



Monitoring and evaluating the effectiveness of UKRI's open access policy

Principles, opportunities and challenges

Executive Summary

Prepared on behalf of UK Research and Innovation

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Executive Summary

Introduction

Background

UK Research & Innovation (UKRI) commissioned Research Consulting to support the development of a monitoring and evaluation (M&E) framework for its open access (OA) policy for research articles and long-form publications.

The framework seeks to enable UKRI and the broader sector to assess progress towards OA, including levels of compliance with the UKRI policy and impacts on research stakeholders and society more broadly. M&E efforts are in line with UKRI's commitment to assess the effectiveness and impact of its OA policy, as well as demonstrating accountability and value for money from public spending.

This [Executive Summary](#) and the [full report](#) present Research Consulting's recommendations, which will be considered by UKRI in the development of its final M&E framework. At this stage, there is no expectation of immediate actions required from research performing organisations, publishers and other stakeholders.

For further information, please refer to the full report [available via Zenodo](#), as well as the [data specification \(Annex A\)](#) outlining the recommended approaches to answering the M&E questions identified. We note that the Annex includes detailed information on possible ways to operationalise the recommended M&E approach, covering data sources, aggregation and analysis methodologies.

Insights supporting our recommended next steps for the operationalisation of the M&E approach are presented across this Executive Summary and are **highlighted in dark blue colour**.

Policy context

UKRI's open access policy was announced in August 2021, with key requirements including immediate open access for all UKRI-funded articles (from April 2022) and open access within 12 months of publication for long-form outputs (from January 2024). This followed a long history of supporting progress towards open

access in the UK, which initially coalesced after the [2012 Finch Review](#). More recently, UKRI's decision to join [cOAlition S](#) further showcased a desire to work in partnership to achieve open access nationally and internationally.

Open access also affects a broad range of adjacent policy areas, which were considered as part of the M&E approach. Examples include [Equality, diversity and inclusion \(EDI\)](#); [open data sharing and adoption of FAIR principles](#) (Findable, Accessible, Interoperable and Reusable); [research and innovation culture](#); [research integrity](#); [research reproducibility](#); [responsible research assessment](#); and [research bureaucracy](#).

Methodology

The project took place between August 2022 and August 2023. It comprised two main phases and involved a total of 76 contributors across the research and publishing sectors:

- Phase 1 was designed as a broad stakeholder consultation in the form of semi-structured interviews and focus groups with open access experts. These were supported by in-depth desk research investigating existing M&E frameworks, informing the collection and development of a longlist of over 100 potential M&E questions. These questions were refined and narrowed down to form the basis for a discussion workshop.
- Phase 2 built on the feedback received at the end of phase 1, leading to a final set of recommended M&E questions, a final report and a detailed data specification to inform the recommended pilot stage of future M&E efforts. This was achieved via an iterative approach, through further consultation with UKRI and additional interviews.

In designing the recommended M&E approach, we considered the guidance and principles included in the UK Government's [Green](#) and [Magenta](#) Books. These were complemented by the inclusion of bibliometric analysis as an assessment methodology, as this is essential to monitor and evaluate open access policies.

We note that other research funders have ongoing M&E exercises, mostly focusing on quantitative measures for research articles. As part of our investigation, we have sought to engage a subset of

these funders to learn lessons and better understand current approaches to M&E (FWF – Austria, DFG – Germany, NWO – Netherlands, Wellcome – United Kingdom).

Limitations

This work has three main limitations:

- contributors were recruited via convenience sampling, i.e. we consulted people who were both available and willing to participate. Contributors may therefore not be fully representative of the broader academic community
- the analysis of qualitative data (literature, interview and focus group transcripts, focus group exercises) is underpinned by thematic coding, which relies on a degree of subjective interpretation
- the assessment of feasibility and resource intensity for answering M&E questions is not based on testing but on our detailed understanding of the sector, data sources, available application programming interfaces (APIs) and ease of aggregating information.

Overall, we do not consider these limitations to have a significant effect on the credibility or validity of the findings or recommendations outlined in the report, as they were mitigated by securing input from a diverse set of contributors with different backgrounds and areas of expertise.

Principles for M&E

Rationale for M&E efforts

M&E will enable UKRI to assess progress towards open access, compliance with the policy, as well as the effectiveness of the policy. In addition, M&E efforts can help assess wider impacts of open access and demonstrate accountability for investment of public money.

