



Department for  
Science, Innovation  
& Technology

# What works in international R&I collaboration?

An evidence review

Research Paper Number 2024/004

Fionn O'Sullivan  
Fabiola Lopez Gomez  
Anna Marcet Puig  
Josh Shelley

April 2023



© Crown copyright 2023

This publication is licensed under the terms of the Open Government Licence v3.0 except where otherwise stated. To view this licence, visit [nationalarchives.gov.uk/doc/open-government-licence/version/3](https://nationalarchives.gov.uk/doc/open-government-licence/version/3) or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or email: [psi@nationalarchives.gsi.gov.uk](mailto:psi@nationalarchives.gsi.gov.uk).

Where we have identified any third-party copyright information you will need to obtain permission from the copyright holders concerned.

---

# Contents

List of acronyms	4
Executive summary	6
1. Introduction	9
2. Methodology	11
3. Types of outcomes and impacts achieved	21
Research quality	23
Research capacity	29
Individual capacity-building	30
Institutional capacity	36
Research uptake and impact	38
Gender-related results	43
Other benefits to the donor country	45
4. Mechanisms and key success factors for achieving impact	52
5. Conclusions	64
Annex 1: References	66
List of evaluations reviewed	66
Other references	69

## List of acronyms

Acronym	Full name
AMR	Anti-microbial research
BA	British Academy
BBSRC	Biotechnology and Biological Sciences Research Council
CARIAA	Collaborative Adaptation Research Initiative in Africa and Asia
CSSP	Climate Science for Service Partnership
DBT	Department for Business & Trade
DFID	Department for International Development
DG RTD	Directorate General for Research & Innovation
DHSC	Department for Health & Social Care
DSIT	Department for Science, Innovation & Technology
EDI	Equality, Diversity & Inclusion
ESA	European Space Agency
ESO	European Southern Observatory
ESRC	Economic and Social Research Council
FAC	Future Agricultures Consortium
FCDO	Foreign, Commonwealth & Development Office
FDI	Foreign Direct Investment

FIC	Fund for International Collaboration
GCRF	Global Challenges Research Fund
HEP SSA	Higher Education Partnerships in Sub-Saharan Africa
HIEP	Humanitarian Innovation & Evidence Programme
HMG	His Majesty's Government
HSRI	Health Systems Research Initiative
LIF	Leaders in Innovation Fellowships
LMIC	Low- or middle-income country
MRC	Medical Research Council
ODA	Official Development Assistance
ODI	Overseas Direct Investment
PIRE	Partnerships for International Research and Education
RAEng	Royal Academy of Engineering
R&I	Research & Innovation
RLO	Raising Learning Outcomes Programme
RQ+	Research Quality Plus
UKCDR	UK Collaborative on Development Research
UKRI	UK Research & Innovation

## Executive summary

This report reviews evidence from evaluations and other studies on what constitutes successful investment in research and innovation (R&I) through international partnerships, and on the key conditions and mechanisms that can lead to success. The aim of the study is to generate insights to inform the design and delivery of future interventions.

The following questions were defined for the study: 1) What are the different types of outcomes and impacts that have been achieved by past international R&I programmes and how have these outcomes and impacts been measured? 1a) To what extent have any of the past international R&I programmes achieved industrial and international inward investment as an outcome/impact? 2) What can we learn from reviewing past programmes about what conditions lead to successful outcomes and impacts for R&I programmes?

The study considers different types of interventions, including funds, programmes and projects. It predominantly focuses on initiatives implemented by UK government departments and agencies funded through the UK aid budget.

The study was implemented through a methodology to search for and then analyse relevant studies, while minimising potential bias and paying attention to the strength of evidence. Through this methodology 153 studies of potential relevance were identified, with 34 of these examined in detail. The research indicates this is only a proportion of the existing evidence and that a substantial number of other published and unpublished studies also exist.

The review identified the following typology of potential outcomes and impacts from international R&I collaborations: improvements in research quality, improved R&I capacity for both individuals and institutions, promotion of research uptake and impact, and achievements of other benefits for donor countries, including economic impacts and soft power.

The evidence provides extensive examples of international R&I collaboration supporting the production of high-quality research, as defined by a range of quality measures. A notable feature of ODA-funded collaborations is however that such benefits are not always shared equally between participants in the Global South compared to the North.

In terms of building R&I capacity, the evidence also shows the strong potential for positive effects on individual researchers, manifested in improved knowledge and skills and better access to research networks. These results also strengthen the capacity of the institutions such researchers work for. In addition, institutions may strengthen their R&I capacities for instance by gaining greater access to research infrastructure, technology or databases.

The study provides strong evidence of a variety of R&I collaboration initiatives (financed by both ODA and non-ODA funds) producing research that is then taken up and used to create impact, that is, changes in the real-world. Impacts described in the reviewed literature are very diverse, including improved policymaking in fields such as climate science, engineering,

agriculture and urban planning, as well as the development of intellectual property and spin-out companies, and improved education and health outcomes.

In relation to broader benefits to the UK from funding international R&I collaboration initiatives, the study highlights that while some benefits (strengthening of academic networks) are an inherent product of such initiatives, others (commercial benefits such as trade and investment, and soft power) are dependent on a range of other supporting conditions. The review identified no evidence of a direct link between collaboration initiatives and the attraction of investment to the UK, though it seems very likely they contribute indirectly, by strengthening the UK’s science and research base.

There is evidence of significant gender inequality in the distribution of benefits from R&I collaboration, highlighting the need to place close attention to this issue in designing and implementing initiatives.

The review highlights a number of mechanisms and factors underpinning successful collaborations, as indicated in the table below.

Focus area	Measures that have promoted success
Strategic positioning and management processes	<ul style="list-style-type: none"> <li>• Focusing on a distinctive R&amp;I niche</li> <li>• Defining clear standards (e.g., on gender &amp; inclusion or monitoring &amp; evaluation and learning)</li> <li>• Promoting equitable partnerships, in relation to funding opportunities, processes and sharing of benefits</li> <li>• Building on structures, processes and relationships already successfully used by other initiatives and/or using overseas posts to benefit from local knowledge</li> <li>• Adopting a flexible approach to project changes and budgets</li> <li>• Administering programmes efficiently – awarding grants promptly, using single reporting templates across delivery partners</li> </ul>
Promoting research quality	<ul style="list-style-type: none"> <li>• Adopting effective quality assurance mechanisms, including dedicated roles for this in programme management teams</li> <li>• Including provisions to build researchers capacities in workplans</li> </ul>
Building institutional capacity	<ul style="list-style-type: none"> <li>• Defining and tracking the building of capacity (for institutions and individuals) and not treating this as an add-on</li> <li>• Incorporating measures into project plans to build the capacity of target audiences to use data</li> </ul>
Supporting development of human	<ul style="list-style-type: none"> <li>• Creating opportunities for cohort-building, including through mentoring, alumni communities and secondments</li> </ul>

