordinating Mechanism (GCM) for R&D in epidemics, the Global Infectious Disease Collaboration for Infectious Disease Preparedness (GloPID-R) and the Coalition for Epidemic Preparedness Innovations (CEPI).<sup>54</sup>

Both calls prioritised proposed solutions with the potential for rapid clinical development.

- **Active intervention development** – This call aimed to fund:
  - Vaccines, with prioritisation of novel candidates and existing vaccines showing cross-reactivity to COVID-19
  - Therapeutics, with prioritisation of those re-purposing of existing therapeutics, and the development of mAbs or other biologics
- **Diagnosing and understanding COVID-19** - This call invited proposals for research on:<sup>55</sup>
  - Diagnostics (e.g. COVID-19 tests)
  - Clinical investigations aimed at understanding the natural history of disease
  - Epidemiological investigations, including those aimed to better understand the transmission characteristics and severity of COVID-19
  - Anthropology and wider social sciences, including understanding and influencing behaviour to facilitate containment and minimise counter-productive behaviours.

<sup>54</sup> UKRI/NIHR (2020) COVID-19 Rapid Response Call text.

<sup>55</sup> The priorities for the second call may have been further refined following the international research and innovation forum meeting at the WHO on the 11-12th February 2020

- Underpinning work to develop novel technologies, platforms or systems to accelerate the R&D of diagnostics, vaccines and therapeutics and epidemiological studies

### Call and application processes

**4<sup>th</sup> February 2020:** The UKRI-NIHR rapid response was launched via two calls:

1. **Active intervention development:** closing date of midday on 13th February
2. **Diagnosing and understanding COVID-19:** closing date of midday on 27th February

The total budget across both calls was £20m to fund projects of up to 18 months. There was no guidance for how much each proposal could request, instead the guidance stated: *"The size of grants will vary according to the needs of each research project"*.

Application forms were submitted as PDFs to an MRC email address.<sup>56</sup> Each submission had to include:

- A shortened application form with five sections and one annex:
  - Section 1: Lay summary, technical summary, duration, costs, fit to call, keywords
  - Section 2: PI's, Co-Is' and partners' details
  - Section 3: Proposal objectives, resources, timeliness of the work
  - Section 4: Track record and expertise
  - Section 5: Research plan
  - Annex: legislative/ethics requirements, clinical research, additional data required
- An optional document of supporting figures, GANTT chart and/or data tables (1 page)
- CVs for the PI and any Co-Is providing key publications/outputs and grants, and other information indicating their suitability to lead/support the research (1 page per CV)

### Eligibility

UKRI (MRC) staff performed initial eligibility checks. Eligible proposals were processed (e.g. combining into one PDF) and uploaded to the Minerva system.

The following eligibility criteria applied:

- PIs had to be from a UK institute eligible for funding under UKRI. PIs could only submit one proposal as the lead, but could participate as Co-I on multiple proposals
- More broadly, academics could apply who were eligible for funding under UKRI (at 80% fEC) and SMEs<sup>57</sup> (100% of costs funded) were permitted to apply, larger companies were also considered<sup>58</sup>. Government arm's length bodies, and NHS organisations (including NHS Trusts and NHS Foundation Trusts), and equivalent UK authorities were also permitted (100% of costs funded). NIHR funding for NHS Trusts and SMEs were subject to a research contract with a revenue sharing approach. Research institutes, including UKRI Units/Institutes, for which *"the Research Councils have established a long-term involvement as major funder"* were also eligible for this call

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<sup>56</sup> [nCoV@mrc.ukri.org](mailto:nCoV@mrc.ukri.org)

<sup>57</sup> NIHR's definition of SME: *"registered in the UK, have a staff headcount no greater than 250 and annual turnover no greater than €50 million (including start-up or spin-out companies). Companies must be registered on Companies House prior to being eligible for funding."*

<sup>58</sup> Contractual terms for awards provided to UK-based, non-SME commercial entities were agreed on a case-by-case basis between NIHR and the applicant

- Sub-contractors and collaborators may be based outside of the UK but could not receive funds. However, researchers from overseas research organisations in 'affected countries' could be Co-Is on proposals. Other overseas researchers could be Co-Is, if they provide necessary expertise/access to resources not available in the UK
- Proposals had to be timely to enable early and valuable outcomes to be established and/or to access time-dependent resources
- Data produced because of the funding had to be shared in line with the Joint statement on sharing research data and findings relevant to the novel coronavirus (nCoV) outbreak<sup>59</sup>
- Costs for UK researchers were supported at 80% of fEC. Overseas researchers' costs were covered at 100% of direct costs
- Ethics permissions and regulatory approvals were not required at the application stage but had to be secured upon award

### Selection processes

MRC organised the selection processes, which comprised an expedited review process including a shortlisting stage conducted by assessment panel members followed by an assessment panel meeting per call. There was no external peer review stage.

Each proposal was assigned three panel members for review conducted via the BBSRC extranet. Each panel member completed a triage spreadsheet which included a yes/no decision to send the proposal to panel based on each proposal's potential impact. Panel members were also asked to provide an initial 1-10 score per proposal as part of the shortlisting, ranging from 'non-fundable' (scores 1-5) and 'fundable' (scores 6-10). Each numeric score included descriptions denoting the quality, impact and productivity of proposals.<sup>60</sup>

The calls received a total of 270 proposals, 62 of which were put forward to panel after triage. Proposals were triaged out if the mean score was less than 6.5 and/or they had only one/no panel members agreeing the proposal would have sufficient impact within 18 months. Some proposals could be 'rescued' from being triaged out if a compelling case was made by panel members.

Applicants could not respond to panel comments unless no feedback had been provided.

The panels were coordinated by the MRC:

- **Call 1** – Panel met on the 2<sup>nd</sup> of March 2020. The membership included one chair and 24 members, mostly from universities with one representative each from industry (Pfizer), VMIC, CEPI, and two representatives from Public Health England
- **Call 2** – Panel met on the 17<sup>th</sup> of March 2020. The membership included three chairs (one each covering COVID-19 related diagnostics [16 proposals], epidemiology [25 proposals] and anthropology [21 proposals]) and 41 members, five of which sat on the Call 1 panel. Three separate meetings were held, led by each chair. The membership was mostly made up of university academics, with two industry representatives (Pfizer and Cambridge Consultants) and two representatives from Public Health England

Observers from Wellcome, NIHR, DHSC and DFID were in attendance.

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<sup>59</sup> <https://wellcome.org/press-release/sharing-research-data-and-findings-relevant-novel-coronavirus-ncov-outbreak>

<sup>60</sup> UKRI/NIHR (2020) COVID-19 Rapid Response Initiative - Call 2: Guidance for Expert Panel members.

Panellists were considered to have 'hard' or 'soft' conflicts of interest (or none) per proposal. Those with hard conflicts with proposals could not participate in reviewing them or be present during review. Those with soft conflicts could observe the review but not participate.

In addition to the usual assessment of scientific quality, applications were assessed on the following assessment criteria (across both panels):

- The potential for the proposal to have an impact within the epidemiological span of the outbreak (within the period of award)
- Need for rapid activation
- Access to required resources
- Applicant expertise and experience
- Partnership: including strength and clarity of collaborations and opportunities provided
- Design and feasibility of project plan
- Value for money
- (Call 2 only) Alignment with WHO-defined priorities

Shortlisted proposals were grouped together by theme and 10 minutes was allocated for the discussion of each proposal. The lead designated panel member (DPM 1) on a proposal summarised the proposal and gave their opinion of its strengths and weaknesses (3 min), based on the assessment criteria. The second and third DPMs then gave their views focusing on those aspects where their views differed from DPM 1's (3 min total).

Following Panel discussion (3 min), the Chair asked the designated panel members for a recommended score using the same rubric as used during shortlisting. All Panel members were asked to vote using an on-line system. Submissions were ranked at the end of the meeting by theme and median score. Panels were asked to rank in the fundable range (scores 6-10), based on proposals' individual quality and the strategic importance.

The ranked lists were then considered by all panel chairs from both calls on the 18<sup>th</sup> of March to reach a recommended list of awards. Panel decisions could not be appealed. Details of the projects were shared Wellcome, DFID, CIHR, and CEPI to help identify gaps to be filled by future awards.<sup>61</sup> Only 10 of the awards not funded scored a 7 or higher at panel assessment, indicating a large volume of substandard applications compared to BaU.

### **Awarding processes**

28 projects were funded from 270 applications (10.4% success rate) totalling £25.2m.<sup>62</sup>

Some of these awards were promoted on the UKRI website.<sup>63</sup> This round included grants to Prof Sarah Gilbert, who led the development of the Oxford/AstraZeneca vaccine, and to Prof Peter Hornby for the Randomised Evaluation of COVID-19 Therapy (RECOVERY) trial.

Successful applicants were required to accept their award within five working days of receipt, together with an invoice, from their Administering Authority. Projects were expected to start within four weeks of award notification.

### **Delivery and project monitoring processes**

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<sup>61</sup> MRC (2020) Panel process and strategic prioritisation of bids.

<sup>62</sup> MRC - ANNEX 4.1 Details of COVID-19 facing funding calls

<sup>63</sup> <https://webarchive.nationalarchives.gov.uk/20200923121624/https://mrc.ukri.org/news/browse/covid-19-vaccine-therapy-research-boosted-by-six-new-projects-in-rapid-response/>

Monitoring processes are discussed at the end of this subsection as a unified process was used across the two call and the rolling call.

### **Rolling response call**

UKRI and DHSC/NIHR subsequently ran a rolling response call from the **1<sup>st</sup> of April 2020 to the 30<sup>th</sup> of June 2020** to fund projects with the potential to deliver public health impacts within 12 months. The priority areas for research continued to be informed by the COVID-19 WHO Research Roadmap and would be updated as priorities were met or evolved during the pandemic.

Proposals of research up to 12 months in duration were invited on:<sup>64</sup>

- Virology, Immunity and Pathophysiology
- Diagnostics
- Epidemiology, including transmission, disease susceptibility and severity, and control and mitigation
- Infection prevention and control (IPC) and personal protective equipment (PPE)
- Public health (e.g. acceptance and uptake of public health measures), media and communication (e.g. combatting misinformation)
- Clinical management
- Primary, adjunctive and supportive therapies
- Vaccines
- Health and care delivery
- Underpinning work such as assays and animal models, and provision infrastructure

The criteria for funding were unchanged bar one additional criterion that the same or similar applications made to the Initiative's first two calls or to the UKRI rolling call would not be accepted.

NIHR led most of the proposal handling and assessment processes in this rolling call compared to Calls 1&2 where MRC led most of the processes. Another change compared to the first two calls was that applicants had to first complete the NIHR Clinical Research Network's COVID-19 enquiry form. This form was for information gathering purposes only, rather than an assessment stage. Applicants were then asked to complete a full application.

The application requirements (full form, annex, CVs) were the same as those for the previous calls except that the form included an additional section on patient and public involvement. Completed applications were to be sent to an NIHR email address.<sup>65</sup> Applicants were free to submit their proposals at any time within the call period (01/04/20 - 30/06/20).

Applications were then assigned to MRC or NIHR teams by theme (self-selected by applicants), who conducted triage and assigned reviewers to applications (contrary to Calls 1&2 where only MRC conducted triage).

The assessment process diverged from that of the previous call. A 'college of experts', chosen based on the subject matter of the proposal, reviewed proposals before each panel assessment. NIHR handled the collection of expert reviews, triaged out those that did not meet the score threshold and sent to panel those that met the threshold.

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<sup>64</sup> UKRI/NIHR (2020) UKRI/NIHR COVID-19 Rapid Response Initiative – Rolling Call.

<sup>65</sup> [ccf-nCoV@nihr.ac.uk](mailto:ccf-nCoV@nihr.ac.uk)

The assessment criteria were the same as in the previous call with a slight modification to the first criteria (underlined): "The potential for the proposal to have an impact within the period of award and to provide a unique value-adding contribution relative to existing activity". MRC and NIHR assigned each proposal to two panel members (introducers) depending on the proposal's theme.

Nineteen panel meetings were conducted over the rolling call period, including three panels for highlight notices that invited proposals to address specific topics:

1. **Mental Health highlight notice** - To reduce the emergence of new, and exacerbation of existing, mental health problems, and to improve outcomes for those whose mental health has already been adversely impacted by the pandemic
2. **Ethnicity highlight notice** – This notice was launched evidence showing that BAME people were nearly twice as likely to die of COVID-19 than white people, after taking account of age and other sociodemographic factors. Researchers had to collaborate with other MRC investments, including the UK Biobank and the MRC Lifecourse Epidemiology Unit
3. **Transmission highlight notice** - To improve understanding around the epidemiology of COVID-19, including its prevention and control. These projects complemented the existing portfolio of platforms addressing UK population transmission.

The panel's recommendations were reviewed by the Chief and Deputy Chief Medical Officers of NIHR (CMO/DCMO) who had the final say on funding.

MRC reported that initially the weekly (on average) panel meetings were carried out effectively with enthusiasm and good will. As proposal numbers increased over time, so did administrative, reviewer and panel fatigue.<sup>66</sup>

51 projects were funded from 698 applications (7.3% success rate) totalling £46.3m.<sup>62</sup> NIHR was given right of refusal for all award decisions.

The awarding process was the same as for the previous calls e.g. to begin within four weeks of award notification. Grantees of this call were consulted via the COVID-19 M&E survey.

### Monitoring processes for the Initiative

**July 2020:** A bespoke monitoring programme was created to track both project delivery and results from across the Initiative. The aim of the programme was to:

- Capture insights/impacts and lessons learned,
- Assess and support project and impact delivery
- Report to the portfolio theme level project progress and impact to highlight drivers and barriers that may merit co-ordinated cross-project solutions

The development of the monitoring programme was led by MRC but implemented by staff from both funders. The programme was overseen by an NIHR/MRC oversight group. Individual project monitoring was conducted by discipline matched portfolio managers.

A monitoring framework was developed to accomplish three goals:

1. Foster clear communication between portfolio managers (~30) and the projects to track progress

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<sup>66</sup> MRC COVID-19 response interim report (<https://mrc.ukri.org/documents/pdf/covid-19-response-interim-report/>) - ANNEX 4.2 COVID award funding process.

2. Establish the starting point and progress indicators for each project. Awards above £1m had an initial assessment to determine the value of monthly vs quarterly monitoring
3. Survey project progress quarterly and review knowledge development, data sharing, patient and public involvement and engagement, potential impact and translational pathways to impact

The survey launched in Autumn 2020 to collect interim impact data. The survey received 69/79 responses (87%)<sup>67</sup> by January 2021.

The survey identified the following points relevant to funding processes:

- **Opportunities:** respondents suggested that NIHR/MRC could help grantees to establish contacts with other researchers, Public Health England and the Department of Health; data access and management advice; arranging priority clinical trial status, assistance in securing reagents; and overcoming bureaucratic issues
- **Challenges:** resources (researcher skills and time), aggregation of the portfolio (to support cross-UKRI learning), connectivity (to promote cross-disciplinary working and to engage with policymakers)

#### F.1.4 Platform and consortia studies

UKRI supported a series of national platform studies to complement the open calls in areas that needed a rapid and coordinated national response. These were mostly launched in **March 2020** under three themes:

- **Therapeutics:** Funding from UKRI and NIHR to identify and trial promising treatments for COVID-19:<sup>68</sup>
  - **RECOVERY** (Randomised Evaluation of COVID-19 Therapy - Phase 1) - RECOVERY is the world's largest randomised controlled clinical trial for COVID-19 treatments (39,000 participants in its first year). Treatments that are found to be effective in RECOVERY will be made available in the NHS to treat those with severe COVID-19 in hospital
  - **RECOVERY+** trial platform (phases 2&3) - £18m over two years starting 1<sup>st</sup> July 2020 (£9m UKRI:£9m NIHR). RECOVERY+ builds upon the previous iteration and covers all publicly funded Phase II clinical trials. It has recruited over 39.5k patients and identified dexamethasone and tocilizumab as effective therapeutics. The UK Covid Therapeutics Advisory Panel Programme Board oversaw both stages of RECOVERY
  - £1m over two years (UKRI) was committed to the **COVID-19 Therapeutics Advisory Panel** (UK-CTAP)<sup>69</sup>, chaired by Prof Patrick Chinnery and up to four members (e.g. clinical pharmacology, infectious disease, statistics/epidemiology), supported by ad hoc expert working groups and by DHSC / NHS expertise. UK-CTAP advises CMO (England) on treatments to be trialled across a suite of phase 1–3 platforms. UK-CTAP has triaged over 300 candidate therapeutics and made 21 recommendations to the CMO
  - **ACCORD** (Accelerating COVID-19 Research & Development platform) – ACCORD, launched in March 2020, aims to get an early indication of drug treatments'

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<sup>67</sup> Four projects started too late to be included in the first survey iteration.