Contributors supported these aims, so **we recommend that UKRI's monitoring efforts focus on positively supporting future policymaking and improving communication, awareness-raising and sharing of best practice.** Contributors generally welcomed the consultative approach taken to policy and M&E development and emphasised the importance of a continuing role for co-creation and iteration with stakeholders.

Key M&E principles recommended by contributors.



Practical considerations

M&E questions will need to cover both research articles and long-form outputs and be underpinned by definitions understood by the research community, using clear, unambiguous and unbiased language. **UKRI should ensure that terminology is clear, by engaging research performing organisations and publishers to test definitions prior to implementation.**

In addition to quantitative (including bibliometric) assessment of whether policy requirements are being met, the inclusion of qualitative analysis will enable UKRI to assess the potential unintended consequences (positive and negative) as well as wider impacts of the open access policy. This includes qualitative investigation of the expectations and experiences of individual researchers, institutions and publishers. This may include, for example, the impact of open access on individuals at different career stages or Equality, Diversity and Inclusion considerations.

UKRI should share monitoring and evaluation results and lessons learned publicly, in the spirit of open data and transparency regarding use of public funding. Open sharing of data can also reduce reporting burden and bureaucracy by enabling the reuse of information to address other or emerging reporting needs.

Recommended areas of focus

Articles

Contributors acknowledged clear benefits that may arise from M&E in the context of articles, particularly in relation to the social and economic impact of open access, enhancing accountability and transparency, providing evidence to inform policy development and assessing the effects of transitional agreements and transformative journals.

Given the gaps in funder and organisational affiliation metadata and the complexity of assessing wider outcomes and impacts, **UKRI should consider a pilot stage to reassess and update the prioritised monitoring and evaluation questions based on emerging results.**

Long-form outputs

The analysis of open access long-form publications at scale would contribute significantly to understanding this less mature landscape. For example, UKRI's M&E approach may shed some light on researcher needs and behaviours as well as on publication business models, potentially informing further work and experimentation. The collection and sharing of case studies and success stories on long-form outputs is seen as a positive contribution to behavioural and cultural change.

The (meta)data for long-form outputs is significantly underdeveloped compared to articles, with limited use of persistent identifiers. However, contributors agreed that this area should be assessed, even if data sources may be limited. **UKRI should iterate and review the monitoring and evaluation approach for long-form outputs as the landscape continues to develop.**

Broader open access landscape

UKRI should carefully scope out questions on the societal impact of open access, to avoid scope creep. We recommend that a small and tightly scoped set of broader impacts is analysed as part of M&E questions and note that UKRI should identify an appropriate frequency for qualitative investigation that takes

account of the resources available and the likely burden on respondents.

In addition, contributors recognised a range of facets of international open access publishing that would benefit from M&E efforts. Although not a primary focus of M&E in a UKRI context, we have recommended that a subset of questions do touch on the international OA landscape (Annex A).

Affordability of OA publishing

Several financial parameters can be monitored around open access articles, for example Article Processing Charge (APC) levels paid; the cost of transitional agreements; the costs involved in starting and operating diamond open access journals and platforms; the costs involved in the green route;¹ and the impact of using block grant awards in furthering the open science agenda. There are emerging concerns from smaller publishers (particularly, but not only, in the case of books) that existential issues may arise if funding mechanisms, as well as M&E efforts, are focused on the Book Processing Charge (BPC) and APC models alone. We note that, given that the long-form outputs' open access landscape is less mature, monitoring financial sustainability is more difficult and may not be possible in all cases. As a result, **M&E questions should cover a variety of funding models and not only focus on the APC and BPC approaches.**

Organisational and global equity

Differences between institutions, funders and other research stakeholders should be considered, including in the context of research performing organisations, where small institutions may have less resource to support open access within their internal systems; and in the context of the diversity of publishers in the scholarly communication ecosystem.

UKRI should consider monitoring the impact of its open access policy on global equity. Global inequalities in open access publishing include the reliance on the APC publication model in high-income countries, which is known to create barriers to access for authors in a range of low- and middle-income countries. UKRI's

¹ Under the green route, accepted manuscripts arising from research are posted to a public institutional or subject repository after peer-review. Green open access is referred to as Route 2 in UKRI's OA policy.