Focus area	Measures that have promoted success
capital for researchers	<ul style="list-style-type: none"> <li>• Creating opportunities for learning-by-doing through joint design of research, implementation of field research and joint opportunities for presenting results</li> </ul>
Promoting research uptake and impact	<ul style="list-style-type: none"> <li>• Seeing the promotion of uptake as about cultivating relationships as much as disseminating research outputs</li> <li>• Involving stakeholders in defining research questions and engaging with them during the research process</li> <li>• Tailoring research outputs to specific audiences</li> <li>• Publishing results in open access journals and making data available in open repositories</li> <li>• Assessing when windows of opportunity for influencing may open and retaining the flexibility to move quickly when they do</li> <li>• Creating specific programme management roles or support structures to champion uptake and impact</li> </ul>
Supporting gender-inclusive results	<ul style="list-style-type: none"> <li>• Defining gender-related objectives at the outset, ensuring these are reflected in programme objectives and theories of change and tracked continually</li> <li>• Engaging gender or social development advisers at the design stage</li> <li>• Actively targeting women (and other disadvantaged groups) through calls for proposals</li> <li>• Ensuring projects adopt equality, diversity and inclusion policies</li> </ul>

The findings provide a valuable source of insight about ‘what works’ in planning future UK R&I cooperation initiatives. However, they should be used carefully as part of a design process which also looks closely at the context for the initiative and builds in strong monitoring, evaluation and learning processes to allow for adaptive management and course correction.

In terms of future steps to build the evidence base, further research could usefully be undertaken focusing on non-ODA UK R&I interventions, and on lessons learned from the experience of other countries in implementing such initiatives.



# 1. Introduction

This report reviews evaluation evidence on what constitutes successful investment in research and innovation (R&I) through international partnerships, and on the key conditions and mechanisms that can lead to success.

A central part of the Department of Science, Innovation & Technology's (DSIT) portfolio and investment relates to international R&I programmes. These have previously focussed on building research and innovation alliances to tackle a variety of global challenges, deliver sustainable development goals and achieve a wide range of societal, economic and intellectual benefits for both the UK and the collaborating international partners. Apart from DSIT, other UK government departments such as the Foreign & Commonwealth Development Office (FCDO), Department for Business & Trade (DBT) and Department for Health and Social Care (DHSC) have also funded R&I collaborations with international partners to address development, climate and health challenges.

Although DSIT has already commissioned evaluations of much of its portfolio of work there is a need now to systematically collate evidence on what works (outcomes, impacts and mechanisms) on a programme- and project- level across the department. A greater understanding of the outcomes and impacts from these initiatives and of the mechanisms underlying their success can then be used to inform the design and delivery of future interventions by DSIT and other departments and agencies.

The following questions were defined for the study by DSIT:

1. What are the different types of outcomes and impacts that have been achieved by past international R&I programmes and how have these outcomes and impacts been measured?
  - 1a. To what extent have any of the past international R&I programmes achieved industrial and international inward investment as an outcome/impact?
2. What can we learn from reviewing past programmes about what conditions lead to successful outcomes and impacts for R&I programmes?

The objective of the study was to cover three types of initiatives, subject to the timescales and resources to conduct a rapid review of this kind:

1. International R&I programmes funded centrally by DSIT such as the Newton Fund, Global Challenges Research Fund (GCRF) and Fund for International Collaboration (FIC)
2. International R&I programmes funded by other UK government departments such as the FCDO
3. International R&I programmes funded by other (non-UK) countries

Finally, the objectives for the study were to consider different types of interventions, including funds, programmes and projects.

## Official Development Assistance, primary and secondary benefits

Much of the UK's support for international R&I collaboration is classified as Official Development Assistance (ODA) and funded through the UK aid budget (including for instance, two of the three DSIT funds mentioned above). In line with the 2002 International Development Act the primary purpose of ODA spending must be to reduce poverty in recipient countries. Since 2015, the UK government has developed a model to use aid spending to deliver mutual prosperity, to address partner country development priorities, while also contributing additional benefits to the UK<sup>1</sup>. Within this model, benefits derived by the UK from ODA-funded programmes are described as secondary benefits, in recognition of the fact that the primary purpose of ODA is to reduce poverty in the partner country. These may include:

- Economic and commercial benefits such as increases in exports, imports, foreign direct investment into the UK (FDI) and overseas direct investment (ODI) from the UK to other countries.
- An increase in knowledge (as generated for instance through undertaking research) and the development of networks (including ones between academics) with associated benefits such as an increased capacity to undertake research.
- Soft power benefits, that is, increased influence at an international level that helps the UK to achieve its wider diplomatic objectives.

The term secondary benefits only applies to ODA-funded programmes (as non-ODA initiatives seek to benefit the UK as a primary objective). Given the UK's non-ODA R&I collaboration programmes also seek to generate economic and other benefits (as do those of other countries), the collective term 'donor country benefits' is used hereafter in this report. This includes the sub-category of what UK ODA-funded programmes describe as secondary benefits.

## Structure for the report

The rest of this report is set out in the following way.

- Section 2 sets out the methodology for the study, the types of documents analysed and limitations of the research.
- Section 3 discusses the evidence on the achievement of different types of outcomes and impact identified in the evidence base.

---

<sup>1</sup> See for instance [The use of UK aid to enhance mutual prosperity](#)

- Section 4 discusses mechanisms and key success factors for achieving these types of results.
- Section 5 summarises the main conclusions.
- References are provided in the annex, including a list of all the documents reviewed.

## 2. Methodology

The methodology for the evidence review was based closely on guidance documents commissioned by the UK Government, in particular Hagen-Zanker, J., and Mallett, R. (2013) *How to do a Rigorous, Evidence-Focused Literature Review in International Development* and DFID (2014) *Assessing the Strength of Evidence – a How To Note*<sup>2</sup>.

The study falls into the class of evidence review described as a narrative synthesis, that is, an approach to the review and synthesis of findings from multiple studies that relies primarily on the use of words and text to summarise and explain findings. This reflects the fact that the evaluations and other studies identified use mixed methods approaches to *describe* a very broad range of outcomes and impacts, instead, for instance, of providing quantitative data for a narrow range of results which can then be compared in the manner of a systematic review.

The review was carried out in two phases: 1) scoping the evidence (corresponding to the first six stages set out in Hagen-Zanker and Mallett) and 2) review of the evidence and synthesis of findings (corresponding to the final two stages).

### Stage 1: Research questions

The three questions noted above were defined by DSIT for the study. The search was also guided by DSIT's interest in assessing results of interventions at different levels (fund, programme and project) and considering those sponsored by UK agencies and those of other countries.

### Stage 2: Inclusion criteria

The following description was used for the search process and was deliberately interpreted in a broad sense, in order not to unwittingly exclude documents with relevant information:

*evaluations or other relevant studies that shed light on what constitutes successful investment by public agencies in research and innovation through international partnerships, and on what*

---

<sup>2</sup> The first of these documents highlights the value of tailoring the process where needed, particularly if time and budgets are constrained. In practice the departures from the guidance are very minor and explained where relevant in the text.