<sup>68</sup> Memorandum of understanding between DHSC and MRC for the "recovery / phase ii therapeutic trials reconfiguration programme" of the joint UKRI/NIHR response research initiative to tackle COVID-19.

<sup>69</sup> previously called the Drug Prioritisation Panel

effectiveness in treating COVID-19 and accelerate their development. ACCORD is overseen by the ACCORD Executive Group<sup>70</sup>

- **Viral:**

- **COG-UK** – handled by UKRI (£6m) in partnership with DHSC (£8.3m) and Wellcome (£6.5m) totaling £20.8m. Funded in response to a direct proposal to the Government CSA by COG-UK, agreed by the CMO. Launched in March 2020 to deliver large scale and rapid SARS-CoV-2 sequencing capacity to Public Health Agencies, the NHS and the UK government. The consortium included representatives mostly from Public Health England, universities and research institutes. A governance working group was established by COG-UK to oversee the project<sup>71</sup>

- **Host Genetics:**

- **Genomics England (GeL) GenoMICC** - funded in partnership with DHSC to analyse the whole genome sequences of approximately 20,000 people who have been severely affected by COVID-19. The scope, funding and management of the project was agreed between GEL, UKRI executive and MRC in April 2020 after initial approval by the Government CSA, and funded in May 2020. The total funding requested was £20m: £1.59m from GeL, £3m from UKRI, £15.3m from DHSC<sup>72</sup>

#### F.1.5 Operational and policy studies - NCS

**October 2020:** UKRI agreed to adopt three of the six National Core Studies (NCS)<sup>73</sup>: (1) Data and Connectivity; (2) Longitudinal Health and; (3) Wellbeing, and Immunity. These studies were well aligned with UKRI's strategic objectives and underpinned by a range of pre-existing and COVID-19 related UKRI investments. Initial support for the studies was provided by HMT.

**March 2021:** UKRI agreed funding of £37m for the three adopted study areas until the end of Quarter 2 FY2022/23. UKRI launched two open calls drawing on the agreed funding (with a further training call planned) to support the work of the NCS'.

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<sup>70</sup> UKRI (2020) Phase II, Experimental Treatments Programme, ACCORD Executive Group Terms of Reference.

<sup>71</sup> COG-UK (2020) A proposal from the COVID-19 genomics UK (COG-UK) – consortium for rapid development of a national capability for COVID-19 sequencing for public health benefit.

<sup>72</sup> GenoMICC (2020) Whole genome sequencing of patients severely affected by COVID-19.

<sup>73</sup> In the summer of 2020, GO-Science worked with a range of government departments to establish the NCS in response to a need identified by the Government's CSA and the CMO (with UKRI and others) to increase research scale or provide infrastructure to respond to near term strategic, policy and operational needs relating to the pandemic.

## Appendix G International funder information

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### G.1 Findings from the international review of funders

#### G.1.1 Introduction

We reviewed six funders to learn about their experiences in responding to Covid-19. The review covered:

- German Research Foundation, DFG
- Dutch Research Council, NWO and its sister organisation for health research ZonMw
- Ministry of Science and Technology (MoST), Taiwan
- National Research Council Canada, NRC
- Japan Science and Technology Agency
- National Science Foundation (NSF), USA

We performed desk research and up to two interviews with each funder, except NSF. The rationale for the response was similar for all funders - to support research that can deliver solutions to both short and long-term problems caused by the pandemic. But the actual response of the funders reviewed varied in scope only supporting rapid response to a mix of various measures, including joint programmes with health research funders and infrastructure development.

The Dutch research council NWO primarily focused on delivering the Fast-track data collection programme and provided co-funding and some guidance for its health funding sister organisation ZonMw which delivered the most extensive Covid-19 research programme. DFG introduced two new funding instruments, including a rapid response. Other funders (NRC, JST) ran a more comprehensive response package, investing in research, private sector R&D, international collaboration programmes and developing research infrastructure of national relevance. NRC stands out from other funders we reviewed because it is also a research and technology organisation and performs research.

All the funders reviewed showed flexibility and the ability to allocate or reallocate resources and respond to the pandemic relatively quickly. They introduced measures to mitigate the impact on already funded projects, used various approaches to decide about the research topics to finance, introduced new funding instruments with accelerated funding processes, adopted proposal review processes and looked for means to deliver the research results to relevant health and other authorities. Organising the response to Covid-19 was not without challenges and some funders faced problems with the significantly increased workload without being able to add staff capacity. MoST, JST and NRC managed this relatively more easily. The pandemic had only a minor impact in Taiwan and Japan, and it seems disaster readiness is very high in these countries and helped to manage the research response. Funders in these countries had already heavily invested in pandemic preparedness research after the SARS outbreak in 2003 (MoST) or had experience with tackling other major disasters (JST). The pandemic was more damaging in Canada, but NRC managed to set up a very targeted management structure and mobilised its internal researchers, allowing for smooth delivery of the response. In addition to capacity and management challenges, funders raised some reflections and concerns about the quality of riskier research sometimes funded in the scope of the response and projects selected through accelerated peer-review or complete bypassing of peer-review. The concerns were due to the accelerated funding processes and eased proposal requirements, for example, shorter proposal templates.

### G.1.2 *Securing budget*

The budgets funders spent on the Covid-19 response range depending on the objectives. Funders that provided only grants invested smaller amounts ranging from €58m in 2020 (NWO and ZonMw) to €76m (NSF). NRC invested the most significant amounts - roughly €83m in grants and around €125m in infrastructure.

When the pandemic started, securing a budget or re-purposing budget to fund Covid-19 response was not very challenging for the funders we reviewed. This is mainly because the governments were committed to funding the research and because of the funders had a degree of autonomy and freedom to make decisions about how and what to fund. Some funders (e.g. DFG, NWO, JST) earmarked the budget from their strategic funds allowing them to assign funding for specific strategic priorities. NWO's sister organisation ZonMw received funding from NWO, Ministry of Health, Welfare and Sport and Ministry of Education, Culture and Science, who decided to invest in the Covid-19 research programme. MoST received additional funds after the government decided to invest extra budget in Covid-19 related research. In the USA the Congress provided NSF with extra \$76m in the scope of the Coronavirus Aid, Relief, and Economic Security (CARES) Act which implemented various programs to address issues related to the COVID-19 pandemic (Senate Committee on Appropriations, 2020).

Some funders (JST, NWO) have terminated the Covid-19 funding in 2021 and do not have plans for further significant investments. They will continue to fund pandemic related research via their normal calls. Others, for example, the Dutch health research funder ZonMw, continued the investments in 2021 (€60m) and reported that commitment and funding from the ministries and government at the beginning of the pandemic was sufficient. However, it is more challenging to convince the decision-makers that further investment is needed, especially in social sciences, to understand socioeconomic consequences or vaccine resistance.

It has to be noted that most of the funders we reviewed are not the only organisations investing in Covid-19 research. For example, in Germany, in addition to the activities of DFG, the Federal Ministry of Education and Research supported a special programme worth €750m in accelerating the development of vaccines and supported three companies working with vaccine development. The ministry also introduced a funding call worth €45m to develop medicines to treat Covid-19. In the USA, the National Institutes of Health is the other major funder of Covid-19 related research, investing roughly \$1.8b. Therefore, it has to be taken into account that in the reviewed countries, the governments channelled the research funding through several funders, not just the ones we review in this report.

### G.1.3 *Setting research priorities*

The response had to be coordinated with other funders nationally and internationally to avoid duplication and address relevant needs. The main international guidelines that the reviewed funders consulted are WHO R&D Blueprint<sup>74</sup> and the work of Global Research Collaboration for Infectious Disease Preparedness and Response (GloPID-R)<sup>75</sup>.

Priorities for what kind of research and innovation to fund, how to fund it, and choosing the right projects are common challenges that were only heightened by the need to respond quickly. The funders' coordination mechanisms to ensure the research it funds are complementary to other funders' efforts in the country and beyond vary between the funders we have reviewed. Most funders (DFG, NWO/ZonMw, NRC) relied on some form of ad-hoc

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<sup>74</sup> <https://www.who.int/publications/m/item/a-coordinated-global-research-roadmap>

<sup>75</sup> <https://www.glopid-r.org/>

external expert advice to support decision-making processes, though the way this was organised took different forms.

For example, NRC focused the funding on challenges identified by the Canadian health experts in its Pandemic Challenge programme (National Research Council Canada, 2021). Scientists from NRC research institutes were often involved in formulating the mission and vision of the challenges, reviewing applications and advising the NRC Pandemic Vice President on project selection. DFG established an Interdisciplinary Commission to steer the response to Covid-19, which emphasised and supported interdisciplinary responses to Covid-19. It has successfully fulfilled the task of providing guidance to DFG on thematic priorities for Covid-19 research calls and coordinating DFG response with other funders in Germany and internationally. DFG considers this a success and believes the strong focus on interdisciplinarity differentiates DFG's response from that of other funders. NWO/ZonMw also relied heavily on external expert advice to select research to support in the First wave Covid-19 research programme. ZonMw organised an expert panel to prioritise research subjects. Part of the calls were open calls for proposals and other were top down (closed) calls. Top down calls meant that based on the expert panel's advice, specific research groups were asked to submit research proposals and received subsidies.

Funders, more directly involved in funding health research (NRC, ZonMw, MoST), made more targeted efforts to gather intelligence on international developments in Covid-19 related research. MoST heavily relied on its international network in 17 countries. MoST representatives in these countries were tasked closely to follow developments and approach policy makers and the research community to gather information on what research was funded. NRC aligned its research priorities to correspond with the WHO Covid-19 R&D Blueprint. ZonMw represents the Netherlands in Global Research Collaboration for Infectious Disease Preparedness (GloPID-R), which aims to facilitate an effective research response. Largely because the non-medical impact of Covid-19 can be context-specific, reviewed funders did not present any specific examples of international coordination and intelligence gathering on the global research on the non-medical impact.

Whatever the mechanism for deciding on research priorities, all funders funded social science research, amongst other disciplines, to seek solutions to socioeconomic challenges caused by the pandemic. Some funders, especially DFG and to a lesser extent also NWO, emphasised the role of interdisciplinary research and introduced mechanisms to stimulate it. For example, NWO/ZonMw sometimes in their award letters encouraged the selected projects to collaborate with research groups from other disciplines.

Some funders implemented parts of the Covid-19 response through their challenge-driven research support mechanisms adding Covid-19 as a new challenge. For example, NRC adapted their already existing challenge-driven programme and used the framework to fund Covid-19 related challenges. JST used its flagship Strategic Basic Research Programme to fund Covid-19 research in one of its calls.

Finally, several funders opened their Covid-19 response programmes to international collaboration (NRC Pandemic Challenge programme) or managed specific programmes supporting international collaborative R&D (JST J-RAPID programme, inspired by the NSF RAPID programme) to be able to address issues requiring competence of international teams.

#### G.1.4 *Timing, speed of the response and review methods*

All the funders we consulted responded to the pandemic relatively quickly, mostly taking weeks rather than months to start the response after the decision to do so. Some (e.g. MoST) started to introduce specific measures already in the beginning of 2020. In some cases, it took slightly more time to design joint programmes, such as the Covid-19 research programme designed

by NWO and ZonMw, although both organisations had launched separate funding trajectories in early April 2020. JST could launch a J-RAPID programme, managed jointly with international funders, quickly because the instrument had already been tested and was in routine use in disaster response.

All funders, often to their surprise, were able to accelerate the launching of calls and decision processes to deliver funding more quickly than usual. However, they differed in their sense of urgency and the rapidity of response of the funding mechanisms and the approaches they used for project selection. Their responses can be classified into three groups:

- Accelerated response, providing funding faster than usual but not for immediate research and relying on peer-review
- Rapid response providing funding for (almost) immediate research by by-passing peer-review
- Rapid response providing funding for (almost) immediate research relying on accelerated peer-review

As the table below shows, some funders used several approaches depending on the objectives of the different programmes they introduced. Most relied on accelerated peer-review, but we also observed experimentation with alternative project selection approaches by-passing peer-review and relying on internal expertise to accelerate the funding process. NRCs Pandemic Challenge Programme lies somewhere in between, as NRC sometimes used external peer-review but sometimes relied on internal experts.

*Table 25 Overview of project selection approaches*

	DFG	NWO/ZonMw	MoST	NRC	JST	NSF
Accelerated response relying on peer-review	Call for multidisciplinary research  Focus funding instrument		C-19 research call			
Rapid response by-passing peer review		Fast-track data		Pandemic Challenge Programme		RAPID
Rapid response still relying on peer-review		1 <sup>st</sup> wave C-19 incidental subsidies  2 <sup>nd</sup> wave C-19 research programme			J-RAPID CREST	

NSF and NWO provide examples of **rapid response by-passing peer-review**. These funders used rapid mechanisms to support research and data collection at the height of the pandemic and expected to collect data immediately or deliver research results within months, or at the maximum a year. The time from the decision to introduce the instrument to the start of the projects is measured in weeks rather than months. NSF used a previously tested RAPID funding mechanism. Proposals for the RAPID instrument must be short (maximum 2-5 pages) and justify why the proposed research is urgent. Proposals are reviewed and approved by NSF officers,

rarely relying on external reviews. NWO introduced a new Fast-track Data programme (NWO, 2020). The mission for the programme was defined by members of the three Domain Boards of NWO and NWO staff; no other parties were involved. NWO built a special team consisting of staff able to focus full-time on the launch of the Fast-track programme, and the team managed to launch the call and select the proposals in two weeks. To grant this very rapid funding, both funders relied on internal resources for project selection and by-passed peer-review, which was considered too time-consuming for the objectives of the funding measures.

JST, ZonMw and, to some extent, also NRC organised **rapid response still relying on peer-review**. The JST J-Rapid programme is designed only for emergencies, and JST uses social pressure to speed up the assessment process, demanding the immediate attention of external peer reviewers. The experts always respond very quickly as they are aware of the objectives of the funding instrument. JST skipped the joint evaluation process with partner funders in the J-Rapid programme to shorten the review process and relied on the partner funder's expertise in approving research teams for partnerships. NRC's agile Covid-19 response involved peer-review in some parts. However, to speed up the process or where NRC had enough internal knowledge, NRC could make decisions relying on internal expertise.

For the First wave Covid-19 incidental subsidies ZonMw, by-passed the formal open procedure for project selection and relied on the expertise of an expert panel that prioritised areas for research. As a result, the First wave Covid-19 incidental subsidies supported eight critical projects in the total value of €5.5m with a direct effect on the pandemic. In the first wave of funding, ZonMw did not organise an open call for proposals. Instead, based on the expert panel advice, specific researchers were asked to submit research proposals, that were reviewed by the same experts and other expert reviewers and only if approved received ad hoc subsidies. ZonMw and NWO chose this very short and closed application procedure because of the need to act quickly.

Other funders (e.g. DFG, MoST) did **accelerate the funding** process; it was faster than business as usual, but not to such an extent that funding could be delivered very rapidly for immediate data collection or research at the height of the pandemic. DFG and MoST reduced the time between the launch of the call and the start of supported projects from seven or more months to 2-4 months. They continued to rely on the peer-review, but adjusted and streamlined it. For example, DFG substituted written panel reviews for the first round of remote peer review to shorten decision-time for the rapid response Focus Funding instrument. DFG pulled a review panel together right after the launch of the call, scheduled the panel meeting, and the reviewers presented their reviews already written in the panel meeting, where the panel made decisions. Also, for the Focus Funding instrument, DFG integrated the Review Board with the Grants Committee and gave the Grants Board a week to decide. This helped to reduce the time required for the review process significantly. According to DFG, although they managed to reduce the proposal evaluation time, they still consider it too long for an urgent crisis. More radical approaches would have to be applied to respond faster in the future.

Whatever the method used, funders reported some concerns about assessing the quality of research or funding research overlapping with ongoing efforts. In cases when funders relied on their staff and by-passed peer-review, consultation with scientific peers was optional (NSF), or the funder consulted the scientific community when the call was launched to avoid funding for research already being performed elsewhere. NWO reported that the staff involved in project selection for the Fast-track programme had clear guidelines. The staff consulted with each other, and with other colleagues specialised in different areas of research.

In cases when the funders accelerated the peer-review process, the main concerns were not about the speed of the peer-review but rather about the detail of proposals. The funders reduced the required length of the proposals to allow shorter proposal submission deadlines,

resulting in limited information on, for example, prior work. According to DFG, this complicated the peer review process, and peers reported trying to use other information sources (e.g. looking up h-indices) to assess the prior experience of the proposers.

NRC and MoST deliberately invested in high-risk, high-reward research. NRC was ready to take greater risks than usual and was ready to accept failure potentially associated with these risks. This approach guided the project selection process. For their Pandemic Challenge programme, NRC used both external peer review and consulted its own scientists. Acknowledging the risk levels of the funded research, NRC and MoST regularly reviewed the progress of projects supported and stopped projects not delivering the expected results.