M&E findings may support **ongoing efforts** to investigate globally fair pricing models for open access publishing, feeding into work led by cOAlition S, UNESCO, the International Science Council, the Open Access 2020 Initiative, Electronic Information for Libraries, the Association of African Universities and Science Europe. The emergence of such initiatives further stresses the international nature of academic publishing and the need for reliable data as well as partnership to address global equity challenges.

Next steps

Overarching M&E strategy

UKRI should use **contribution analysis as the core evaluation strategy**. This approach is helpful in cases where one needs to understand the likelihood that an intervention (i.e. the introduction of the open access policy) has contributed to a series of observed outcomes and is particularly appropriate where it may not be possible to establish an experimental design testing cause and effect. One of the strengths of contribution analysis as a methodology is that a broad range of evidence types can be used to inform conclusions, and such a mix is necessary to examine a complex policy landscape that involves multiple stakeholders. The evidence types to inform UKRI's M&E efforts should include quantitative (including bibliometric) data on individual research outputs to assess policy effectiveness and compliance, plus qualitative information on the publishing landscape to collect narratives and experiences around policy implementation. The evidence collected via the recommended M&E questions will also provide insight into value for money, but we note that a full assessment in this direction would require the consideration of additional financial data and is beyond the scope of this work.

In the proposed M&E strategy, difference-in-difference analysis is recommended as a source of evidence to inform contribution analysis. This is a quasi-experimental method that compares trends across comparable groups before and after the introduction of an intervention. For example, the collection of data for both UKRI-funded and non-UKRI-funded but UK-affiliated authors could enable the tracking of behaviours in key policy dimensions from the time the policy was introduced (e.g. no embargo period, choice

of appropriate licence, choice of appropriate open access pathway).

Recommended M&E questions

The prioritised list of 20 questions presented on p. 6 has been identified by assessing a range of dimensions, including (see the full report for more detail on the shortlisting methodology):

- the prominence of a requirement in UKRI's open access policy
- perceived significance of the question to external stakeholders
- estimation of feasibility and resource intensity
- expected reporting burdens
- availability of open data sources.

It is important to collect qualitative information alongside quantitative data, in order to achieve richness of narrative and storytelling as part of the framework. **UKRI should seek to achieve a balance between the collection of new evidence and the creation of consultation burdens for external stakeholders (including, for example, higher education institutions, researchers and publishers)**. Wherever possible, qualitative input should be sought by expanding existing engagement mechanisms which UKRI has in place (e.g. **Open Access Policy Stakeholder Forum**) rather than by setting up new consultations.

Choice of data sources

This work assessed the feasibility of answering M&E questions via open data sources, in combination with proprietary options only where needed. This aimed to demonstrate that questions on the OA landscape may, in principle, be answered by the means of open data. The prioritisation of open data sources should not be considered as a formal recommendation to UKRI, as no testing has taken place to date to compare results using different sources. UKRI will also need to assess how OA M&E efforts fit with other ongoing M&E activities and data sources already being used within the organisation, to streamline operations. In practice, **UKRI could seek to appropriately combine a mix of open and proprietary datasets to address M&E questions, considering efficiency, value for money and operational needs**. In addition, **UKRI could collaborate with existing data providers to minimise burdens, including working with organisations that do not make their data publicly available**.

Prioritised list of M&E questions and intended purpose (more detail on M&E questions is available in the main report and Annex A).