*the key conditions and mechanisms for this success are.* This definition was further refined with the following inclusion criteria:

- Relevance: studies evaluate outcomes and impacts of international R&I projects, programmes or funds funded by a) DSIT b) other HMG departments c) other advanced economies
- Timeframe: published no earlier than 2008
- Accessibility: publicly accessible or approved by copyright owner, and in English
- Credibility: on first view, document appears to have used robust evaluation methods

The initial terms of reference for this project called for a focus on evaluations. However, the initial search identified several other useful studies which are worth including, though not formal evaluations<sup>3</sup>. These included other comparative reviews covering very similar questions to this study, research reports and programme reports. In the end the reviewers' case for proposing these for the sample rested on the answer to a pragmatic question – does the document include substantial content on achievement of outcomes and analysis of why these were achieved?

### Stages 3 and 4: Search strategy and search terms

The search strategy included the following:

- Requests from DSIT to ex-BEIS Analysis Teams, as well as to other HMG departments and agencies for relevant evaluations (or where these might be found), including the FCDO, DHSC, British Council, Academy of Medical Sciences, Met Office, Royal Academy of Engineering, Higher Education Funding Council Wales and the Scottish Funding Council. This resulted in 43 documents being provided to the review team. On examination these included 30 evaluation studies
- Google and Google Scholar searches using combinations of the following keywords, intended to be combined flexibly, depending on what results were identified:
  - Evaluation, impact assessment, study, economic impact, evidence, review
  - Research, innovation, R&I, industry-academia, R&D
  - Collaboration, cooperation, partnership
  - Fund, programme, project, intervention, initiative

In practice searches using 'evaluation', 'review', 'R&I', 'research and innovation', 'collaboration' and 'partnership' quickly revealed a large number of studies that fit the inclusion criteria. The review team felt this was sufficient, within the parameters of the project, to provide a well-evidenced account of the mechanisms and key success factors for successful ODA collaborations and so did not use the remaining terms.

- Searches for relevant evaluations and other studies in the following databases:

---

<sup>3</sup> Albeit the research and evaluation may often overlap and even if distinct the dividing line is often a fine one, see e.g. [Ways of framing the difference between research and evaluation - Blog post on Better Evaluation](#)



**Table 1 Databases used in searching for evaluations**

Database	Search terms
SIPER – the Science and Innovation Policy Evaluation Repository	'research', 'innovation', 'evaluation' 'collaboration'
USAID Clearinghouse	'research', 'innovation', 'evaluation' 'collaboration'
MODARI – Mapping ODA research and innovation	MODARI is a database of development projects rather than evaluation reports. The full database was downloaded and cleaned, and then filtered by 'End date' to identify closed projects (which could have final evaluations available). Potential candidates identified in this way were then searched for in Google, Google Scholar and Dev Tracker using combinations of key words including 'evaluation', 'impact assessment', and 'review'.
STIP Compass – EU/ OECD database on national STI policy	Various terms were tried, with 'partnership' and 'collaboration' proving the most useful.

The websites of selected UK R&I agencies were also reviewed to identify relevant studies. These included UK Research & Innovation (UKRI)<sup>4</sup> which has 59 evaluation reports on its website, and NESTA (which returned a small number of full reports on R&I initiatives). One notable result of this process was that most UK R&I agencies' studies focused on initiatives classified as Official Development Assistance (i.e., paid for through the UK aid budget).

A similar search was carried out for the European Commission's Directorate General for Research & Innovation (DG RTD), which resulted in 8 studies relating to the Horizon programme.

'Snowballing' – i.e. using references identified in relevant documents as the basis of further specific searches also provided a small number of additional relevant documents. A similar approach was used in following up links from the DG RTD website links to various EU member state websites, which identified 18 documents related to evaluations of R&I programmes, mostly from Austria.

<sup>4</sup> UKRI brings together seven Research Councils, Innovate UK and Research England.

## Stage 5: Retrieval

152 documents were identified as potentially relevant based on their titles or a quick reading of the executive summary, ensuring that they met the inclusion criteria listed above.

## Stage 6: Screening

The retrieved documents were then screened by reading executive summaries or abstracts (and in some cases skim reading parts of the reports) and then making a judgement against the following criteria:

- The studies had a strong focus on collaborative international R&I initiatives
- There was substantial discussion of the outcomes of the initiatives

This was necessarily a preliminary assessment of the material, with the fact that documents were not read in detail at this stage raising the risk that some potentially relevant documents might be excluded from the review. Such a possibility could not be avoided without reading all the documents in detail (an option that the timeline and resources for the study precluded).

However, it is not considered that this significantly skewed the results of the review given that the executive summaries of the document were almost universally well-written (and therefore provided a good indication of the content of the study). Secondly, some UK documents were reviewed a second time by the lead reviewer (in addition to the initial review carried out by another researcher).

The reverse possibility (that some irrelevant documents might mistakenly be included) was removed during the detailed review phase, which provided the opportunity to remove such studies from the sample.

A relevance score of 1 to 3 was then assigned to each document, with 3 = very relevant i.e. satisfying both criteria, 2 = quite relevant, e.g. satisfying one criterion strongly but the other weakly and 1 = not relevant (not satisfying either criterion). It should be noted that this initial screening is necessarily approximate (the full review of the document in question only being carried out at a subsequent stage).

Given DSIT's interest in the experience of UK programmes, those documents relating to UK interventions initially rated 2 were scanned for a second time. This resulted in the score for two documents being upgraded to 3.

As a result of this process, of the 152 documents, 49 were deemed very relevant, 32 quite relevant and 71 not relevant. The original intention was for the review to focus on the 49 documents considered very relevant. However, given the tight timescale for the completion of the review and the project's focus primarily on UK programmes, it was considered at this stage that the review should focus on the 34 documents covering UK-sponsored initiatives judged to be very relevant. In the subsequent analysis process, two of these 34 documents were found to be less relevant than initially anticipated and were replaced with two alternatives, which were classified as very relevant, and which evaluated non-UK initiatives. As such, the final

sample of studies for this review consists of 32 very relevant studies of UK initiatives and 2 very relevant studies of non-UK initiatives. Table 2 lists the 34 studies.