#### G.1.5 Governance and management of the response

At the **strategic level**, some funders introduced ad-hoc organisational structures to support the Covid-19 response. DFGs Interdisciplinary Commission supported DFG in suggesting specific topics for Covid-19 research programme calls (DFG, 2020). NRC delegated a Vice-President to lead the Pandemic Response Challenge Programme and introduced Vaccine task force to help the government make sound evidence-based decisions. Using a Vice-President position to lead the challenge programme was unique for NRC. Normally, a Vice-President would merely oversee programmes. However, in view of the importance and difficulty of the task and the need for authority to take risky decisions, NRC chose to use a particularly experienced person. The Vice-President concerned received a clear mandate to lead the response and to make for high-risk investments. In the Netherlands, ZonMw relied on the competence of an external panel of experts to select research teams to conduct the most urgently needed research.

As illustrated above, the funders demonstrated flexibility and the ability to react quickly. However, the Covid-19 response put pressure on funders' staff and the external reviewers they relied upon to conduct the peer-review. At the **operational level**, to manage the increased workload, funders' staff worked long hours. In some cases, staff was re-allocated from international departments, which were experiencing decreased workload as a result of the pandemic. In other cases, new staff was hired, which was challenging given the need for teleworking and the complexity of the new, rapid funding mechanisms. Some funders (e.g. DFG) emphasised the need for the funder's leadership to set clear priorities for daily operations and to decide what could be postponed. Others (e.g. NWO and ZonMw) relied on creating targeted teams of employees available to work only with the rapid response instruments (including beyond the typical working hours) and was also able to move quickly because all support staff (e.g. legal department, finance department, management approving the decisions, etc.) prioritised and administered quickly any requests coming from the rapid response team. The funders agreed that the accelerated pace cannot be sustained in daily operations and can only be applied in a crisis. Even with accelerated funding processes, some funders (e.g. DFG) concluded that the response was too slow for real emergencies.

An exception to this trend is the MoST in Taiwan, where the pandemic initially had a minor impact, and there was only limited change in working practices. Thus, it was relatively easy to respond fast and introduce the funding measures in a shorter period than usual. In Japan, JST has a high disaster preparedness and a working culture that can easily accommodate increased workload for a while. JST cannot add human resources to manage the emergency work, so it had to absorb the additional workload by asking the staff to work longer hours. JST staff are experienced in responding to similar crises and can relatively easily cope with the extra work.

NRC in Canada followed a slightly different approach than other reviewed organisations. NRC appointed Pandemic Vice-President used a "Tiger team" approach to manage and coordinate their efforts and the human resources involved in the response. Agility and mission

orientation guided the management of the NRC response. This meant relying on a carefully selected central team of experts knowing a big organisation very well and identifying necessary support. The team worked with the NRC research centres. Some staff was involved for short-term periods then returned to their regular duties. Its large staff with rich scientific expertise helped NRC devote sufficient human resources to manage the response. Overall, NRC did not suffer from a lack of resources and considered the management of the process a success.

Funders used their standard IT systems to manage the proposals. Although the large number of proposals submitted in a short period was a challenge, the systems served their purpose well. DFG and NWO reported it was a substantial task to adapt all internal regulations to perform virtual assessment and decision-making. However, both funders were well prepared. They had previously invested significant resources in information technologies to manage the funding process, anticipating the digitalisation trends and their benefits for organising funding processes. Thus, these funders did not face serious problems with IT systems when managing the response to the pandemic. In Japan the pandemic forced digitalisation-supported positive cultural change in peer-review processes. Normally, it would have been rude to ask experts to participate virtually in panel meetings, but the pandemic has forced a change in etiquette and made it easier to organise panel meetings.

#### *G.1.6 Delivering the results of the research to relevant health and other authorities*

Funders introduced responses to Covid-19 because of the urgent need for research. Thus, it is legitimate to expect that the rapid research will provide some results relatively faster than the "business as usual" research. Funders can have a role to play in this by establishing closer links with potential users to support the uptake of research results. OECD recently concluded that most funders have not set up procedures to facilitate uptake of research results and called for closer work with authorities potentially benefiting from the research (OECD, 2021).

Our review suggests that some funders have deliberately considered and tried to **establish links with potential users of the research they fund**. For example, the activities and research funding provided by MoST in Taiwan is very closely linked to the agenda and needs of the national pandemic task force. MoST holds weekly meetings with the task force, and the meetings cover reporting on the research funded and the results the research has delivered. ZonMw regularly monitored the results of the projects and sent a summary to the Ministry of Health for review. In other cases, funders reported that they had faced challenges. For example, DFG reported they took steps to disseminate the results of the Interdisciplinary Commissions discussion about vaccine awareness to the health authorities, the Federal Ministry of Health in particular. However, due to other urgent issues prioritised by the Federal Ministry of Health, the authorities did not start the dialogue for several months. Overall, there is an impression that the German health authorities did not prioritise discussion with the research community about long-term issues. The main focus was on the immediate problem of controlling the pandemic.

Other funders (NWO, ZonMw, NSF, JST) partly **relied on the research community and their ability and skills to disseminate the research results** to relevant end-users. NWO and ZonMw used selection criteria assessing the ability to implement research results and assessed the progress through regular monitoring. Both organisations have mechanisms that encourage researchers to disseminate research results beyond traditional means such as scientific publications. NSF introduced Covid-19 Information Commons, which is a public database facilitating knowledge sharing and collaboration across various Covid-19 research efforts. It aims to serve as an information resource for researchers, students, policy makers and industry and contains detailed information about all NSF awarded RAPID projects (Covid Information Commons, 2020).

### G.1.7 *Future plans*

The global scale of the pandemic, the disruption it caused to everyday life, and the need for rapid scientific solutions was unprecedented for most research funders. The experience in addressing it provides lessons for future crises. Some funders we reviewed (JST, MoST) had learned from previous disasters they have faced and were better prepared. Though, in many cases, the funders are still digesting the experience and discussing the lessons. In most cases, it is uncertain how the funders will use the measures and processes introduced in 2020 in the future, but they expect to be better prepared for similar disruptions.

Some funders (DFG, MoST) expect to close specific Covid-19 targeted instruments roughly by mid-2021 and to continue funding pandemic-related research through normal calls. ZonMw has secured funding for further investment in 2021. NRC has earmarked budgets for Covid-19 response funding instruments and will continue its active and targeted response in 2021 and 2022 when the Pandemic Challenge programme will end. JST does not have plans to have a second Covid-19 call in the programmes it runs. However, the pandemic will not go away quickly, so there may still be a need for further calls. For example, JST is considering funding AI research on prevention of infectious diseases.

### G.1.8 *Lessons learned and long-term impacts*

The pandemic provided both an opportunity and a reason for the funders to innovate. As a result, funders can use newly introduced rapid response instruments for future crises either in the current or improved formats. Funders now should be better prepared for emergencies. As some (NSF, JST) have done already before the Covid-19 pandemic, also others might develop specific rapid-response mechanisms as part of their funding portfolio – available and ready to use.

For the above to happen, the funders will have to strike a balance between the ability to react very rapidly, which, as demonstrated by our consultation, can mean by-passing peer-review, and still ensuring quality and objectivity, which is easier to do when relying on peer review (Janzwood, 2021) even when funding is in response to urgent global crisis. As demonstrated by the NRC, a crisis can also be an opportunity to invest in high-risk research.

The ability to react quickly and invest in risky research, depends on the resources available and freedom to act. Funders with dedicated strategic budgets that can be used for emergencies and funders with higher overall independence can react faster and experiment more, at least in the first stages of the crisis. Although this did not appear to be very problematic for the funders reviewed, because of the high priority of the pandemic for their governments, funders which have to wait for government decisions on funding run the risk of being delayed in their response.

It seems there is a limit to how much the pandemic experience can inspire and improve the regular operations. Some innovations, for example, remote peer-review, improved electronic proposal submission systems and further digitalisation, will improve the funding processes. The pandemic accelerated developments in open access to data, for example, ZonMw in collaboration with GO FAIR speeded up the implementation of the initiative "Virus Outbreak Data Access Network" (ZonMw, 2021) to share data on the current pandemic in such a way that they become accessible to learning algorithms. The crisis forced funders to act faster and simplified processes, but increased workload and created concerns about missing pieces of information due to shortened proposals, complicating award decisions. It remains to be seen whether accelerated, simplified funding mechanisms allowing riskier projects have been more effective in producing useful research.

DFG pointed out that the changes in funding priorities and the urgent and short-term funding for Covid-19 research could impact research careers by increasing the proportion of

appointments that are short term. Longer-term impact remains to be seen and depends on how long the pandemic will continue to affect the research funding landscape. Covid-19 research and especially prioritisation of biomedical research displace funding from other disciplines, sometimes referred to as “covidisation” of research (Adam, 2020). Examples from other recent epidemics such as Ebola and Zika outbreaks demonstrate that short-term dedicated research programmes are not continued after an emergency. This results in a “panic and neglect cycle” (OECD 2021), leaving other disciplines in a slightly peripheral role. The funders did not express much worry about this, but did report (DFG) that the research community is concerned about it. These concerns depend largely on the overall government budgets available for research and the risk of an economic downturn or austerity programmes following the pandemic. The funders largely expect to maintain their regular calls with the addition of specific Covid-19 thematic priorities, rather than continuing to use dedicated Covid-19 funding instruments. Disciplines unrelated to the pandemic may therefore face slightly tougher competition for funding.

### G.1.9 Comparator funders' programmes – key facts at a glance

*Table 26 Comparator funders' programmes – key facts at a glance*

Programme (funder)	Approximate length of review process	Overall funding	Award size	Number of applications	Number of supported projects
Programmes relying on peer-review					
COVID-19 Focus Funding (DFG)	3 months	€3.6m	Up to €100k	89 (first call)	33 (first call)
Call for multidisciplinary research into epidemics and pandemics (DFG)	6-7 months	€30m	Up to €1m	280	50
J-RAPID (JST)	Few weeks	€4.1m	Up to €500k	23	11
CREST (JST)	2 months	€30m	Up to €1m	n/a	10 (in 2020)
C-19 research call (MoST)	1 month	€30m	No upper limit	300	n/a
Covid-19 programme (ZonMw and NWO)	Peer-review duration few days	€56.5m	Up to €500k	1 449 project ideas 555 full grant applications	235 (out of full grant applications; incidental subsidies and call for proposals combined in 2020)
Programmes bypassing peer-review					
Pandemic Challenge Programme (NRC)*	A few weeks (no exact specification but one month appears to be the maximum)	€15m	Up to CAN\$100k	n/a	6 (in 2020), programme running until 2022

Programme (funder)	Approximate length of review process	Overall funding	Award size	Number of applications	Number of supported projects
RAPID (NSF)*	n/a	\$75m	Up to US\$ 200k	Several thousands	Over 1 000 awards by the end of October 2020
Fast-track data (NWO)	Less than one week	€1.5m	Up to €50k	46	34

#### G.1.10 Recommendations/ best practice from the international perspective

Different research funders operate in different contexts and parameters, and funding organisations do not all have the same uniform remit. However, within these limitations we are able to distil from our review of international funders what may be termed a generic 'check list' of good practice, based on those elements that were carried out successfully by various funders:

**Ensure funding agencies have sufficient autonomy** to re-purpose or launch funding programmes, temporarily change application and decision-making processes, and allow researchers to respond through repurposing or altering deadlines and methods within existing grants on their own authority

**Ensure staff have high levels of scientific knowledge and knowledge of the wider context**, enabling them where appropriate to take short-term decisions without necessarily referring to external peer review, to be able to identify key research groups and to have an understanding of users and user needs

**Maintain a multi-purpose and permanently-funded rapid-response programme**, so that there is institutional knowledge of how to organise rapid response, rapid-response routines that will be a appropriate or can easily be modified, in order quickly to launch responses. This can also provide a platform from which subsequently to scale up

**Ensure crisis responses can include rapid investments in infrastructure as well as research labour**. This will require reviewing procurement procedures to enable rapid response while minimising the risk of corruption

**Support rapid-response capability by doing regular simulations**, trying to ensure a strong set of disciplines, instruments, channels and user links is available to meet a wide range of potential challenges

**Have a wide-ranging strategy to maintain research capacity in crisis-relevant areas**, to avoid the pattern of 'panic and neglect' seen, for example, in relation to potential virus pandemics in recent years

**Ensure rapid response funding can have a higher risk appetite than normal grants**, to support quick responses and to tackle the uncertainties inherent in crises of which the community has limited experience

**Consider task-forcing, using some of the organisation's most experienced people**

**Recognise the professionalism of recognised international partner funding organisations**, avoiding the delays associated with checking or duplicating their procedures

**Ensure response to future crises considers the precarity of research careers**. Ensure unrepresented groups or researchers with care responsibilities can equally contribute to research on the relevant topics. That means having a funding system with a long-term vision on researchers' employment trajectory, including their opportunities beyond the crisis.

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## G.2 Funder information: German Research Foundation, DFG

Funder name	German Research Foundation, DFG
Brief description	<p>The German Research Foundation (DFG) is the central, independent research funding organisation in Germany. It serves all branches of science and the humanities by funding research projects at universities and other research institutions. The DFG promotes excellence by selecting the best research projects on a competitive basis and facilitating national and international collaboration among researchers. Its mandate includes:</p> <ul style="list-style-type: none"> <li>• encouraging the advancement and training of early-career researchers</li> <li>• promoting gender equality in the German scientific and academic communities</li> <li>• providing scientific policy advice</li> <li>• fostering relations between the research community and society and the private sector (DFG, 2020d)</li> </ul> <p>The DFG receives the large majority of its funds from the federal government and the states, represented in all grants committees. The voting system and procedural regulations guarantee science-driven decisions. The main task of the DFG is to select the best projects by researchers at universities and research institutions on a competitive basis and finance these projects. Individuals or higher education institutions submit proposals in a particular field of curiosity-driven basic research that they select. Interdisciplinary proposals are welcome (DFG, 2020d).</p> <p>In a multi-layered decision-making process, the proposal is evaluated by voluntary reviewers exclusively according to scientific criteria. Based on this expert review, elected members of a review board assess it, and a grants committee makes the final decision. In this way, DFG funding guarantees quality-based differentiation in the German research system (DFG, 2020d).</p>
Mechanisms for responding to specific needs	DFG introduced rapid response for the first time in reaction to Covid-19.
Funders approach to interdisciplinary research and high-risk or transformative research	<p><b>Interdisciplinary research</b></p> <p>The DFG supports projects from all science and humanities areas and significantly promotes interdisciplinary cooperation among researchers (DFG, 2020d). Institutionally DFG works as a single institution across disciplines, and it has no separate councils. DFG has been recognised as a pro-active funder in terms of supporting interdisciplinarity. It facilitates interdisciplinary work by providing incentives for workshops and seminars across disciplinary borders and operates some targeted funding instruments, e.g. Collaborative Research Centres (DJS Research, 2016). At the same time, DFG's main priority is curiosity-driven research and not problem-oriented research, and this has implications for how much it can support interdisciplinary research.</p> <p>Support for interdisciplinary research is well evident also in DFGs response to Covid-19. To steer the response to Covid-19, DFG established Interdisciplinary Commission for Pandemic Research (hereinafter – the Commission). It consists of 20 members representing all disciplines, and DFGs President leads it. The Commission's task is to strengthen the knowledge-driven research, which is essential to pandemic and epidemic research and forms the basis for translational approaches. The Commission also has the task of monitoring the overall basic research</p>

	<p>landscape in relation to pandemics and epidemics and identifying potential research needs, giving special attention to interdisciplinary and transdisciplinary cooperation and the strengthening of synergies (DFG, 2020c).</p> <p>In March 2020, DFG launched the first response to Covid-19 - a call for multidisciplinary research into epidemics and pandemics in response to the outbreak of SARS-CoV-2. The call was primarily aimed at multidisciplinary research projects (DFG, 2020a).</p> <p><b>High-risk research</b> DFG runs the Reinhart Koselleck funding instrument that enables outstanding researchers with a proven scientific track record to pursue exceptionally innovative and higher-risk projects. This instrument is only a small proportion of the DFG instruments portfolio, and the operation of this instrument has not had any significant impact on how DFG responded to Covid-19.</p>
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**Funder's response to Covid-19**

**Funder's response to Covid-19**

DFG reacted to Covid-19 on several levels, all summarised and explained below.