#	M&E question	Purpose
1	What is the number of UKRI-funded outputs annually? How do these figures compare to outputs with an author affiliated with a UK-based research performing organisation? (by discipline, publisher)	Define the set of outputs that forms the basis for the monitoring exercise (including comparison of UKRI-funded outputs and all UK outputs) and allow subsequent grouping by discipline, research performing organisation and publisher
2	What is the percentage of UKRI-funded outputs compliant with UKRI's OA policy? (by OA route, license, embargo period) How does this compare to the findings of M&E frameworks run by other funders? (approximated comparison)	Assess overall compliance with the UKRI OA policy and identify the use of the different OA routes (full gold OA ² journals, hybrid journals in transitional agreements, and green OA), including in the form of year-on-year comparisons
3	What is the share by publisher of UKRI-funded vs UK outputs? (overall and by OA model)	
4	What is the percentage of UKRI-funded articles published in journals under Jisc-approved transitional agreements?	Assess where UKRI-funded and UK-affiliated authors publish over time and chart the different OA models used by venues in which UKRI-funded (and UK-affiliated) researchers publish
5	What are the OA options offered by journals in which UKRI-funded / UK-affiliated authors publish? (by discipline, journal, publisher)	
6	To what extent does UKRI's OA policy affect the number of (inter)national collaborations involving UKRI-funded authors? To what extent are (inter)nationally co-authored publications compliant with policy requirements?	Investigate and assess trends in collaboration over time and try to isolate the effect of the UKRI OA policy
7	What are the reasons for non-compliance with UKRI's OA policy's terms? (incl. technical requirements, allowed exceptions)	Assess reasons for non-compliance, and any differences across different dimensions, e.g. disciplines or research performing organisations
8	What is the percentage of UKRI-funded articles available as an author accepted manuscript in a repository, with a Route 2 Licensing statement?	Monitor the use of a Route 2 Licensing statement (also known as the green route) when using the repository route and the requirement to include a Data Access Statement
9	What is the percentage of UKRI-funded articles that include a Data Access Statement?	
10	What is the percentage of UKRI-funded articles in journals / repositories meeting technical standards as set out in the UKRI OA policy?	Monitor technical standards for journals and repositories
11	How often are UKRI-funded (OA) publications cited/downloaded compared to UK-affiliated OA publications and to UK-affiliated non-OA publications?	Assess usage and impact of UKRI-funded OA publications, both within academia and within society
12	How often are UKRI-funded (OA) publications used/discussed (altmetrics) compared to UK-affiliated OA publications and to UK-affiliated non-OA publications?	Assess impact of the UKRI OA policy compared to other OA publications by UK-affiliated authors
13	To what extent does OA affect the diversity of affiliation countries of authors citing published outputs , for UKRI-funded and UK-affiliated authors? (by discipline)	Monitor global reach and impact of OA publications by looking at affiliation countries of citing researchers, compared to non-OA publications in the same journals/disciplines
14	What is the proportion of UKRI OA block grant funding going towards gold OA (including diamond OA), hybrid OA (via TAs) and green OA (via investment in repository infrastructure and staff)?	
15	What is the (estimated) annual expenditure of institutions towards reading and publishing? (by publishing model)	Assess how costs for OA publishing under the UKRI OA policy are divided between OA models, as well as how these costs are covered (e.g. through UKRI OA block grant or institutional means)
16	What is the number of OA publications funded via UKRI OA block grant awards/OA fund/other institutional means, and what is the estimated average article/book processing charge? (by discipline, journal, publisher)	
17	What do institutions expect/experience to be the main challenges/opportunities arising from UKRI's OA policy? (incl. around EDI, career progression, research evaluation) ³	
18	What do publishers expect/experience to be the main challenges/opportunities arising from UKRI's OA policy? (incl. around EDI, career progression, research evaluation)	Study expectations and experiences around the UKRI OA policy among various stakeholders over time, including impact of OA on society
19	What do researchers expect/experience to be the main challenges/opportunities arising from UKRI's OA policy? (incl. around EDI, career progression, research evaluation)	
20	What difference has access to OA outputs made for non-academic stakeholders? (e.g. industry, general public, practitioners)	

² Under the gold route, published, peer-reviewed outputs arising from research are freely accessible at the point of publication, often accompanied by Article Processing Charges (APCs) levied on article authors. Publications with no APCs are known as diamond OA. Gold open access is referred to as Route 1 in UKRI's OA policy.

³ Please note that more detail on the specific dimensions to be addressed in Questions 17-20 is provided in Annex A.

Technical implementation and automation

UKRI should clearly note the limitations of the chosen set of data sources as part of the published monitoring and evaluation methodology and of any data releases. The data specification (Annex A) outlines potential data sources and caveats, as well as recommended mitigation actions.

The potential for duplication of effort is high and should be carefully considered: contributors commented on the wide range of existing systems and mechanisms that gather different forms of data from institutions, publishers and researchers (e.g. the Research Excellence Framework, Researchfish, Crossref).

There is a clear desire to ensure that UKRI's M&E approach builds on existing efforts and initiatives, and there is an opportunity to liaise with other funders as well as relevant international projects to assess likely efficiencies and areas for collaboration.