**Table 2 Summary details of the sampled studies**

Title of study	Study characteristics			
	Type	Level: fund, programme, project	Quality of the study	ODA / Non-ODA?
Evaluation of the Africa Prize for Engineering Innovation (APEI)	Evaluation	Project	High	Both
Review of the British Academy Cities & Infrastructure programme	Evaluation	Programme	High	ODA
Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA) - Summative Evaluation	Evaluation	Programme	High	ODA
ESRC – FCDO Joint Fund for Poverty Alleviation Research Programme – Phase 3 Evaluation	Evaluation	Fund	Moderate	ODA
ESRC-FCDO Raising Learning Outcomes programme evaluation report (RLO)	Evaluation	Fund	High	ODA
Evaluation of the Royal Academy of Engineering International Industry-Academia Linkage Programmes	Evaluation	Programme	High	Both
Evaluation of the Benefits the UK has derived from CERN	Evaluation	Project	High	Non-ODA
Evaluation of the effectiveness and impact of BBSRC's investments in antimicrobial resistance research	Evaluation	Programme	High	Both
Evaluation of the Fund for International Collaboration (FIC)	Evaluation	Fund	High	Non-ODA
Evaluation of the Future Agriculture Consortium (FAC)	Evaluation	Programme	Moderate	ODA
Evaluation of the GCRF Africa Catalyst programme	Evaluation	Programme	High	ODA
Evaluation of the Global Challenges Research Fund: Stage 1b Synthesis report (GCRF)	Evaluation	Fund	High	ODA
Evaluation of the Higher Education Partnerships in sub-Saharan Africa (HEP SSA) Programme	Evaluation	Programme	High	ODA
Economic Impact of International Research and Innovation Cooperation - Denmark's Participation in EUREKA	Evaluation	Multiple	Moderate	Non-ODA
Evaluating ODA-funded granting mechanisms for global health and development research	Other study	Fund	High	ODA
Evaluation of the benefits of UK Membership European Southern Observatory partnership	Evaluation	Project	Moderate	Non-ODA
ICF Portfolio evaluation 1: Integration of ICF, final report	Evaluation	Fund	High	ODA
ICF Portfolio evaluation 2: Mobilising private finance through demonstration effects, final report	Evaluation	Fund	High	ODA
ICF Portfolio evaluation 3: Support for policy change, main report	Evaluation	Fund	High	ODA
The Impact and Effectiveness of Policies to Support Collaboration for R&D and Innovation	Other study	Multiple	Moderate	Non-ODA
Evaluation of the Leaders in Innovation Fellowships Programme (LIF)	Evaluation	Programme	High	ODA
Evaluation of the Partnerships for International Research and Education Programme	Evaluation	Programme	High	Non-ODA
Humanitarian Innovation & Evidence Programme Evaluation (HIEP)	Evaluation	Programme	High	ODA
Impact evaluation of UK investment in the European Space Agency (ESA)	Evaluation	Project	High	Non-ODA
Interim Evaluation of the UK Vaccine Network	Evaluation	Project	High	ODA
Newton Fund Final Evaluation Report	Evaluation	Fund	High	ODA
Review of the Health Systems Research Initiative (HSRI)	Other study	Programme	High	ODA
Review of the Joint Global Health Trials Initiative	Evaluation	Programme	High	Both
Review of the MRC-DFID Concordat	Other study	Programme	High	ODA
Socio-Economic Impact evaluation of the UK subscription to European Southern Observatory (ESO)	Evaluation	Project	High	Non-ODA
The impact of collaboration. The value of UK medical research to EU science and health	Other study	Multiple	Moderate	Non-ODA
The U.K.–China Climate Science to Service Partnership	Other study	Project	High	ODA
End-point evaluation of the UK Public Health Rapid Support Team (UK-PHRST)	Evaluation	Programme	High	ODA
Writing Workshops programme report	Other study	Project	High	ODA

Of these 34 documents:

- 27 are evaluations and 7 are other studies (see note above on inclusion of other studies)
- 9 are Fund-level studies, 14 are for programmes, 8 are for projects and three were studies of different initiatives at more than one of these levels
- 32 of the documents dated from within the last 10 years; the remaining 2 are from the last 15 years.

In terms of funding sources, 25 of the documents are for ODA-funded initiatives (21 funded only by ODA and 4 by ODA combined with other sources of funding); and 9 are for non-ODA funded initiatives. There was notably greater reporting of outcomes and impacts for ODA-funded projects. As a result, the analysis presented in the rest of this report is strongly ODA-focused.

## Stages 7 and 8: Analysis and Reporting

Full reviews of the evaluations identified in Phase 1 (i.e. the preceding six stages) were then undertaken, reading the whole document and coding selected information from the text with qualitative analysis software (Dedoose) using the following codes:



- Methodology (all details relating to the method, data sources etc, to aid in assessing the strength of evidence).
- Outcomes and impacts. This code was deliberately left broad (with one exception), reflecting the inductive approach underlying the study (i.e., to understand the full breadth of outcomes from international R&I collaboration, rather than predetermining what these might be).
- Other benefits to the donor country. This was an exception to the preceding point, reflecting DSIT’s interest in benefits to the UK and research question 1a, which focuses on industrial and inward investment. These benefits include effects on exports, imports, foreign direct investment, overseas direct investment, market access, network effects and soft power.
- Gender-related impacts. This was included to identify any results that might affect men and women in different ways.
- Mechanisms and key success factors (analysis on why outcomes or impacts were achieved).
- Context (to aid in understanding the environment in which results were achieved, to inform conclusions on the extent to which these might be transferrable etc.)

The coded text from the different documents was analysed, and categories of outcomes and impacts defined (research quality, capacity building for institutions and individuals, research uptake and impact, other donor country benefits, gender-related effects). Conclusions were then developed and written up, as presented in the preceding sections of this report.

## Assessing the strength of evidence

The review made an explicit assessment of the strength of evidence, considering the potential for bias, as well as the range and quality of evidence underpinning evaluation findings. Individual studies were assessed according to the following criteria, which are drawn from DFID (2014) Assessing the Strength of Evidence – a How To Note.

**Table 3 Assessing the strength of evidence**

Criterion	Issues to consider
Conceptual framing	Does the study pose a research question or hypothesis? Does it construct a conceptual framework (e.g. theory of change)
Appropriateness	Does the study explain its research design and method? Does it demonstrate why these were chosen?

Validity	Is the study internally valid – are the methods appropriate for the conclusions drawn?
Credibility	Data collection methods generate a credible dataset, and analysis methods generate credible results
Cogency	Does the study present a coherent and convincing argument, linking questions, data and conclusions?

The criteria set out in this note were slightly modified to make them relevant to the current study. For instance, validity was limited to an assessment of internal validity (compared to the guidance which also includes external and measurement validity).

External validity (how far results from an intervention can be expected to be achieved in a different context), was not considered for the following reasons. It is relatively unproblematic to assess this for what can be described as “low causal density” interventions where cause and effect is relatively simple (e.g. immunisation, bed nets to prevent malaria, cameras in classrooms to reduce teacher absence)<sup>5</sup>. However, it is more problematic for “high causal density” interventions where multiple factors impact on success in complex ways (international R&I collaboration initiatives lie in this category). Given this complexity, this review has avoided assessing the external validity of particular interventions and instead looks at the general mechanisms and success factors across several interventions that are identified as underpinning their success.

Measurement validity (e.g. are research instruments such as surveys and topic guides appropriately designed for the task in question) was not included as almost none of the evaluation reports in question provide this detail.