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graph TD
    A[Interdisciplinary Commission for Pandemic Research] --> B[Actions to mitigate the effects of the pandemic on proposers and already funded projects]
    A --> C[Call for multidisciplinary research into epidemics and pandemics]
    A --> D[COVID-19 Focus Funding instrument]
    E[DFG reorganising to working from home and organising virtual assessment and decision-making]
  
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The DFGs Executive Committee decided to set up **Interdisciplinary Commission for Pandemic Research to steer the response to Covid-19**. The new Commission supported DFG funded projects investigating pandemics and epidemics, including ongoing work and research projects initiated in the cross-disciplinary call launched by the DFG at the end of March 2020. The Commission identifies thematic research needs to be supported in Covid-19 rapid response Focus Funding instrument.

DFG **introduced actions to mitigate the effects of the pandemic on proposers and already funded projects**. In all funding programmes, DFG tried to maintain the 6-7 months' time-to-decision. DFG already had routines for cost-neutral project extensions and were able to use these. Applicants were able to explain delays in their proposals. There were also additional funds made available for a period of up to three months for already funded projects. DFG was extending the individual eligibility period for proposal submission by three months within the Emmy Noether Programme, targeting early career researchers and the Heisenberg programme, targeting more experienced researchers. Fellowships could get cost-neutral extensions of up to 12 months.

In response to Covid-19, **DFG funded new projects**. DFG introduced a call for multidisciplinary research in response to Covid-19 in March 2020 and a rapid response Focus Funding instrument in August 2020.

The **call for multidisciplinary research into epidemics and pandemics** in response to the outbreak of SARS-CoV-2 was available for projects addressing the prevention, early detection, containment and investigation of the causes, impacts and management of epidemics and pandemics, taking the example of SARS-CoV-2 and other microorganisms and viruses that are pathogenic to humans. Proposals were considered for projects designed to gather and record basic data on the current epidemic and current countermeasures, which can serve as the basis for future retrospective analyses. Researchers could submit projects involving the simulation of the spread and consequences of pandemics and the effectiveness of interventions. Funding was available for individual or joint proposals in the form of individual research grants or proposal packages. For existing groups such as Research Units, Research Training Groups and Collaborative Research Centres that thematically fit the call, it was possible to submit a supplemental or additional proposal (DFG, 2020a). The call supported 50 projects with over €30m funding. 40% of projects were in social sciences and humanities.

**DFG introduced the COVID-19 Focus Funding instrument** in August 2020. The DFG set up COVID-19 Focus Funding to enable researchers to address particularly urgent questions on the coronavirus pandemic that need short-term answers. The Focus Funding instrument publishes thematic calls directed at all relevant disciplines, and the DFG Interdisciplinary Commission decides the call themes (DFG, 2020b). DFG can support individual projects limited to the call topic for a maximum period of one year. Support is available for projects of the highest scientific quality that break new scientific ground, promise to deliver a substantial contribution to knowledge on the specific research question of the call and are expected to be completed in a funding period of up to one year. Proposals must be short, a maximum of five pages (DFG, 2020b). The first set of thematic calls at the end of 2020 resulted in 89 proposals and 33 supported projects with €3.6m funding. The programme is ongoing, and several thematic calls are planned to be open until June 2021.

Finally, DFG head office had to be reorganised so that employees **work from home**. DFG adapted all internal regulations to handle **virtual assessment and decision-making**. DFG had already invested a lot in IT and mobile work options, and they were well prepared.

## Funder's mission for Covid-19 response and priority setting

### Funder's mission for Covid-19 response

DFG mission for responding to Covid-19 was to monitor the overall basic research landscape in relation to the pandemic and identify and fund potential research needs, giving special attention to interdisciplinary and transdisciplinary cooperation. Although DFG launched funding instruments relatively quickly, it does not see itself as a funder coming up with rapid solutions for the pandemic. Instead, it supports basic, curiosity-driven research that might deliver relevant results in the longer term. DFG is an independent legal entity and could easily make decisions about the Covid-19 response independently.

Consisting of 20 experts from all research disciplines, the interdisciplinary commission has guided DFG decisions on how to mitigate the effects of the pandemic and fund new research on Covid-19. The idea to set up the Commission came from understanding that DFG would need all disciplinary perspectives relevant to the pandemic. The Commission was created to have room for interdisciplinary exchange to see where the most urgent research needs are and which institutions should be involved.

The DFGs mission for the response has been stable and has not changed significantly over time. In terms of funding, DFG reacted fast in March 2020, launching the call for multidisciplinary research. It took more time to set up the Commission and Covid-19 Focus Funding instrument supporting urgent research. For the Focus Funding instrument, DFG launched the first calls in August 2020.

### **Budget and human resources for response to Covid-19**

DFG invested roughly €33m in pandemic related research through the two specific funding schemes.

DFG did not receive any additional external funding from its funders. DFG is an independent organisation funded by the German Federal Ministry of Education and Research (BMBF) and the states. In 2020 DFG itself earmarked a budget from DFG's strategic funds internally. DFG annual budget allows room to assign funding for specific strategic priorities. DFG Executive Committee defined Covid-19 related research as a strategic priority. For the call for multidisciplinary research into epidemics and pandemics (budget €30m), the DFG Executive Committee had enough lead time to secure the funding. DFG had time to apply the normal budgeting process. A similar procedure was applied for the Focus Funding instrument, which required smaller resources (€3.6m).

DFG was very overwhelmed managing all aspects of response to Covid-19, and the staff has been working very hard. DFG was able to get a few additional staff and did some reallocation, for example, people in the International Department who could help with the new tasks. It takes a long time to induct new staff at DFG, and onboarding online is even more difficult; therefore, the opportunities to increase staff numbers were limited. Highly qualified staff is needed to manage the funding, and the introduction of the Focus Funding instrument was a new task requiring experienced people. It is not easy to find reviewers and set up a review panel fast and manage the new review process.

To address these challenges, DFG focused on setting clear priorities for the daily operations and regularly reviewed what the priorities are and what to postpone. It was a task for the DFG leadership to define the priorities and manage the organisation in this challenging time. DFG is proud of motivated staff, and intrinsic motivation is common because many staff members have an academic background, and they have the motivation to support researchers. DFG has observed that operating on intrinsic motivation for a long period is harmful because people tend not to care for themselves. The DFG management is therefore concerned about staff burnout.

### **Setting research priorities and consulting other funders**

The Commission has a central role in defining research priorities. For example, it decides about the themes to be supported in Covid-19 rapid response Focus Funding instrument. It also collaborates with other national institutions (e.g. BMBF, Max Planck Society, German National Academy of Sciences Leopoldina) when making decisions about priorities. The Commission reviews the activities of other funders and organisations, how they organise and fund the pandemic related research and decides what would be needed complementarily.

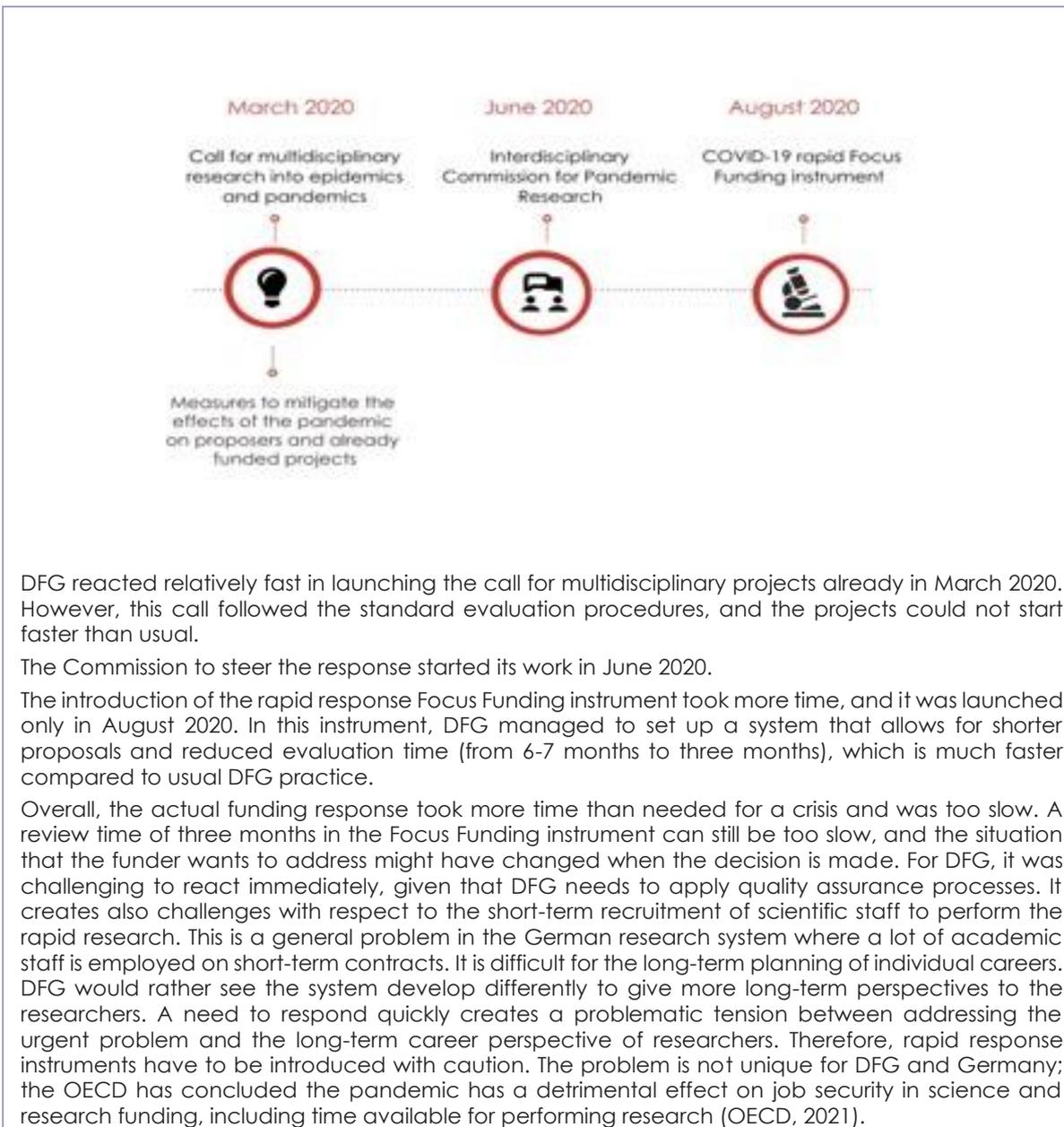
BMBF has invested in Covid-19 related research, mainly in life sciences. For example, BMBF supported a special programme worth €750m in accelerating the development of vaccines and supported three companies working with vaccine development. BMBF also introduced a funding call worth €45m to develop medicines to treat Covid-19 (Federal Ministry of Education and Research, 2020).

DFG invited the Federal Ministry of Health for background talks about motivation for vaccination and funding more social science and behavioural research on motivating people and how to communicate about vaccination.

The Commission did not explicitly consult international guidelines or developments, but the knowledge on these developments is held by the people who work in the DFGs Commission for pandemic research. Commission members collaborate with WHO, UN, and other international organisations and know about international developments.

### **Timing of the response**

The key events of DFG response to Covid-19 are summarised below.



## Organisational changes to manage the response

### Management of the response

The main difference to 'business as usual' was the set-up of the Commission to steer the response and set the thematic priorities for funding. Such Commissions are not typical in regular DFG funding procedures. The Commission has successfully guided defining research priorities and coordinating with other national and international funders.

The call for multidisciplinary research was largely managed in the scope of existing organisational structures and processes. While for the Focus Funding instrument, it was the first time DFG applied a shorter review process and re-organised how peer-review is performed. See details in section "Project selection" below. Accelerated peer-review was a new process, but otherwise, the instrument was implemented in line with existing organisational structures. The main challenge for managing both

### Management of the response

funding instruments and the work of the interdisciplinary Commission was securing enough human resources. DFG hired some new staff, re-allocated staff to the Department of Scientific Affairs, and increased staff workload to address this challenge.

## Project selection and quality assurance

### Project selection

The call for multidisciplinary research largely followed the usual DFG selection process.

DFG substituted written panel reviews for the first round of remote peer review to shorten decision-time for the rapid response Focus Funding instrument. DFG pulled a review panel together right after the launch of the call, scheduled the panel meeting, and the reviewers presented their reviews already written in the panel meeting where decisions were made. The second stage in the decision process is for the Grants Commission to make funding decisions and the Grants Commission did it 3-4 weeks after the panel meeting. Typically there is a Review Board between the panel review and Grants Commission. For the Focus Funding instrument, DFG integrated the Review Board with the Grants Commission and provided the Grants Board a week to decide. This helped to reduce the time required for the review process significantly.

The shortened review process raised concerns about the quality. A monitoring process is set up for the projects supported by the rapid Focus Funding instrument. It aims to monitor the use of the instrument and the achievement of objectives. DFG have surveyed the peer reviewers and the staff of the head office about their perceptions of the quality of the applications. DFG rarely operates with thematic calls, and the survey results suggest quality was a little lower than usual. Success rates for the Focus Funding have been lower, 20-25%, compared to 30% in bottom-up instruments. DFG has observed lower success rates in thematic calls before. According to DFG, self-selection works better in bottom-up competitions where the scientists come up with their defined research themes, and it does not work that well in thematic calls.

Applicants usually have to describe their prior work, but this was not required for the rapid Focus Funding instrument to keep the proposals short. This complicated the peer review process, and peers reported trying to use other information sources (e.g. looking up h index) to assess the prior experience of the proposer.

## Communication, dissemination and perception of the response

### Communication and dissemination activities

DFG communication efforts were strong and more pronounced than usual. It involved communication to the research community, but also with media. The core message was information about how the DFG mitigates the impact of the pandemic on ongoing research and how it supports research in response to Covid-19. DFG has also communicated about and explained the functioning of the interdisciplinary Commission. Members of the Commission were always available for interviews.

DFG did take steps to disseminate the results of the Commissions discussion to the health authorities, the Federal Ministry of Health in particular. However, due to other urgent issues prioritised by the Federal Ministry of Health, their response to start the dialogue took several months. Overall, there is an impression that health authorities do not prioritise discussion with research community about long-term issues. The main focus is immediate problems of controlling the epidemiological situation. For example, in the public debate about the AstraZeneca vaccine in Germany, it would have been important to have a different communication strategy, based on the scientific advice, which is one of the topics DFG's interdisciplinary Commission wanted to discuss with the Federal Ministry of Health.

**Communication and dissemination activities**

The problematic communication might have long-term consequences for the overall vaccination of the population.

**Perception**

DFG response was well perceived and praised by the research community. DFG has not faced any significant reactions.

**Lessons learned and future plans**

**Strong points**

DFG succeeded in adjusting relatively fast and easy to work from home thanks to prior investments in IT infrastructure and a long-term plan for mobile work options. This helped ensure that there were no significant delays in DFGs regular funding processes. DFG managed to introduce several crisis mitigation measures to support researchers funded by DFG programmes.

The establishment and functioning of the interdisciplinary Commission to steer the response to Covid-19 have been successful. The Commission's composition is interdisciplinary, and the Commission has emphasised and supported interdisciplinary response to Covid-19. It has successfully fulfilled the task of coordinating DFG response with other funders in Germany and at the international level. DFG considers this a success and believes the strong focus on interdisciplinarity differentiates DFGs response from other funders.

DFG introduced a new rapid response instrument that has never been used by DFG before. As a result, DFG managed to reduce proposal evaluation time significantly. However, it is still considered too long for a crisis.

**Main difficulties**

DFG faced several difficulties. At the strategic level, the interdisciplinary Commission has not been able to gain full attention from the relevant health authorities to discuss some longer-term research implications. This is mainly due to external reasons, in particular other priorities of the overwhelmed health authorities.

DFG staff has been overwhelmed despite some efforts to hire new people and re-allocate from other departments. This has been addressed by the very careful setting of everyday priorities by the management, but the workload is not sustainable in the long term.

Introducing and implementing rapid response instrument has been a challenge as well. DFG managed to reduce the proposal evaluation time but still considers it too long for an urgent crisis. More radical approaches would have to be applied to respond faster. Fast and simplified peer-review has limitations. Because of the shortness of the proposals, peer reviewers tend to look for extra information online, which extends the review process. The quality of the extra information peers find cannot be ensured. DFG observed that the quality of the proposals is slightly lower in the rapid response instrument. Rapid response instruments can also have some negative impacts on the research system because of the short-term nature of this research complicating researchers career paths.

**Future plans**

The Commission will continue its work until summer 2022. DFG has decided not to continue issuing calls in the rapid response Focus Funding instrument. Final calls will be closed before summer 2021. The Commission will move into advising and networking mode. DFG will organise a conference for the research community to discuss further research and build an agenda for the future. The DFG Senate is discussing the effects of the pandemic on careers, internationalisation, data storage infrastructure and re-use – the Commission will review these issues.