UKRI should pursue an automated rather than manual approach to data collection and analysis, leveraging Application Programming Interfaces (APIs) and cloud-based analytics tools as appropriate. This may be developed in-house or leverage existing infrastructure to store, ingest, combine and analyse data from different (open) data sources, and we note that the use of existing infrastructure will likely be more practical and effective. This also provides an opportunity to not only use and support open data sources wherever possible, but also to use and support existing open infrastructure for data processing and analysis.

Data sharing and reporting may be implemented in a range of ways, and UKRI will need to consider what is operationally feasible in deciding on the final approach it takes. In our view, UKRI should produce a monitoring and evaluation report as well as a record-level dataset and additional qualitative evidence, as this will enable more accurate analysis; we note that the specific licensing terms of the data source(s) chosen will determine whether this is possible in practice. The creation of interactive visualisations may be of interest but requires further consideration and the

development of a clear business case (see the range of options depicted in the figure on the present page).

High-level approaches to reporting and expected requirements for UKRI.

Lower	Level of resource		Higher
<p>Report + Aggregated dataset</p> <ul style="list-style-type: none"> Limited data documentation and preparation 	<p>Report + Record-level dataset</p> <ul style="list-style-type: none"> Extensive data documentation and preparation Data warehouse (optional) 	<p>Interactive dashboard with visualisations</p> <ul style="list-style-type: none"> Extensive data documentation and preparation Data warehouse Web design and hosting 	

Minimising administrative and technological burdens

Contributors shared a desire to reduce administrative burdens in reporting for research organisations. Notably, perceptions of burdens vary. For example, established systems at some research performing organisations that have previously fed data into UKRI reporting spreadsheets⁴ may continue to be used for internal activity monitoring even though UKRI's open access reporting requirements for block grant awards have been reduced.

Additionally, automated approaches to M&E may place new burdens on small publishers, to develop a technical infrastructure which integrates with these, as well as requiring new approaches for data quality checking.

From design to implementation

The indicative timeline on p. 9 summarises the recommended first six years of the operation of the suggested M&E framework (pilot year followed by five subsequent years), and specific recommendations to UKRI are available on the following page, grouped by theme.

In our view, the deployment of the M&E approach will benefit from planning and liaison with external stakeholders, including a pilot phase validating the approach with a small set of key stakeholders (e.g. an external review group) and investigating appropriate

⁴ For the RCUK/UKRI OA policy from 2013-2022 ROs submitted spreadsheets to report on OA policy compliance. UKRI has removed this reporting requirement with the new policy.

technical solutions for data storage and sharing as well as automated data analysis. Decisions on the final set of M&E questions and how to operationalise the M&E framework rests with UKRI, based on available resources, budget and the skills and expertise available.

Several opportunities may arise from the analysis of M&E results. For example, UKRI could join a small number of leading organisations who are exploring qualitative data as well as bibliometric information to better understand the short-, medium- and long-term impacts of open access policies, including their unintended consequences.

As the framework is finalised and deployed, we recommend that UKRI set up discussions with other national and international funding bodies, aiming to identify pathways for information sharing, mutual learning and continuous improvement.

Key recommendations.

Principles for monitoring and evaluation

UKRI should:

- focus on positively supporting future policymaking and improving communication, awareness-raising and sharing of best practice
- use contribution analysis as the core evaluation strategy
- seek to achieve a balance between the collection of new evidence and the creation of consultation burdens for external stakeholders (including, for example, higher education institutions, researchers and publishers)
- monitor the use of a variety of funding models and not only focus on the use of article processing charges and book processing charges
- consider monitoring the impact of the open access policy on global equity

Practical next steps

UKRI should:

- ensure that terminology is clear, by engaging research performing organisations and publishers to test definitions prior to implementation
- consider a pilot stage to reassess and update the prioritised monitoring and evaluation questions based on emerging results

- iterate and review the monitoring and evaluation approach for long-form outputs as the landscape continues to develop
- carefully scope out questions on the societal impact of open access, to avoid scope creep

Technical implementation

UKRI should:

- consider the use of open data sources, in combination with external datasets where proprietary or confidential information is required and can be used for the intended purposes
- pursue an automated rather than manual approach to data collection and analysis, leveraging Application Programming Interfaces (APIs) and cloud-based analytics tools as appropriate
- explore potential to collaborate with existing data providers, to minimise data collection burdens where open data may not be available