An assessment of the quality of an individual study was then be made as follows:

**Table 4 Assessing the quality of individual studies**

Assessment	Characteristics of the study
High	Addresses all principles of quality
Moderate	Some deficiencies in attention to principles of quality (e.g. insufficient information about one or two criteria)

<sup>5</sup> For an extended discussion of this point see Woolcock, M (2013). *Using case studies to explore the external validity of 'complex' development interventions*, WIDER Working Paper No. 2013/096

Low	Fails against more than two criteria
-----	--------------------------------------

General conclusions were then drawn assessing how far the overall body of evidence that supports them (e.g. where a number of studies provide evidence of a particular outcome), on the basis of the following criteria:

**Table 5 Assessing the overall body of evidence**

Criterion	Issues to consider
The technical quality of the studies	As per the categorisation of individual studies
The context for evidence	Similar findings in varied contexts indicate stronger evidence
The consistency of the findings	Consistent findings across studies indicate stronger evidence
The size of the body of evidence	Number of studies supporting overall conclusions

The strength of evidence has been summarised for each of the main groups of findings with the same overall categorisation as for individual studies:

- High – supported by more than three medium or high-quality studies with consistent findings from different contexts.
- Moderate – supported by one high-quality or two medium-quality studies with consistent findings from different contexts (in the case of two studies).
- Low – supported by a single medium-quality study from a single context.

For the purposes of writing simply and clearly in English, the characterisation “high” has sometimes been replaced with “strong” in the body of this report; “moderate” with “moderately strong” and “low” with “limited”.

### Applying the strength of evidence criteria in practice

**Technical quality of studies.** The assessment of study quality revealed that this was good - with 27 graded ‘high’ and 7 graded ‘moderate’. For the latter, this was typically because there was not adequate explanation of one of the criteria listed in Table 4.

**Contexts.** All of the studies were of very distinctive initiatives implemented in very different contexts.

**Consistency of findings.** In the large majority of cases, conclusions were drawn where several studies highlighted the same or similar findings.

**Size of the body of evidence.** Given the three points above – that the technical quality of studies was high, that initiatives were from a range of contexts and with conclusions drawn where there were consistent findings – the predominant criterion in the assessment of the strength of evidence is the number of studies highlighting these findings.

For most outputs/outcomes/mechanisms covered, findings tended to point in the same direction, so even when a small proportion of the 34 studies found evidence of an output/outcome/mechanism, we report this as strong evidence based on a combination of the number of studies showing this, the consistency in findings, the quality of the studies and the variety of different contexts involved. Where studies find against an outcome, this has been highlighted in the text.

## Limitations

This study is a small-scale research project completed in five weeks, with the short timescale limiting the volume of evidence that could be reviewed. It nonetheless proved possible to identify and analyse a substantial body of literature, with 152 documents reviewed in outline and 34 in detail. Most high-income countries sponsor international R&I collaborations, and it is clear that the documents identified constitute only a proportion of the total evidence. A large number of other evaluations and studies (both published and unpublished) are therefore likely to exist.

The constraints on the review meant that it focused almost exclusively on evidence from UK-sponsored R&I interventions. Overall however, the review team are confident that the conclusions provide a well-evidenced account of the mechanisms and key success factors for successful ODA collaborations. The evidence from the review does not however provide a substantial basis for assessing non-ODA collaborations. This highlights an area for future research.

Any review of this nature is also dependent on the judgement of the reviewers, introducing the potential for bias. The review team consider however that sufficient measures were taken to address this, in particular by closely following an established methodology for evidence reviews. It is also worth commenting briefly on two further sources of potential bias.

The first of these relates to what was included in the review. In particular, it is possible that a broader study covering more evaluations would identify additional outcomes and impacts beyond those described here. It could also lead to further caveats regarding the main conclusions drawn (e.g., if contradictory evidence was identified). The potential for this to

happen is however mitigated by the fact that the conclusions are generally supported by multiple studies and good evidence. This suggests that increasing the number of evaluations would not have made a difference, though this remains a possibility.

Furthermore, it should be noted that some of the studies included in this review used subjective measures for tracking programme outputs and performance (e.g. surveys of beneficiaries' own perceptions at a single point in time), which may introduce a degree of optimism bias in the findings reported. In addition, some of the evaluations included did not have the optimal level of independence (i.e., conducted by an external evaluator), which should be also acknowledged as a limitation of some of the studies reviewed.

Secondly, there is potential for bias in the way the evidence was analysed. For instance, time and resource constraints limited how far the assessment of any single strength of evidence criterion could go. However, in this case, the potential for bias was mitigated by assessing strength of evidence across five separate criteria on study quality (see Table 3 above) and also by looking at additional criteria when making the overall assessment (see Table 5 above).

A further mitigating point is that the conclusions are not framed as recommending the adoption of specific *models* for R&I collaborations, but rather as illustrations of the *type* of outcomes and impacts that can be achieved, and the *mechanisms and factors* that contribute to their achievement<sup>6</sup>. This reduces the risk of providing undue emphasis on replicating a particular initiative.

It also highlights the role of the evidence review findings as a reference point in developing future UK R&I cooperation initiatives. These provide a valuable source of insight about 'what works'. However, they will need to be used carefully as part of an initiative design process taking into close account of the contextual factors and building strong monitoring, evaluation and learning processes into implementation arrangements to allow for adaptive management over the course of the initiative.

## 3. Types of outcomes and impacts achieved

### Overview

The types of outcomes described in the evidence documents were classified during the first stage of the review (initial identification of studies and assessment of their relevance). These were then crystallised into a set of broad outcome categories to provide a heuristic framework for the analysis. This was undertaken through an inductive process, i.e., reading through the data and identifying categories in an emergent way. This analysis was very slightly refined following the detailed review (e.g., capacity building was separated into two separate sub-

---

<sup>6</sup> A key reason for this is the high causal density of the R&I interventions, which by their nature are tailored to very specific contexts during both their design and implementation phases.

categories – one for individuals, the other for institutions). This process produced the following typology of outcomes and impacts from international R&I collaboration initiatives, comprising the types of outcomes and impacts, as well as their respective measures:

- **Research quality**
  - Number of publications
  - Citation rates
  - Positioning for use
- **Research capacity - individuals**
  - Improved knowledge / skills
  - Improved proposal writing
  - Networking and partnerships
  - Career progression
  - Mindset shift
- **Research capacity - institutions**
  - Improvements in research infrastructure, technology, databases
  - Establishment of national / international networks
- **Impact**
  - Improved policies in different sectors (flood management, health, agriculture, urban development)
  - Intellectual property, spin-out companies, increase in revenue
  - Improvements in teaching quality and learning outcomes in education
  - Improved health
- **Other donor country benefits**
  - Commercial benefits (trade or investment)
  - World-leading networks for the UK
  - Perception of UK as leader in R&I
  - Science diplomacy / soft power

### **Definitions of results terms used in this report**

**Activities:** the R&I work undertaken through the collaboration

**Outputs:** the results of research-related activities, such as journal articles and other outputs from the collaboration

**Outcomes:** further positive benefits from the collaboration that may (but not necessarily) include high quality research<sup>7</sup>, building of capacity for individuals or institutions and research uptake by research users (e.g. policymakers)

**Impacts:** changes in the real-world as a result of research being used e.g. to solve development challenges. Also – where these arise – other benefits for the donor country

**Indicators:** performance measures used to describe the other results in this box. The terms ‘metrics’ or ‘measures’ are used in this report with the same meaning

The rest of this section now reviews the evidence for each of these types of outcomes and impacts.