It is not yet decided if the rapid response instrument will be institutionalised and become permanent in DFG. It can be used only in a crisis and not in normal circumstances. However, as pointed out above, it is still too slow, and therefore it is unclear if DFG can use it again in the same format.

## Information sources and interviewees

### Documents consulted

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### Interviewees

Dr Anne Brüggemann, Head of Social Sciences and Humanities Division; DFG coordinator for the Interdisciplinary Commission for Pandemic Research.

### G.3 Funder information: Japan Science and Technology Agency, JST

Funder name	Japan Science and Technology Agency, JST
Brief description	<p>JST funds high impact strategic research. Strategic Basic Research Programmes are intended to advance basic research to achieve solutions for key issues Japan is facing. Fusion Oriented Research for disruptive Science and Technology programme supports ambitious transdisciplinary research beyond existing frameworks. JST funds also research-industry collaboration and technology transfer. In addition, JST fosters next generation talents in science and technology and provides information platforms and database services (JST, 2021 a).</p> <p>Together with Japan International Cooperation Agency which provides Official Development Assistance funding, JST promotes international collaborative research for development. JST implements the Science and Technology Research Partnership for Sustainable Development programme, known as "SATREPS", which promotes international joint research based on the needs of developing countries (JST, 2021 a).</p>
Mechanisms for responding to specific needs	<p>JST has previously used the J-RAPID programme to fund rapid research in emergencies. The programme was inspired by the NSF RAPID programme and was founded in response to the 2011 Great East Japan Earthquake. The uniqueness of this programme is how it enables rapid and efficient international collaboration with overseas partner funders when we face emergent common challenges. The JST budget is normally predetermined and pre-arranged annually for planned programmes, but when an unprecedented national crisis required an immediate response from science and technology, JST took this unconventional measure and introduced the J-RAPID programme.</p>
Funders approach to interdisciplinary research and high risk or transformative research	<p>The complex nature of today's challenges necessitates an interdisciplinary approach, and JST regularly supports ambitious and transformative interdisciplinary research. It followed the same approach when funding research into COVID-19.</p>

### Funder's response to COVID-19

Funder's response to COVID-19
<p>In response to COVID-19, JST utilised two key programmes – international programme J-RAPID and national programme CREST.</p> <p>The purpose of the international emergency program <b>J-RAPID</b> is to respond quickly to emergency events, such as natural or anthropogenic disasters, and support research at the height of the crisis mobilising national and international researchers. J-RAPID aims to play an initial response role by promptly supporting activities before ordinary projects are implemented by the national government, academic societies, or others. The J-RAPID COVID-19 call supported 11 international research collaboration projects.</p> <p>JST launched a special COVID-19 call within the <b>CREST</b> programme also. CREST is one of JST's major programmes for stimulating achievement in fundamental science and technology fields. The government and JST annually decide which themes to pursue, and JST publishes the calls once a year. In 2020 one of the CREST programme themes was related to coping with the COVID-19 pandemic, and it quickly launched a special call for proposals resulting in ten supported projects. It supported interdisciplinary collaborations of researchers from a wide variety of research fields. It utilised and combined various types of non-medical knowledge such as engineering, informatics and nanotechnology. The call aimed to minimise the impact of COVID-19 and create fundamental</p>

technologies to coexist with emerging or re-emerging infectious diseases, utilising a wide variety of science and technology to build a resilient society for the new normal with/post COVID-19.

## Funder's mission for COVID-19 response and priority setting

### Funder's mission for COVID-19 response

JST's mission was to help researchers continue their research under new circumstances and fund non-medical research for COVID-19, such as behavioural simulation, materials for sensors, detective devices, and social surveys for policy making and similar.

JST also functioned as a bridge between science and society, disseminating scientific information on the virus to the general public.

### Budget and human resources for response to COVID-19

JST invested roughly €30m in research and €4.1m in international collaborative research projects. JST secured the budget by re-purposing some funds, used an internal strategic budget, and received new funds from the government.

JST as an agency is run mostly independently from national budget allocations and is allowed to make its own budget decisions according to five year plans approved by the Ministry of Education, Culture, Sports, Science and Technology (MEXT). Thus, JST can respond to emergencies flexibly using autonomous initiatives and at the discretion of the president of JST.

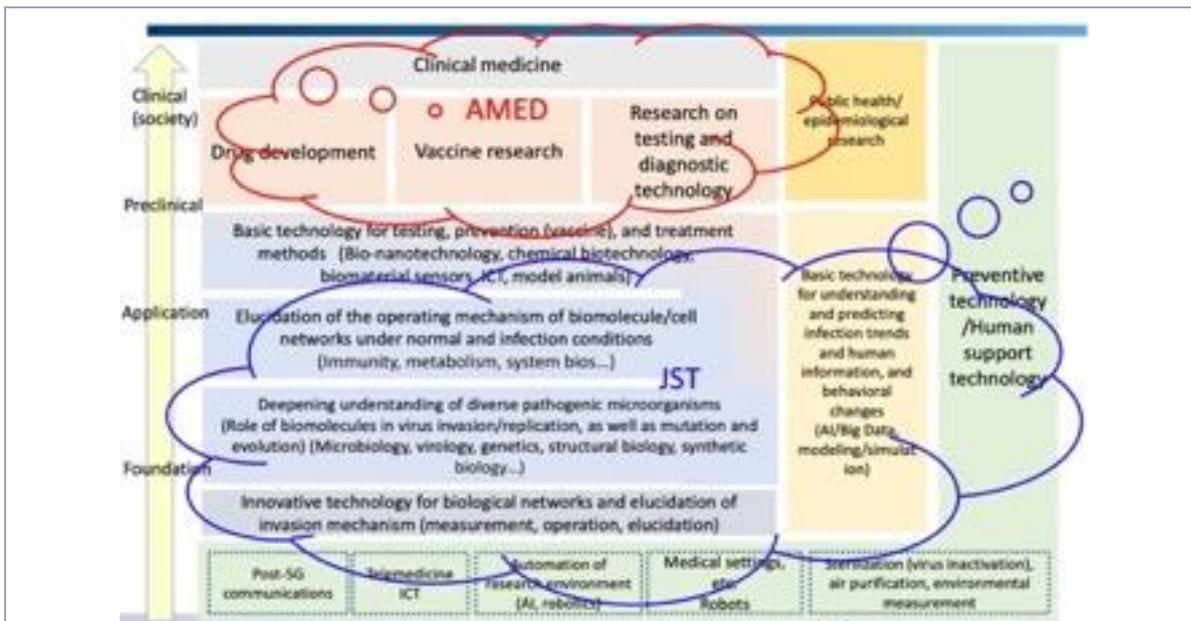
JST generally cannot secure additional human resources for an emergency. Instead it handles the extra workload with existing staff that may need to work overtime. Most of the JST staff have worked for the agency for a long period, meaning they are experienced in addressing similar crises in the past and can efficiently respond to unexpected crises. JST tries to ensure a fair allocation of workload across teams in order to comply with labour regulations on overtime work.

### Setting research priorities and consulting other funders

JST president, executives and directors in charge discussed what the agency can do according to its internal regulations. The JST management reported this information - why, what, and how JST would respond - to its supervising ministry MEXT.

For the J-RAPID programme, JST aligned research priorities with its partner funders.

JST and other research funders in Japan use "Plan A" and "Plan B" approaches for funding COVID-19 research. "Plan A" focuses on the development of vaccines and medicines to fight the disease. In contrast, "Plan B" focuses on multidisciplinary methods to minimize virus prevalence, prevent healthcare systems from being overloaded, and allow the population to live comfortably in with/post pandemic society. JST mainly contributes to "Plan B". Japan Agency for Medical Research and Development (AMED) funds medical and pharmaceutical research, so it was clear that JST should focus on non-medical research. Specific research topics covered by JST and AMED are illustrated below.



Source: JST (2021b). JST Policy for the Next Fiscal Year. Available: <https://www.jst.go.jp/world/connect/files/20210224-presentation01.pdf>

### Timing of the response

JST introduced the pandemic response programmes in March 2020. The international department responded first since it was familiar with responding to crises with the J-RAPID programme. It took a few weeks to launch a new call in response to COVID-19. National programmes started soon after.

## Organisational changes to manage the response

### Management of the response

It was relatively easy to adapt the J-RAPID programme for the new pandemic. Also, the CREST programme had an established mechanism, and the only major difference to business as usual was the rapid introduction of the call and evaluation of the projects.

However, it was a challenge as well as an opportunity for JST, which had mainly handled natural sciences research, to involve social science/humanities disciplines effectively to contend with the pandemic which cannot be solved by natural sciences alone.

## Project selection and quality assurance

### Project selection

The selection process went almost as normal, but JST changed some practices including shifting the evaluation committee meetings from in-person to online. Programmes followed normal peer-review procedures, that were accelerated thanks to JST's active communication and encouragement. The peers always responded quickly.

J-RAPID programme involves international cooperation (with NSF, UKRI, ANR, NRC), and normally, JST organises joint evaluation meetings. To speed up the process, JST skipped the joint meetings for the COVID-19 response. This was possible due to the high level of trust between JST and its long-term

international partners. When qualified Japanese researchers wanted to work with colleagues from the partner country, they were automatically approved if the partner funder had previously funded them.

## Communication, dissemination and perception of the response

### Communication and dissemination activities

JST-managed museum 'Miraikan' - the National Museum of Emerging Science and Innovation - frequently updated and disseminated information on COVID-19 to enhance and foster science literacy in broader society. It does this in easy-to-understand language. JST performed similar activities after the 2011 great earthquake.

### Perception

JSTs COVID-19 response was well perceived and praised in the research community and society at large.

## Lessons learned and future plans

### Strong points

Japan regularly experiences disasters like earthquakes, seasonal typhoons and periodic volcano eruptions. Society and organisations are well trained and have a disaster-ready mindset. JST had already operated the J-RAPID programme and could easily adapt it for the pandemic.

JST managed to respond using existing programmes and without changing its procedures, relying on proactive communication to accelerate the funding process. Scientific peers involved in the project evaluation process cooperated very efficiently taking the emergency into consideration.

### Main difficulties

Adjusting to remote work was not easy, mainly for cultural reasons and insufficiently developed digital solutions. Initially, it slightly affected the response. However, the pandemic is changing the work culture towards greater acceptance of online work.

### Future plans

JST will continue to support COVID-19 related non-medical research within the scope of its regular funding instruments, e.g. CREST programme. For example, JST might fund research on artificial intelligence and its potential contribution to preventing infectious diseases. In addition, the J-RAPID programme will continue to function as a targeted emergency funding instrument.

JST will continue and improve the digitalisation of everyday work, including online meetings, remote evaluation, and streamlining paperwork.

## Information sources and interviewees

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**Interviewees**

Osamu Kobayashi, Director, Department of International Affairs, Japan Science and Technology Agency.

## G.4 Funder information: Ministry of Science and Technology Taiwan, MoST

<b>Funder name</b>	<b>Ministry of Science and Technology Taiwan, MoST</b>
Brief description	The Ministry of Science and Technology is a government agency dedicated to scientific and technological development. Its three main missions are promoting nationwide science and technology development, supporting academic research and developing science parks. In addition, the MoST promote curiosity-driven fundamental research and encourages creativity and innovation and reinforces academia-industry partnership, entrepreneurship and R&D in industry. Each year, the MoST funds around 20,000 research projects, including basic research and applied research from Taiwanese research communities (MoST, 2021).
Mechanisms for responding to specific needs	MoST did not have a rapid-response instrument before COVID-19.
Funders approach to interdisciplinary research and high risk or transformative research	The MoST encourages bottom-up and mission-oriented research to foster creativity and research innovations while boosting translational science and technology to support economic growth. Interdisciplinary research was part of the Covid-19 response call, and MoST supported also high-risk projects.

### Funder's response to Covid-19

<b>Funder's response to Covid-19</b>
<p>MoST response to Covid-19 took place at four levels:</p> <ol style="list-style-type: none"> <li>1. Taiwan and MoST, in particular, had learned a lot from the SARS outbreak in 2003 and prepared accordingly</li> <li>2. MoST had to daily support the Central Epidemic Command Center (CECC) of the Taiwanese government</li> <li>3. MoST allowed for responsive changes in existing research projects</li> <li>4. MoST issued new calls for proposals to fund Covid-19 related research.</li> </ol> <p><b>Actions before the pandemic</b></p> <p>Since the SARS outbreak in 2003, the MoST has recognised the importance of emerging infectious diseases and has directed significant resources to relevant projects. MoST has supported academia in developing anti-epidemic science and technology and established national and institutional infrastructure to control infectious diseases in Taiwan. As a result, when the pandemic started, many Taiwanese experts and scholars could transfer rapidly to the emerging COVID-19 pandemic prevention-related studies through the existing research platforms. Thus, in a sense, the response to Covid-19 started even before the pandemic.</p> <p><b>Support for the Central Epidemic Command Center</b></p> <p>At the beginning of 2020, MoST supported the national Central Epidemic Command Center (CECC) in Taiwan. Support to the CECC was one of the central tasks throughout the pandemic. MoST mobilised research groups and private companies that could deliver fast and direct knowledge and technologies to assist the CECC in managing the national response to the pandemic. MoST acted as a coordinator between the research community and the CECC collecting the requests and needs of the CECC and looking for available solutions in the research community.</p> <p><b>Responsive changes in existing research projects</b></p> <p>MoST announced a series of responsive regulations, starting in March 2020, allowing for changes in existing projects. The funded researchers were allowed to modify their international itineraries, extend deadlines, and change the research format. This action helped a total of 824 researchers and 140</p>

international bilateral projects. MoST's overseas offices also proactively reached out to those overseas and provided them with related assistance.

#### **Funding call for Covid-19 research**

MoST provided additional research funding to address Covid-19 and managed the funding out of the regular funding cycle. MoST funded short-term and long-term research priorities. The Covid-19 research funding short-term priorities were testing, treatment, vaccines and field verification (real-time monitoring of cases). The long-term research priorities were related to epidemiology and policy making. According to the MoST, this research requires longer-term observation, not only domestically but also internationally. By the end of April 2020, MoST received more than 300 proposals.

### **Funder's mission for Covid-19 response and priority setting**

#### **Funder's mission for Covid-19 response**

MoST mission through its response to Covid-19 was to support the Central Epidemic Command Center (CECC) in Taiwan. The CECC has the authority to coordinate work across government departments and enlist additional personnel during an emergency. The government established CECC in 2005, based on a new law passed in 2004, one year after the SARS outbreak. Typically, the commander of this centre is the minister of health and welfare. This minister is the overall commander who holds the authority to command the military, ministries or whatever other organisation are needed. At the beginning of the pandemic, the MoST mission was to respond to the CECC for whatever research they required. Since the outbreak of COVID-19, many research teams and investigators supported by MoST have quickly responded, delivering efficient epidemic prevention technology and products to the government and CECC in particular.

During the pandemic, the second mission was formulated – to fund both top-down and bottom-up Covid-19 related research.

#### **Budget and human resources for response to Covid-19**

The Taiwanese government allocated extra €30m to MoST to fund new research on Covid-19. MoST did not set the upper budget for the bottom-up projects they funded in the scope of the Covid-19 research call. The top-down research fund has established five Research Centres for Epidemic Prevention Science, each receiving a maximum of €2.4m per year for four years.

After the extra budget invested in Covid-19, MoST funds pandemic-related research in the scope of the regular calls, with additional funding allocated in 2021 and planned for 2022. MoST have the freedom to re-allocate resources towards the pandemic research as they see fit.

MoST did not face any significant problems with managing the response. This is mainly because Taiwan was less affected by the pandemic. Staff could go to the offices and continue a normal life. MoST relies heavily on part-time academics employed in MoST and helping with peer review, and this community helped organise the Covid-19 response call for proposals.

#### **Setting research priorities and consulting other funders**

The research topics were primarily in line with the needs of the Central Epidemic Command Center (CECC). CECC had an expert advisory panel formed on 4<sup>th</sup> January 2020 with more than 20 experts chaired by the vice president of National Taiwan University, an expert in infectious diseases and epidemiology. CECC guided selecting four priority topics for research (testing, treatment, vaccines and field verification).

The call for Covid-19 research funded not only medical research but also other disciplines, including social sciences.

#### **Timing of the response**

Central Epidemic Command Center (CECC) started its work in January 2020, and since then also MoST has been involved in providing and coordinating scientific advice to the CECC.

MoST published the call for proposals to fund new research on Covid-19 with the extra budget provided by the government in March 2020 with the deadline of the first call by the end of April 2020 and most projects started in May 2020.

MoST introduced and managed the Covid-19 research call faster than the usual funding mechanisms. Typically, the whole funding cycle takes 5-6 months. For the Covid response, it took less than two months from publishing the call to starting the projects. To accelerate the process, MoST slightly adjusted the review process. The review process usually involves circulating written information between the researchers, peer reviewers and the panel members. For the Covid-19 call, MoST first filtered the pre-proposals and thus had fewer but more focused full proposals to review without several exchanges between researchers and peer reviewers. More panel meetings were also called to help speed up the decision-making process.