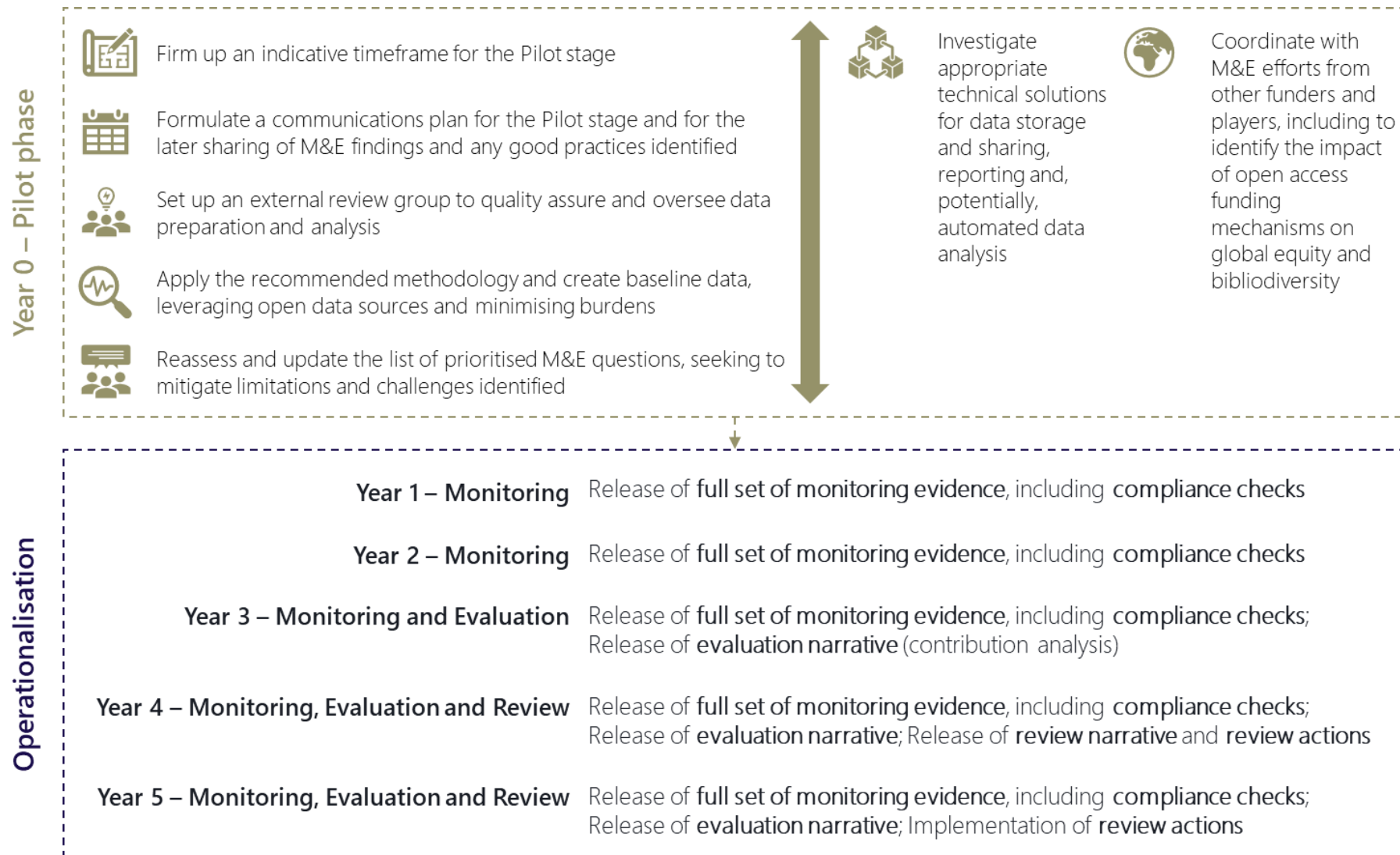
Outputs and public sharing

UKRI should:

- produce a monitoring and evaluation report as well as a record-level dataset and additional qualitative evidence (in line with the licensing terms of the data source(s) chosen)
- share monitoring and evaluation results and lessons learned publicly, in the spirit of open data and transparency
- clearly note the limitations of the chosen set of data sources as part of the published monitoring and evaluation methodology and any data releases

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Recommended next steps for the operationalisation of the M&E approach.





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