## Research quality

Research quality has traditionally been assessed by measures relating to the number of publications produced and how frequently they are cited in other research. However, in recent years the case has been made for taking other factors into account in assessing the quality of development research. These include for instance, Research Quality Plus (RQ+), which also considers scientific integrity, legitimacy, importance, and positioning for use, as indicators of quality<sup>8</sup>.

The evidence reviewed considers research quality on a range of such measures and provides extensive examples of international R&I collaboration producing high quality research. Of the 34 documents reviewed, 14 mention outcomes in terms of research quality and excellence<sup>9</sup>. Of these, 17 indicate international R&I collaboration as a contributing factor in improvements in research quality, while one evaluation indicates a neutral impact (US National Science Foundation’s Partnerships for International Research and Education (PIRE) Program).

Taking into account the other criteria for the strength of evidence (study quality, consistency of findings, varied contexts) this large number of examples provides very strong evidence of international R&I collaboration producing high quality research.

---

<sup>7</sup> While the distinction here between a research report as an output and research quality as an outcome is a fine one, it can be understood, for instance, by considering that while all research collaborations will typically produce outputs, these will not necessarily be of high quality.

<sup>8</sup> International Development Research Centre (2022) RQ+ Evaluating Research Differently. Extracted from: <https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/60945/IDL-60945.pdf?sequence=2&isAllowed=y>

<sup>9</sup> **UK Funds** (4): Newton Fund, UKRI FIC, ESRC – FCDO Joint Fund for Poverty Alleviation Research Programme, GCRF **UK Programmes** (8): ESRC – FCDO RLO programme, Health Systems Research Initiative, MRC-DFID Concordat, BBSRC’s investments in antimicrobial resistance research, BA Cities & Infrastructure Review, Humanitarian Innovation & Evidence Programme, FAC, Adaptation Research Initiative in Africa and Asia. **UK Projects** (3): Interim Evaluation of the UK Vaccine Network, CSSP China, The Impact of collaboration: the value of UK medical research to EU science and health. **UK Megaprojects** (2): UK Membership ESO partnership, UK Investment in ESA (see footnote 3 on the following page for a definition of this term). **International Programmes** (1): National Science Foundation’s PIRE

For the majority of initiatives reviewed therefore, the evaluators and/or project participants report that the research outputs were of high quality. As informed stakeholders, these opinions provide useful evidence that international collaboration can promote research quality.

This finding is further confirmed by several measures of research quality and excellence, including traditional measures such as number of publications and citations as well as other evaluative frameworks such as RQ+.

The traditional metrics are the most often cited indicators of success in the projects, programmes and funds reviewed. These include measures of quantity (e.g., the number of publications and citations), as well as of quality (e.g., whether research was published or subsequently cited in prestigious journals and the nature of the peer review process).

The evidence reveals numerous examples of international collaboration having distinct positive impacts on the standard metrics, improving both citation and publication rates. This is further confirmed by more holistic and flexible assessment frameworks such as the RQ+ which also demonstrate clear links between international collaboration and improved quality.

In addition to some references to the RQ+ framework, the evidence highlights positive results for other indicators of quality including that research was taken up and used for instance in developing policy or in creating new products or services. This indicates that overall, there is strong evidence of a range of R&I collaborations producing high quality research.

These results are summarised in Table 6.

**Table 6: Measures of research quality in the reviewed evidence**

Research quality measure	Number of evaluations	Name of initiative
Outputs measured by number of publications	8 out of 14	<p><b>Fund (4):</b> Fund for International Collaboration (FIC), Newton Fund, GCRF, ESRC – FCDO Joint Fund for Poverty Alleviation Research Programme</p> <p><b>Programme (2):</b> BBSRC Investments in Antimicrobial Resistance (AMR) Research</p> <p><b>Project (1):</b> Climate Science to Service Partnership (CSSP) China-UK</p> <p><b>Megaproject (1)<sup>10</sup>:</b> European Southern Observatory (ESO), European Space Agency (ESA)</p>

<sup>10</sup> Multi-country scientific collaborations based on huge investments in research infrastructure and equipment, e.g. CERN, the European Space Agency, European Southern Observatory. These are classified separately as a sui generis type of international R&I collaboration.



Research quality measure	Number of evaluations	Name of initiative
Citation rates	6 out of 14	<p><b>Fund (2):</b> FIC, ESRC – FCDO Joint Fund for Poverty Alleviation Research Programme</p> <p><b>Programme (2):</b> ESRC – FCDO Raising Learning Outcomes (RLO), British Academy (BA) Cities &amp; Infrastructure</p> <p><b>Megaproject (2):</b> ESO, ESA</p> <p><i>Also mentioned in <i>The impact of collaboration – the value of UK medical research to EU science and health.</i></i></p>
Positioning for use	9 out of 14	<p><b>Fund (2):</b> FIC, Newton Fund</p> <p><b>Programme (5):</b> BBSRC investments in AMR research, Collaborative adaptation research initiative Africa and Asia (CARIAA), Humanitarian Innovation and Evidence Programme (HIEP), Future Agricultures Consortium (FAC), ESRC - FCDO RLO</p> <p><b>Megaproject (2):</b> ESO, ESA</p>

**We found strong evidence indicating a positive impact of international R&I collaboration in terms of outputs (8 out of 14 evaluations) as measured by the number of publications.**

These include:

- The Fund for International Collaboration (FIC) reported a higher number of outputs per GBP million invested than all other UKRI grants including when measuring number of publications, new research databases and technical products<sup>11</sup>.
- The Newton Fund evaluation reported the formation of at least 3,228 collaborations and partnerships resulting in over 5,700 publications<sup>12</sup>.

<sup>11</sup> Technopolis (2021b). Evaluation of the Fund for International Collaboration (FIC) Baseline and Interim Process Evaluation - Technical report. Available at: <https://beta.ukri.org/wp-content/uploads/2022/07/UKRI-27072022-FIC-Baseline-and-Interim-Process-Evaluation-Technical-Report.pdf>

<sup>12</sup> Tetra Tech International Development (2022). Newton Fund- Final evaluation report. Available at: <https://www.newton-gcrf.org/wp-content/uploads/2022/02/newton-fund-final-evaluation-report.pdf>

- The BBSRC AMR programme reported national and international academic collaboration as a strength with 67% of its publication outputs having an international co-author<sup>13</sup>.
- The ESRC – FCDO Joint Fund for Poverty Alleviation Research Programme produced academic research that is significant in quantity as measured by the number of academic publications (over 308 had been published or accepted for publication at the time of the evaluation)<sup>14</sup>.
- The China-UK Climate Science to Service Partnership, which emphasised publishing only peer-reviewed outputs in well-established scientific journals, produced over 300 peer-reviewed papers, with examples in high-quality journals and some papers winning awards<sup>15</sup>.