## Organisational changes to manage the response

### Management of the response

Besides assisting the Central Epidemic Command Center (CECC) MoST established a new internal task force headed by the deputy minister. The key members were the deputy directors of all departments. It handled internal needs and externally reported requests on a daily basis. Solutions had to be proposed within one day and their progress supervised on a daily basis. The task force also focused on updates on the national and international developments gathering intelligence from the overseas offices to support the MoST function of assisting CECC. MoST did not set up any other new organisational structures to manage the response.

## Project selection and quality assurance

### Project selection

To select the projects to fund within the Covid-19 research call, MoST largely followed the normal three-step project selection process, with an extra filtering of the pre-proposals to reduce the number of full proposals that require detailed review. The first round is peer-review organised by a special new panel. The second round is the panel review, which prioritises the projects based on two equally weighted criteria - track record in the past five years and scientific merit of the proposed research. The third round of the selection process is the final decision, which is integrated into the second round to speed up the decision-making process. MoST did fund risky projects and monitored the progress of the funded projects every six months—this involved reporting on the project and relied largely on the opinions of the review panel.

MoST did not report any challenges associated with the slightly accelerated peer-review process as it still relied on usual principles and peer-review mechanisms.

## Communication, dissemination and perception of the response

### Communication and dissemination activities

Central Epidemic Command Center (CECC) held daily press conferences reporting about recent developments. Regular reporting and transparency ensured the trust of the society in government and its ability to manage the response.

MoST sent out individual notes to principal investigators guiding project extensions, hosting overseas visitors and other relevant topics.

### Communication and dissemination activities

MoST worked close with the CECC also in reporting on the research results. CECC research and development group reviewed the reports and followed up with further requests, if necessary. Thus, close integration between CECC and MoST was instrumental in making sure the research results reach the target users.

## Lessons learned and future plans

### Strong points

MoST consider the response to the pandemic of the country and the research community a success. The country was united and committed to fighting the pandemic. The same applies to the MoST activities and organising the response. MoST would not change much in the approach and would do the same again if necessary. MoST had no particular challenges in accelerating the process and managing the response.

Taiwan was not severely affected by the pandemic, and this somewhat eased also the work of MoST. MoST made lessons after the SARS outbreak in 2003 and had invested in pandemic preparedness research and the related industry-academia cooperation since then. This definitely helped the country to react in 2020.

### Main difficulties

Taiwan experienced a surge in new cases in the spring of 2021 and struggles to ensure population immunisation. MoST might have a role to play in this. However, both events were developing when we drafted the report, and MoST did not have any specific actions to report. For Taiwan, its fight with the pandemic and research contribution to it, the issue is not so much about prioritising and budgeting but about the impact of international developments and international politics potentially hugely affecting the country's development.

### Future plans

Funding for pandemic related research will continue in the regular funding cycle with increased budget in 2021 and 2022.

## Information sources and interviewees

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### Interviewees

Prof. Jiun-Huei Protu Wu, Director, UK Office, Ministry of Science and Technology, Taiwan.

## G.5 Funder information: National Research Council Canada, NRC

<b>Funder name</b>	<b>National Research Council Canada, NRC</b>
Brief description	<p>National Research Council Canada (NRC) is the largest federal research and development organisation. It reports to Parliament through the Minister of Innovation, Science and Industry and is governed by a council of appointees drawn from its client community. The council reviews strategic directions and oversees the performance.</p> <p>NRC's mission is to "have an impact by advancing knowledge, applying leading-edge technologies, and working with other innovators to find creative, relevant and sustainable solutions to Canada's current and future economic, social and environmental challenges." (National Research Council Canada, 2021a).</p> <p>The NRC is made up of four R&amp;D divisions and a horizontal digital research initiative. Under these divisions operate 14 integrated and consolidated research centres, each guided by advisory bodies composed of academic and industry leaders (National Research Council, 2019).</p>
Mechanisms for responding to specific needs	NRC did not have a rapid-response instrument before COVID-19.
Funders approach to interdisciplinary research and high risk or transformative research	NRC supports transformative, high-risk, high-reward research through its Challenge programs and does this in partnership with private and public sector, academic and other organisations in Canada and beyond. The programmes are running for five years, and NRC has invested \$150m (National Research Council Canada, 2021b). Pandemic response programme is implemented as one of the Challenge programmes and took higher risks when supporting Covid-19 research.

### Funder's response to Covid-19

<b>Funder's response to Covid-19</b>
<p>At the <b>strategic level</b>, NRC <b>appointed a new Vice-President</b> to lead Pandemic Response Challenge Programme. NRC also <b>hosted the secretariat of the Canadian COVID-19 Vaccine Task Force</b>. Comprised of multidisciplinary experts and industry leaders in vaccine development, the COVID-19 Vaccine Task Force advises the government to make evidence-based decisions.</p> <p>At the <b>operational level</b>, NRC's response to Covid-19 consisted of several measures, summarised in below.</p>



Source: Canada Gairdner Awards (2020). Covid-19: The Canadian Research Response – Gairdner Global Perspectives Panel. Available: <https://www.youtube.com/watch?v=OPUjRpEcm4A&t=1344s>

NRC introduced the **Pandemic Response Challenge** programme, bringing together the best Canadian and international researchers to fast-track research and development aimed at specific COVID-19 gaps and challenges identified by Canada's health experts. The programme is one of the other five challenge programmes designed by the NRC. The programme is structured around four research pillars: rapid detection and diagnosis, therapeutics and vaccines, digital patient care and pandemic analytics and enabling adaptive responses (National Research Council Canada, 2021e). NRC has also invested in two large **infrastructure projects**. There are two separate construction projects underway that will help support Canada's biomanufacturing production capacity. Construction of the new **Biologics Manufacturing Centre** was completed in June 2021, only ten months after breaking ground. Once it is fully licensed and operational, the Biologics Manufacturing Centre will produce cell-based biopharmaceuticals like vaccines. **Clinical Trial Material Facility** will be built to manufacture vaccines for clinical trials and is scheduled to be complete in summer 2022 (National Research Council, 2021c).

As an organisation performing research, NRC provided **Community Support**, and its 14 research centres supported their research collaborators in universities and industry responding to short-term research requests.

NRC's **Industrial Research Assistance Programme (IRAP)** also collaborated with the Department of Industry, Science and Economic Development's (ISED) **Innovative Solutions Challenge Program** and posted challenges seeking near-to-market solutions from small and medium-sized businesses (i.e. fewer than 500 staff) that require financial support to refine and sell their product or solution to meet a COVID-19-related need. In addition to the Innovative Solutions Challenge Programme, IRAP launched an initiative to invite small and medium-sized businesses to register their technology to assist Canada's COVID-19 response, and participate in virtual "pitch sessions" to present their business, technology, and ideas to a panel of experts from federal and provincial governments. This initiative helped companies align their efforts to ongoing government activities, seek funding support from existing relevant funding programs or secure NRC IRAP research and development funding. IRAP was also used to aid innovative firms that were not eligible for the regular Canada Emergency Wage Subsidy support (National Research Council Canada, 2021b).

## Funder's mission for Covid-19 response and priority setting

<p><b>Funder's mission for Covid-19 response</b></p>
<p>NRC's mission for responding to Covid-19 was to exploit and pivot NRC's activities and fund Covid-19 research to create solutions for the Covid-19 crisis. The Pandemic Response Challenge Program (PRCP) funding was directed in four research areas: rapid detection and diagnosis, therapeutics and vaccines, digital patient care and pandemic analytics and enabling adaptive responses. The PRCP's mission included taking higher risks, and a readiness to abandon projects that were not paying off in their mid-life.</p>
<p><b>Budget and human resources for response to Covid-19</b></p>
<p>NRC invested roughly €83m in grants and around €125m in infrastructure. All funding was on top of the regular funds and came from the whole-of-government response to Covid-19. NRC secured the funding relatively rapidly. It had to make a Treasury Board submission to get some of the procedures and funding arrangements changed and received a quick approval.</p> <p>NRC appointed Pandemic Vice-President used a "Tiger team" approach to manage and coordinate their efforts and the human resources involved in the response. Agility and mission orientation guided the management of the NRC response. This meant relying on a carefully selected central team of experts knowing a big organisation very well and identifying necessary support. This allowed working beyond the silos. The team worked with the NRC research centres. Some staff was involved for short-term periods then returned to their regular duties. Its large staff with rich scientific expertise helped NRC devote sufficient human resources to manage the response. Overall, NRC did not suffer from a lack of resources and considered the management of the process a success.</p>
<p><b>Setting research priorities and consulting other funders</b></p>
<p>NRC is a Crown Corporation and therefore has a significant degree of autonomy in Canada. Thus, it had a high degree of autonomy in making decisions about the shape of the response to Covid-19. NRC did benefit from its research capacity and mobilised scientific knowledge to understand needs.</p> <p>The government in Canada consulted the WHO Covid-19 R&amp;D Blueprint when deciding about the Covid-19 response research priorities (OECD, 2021), and NRC did the same for the Pandemic Response Challenge programme in addition to relying on internal expertise.</p> <p>Canada Research Coordinating committee provided federal level coordination of research response to Covid-19 between several research funding organisations. As illustrated below, NRC's Pandemic Response Challenge Programme (NRC-PRCP) aimed to accelerate the development of technologies and focused on bridging the gaps between public research and private industry. NRC's Industrial Research Assistance Programme (NRC-IRAP) supported projects closer to the market.</p>

Source: Material provided by NRC<sup>76</sup>

NRC also worked closely with companies. NRC's Industrial Research Assistance Program (IRAP) created a Diagnostic Subject Expert Team to work with Canadian companies in this space to assess their existing capabilities, review proposed solutions, and identify candidates with the best potential to meet Canada's short-, medium- and long-term diagnostic and monitoring needs (National Research Council Canada, 2020e).

#### Timing of the response

NRC introduced the pandemic response programmes in March 2020, and the key programme – Pandemic Response Challenge Programme (PRCP) will last until March 2022. NRC managed to introduce the programmes much faster than usual. It usually takes about one year to scope and introduce a new programme. NRC introduced the PRCP about two months after the decision to start the programme. Introducing a Pandemic Vice President position helped to steer and accelerate the process.

### Organisational changes to manage the response

#### Management of the response

The primary management change was the appointment of the NRC Pandemic Vice President for the response and use of the "Tiger team" approach to manage and coordinate their efforts and the human resources involved in the response. The Vice President had a clear mandate and autonomy to act and deliver the results. Agility and mission orientation guided the management of the NRC response. This meant relying on a carefully selected central team of experts knowing a big organisation very well and identifying necessary support. The team worked with the NRC research centres. Some staff was involved for short-term periods then returned to their regular duties. Its large staff with rich scientific expertise helped NRC devote sufficient human resources to manage the response. Overall, NRC did not suffer from a lack of resources and considered the management of the process a success.

NRC used the framework of already running Challenge programmes to introduce the Pandemic Response Challenge Programme. NRC had to make a Treasury Board submission to get some of the procedures changed and received a quick approval. Otherwise, NRC worked within existing processes rather than developing new ones. Thus the Covid-19 team was dealing with multiple existing processes rather than imposing their own. NRC believes the introduction of new processes would have been slower than the adoption of already existing frameworks.

### Project selection and quality assurance

#### Project selection

For the Pandemic Research Challenge Programme, NRC asked research project leaders to complete a project application form that calls for discussion of impact, milestones and checks and balances. Programme pillar leads reviewed the forms, and Pandemic Vice-president approved the forms, and the projects went into internal production. NRC announced calls for capabilities to seek research partners with complementary and enabling technologies and industry and end-user partners. Once

<sup>76</sup> Acronyms: Canadian Institutes of Health Research (CIHR), Natural Sciences and Engineering Research Council of Canada (NSERC), Pandemic Response Challenge Program (PRCP), Innovative Solutions Canada (ISC), Strategic Innovation Fund (SIF), Industrial Research Assistance Program (IRAP), Regional Development Agency (RDA), Innovation Superclusters Initiative (ISI), Business Development Bank of Canada (BDC), Public Services and Procurement Canada (PSPC), Public Health Agency of Canada (PHAC)

partners were found, the project proceeded to the grants and contributions development, and a more detailed project outline was requested and reviewed. The programme has a Challenge Officer who was dedicated to managing the projects' grants and contributions and was often present with the researchers at the start of the project.

NRC deliberately invested in a portfolio of high-risk, high-reward research as well as high TRL rapid response projects. NRC was ready to take more significant risks than usual and was prepared to accept failure potentially associated with these risks. This approach guided the project selection process. NRC's agile Covid-19 response involved peer-review in some parts. However, to speed up the process or where NRC had enough internal knowledge, NRC could make decisions relying on internal expertise. Acknowledging the risk levels of the funded research, NRC regularly reviewed the progress of projects supported and stopped projects not delivering the expected results. Supporting risky projects requires very careful documentation of every step of the funding process and project delivery to explain and support the decisions.

## Communication, dissemination and perception of the response

### Communication and dissemination activities

NRC primarily relied on traditional communication tools, mostly web-based. NRC set up a dedicated section on their website containing all relevant information on Covid-19 response.

NRC has always had a paragraph in the project descriptions about how the results would be implemented, and this was also the case for Covid-19 related research. In addition, close cooperation with health authorities from the first steps of the programme development ensured that supported research is relevant for the health authorities, and researchers are in close contact with the potential users.

### Perception

NRCs Covid-19 response was well perceived and praised in the research community and society at large.

## Lessons learned and future plans

### Strong points

NRC relied on a dynamic team and internal research resources to manage the response, which worked very well. The Pandemic Vice president post and authority assigned to it made the response fast and successful. The autonomy and leeway given to the Vice president and the team and the reliance on internal resources were the key success factors. In addition, NRC tapped better than normal into their own and other government organisations' expertise. NRC believes that management of the response within the frameworks of existing programmes was a success, and avoided the pitfalls of attempting to build something new during a crisis.

NRCs Covid-19 response took higher risks, and the organisation was ready for projects that could fail. NRC managed to strengthen ties with the industry and harness the industrial sector's capacity for the benefit of Canadians. This was a positive development that might have positive implications for future work. Overall, through the experience, NRC has strengthened the organisation's resilience and readiness for future emergencies.

### Main difficulties

Managing the response was a task requiring significant effort. However, the sense of mission and realisation response is a fixed-term commitment as well as organisation-wide support allowed to deliver the response without any major problems.

Vaccine production capacity is a problem of national relevance in Canada. NRC's new Biologics Manufacturing Centre is a significant step in addressing the problem.

### Future plans

The Pandemic Response Challenge Programme will formally end on March 2022.

According to the NRC's Departmental Plan for 2021-2022, NRC will complete the commissioning and qualification of the new Biologics Manufacturing Centre (BMC). The BMC will contribute to the production of vaccine doses. The NRC will advance the development of a COVID-19 spike protein reference material, which will serve as a positive control sample for rapid antigen tests kits. NRC will develop COVID-19 antibody reference materials for determining population immunity. The NRC will support diagnostics and digital health clients in their transition to distributed healthcare, including the adoption of NRC pandemic response innovations (National Research Council, 2021e).

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#### Interviewees

**Jean-Francois Houle**, Vice-President, Pandemic Response Challenge Programme

**Andrew Procca**, programme manager, Pandemic Response Challenge Programme

**Flavia Leung**, Senior Policy Advisor, International Innovation Office

**Roscoe Klinck**, Senior Policy Advisor, International Innovation Office

## G.6 Funder information: National Science Foundation (USA), NSF

<b>Funder name</b>	<b>National Science Foundation, NSF</b>
Brief description	The National Science Foundation (NSF) is an independent federal agency created by Congress. NSF is the only federal agency whose mission includes support for all fields of fundamental science and engineering, except for medical sciences. Providing grants for promising scientific research is NSF's primary business and a key element of its mission. In addition to funding research in the traditional academic areas, the NSF also supports high-risk research (National Science Foundation, 2021a).
Mechanisms for responding to specific needs	<p>NSF has used its RAPID grant mechanism to fund urgent research before. The RAPID programme originated from the Small Grants for Exploratory Research programme introduced in 1990 and transformed to RAPID programme in 2009 (Wagner &amp; Alexander, 2013).</p> <p>Usually, RAPID awards result from principal investigators approaching NSF with an inquiry on a potential proposal. In other cases, and the case of Covid-19 pandemic program officers or chief operating officer, draft a Dear Colleague Letter sent out broadly to the research community, calling for RAPID proposals. The Dear Colleague Letter is usually used during a significant disaster. This approach to call for proposals was also used after Hurricane Katrina, the Haiti and New Zealand earthquakes, and the Fukushima nuclear disaster (Institute of Medicine, 2015). RAPID programme was also used to fund the response to Covid-19.</p>

### Funder's response to Covid-19

<p><b>Funder's mission and response to Covid-19</b></p> <p>NSF is the only U.S. federal agency that supports fundamental research across all fields of science and engineering. Thus during the pandemic, it was uniquely positioned to "gather a spectrum of scientific input, bringing to bear the best research on most complex national concerns." In its public communication, NSF emphasises the past investments it has made in basic research and how it laid the groundwork for today's scientific advances (National Science Foundation, 2020a; National Science Foundation, 2020c).</p> <p><b>Measures to mitigate the impact of pandemic</b></p> <p>To mitigate the impact of the Covid-19 pandemic on the NSF grant holders, NSF allowed extending an award for one year without needing to seek NSF approval. NSF also provided flexibility in salaries, reporting, charging cancelled travel, procurement requirements and others. Some departments switched to running programmes without deadlines and welcomed proposal submissions at any point (National Council of University Research Administrators, 2020). Virtual panels were used to assess proposals and are scheduled to continue to be virtual at least until September 2021 (National Science Foundation, 2021b).</p> <p>NSF faced substantial demand from the research community for extending the deadlines and introducing other measures to mitigate the impact of the pandemic. NSF relied heavily on the guidance provided by the Office of Management and Business (OMB) in administering its measures (National Council of University Research Administrators, 2020). OMB authorised federal agencies to provide certain short-term relief from administrative, financial management and auditing requirements for grantees involved in research related to Covid-19 (Congressional Research Service, 2020).</p>
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### **RAPID grant mechanism**

To fund NSF response to Covid-19, the Coronavirus Aid, Relief, and Economic Security (CARES) Act provided NSF with \$76m "to prevent, prepare for, and respond to coronavirus, domestically or internationally, including to fund research grants and other necessary expenses." (Senate Committee on Appropriations, 2020) The CARES Act implemented various programs to address issues related to the onset of the COVID-19 pandemic, and funding for NSF was one of the many funding streams approved by Congress. The funding was used for the funding (\$75m) and administration (\$1m) of the NSF RAPID grant mechanism, which supports fast response research of up to \$200,000 on natural or anthropogenic disasters and similar unanticipated events. NSF chief operating officer sent a Dear Colleague Letter to the research community calling for proposals to the RAPID mechanism. The duration of the supported projects is up to one year (Congressional Research Service, 2020).

Proposals for the RAPID instrument must be short (maximum 2-5 pages) and justify why the proposed research is urgent. Proposals are reviewed and approved by NSF officers, rarely relying on external reviews (National Science Foundation, 2011). NSF received thousands of proposals for the RAPID grants and had granted over 1 000 awards by the end of October 2020. To avoid duplication of research themes and projects, NSF performed internal coordination and consulted with other research funders (OECD, 2021a).

NSF also supported the creation of Covid-19 Information Commons, which is a public database facilitating knowledge sharing and collaboration across various Covid-19 research efforts. It contains detailed information about all NSF awarded RAPID projects (Covid Information Commons, 2020).

Examples of RAPID response funded research include the development of self-sanitising medical facemasks, research on how different temperatures, drying and other conditions affect the virus's ability to survive and research how water quality is affected by building closures (National Science Foundation, 2020b).

### **Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) calls addressing Covid-19 related research**

In addition, to support for basic research across all disciplines, NSF operates SBIR/STTR programmes focusing on the translation of the research outcomes and supporting business R&D. SBIR/STTR programme call addressing Covid-19 related research supported proposals directly focusing on urgent research with a potential to provide solutions to pandemic related problems. Applicants had to submit a short (maximum 2000 words) project pitch, and NSF aimed to provide funding within six weeks after the receipt of the proposal (National Science Foundation, 2020d).

### **Management challenges and lessons learned**

Providing oversight of grants during the pandemic is defined as one of six major management challenges the NSF faces in the fiscal year 2021. COVID-19 has added complexity to the grant management process due to the need to expend additional federal funds to address its impacts, as well as the health, economic, and societal impacts on NSF's recipient environment (National Science Foundation Office of Inspector General, 2020).

National Science Foundation Office of Inspector General, which provides independent oversight of the NSF programs and operations, found NSF RAPID response funding to be "reasonable, prudent, and consistent with the intent of the funding objectives. NSF is using existing funding mechanisms with established policies, procedures, and controls to disperse the funds, which reduces the risk of misuse and helps ensure accountability." (National Science Foundation Office of Inspector General, 2020)

The same NSF Office of Inspector General report also found great uncertainties about achieving grant objectives caused by pandemic disruptions, which creates challenges for NSF to ensure grant oversight. NSF may need to make difficult decisions about which grants to terminate, continue supporting at established funding levels, and support supplemental funding. NSF also must consider

how these decisions will impact the funding levels of future awards (National Science Foundation Office of Inspector General, 2020).

Contrary to many other funders, NSF had already operated a funding mechanism for rapid response to an urgent need for research. Although the scope of the Covid-19 pandemic and the demand for the RAPID mechanism cannot be compared to the previous crisis when this funding instrument was used, the mechanisms in place and previous experience helped NSF respond to Covid-19.

#### Other funders

The National Institutes of Health (NIH) was and still is the other major funder of Covid-19 related research in the United States, investing roughly \$1.8b in research on Covid-19. NIH has defined five strategic priorities for its investments: improving fundamental knowledge, advancing research to improve detection, support research to advance treatment, accelerate research to improve prevention and prevent and redress poor Covid-19 outcomes (National Institutes of Health, 2021). NSF made it clear to the research community that any research that involves the development or testing of vaccines or other therapeutics are considered medical research and should be referred to the NIH and not NSF funding instruments (National Science Foundation, 2020a).

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## G.7 Funder information: The Netherlands Research Council, NWO (and ZonMw)

<b>Funder name</b>	<b>Dutch Research Council, NWO</b> <b>The Netherlands Organisation for Health Research and Development, ZonMw</b>
<b>Brief description</b>	<p>The Dutch Research Council (NWO) is one of the most important science funding bodies in the Netherlands, and its mission is to advance world-class scientific research. Each year, it invests almost €1b in curiosity-driven research related to societal challenges and research infrastructure. NWO focuses on all scientific disciplines and the entire knowledge chain, emphasising fundamental research (NWO, 2021a).</p> <p>NWO encourages national and international collaboration, invests in large research facilities, facilitates knowledge utilisation and manages research institutes. In realising its tasks, NWO's primary focus is on university research (NWO, 2019).</p> <p>NWO is an Independent Administrative Body and has public authority. The Minister of Education, Culture and Science is responsible for the NWO policy and its monitoring. NWO receives public funding from this ministry and almost all the other government ministries. The funding is distributed using competition to the universities and national research institutes (NWO, 2019).</p> <p>ZonMw stimulates health research and care innovation throughout the entire knowledge chain from fundamental research to implementation. Through various subsidy programmes ZonMw promotes and funds development and practical application in the area of prevention improvement, care and health. ZonMw is an independent self-governing organisation. The Minister of Health, Welfare and Sports is responsible for the ZonMw policy and its monitoring. ZonMw's main commissioning organisations are the Ministry of Health, Welfare and Sport and NWO. The funding is distributed using competition to the universities, national research institutes and health care organisations.</p> <p>Both NWO and ZonMw select and fund research proposals based on recommendations from peer scientists and other experts in the Netherlands and abroad.</p>
<b>Mechanisms for responding to specific needs</b>	<p>NWO and ZonMw introduced very rapid response for the first time in reaction to Covid-19. For its activities, ZonMw was supported and financed by the Ministry of Health, Welfare and Sport and by NWO. ZonMw has performed rapid response procedures before e.g. in outbreak situations.</p>
<b>Funders approach to interdisciplinary research and high risk or transformative research</b>	<p>The Ministry of Education, Culture and Science mandated NWO to prioritise fundamental research in the Dutch National Research Agenda and the top sectors with the new focus, whilst ensuring ample room for curiosity-driven research (NWO, 2019).</p> <p>In recent years, the NWO organisation has been adjusted so that it can optimally fulfil its tasks. NWO has moved to an organisation consisting of three disciplinary domains, and alongside ZonMw it organises coherent programming for research funding, in which ZonMw covers the health sector. Also, the governance and management of the nine NWO institutes have been brought together in the foundation of NWO-I, which has enhanced the role of the NWO institutes in realising NWO's strategic plan. In addition, NWO and ZonMw have knowledge of and experience with supporting applied and practice-oriented research. Consequently, the organisations are well-equipped to connect partners from the entire knowledge chain across the boundaries of disciplines and sectors (NWO, 2019). An interdisciplinary approach is evident also in the programmes run by the NWO. For example, the NWO's Knowledge and Innovation Covenant programme, which focuses on societal challenges using</p>

	<p>mission-driven research, has made interdisciplinary research a priority and interdisciplinary project proposals are funded and is a condition for research proposals within the mission-driven calls (NWO, 2021).</p> <p>NWO's and ZonMw's rapid response to Covid-19 did not have a strong interdisciplinary focus. However, the Covid-19 programme led by ZonMw encouraged collaboration between the medical streams it supported and social science research, which was also a part of the programme financed by NWO.</p>
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**Funder's response to Covid-19**

**Funder's response to Covid-19**

NWO responded to Covid-19 by launching the Corona: Fast-track Data call to support immediate data collection possible only during the crisis, and together with its sister organisation, the Netherlands Organisation for Health Research and Development (hereinafter ZonMw), launched a more substantial Covid-19 research programme. ZonMw also started together with the GO FAIR Foundation initiative, the 'Virus Outbreak Data Access Network' (VODAN) for the coronavirus and COVID-19. The purpose of this implementation network is to share data on the current outbreak of coronavirus in such a way that they become accessible to learning algorithms.

In parallel to this, NWO and ZonMw introduced measures to mitigate the impact on ongoing research projects.

**Fast-track data**

To support an immediate collection of data possible only during the pandemic, NWO introduced the Corona: Fast-track Data call for proposals in April 2020. The call for proposals focused on research conducted at the height of the corona crisis, specific research into issues other than medical and healthcare issues that arise in society during the crisis.

This instrument was intended solely for research into issues arising in society during the corona crisis. The research had to be relevant to the learning capacity of society during the corona crisis or to the management of the crisis and - and had to require the gathering of real-time data that could only be collected during the crisis. Potential research topics included the fight against the pandemic, drug development, improvements in current care, population behaviour and behavioural changes in the Netherlands, and their impact on the spread of the virus, social and economic consequences and the impact of measures on the well-being of the Dutch population. NWO provided €1.5m to fund data gathering and analysis. Many projects were already in progress to gather essential information that could only be collected during the pandemic. This call was intended to support such existing projects, but funding could also be requested for new projects (NWO, 2020).

**COVID-19 programme**

ZonMw had the lead role in implementing the Covid-19 research programme. The programme was largely funded by the Ministry of Health. NWO provided part of the programme's budget and was involved in the programme design, while ZonMw led the programme design and ensured the practical implementation of the programme. ZonMw implemented the programme in two waves.

#### First wave Covid-19 incidental subsidies

The first wave Covid-19 programme supported eight critical projects in the total value of €5.5m with a direct effect on the pandemic. ZonMw organised the work of an expert panel that had the task to prioritise the most urgent, critical research subjects in the first stage of the pandemic. ZonMw did not organise an open call for proposals because of the urgency. Instead, based on the expert panel advice, specific research groups or principal investigators were asked to submit research proposals and received incidental subsidies. The funders used this very short and closed application procedure because of the need to act quickly. Examples of the supported projects include studies into the safety and efficacy of antibodies to the coronavirus, research into carrier status, burden of disease and transmission from and to children and research in the field of hospital epidemiology to support infection prevention measures (ZonMw, 2020b).

#### Second wave Covid-19 programme

The second wave Covid-19 programme was partly organised as open competition and focused on research aimed at the effects of the crisis and the measures taken against the pandemic. The programme supported three focus areas (ZonMw, 2020d):

1. Predictive diagnostics and treatment
2. Care and prevention
3. Societal dynamics

Bottom-up calls for proposals were published for all three focus areas. At the same time for all 3 focus areas some research groups were asked to submit proposals on specific subjects based on experts advice, similar to the incidental subsidies described above. These were so called top-down subsidies. The bottom-up and top-down subsidies together funded 105 projects in 2020. Additional call for proposals *COVID-19 Science for professional practice* was published for small projects and studies with a maximum budget of €25,000. The call for proposals was intended for research realised by collaborations between scientific organisations and businesses, public organisations, administrative bodies or local governments. The scientific organisations applied on behalf of the collaboration. 56 projects were funded. This call for proposals focused on the three focus areas of the COVID-19 Programme (NWO, 2021b). Further ZonMw hosted a call on creative practical solutions within and outside the health care system (e.g. on medical supplies, and ideas to support vulnerable groups), small projects of €7.500 or €15.000. 79 small projects were funded.

#### Measures to mitigate the impact of the pandemic

NWO and ZonMw introduced several measures to mitigate the impact of the pandemic. For NWO this included extending the deadlines for proposal submissions, increasing the periods for rebuttals, moving meetings and interviews online, extending the project completion deadlines and others (NWO, 2021b). ZonMw extended deadlines for submitting progress and final reports for ongoing projects, organised digital interview meetings and introduced other specific measures for particular programmes (ZonMw, 2020c).

## Funder's mission for Covid-19 response and priority setting

### Funder's mission for Covid-19 response

NWO's short-term mission for responding to Covid-19 was to rapidly provide resources needed for urgent data collection during the crisis. The longer-term mission was to fund, together with Dutch health research organisation ZonMw, research directly related to the pandemic, recognising the relevance of health research and the contribution of social sciences.

The decision to introduce the Fast-track data programme was made by the three NWO Domain Boards. Members of the three Domain Boards defined the mission for the programme, and no other parties were involved in defining this programme.

The decision to introduce and fund the more substantial Covid-19 research programme was made together by the Ministry of Health, Welfare and Sport and Ministry of Education, Culture and Science and NWO. The ministries asked NWO and ZonMw to jointly design and implement the programme, acknowledging the role of health-related research in this crisis. Together with the ministry, NWO provided funding for the programme and assistance in expert selection for the societal dynamics research stream of the programme because ZonMw had previously funded only few of such studies. NWO was not involved in other aspects of the practical implementation of the programme.

### Budget and human resources for response to Covid-19

In 2020 NWO invested €13.5m and ZonMw €43m in Covid-19 research. The funding originated from different organisations and funding sources (see Table 1). For the Fast track data programme, NWO re-distributed some internal strategic funds and made the decision independently.

For the more extensive Covid-19 research programme, the decision to invest in Covid-19 research was made together by NWO, the Ministry of Health, Welfare and Sport and the Ministry of Education, Culture and Science. The two ministries also contributed funding to the Covid-19 research programme. Furthermore, the respective organisations decided to task NWO and ZonMw to deliver the Covid-19 research programme jointly. This is because the Ministry of Health, Welfare and Sport and the Ministry of Education, Culture and Science respectively oversee the operations of ZonMw and NWO.

NWO did not report any challenges with securing funding. The health research funder ZonMw that implemented two waves of the Covid-19 programme with a budget of €56.5m in 2020, reported that commitment and funding from the ministries and government at the beginning of the pandemic was sufficient. To put things in perspective – the annual budget for all infectious diseases before the pandemic was around €6m (per year), while during the pandemic, it reached €56.5m for Covid-19 alone in 2020. However, it is more challenging to convince the decision-makers that further investment is needed, for example, on long COVID, on effects of Covid on non-Covid healthcare, on epidemiology and transmission (e.g. new variants) and on social sciences, to understand socioeconomic consequences or vaccine resistance. When the interview was conducted, the government was not yet formed after the recent election, thus delaying investment decisions.

### Overview of Covid-19 research funding sources in 2020

	Total	NWO	ZonMw	Ministry of Education, Culture and Science (via NWO)	Ministry of Health, Welfare and Sports
<b>Fast-track data programme</b>	€1.5m	€1.5m			
<b>First wave Covid-19 research programme</b>	€6.5m	€1.5m	€1m		€4m
<b>Second wave Covid-19</b>	€50m	€10m	€1 m	€2m	€37m

<b>research programme</b>					
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Source: ZonMw, 2020a and interview with NWO and ZonMw

Both NWO and ZonMw faced challenges with increased workload associated with management and rapidness of Covid-19 response. To address these challenges, the funders re-allocated human resources to support the Covid-19 response, which meant some delays in other, non-essential tasks.