**There is also strong evidence of the positive impact of international R&I collaboration on citation rates (6 out of 14 evaluations).** This characterisation is based on the fact that a significant number of high quality evaluations from different contexts make the same point. Two studies from the sample highlight this clearly:

- International collaboration is described by the UK medical research to EU science and health study as a ‘clear win-win situation’ for medical researchers in the UK and the EU. This was evidenced by the proportion of internationally co-authored publications in the top 10% of highly cited publications being higher for UK and other EU co-publications when compared either with EU26<sup>16</sup> only (without UK co-authors) or UK only (without EU26 co-authors). The proportion of HCP10 level (papers in top 10% of highly cited papers)<sup>17</sup> publications – a strong indicator of quality – increased from 15% to 23% for EU26-UK collaborations according to one study<sup>18</sup>.
- The evaluation of the benefits to the UK from the European Space Agency showed that by standard metrics of quality in research (citation and publication rates) UK publications are growing in number and quality and that the UK outperforms competitors in Europe considerably at HCP10 level on this metric<sup>19</sup>.

This performance is also evidenced in ODA-supported collaborations. For instance:

---

<sup>13</sup> UK Research and Innovation (2022). Evaluation of the effectiveness and impact of BBSRC's investments in antimicrobial resistance research. Available at: <https://www.ukri.org/wp-content/uploads/2022/11/BBSRC-161122-EvaluationOfTheEffectivenessAndImpactOfBBSRCsInvestmentsInAMRResearch.pdf>

<sup>14</sup> LTS International (2021). ESRC – FCDO Joint Fund for Poverty Alleviation Research Programme - Phase 3 Evaluation final report. Available at: <https://www.ukri.org/wp-content/uploads/2022/08/ESRC-080822-JointFundPovertyAlleviationResearchProgrammePhaseThreeEvaluation-FinalReport.pdf>

<sup>15</sup> Scaife, A et.al (2021). The U.K.–China Climate Science to Service Partnership. Available at: <https://doi.org/10.1175/BAMS-D-20-0055.1>

<sup>16</sup> EU28 without the UK and Croatia

<sup>17</sup> Technopolis (2018). Review of the MRC-DFID Concordat. Available at: <https://www.technopolis-group.com/wp-content/uploads/2020/04/MRC-DFID-Concordat.pdf>

<sup>18</sup> Technopolis (2017). The impact of collaboration: The value of UK Medical research to EU science and health. Available at: [https://www.cancerresearchuk.org/sites/default/files/main\\_report\\_v8.pdf](https://www.cancerresearchuk.org/sites/default/files/main_report_v8.pdf)

<sup>19</sup> Technopolis (2022a). Impact evaluation of UK investment in ESA. PART A: First impact evaluation of CMIN19 investments. Available at: [https://www.technopolis-group.com/wp-content/uploads/2022/10/3617-Impact-Evaluation-Report\\_PART-A\\_220427\\_FINAL.pdf](https://www.technopolis-group.com/wp-content/uploads/2022/10/3617-Impact-Evaluation-Report_PART-A_220427_FINAL.pdf)

- The ESRC – FCDO Joint Fund for Poverty Alleviation Research Programme produced high-quality academic research as measured by the citations rate. For instance, ten of the publications had a Field Citation Rate of 20 – i.e. they were twenty times more likely to be cited than other publications in their field<sup>20</sup>.
- The ESRC – FCDO RLO research scored well against both standard metrics of research quality (indicated by publications and citations rates) and when measured by the more holistic framework of RQ+<sup>21</sup>.
- The UKRI FIC reported that publications from international projects had higher citation impacts, but that co-authoring with developing countries tended to have a lower impact – highlighting a potential trade-off between building the research capacity of developing countries and research quality and quantity<sup>22</sup>.

When considering the impact of international collaboration on factors beyond the standard metrics of publication and citation rates, there are numerous examples of the positive outcomes of research collaboration. For instance, the evidence provides extensive and strong evidence (9 out of 14 studies) of programmes **reporting research quality with positioning for use**. In this context, this includes undertaking research which is carefully designed with the intention of filling existing evidence gaps or of informing the creation of new tools and technologies.

A range of different measures were used in the evaluations to demonstrate this. For example, the Newton Fund evaluation used quantitative surveys of project participants to assess their self-reported perceptions on issues such as increased capacity to translate research into products, or to establish new institutional and commercial links. Alternatively, evaluations based their assessments on the results of qualitative assessments of results, identified through interviews with programme participants. This included whether the collaboration had led to the creation of innovative research tools (FIC) or filled knowledge gaps (Future Agriculture Consortium).

Examples of delivering high quality research that is positioned for use include:

- Some FIC projects progressing to real world application, increasing the Technology Readiness Level of their solutions and creating innovative research tools, models, and materials<sup>23</sup>.
- Newton Fund non-UK Award Holders from industry and technology sectors reporting increases in their capacity to translate research into products (84%), capacity to establish new institutional and commercial links (83%) and raising their profile in the

---

<sup>20</sup> LTS International (2021). ESRC – FCDO Joint Fund for Poverty Alleviation Research Programme - Phase 3 Evaluation final report. Available at: <https://www.ukri.org/wp-content/uploads/2022/08/ESRC-080822-JointFundPovertyAlleviationResearchProgrammePhaseThreeEvaluation-FinalReport.pdf>

<sup>21</sup> NIRAS LTS International (2022). Raising Learning Outcomes (RLO) Phase 1 Programme Evaluation ESRC-FCDO- Final report. Available at: <https://www.ukri.org/wp-content/uploads/2022/08/ESRC-020822-RLOFinalReport.pdf>

<sup>22</sup> Technopolis (2021b).

<sup>23</sup> UK Research and Innovation (2021b).

fields of applied research and product development (89%), as well as improved capacity to commercialise innovative products (76%)<sup>24</sup>.

- The BBSRC investments in AMR reported research of high quality that enabled future collaborative work with industry, policymakers, academics, users, and practitioners<sup>25</sup>.
- The Collaborative Adaptation Research Initiative – Africa and Asia has produced high-quality, innovative research with a very good rating from the RQ+ assessment. The investment, though small for each institution level, allowed the production of influential research papers, conducting capacity building, and involving key development stakeholders in climate change discussions. The evaluation describes the research as foundational, with the potential to influence future climate change decisions<sup>26</sup>.
- The evaluation of the Future Agricultures Consortium confirmed that it has provided multi-country evidence and perspectives, filling knowledge gaps and framing issues in new ways with high-quality of products<sup>27</sup>.
- The Humanitarian Innovation & Evidence Programme (HIEP) produced high-quality evidence and promoted findings to a wide audience of policymakers, practitioners and researchers. HIEP influenced policy and strategy development processes at national and international levels, according to its evaluation<sup>28</sup>.
- The UK's contribution to supporting the European Southern Observatory has led to the development of novel technologies that have been adopted and used, with contributions generating substantial new knowledge about the earth, solar system and wider universe.

The only relevant programme reviewed that is non-UK funded, the US National Science Foundation's PIRE programme, made international collaboration a mandatory requirement to receive funding<sup>29</sup>. Although its evaluation did not find a measurable positive outcome, the study states that research productivity and quality was not compromised by this requirement.