### Setting research priorities

NWO and ZonMw relied strongly on internal and external expert advice when deciding about the research priorities. Further, projects had to be able to start immediately. For the first wave, the Covid-19 research programme external expert group had great control over the programme because it suggested specific research groups to fund. The Netherlands is a relatively small country, and in some disciplines, it was clear that only one group can perform specific research topics relevant for the public authorities. Therefore, funders did not organise an open call for proposals to quickly deliver the funding to the relevant groups. This was a crisis measure and also received some criticism from groups that did not receive the funding. In addition to the recommendations about ranking made by the expert group, two additional projects were added at the advice of the National Institute for Public Health and the Environment and Ministry of Health, Welfare and Sports, respectively (ZonMw, 2020a).

Both funders consulted with experts when deciding about the priorities of the two other programmes – The fast track programme and the Second wave Covid-19 research programme. Both organisations employ programme managers with a background in science, and programme managers hold the relevant expertise, but NWO and ZonMw also sought external expert advice from their networks. NWO has domain boards, the members of which are academic researchers (usually full professors), and they took an active role in setting up the Fast-track programme.

Both organisations have high independence and are expected to host the research expertise needed to decide about research priorities. Therefore both organisations had the freedom to decide where to target the Covid-19 research investments. Both funders did not take deliberate steps to coordinate the response globally and relied on expert advice because the consulted experts are internationally recognised and active. One of ZonMw experts, epidemiologist and manager of the Covid-19 research programme Suzanne Verver (also interviewed for this study), represents the Netherlands in Global Research Collaboration for Infectious Disease Preparedness (GloPID-R), intending to facilitate an effective coordinated research response.

The ministries overseeing the funders made some programming decisions considering the themes and disciplines relevant for Covid-19 research in the ZonMw administered programme. ZonMw took the initiative to start a programme, and the Ministry of Health, Welfare and Sports commissioned the funding and implementation to ZonMw. NWO and Ministry of Education, Culture and Science also decided to contribute to the programme. That way, the programme could better support interdisciplinary research between health and social/societal science disciplines. ZonMw administered the programme, and it was for the first time this funder worked with e.g. economic science researchers.

### Timing of the response

ZonMw introduced the first measures in March 2020 and did it very rapidly for the Covid-19 programme. The three NWO Domain boards decided in March 2020 to introduce the Fast track programme. Although it was a completely new programme for NWO, it took only four days from the decision to publish the call for proposals. NWO allocated the funding following the “first-come, first-serve” principle. The call for proposals was published on Friday, and by Tuesday the following week, NWO had received enough applications to be able to allocate all budget (€1.5m). The programme provided grants up to €50.000. The first projects were completed by the end of September 2020. The Dutch researchers sometimes used data collected through the Fast-track data programme and the ‘science for practice’ round from ZonMw in larger research projects funded in the more substantial Covid-19 research programme. A sense of urgency allowed for the very fast introduction of the programme. Because of the small grant amount NWO chose to assess the applications without peer-review. The way the funding was distributed caused some complaints from the research community. For example, the publication of the call on Friday in a call that distributes funding on a first-come-

first-serve basis was criticised as being unfavourable for researchers not able to work during the weekend, because of care responsibilities, for example. Others were disappointed to learn that the funding had run out very quickly due to high demand.

NWO and ZonMw introduced the more extensive Covid-19 research programme in two waves. Due to the urgency and willingness to quickly deliver the funding to relevant research groups, the first wave of the programme funding was distributed based on external expert group advice. This allowed providing the funding to the researchers fast and was an exceptional measure triggered by the crisis. The second wave of the programme was partly an open competition, and ZonMw used peer-review to assess the proposals. The time to prepare proposals and peer-review was faster than usual. Typically, ZonMw provides 2-3 months for proposal submission. For the Covid-19 research programme, the deadlines were in two weeks from the publishing of the call. Peer review typically took 2-3 weeks. For the Covid-19 research programme, ZonMw asked the peers to provide feedback in a few days. For ZonMw total time from call to grant allocation is normally 6-9 months, and it was much faster in the COVID-19 programme - for the top down subsidies around four weeks, and for the bottom-up subsidies around 10 weeks.

According to ZonMw, there were several challenges in developing a quick programme: crisis time, working from home, and getting agreement between ZonMw and NWO using different systems and organisational structures. Otherwise, both NWO and ZonMw are satisfied with the response they organised and the timing and rapidness of the response.

## Organisational changes to manage the response

### Management of the response

NWO and ZonMw primarily managed the response in the scope of existing organisational structures and processes. For the Fast-track data programme, which was new for NWO, a dedicated team was set up consisting of staff re-allocated from different departments for the duration of the programme. For ZonMw, one challenge arose because of the interdisciplinary nature of the Covid-19 research programme they administered. In the scope of the Covid-19 research programme, the health research funder ZonMw had to administer also submissions from social science and eg economic researchers that NWO usually funds. This resulted in some difficulties for the new applicants who had to use the ZonMw application system instead of the usual NWO system. ZonMw had to invest more time to support this group of applicants.

## Project selection and quality assurance

### Project selection

NWO and ZonMw used different project selection mechanisms in their Covid-19 response, and the chosen approach largely depended on the programme objectives and urgency.

Due to the urgency and the relatively small amount of grants for the Fast-track programme, NWO bypassed peer-review and relied on their staff to select the projects. Overall, NWO is satisfied with how the programme and project selection process worked and may consider using similar mechanisms in the future after a careful review of the recent experience. Programme managers involved in the project selection did not face any particular difficulties when making funding decisions. The programme aimed to fund very rapid data collection, and to reach its objectives, it had to start immediately. Assessment criteria were focussed on these aspects, which made it realistic to assess in this manner.

Urgency also guided the First wave Covid-19 research programme. ZonMw relied on the external expert group that suggested the most urgent research topics in the Netherlands and specific research groups that could deliver the relevant research. The funding was distributed to the research

groups or principal investigators based on the expert group suggestion, and also review by committee members. For the Second Wave, the Covid-19 research programme ZonMw relied on peer-review, which was accelerated compared to the usual process. To support health funder ZonMw, NWO provided suggestions on peers to review social science projects as ZonMw had limited experience in funding outside the health domain.

ZonMw noticed that some of the rapidly selected research projects needed adjustment in the implementation. Several projects performed re-planning during the implementation because of the unanticipated problems during the rapid proposal development phase. Therefore, ZonMw management is still discussing if and how any of the fast approaches will be used after the pandemic.

## Communication, dissemination and perception of the response

### Communication and dissemination activities

NWO and ZonMw communicated about the Covid-19 response through their regular channels well known to the research community. In addition, both set up targeted sections in their websites containing all relevant information.

To disseminate the research results to the relevant public authorities, every two months, ZonMw sends project monitoring results to the Ministry of Health, Welfare and Sports and the National Institute for Public Health and the Environment (RIVM) managing the Covid-19 response in the Netherlands. NWO and ZonMw have also organised events bringing together researchers they have funded and the Ministry of Health, Welfare and Sports and the National Institute for Public Health and the Environment to discuss the findings, potential use and next steps. Furthermore, ZonMw and NWO encouraged researchers to make the collected data and results publicly available as soon as possible so that other research groups and other users could benefit from it (Open Science, FAIR data). The funders have observed that researchers actively approach the relevant authorities and have already established close contact. Thus NWO and ZonMw are convinced the research results have been widely disseminated and are made use of.

### Perception

Overall, NWO and ZonMw quick response was well perceived and praised by the research community enabling urgently needed research findings for the benefit of the society.

## Lessons learned and future plans

### Strong points

The Dutch funders are proud that they managed to organise the response fast and successfully. NWO and ZonMw substantially adjusted programming and review processes, and to the perception of both NWO and ZonMw, this worked well, and the funding reached the target groups quickly. Realising the objectives of the Covid-19 response, this is a good achievement.

Organisations involved in the decisions about the shape of the response acknowledged the need for social science contribution, and therefore the Covid-19 research programme was implemented jointly between the two funders. Although joint programming and implementation were not without challenges (see next section), the programme supported close work between the disciplines. For example, interdisciplinary work is performed on long Covid by health scientists focusing on health impacts while social scientists review the consequences for affected peoples work and life habits.

Besides the above mentioned VODAN network, ZonMw also started a new approach for research data management and stewardship (RDM). Its objective is to make RDM of added value for researchers, to tailor RDM requirements according to the specific research topics and disciplines in research programmes, and to stimulate the use of standards to improve the interoperability of research data. Metadata schemes have been developed for a Dutch health data portal ([COVID-](#)

[19 data portal | Health-R|](#)), starting with COVID-19 and currently being adapted for other infectious diseases.

#### Main difficulties

To support interdisciplinary research, the joint programming of the Covid-19 research programme was not without its challenges. Joint programming slightly delayed the launch of the programme and complicated the application process. Also, ZonMw reported now, when the crisis is ending, it is hard to secure further funding for many subjects (see above) on Covid-19. However, the funder observes many relevant topics to be further explored.

Both organisations have experience with urgency and rapid responses. However, the crisis mode of the pandemic combined with the new working environment was challenging for both funders.

#### Future plans

NWO has closed the Fast-track data programme, and currently, Covid-19 research can be funded through regular calls. The supported projects of Fast-track data programme are finished, and of the ZonMw programme's the small projects are finished and the large projects are ongoing, and NWO and ZonMw monitor the progress and update health authorities on the results.

In 2021 ZonMw is developing a follow-up Covid-19 research programme and has already secured funding from the Ministry of Health, Welfare and Sports to fund research on vaccination and treatment and small funding for long Covid (total around €70m). However, funding for other Covid-19 related research, including longer follow-up studies, epidemiology, transmission, non-covid care and social science research is not yet secured, and it is not clear if it will be funded.

ZonMw is reviewing the recent experience in addressing the pandemic. Both ZonMw and NWO have not yet made very specific conclusions about what (and if) will change in the operations considering the recent experience. The ability to act fast and perform more research funding tasks remotely was a good lesson, but it remains to see if elements of Covid-19 response will stay.

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#### Interviewees

**Documents consulted**

Dr Carlien Hillebrink, policy advisor and worked on NWO Corona: Fast track Data programme  
Dr Suzanne Verver, Covid-19 senior research programme manager at ZonMw

## Appendix H Terms of reference: aims and indicative questions

### 1. Aim

UKRI is committed to a rigorous evaluation of its Covid-19 research and innovation response to learn any lessons and to assess the impact of the response. This evaluation will comprise a process review and separately an impact evaluation. This tender is for a process review.

The process review will seek to identify the role UKRI played in terms of the UK Government's Research & Innovation response to Covid-19 and will bring together views of and evidence from relevant parties on UKRI's role. UKRI is an independent organisation that brings together the seven Research Councils, Innovate UK and Research England. The focus of the process review will be on how UKRI worked, and therefore on the interactions between the different parts of UKRI. However, the review will also need to consider how UKRI worked and interacted with external actors, both within the UK (including with the UK Government (eg SAGE, DHSC, HMT) and with the devolved administrations and with other research organisations nationally and internationally). The review will also consider the extent to which UKRI's pre-existing organisational structures – as well as any changes made thereto as part of UKRI's response to Covid-19 – enabled or inhibited its Covid-19 response, and the adequacy and appropriateness of UKRI's R&I response (based on what was known and needed at the time of decision making, during the height of the response). The review should identify strengths as well as areas for improvement.

This process review should look at UKRI's R&I response holistically. However, in order to provide this holistic review, it will be necessary to consider the processes for each of the individual interventions.

UKRI's R&I response to Covid-19 can be summarised as:

- Various forms of funding to support research and innovation to understand, tackle and/or mitigate the Covid-19 pandemic
  - UKRI open call for Covid-19 focused research
  - DHSC/UKRI rapid response initiative
  - GCRF/Newton Fund agile response call to address Covid-19
  - Whole Genome Sequencing Alliance
  - GenOMICC Consortium
  - Global Effort on Covid-19 (GECO) Health Research – UKRI/DHSC
  - Covid-19 Africa Rapid Grant Fund - Newton
  - Innovate UK competition for Covid-19 focused innovation
  - Ventilator Challenge scale-up
  - Vaccines Manufacturing Innovation Centre scale-up
  - Increasing testing capacity
  - ACCORD – Accelerating COVID1 – Research and development platform (UKRI/DHSC)
  - RECOVERY (Randomised Evaluation of Covid-19 Therapy) trial (UKRI/NIHR)
- Non-financial interventions
  - Changes to UKRI's funding and operational processes (eg virtual peer review)
  - Communication and dialogue with the R&I community and wider public
- Business as usual
  - Funding for Covid-19 focused research
  - Re-purposing of existing grants towards Covid-19 focused research

This process review will gather evidence that will be used to help assess the effectiveness of UKRI's R&I response by looking holistically at the overall UKRI response and:

- a. Understanding the environment within which UKRI was operating. UKRI's response began before the pandemic affected the UK and continued as the pandemic unfurled. At the same time UKRI "business as usual" continued. It will be important to place the changes made and decisions taken in context;
- b. Summarising the actions taken by UKRI and placing these actions in the context of the environment within which UKRI was operating. This needs to include an assessment of the information available when decisions and actions were taken, and the bodies available to assess the information);
- c. Gather evidence and perceptions from key stakeholders on UKRI's R&I process in terms of what was done, how and why;
- d. Identifying any organisational or environmental factors that enabled the Covid-19 response, how and why they enabled the changes as well as any that slowed or inhibited process changes;
- e. Identify and record any lessons learned, both to identify short-term changes that could be made as well as lessons for design and delivery that could be considered for the future. This should include a consideration of whether UKRI has appropriate and effective cross-UKRI horizon scanning systems in place to enable it to mount an effective system wide response, and the extent to which it is able to flex resources across the organisation to deliver priorities.

## **2. Review Questions**

- a. This review forms the first stage of a wider programme of work to evaluate UKRI's response to Covid19. Some of the questions for this review have been developed to support the wider evaluation. The intention is to build an evidence base to determine the success of UKRI's

response and to inform lessons learned for the future. This evidence base may also be used more widely, for example, as Government more generally learns lessons from its Covid19 response or in planning for future pandemics.

Audience and purpose of the question	Sub evaluation questions
<b>Appropriateness – process review questions</b>	
<p><b>For UKRI - To understand [how the organisational structure facilitated the changes, and the speed at which changes were made, to help UKRI] to learn lessons for the future</b></p>	<p>As part of the review, a set of questions will be refined, these will include but will not be limited to the following areas:</p> <ul style="list-style-type: none"> <li>- Strategic Rationale               <ul style="list-style-type: none"> <li>o What role did UKRI play? To what extent was this role decided by UKRI versus a role UKRI was encouraged to adopt? To what extent did this response need, and was able, to flex as the pandemic unfolded? How were decisions taken? What was the governance for decision taking?</li> <li>o When and how did UKRI's R&amp;I response to Covid-19 begin? UKRI's response was largely managed within business-as-usual. What were the advantages, and disadvantages of this? What are the lessons? Where there were differences compared to business as usual, what were these differences? Were these planned and anticipated? What drove any differences?</li> </ul> </li> <li>- Funding and process changes               <ul style="list-style-type: none"> <li>o To what extent were funding and/or application processes changed? Did these changes adequately reflect the objectives of the Covid19 response? Did the changes achieve the objectives? What was the effect of funding and process changes?</li> <li>o To what extent were the Covid-19 funding streams distinct from business as usual? To what extent were appropriate policies in place to empower these different funding routes? Were these policies used effectively? Were the distinctions clear to staff and potential applicants?</li> </ul> </li> <li>- Governance               <ul style="list-style-type: none"> <li>o How were decisions taken? What was the governance process for Covid-19 R&amp;I? How did it differ from business as usual and to what extent did it facilitate the Covid-19 response?</li> </ul> </li> <li>- Operations/delivery               <ul style="list-style-type: none"> <li>o To what extent did UKRI have a plan that it could roll-out for managing a its response to a pandemic? Was this plan followed and if so was it effective?</li> </ul> </li> </ul>

- To what extent did the Covid19 response impact on “business-as-usual” activities? What was the impact? Was it anticipated? Are there lessons from this?
- How was the Covid-19 response resourced? How were resourcing decisions taken? Was UKRI able to sufficiently flex resources across UKRI to resource priorities? Was this sustainable?
- **Communications**
  - How was UKRI’s response to Covid-19 communicated? What was the Covid-19 communications strategy? Was it effective was it? What was its impact
  - What could we learn from this process to take forward? In keeping the R&I community engaged?
- **Assessment process**
  - To what extent did the assessment process for the Covid-19 funding streams differ from BAU?
  - To what extent did the assessment process meet its objectives? What was the outcome (compared with BAU)?
- **Monitoring process**
  - How is the Covid-19 response being monitored? By whom? What monitoring information is being collected? By whom? How is the monitoring information being used?
  - To what extent, and why, does the monitoring process for Covid-19 differ from BAU monitoring?
  - Are there any data deficiencies identified that might have some implications for the evaluation of the Covid19 response?

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