The evidence review also highlighted some challenges and unintended outcomes of research collaboration that future HMG initiatives should be mindful of. It occasionally showed that the **impacts on research quality and excellence were not always shared equally among initiatives participants**. Often researchers affiliated with institutions in the Global South were less well represented than those from institutions in the Global North in publication and citation

---

<sup>24</sup> Tetra Tech International Development (2022)

<sup>25</sup> UK Research and Innovation (2022). Evaluation of the effectiveness and impact of BBSRC's investments in antimicrobial resistance research. Available at:

<https://www.ukri.org/wp-content/uploads/2022/11/BBSRC-161122-EvaluationOfTheEffectivenessAndImpactOfBBSRCsInvestmentsInAMRResearch.pdf>

<sup>26</sup> Baastel (2018). Collaborative Adaptation Research Initiative in Africa and Asia- Summative Evaluation- Final report. Available at: <https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/57296/IDL-57296.pdf>

<sup>27</sup> Upper Quartile (2014). Evaluation of the Future Agricultures Consortium (FAC)- Final report. Available at: <http://www.future-agricultures.org/wp-content/uploads/2017/06/Evaluation-of-FAC-final-report.pdf>

<sup>28</sup> Itad (2018). Evaluation of Humanitarian Innovation and Evidence Programme-Final report. Available at: [https://assets.publishing.service.gov.uk/media/5d31b732e5274a14efbe50dd/Evaluation\\_of\\_HIEP\\_summative\\_phase\\_two.pdf](https://assets.publishing.service.gov.uk/media/5d31b732e5274a14efbe50dd/Evaluation_of_HIEP_summative_phase_two.pdf)

<sup>29</sup> ABT Associates (2015). Evaluation of the National Science Foundation's Partnerships for International Research and Education (PIRE) Program-Volume 1-Final report. Available at: <https://files.eric.ed.gov/fulltext/ED563795.pdf>

rates (see below for further discussion on equitable partnerships). Examples of these challenges include:

- The evaluation of the ESRC-FCDO Joint Fund for Poverty Alleviation Research reported that Northern-affiliated Joint Fund researchers published more and had higher citation rates compared to their Southern counterparts<sup>30</sup>.
- The MRC-DFID Concordat generated 1,457 scientific publications (2006-2010) with only 15% of co-investigators in low-income countries, 4% in lower-middle income countries with the majority (76%) being from upper-income countries<sup>31</sup>.
- The evaluation of the PIRE programme reported good impacts on numbers of publications, but noted that the effect varied among researcher groups (early career researchers benefited more than senior researchers)<sup>32</sup>.

## Research capacity

The UK Collaborative on Development Research (UKCDR)<sup>33</sup> defines capacity-strengthening as “*enhancing the ability and resources of individuals, institutions and/or systems to undertake, communicate and/or use high-quality research efficiently, effectively and sustainably*”. Thus R&I programmes often aim to strengthen the capacity of individuals and institutions to become better at carrying out research.

The evaluations use several measures to assess increases in research capacity, some of which overlap with those for research quality. For example, quantitative indicators include the number of publications, new research databases and models, research methods and technical products. Other, non-tangible indicators include improved soft skills and understanding of research agendas.

Five distinct measures were found in the evidence to assess capacity building for individuals and institutions. The first of these is the development or strengthening of networks and partnerships. Individual researchers may benefit from these through the personal contacts they make, expanding their knowledge and creating the potential for future research cooperation. Institutions may also benefit, both through the increased capacity of their individual staff members and also through the establishment of relationships that may endure even when the staff involved move on to other jobs.

Beyond this, there are three measures relating specifically to capacities of individuals:

- Improved knowledge and skills, including specific skills for grant writing
- Career advancement

---

<sup>30</sup> LTS International (2021).

<sup>31</sup> Technopolis (2018).

<sup>32</sup> ABT Associates (2015).

<sup>33</sup> <https://www.ukcdr.org.uk/what-we-do/our-work/research-capacity-strengthening/>

- Mindset shift (meaning the exposure to new ideas and practices, bringing change to working practices and the ideation process).

The fifth and final measure relates to capacity building for institutions – where international collaborations lead to improvements in research infrastructure, technology or databases.

## Individual capacity-building

The review indicated that of the 34 documents reviewed, 14 described outcomes that built human capital among researchers, providing strong evidence of this outcome, based on the fact that a large number of high quality evaluations from different contexts make the same point.<sup>34</sup> Table 7 outlines evidence on research capacity at the individual level and Table 8 outlines it at the institutional level. The text below each table presents the evidence for these findings.

**Table 7 Capacity building for individual researchers**

Measure of individual research capacity	No. of evaluations	Name of initiative
Improved knowledge and skills <sup>35</sup>	9 out of 14	<p><b>Programmes (6):</b> Health Systems Research Initiative (HSRI), Royal Academy of Engineering (RAEng) International Industry-Academia Linkage Programmes, British Academy Cities &amp; Infrastructure, Leaders in Innovation Fellowships (LIF), MRC-DFID Concordat; GCRF Africa Catalyst</p> <p><b>Projects (1):</b> Writing Workshops</p> <p><b>Megaprojects (1):</b> European Southern Observatory (ESO)</p> <p><b>International Programmes (1):</b> US National Science Foundation's PIRE</p>
Improved proposal writing skills to	2 out of 14	<b>Fund (1):</b> Global Challenges Research Fund

<sup>34</sup> **UK Funds (1):** UKRI FIC **UK Programmes (6):** HSRI, MRC-DFID Concordat, BA Cities & Infrastructure, HEP SSA, LIF, International Industry-Academia Linkage Programme. **UK Projects (3):** Writing Workshops, CSSP China-UK, Africa Prize for Engineering Innovation. **UK Megaprojects (1):** ESO. **International Programmes (1):** US National Science Foundations PIRE

<sup>35</sup> These are assessed in different ways. For instance, the Writing Workshops evaluation measured this through surveys of beneficiaries asking whether they felt participation had improved different kinds of skills; the British Academy academia-industry linkages programme evaluation assessed this in part where participants went on to acquire formal (non-academic) qualifications.

Measure of individual research capacity	No. of evaluations	Name of initiative
access funding opportunities		<b>Project (1):</b> Writing Workshops
Networking and partnerships	9 out of 14	<p><b>Fund (1):</b> UKRI FIC</p> <p><b>Programme (3):</b> Higher Education Partnerships in sub-Saharan Africa (HEP SSA), LIF, RAEng International Industry-Academia Linkage Programmes</p> <p><b>Project (3):</b> Writing Workshops, CSSP China-UK, Africa Prize for Engineering Innovation</p> <p><b>Megaprojects (1):</b> European Southern Observatory (ESO)</p> <p><b>International Programmes (1):</b> PIRE</p> <p>Also mentioned in <i>The impact of collaboration – the value of UK medical research to EU science and health.</i></p>
Career advancement	5 out of 14	<p><b>Programme (2):</b> BA Cities &amp; Infrastructure, MRC-DFID Concordat</p> <p><b>Project (1):</b> Writing Workshops</p> <p><b>Megaprojects (1):</b> European Southern Observatory (ESO)</p> <p><b>International Programmes (1):</b> PIRE</p>
Mindset shift	2 out of 14	<b>Programme (2):</b> BA Cities & Infrastructure, LIF

The evidence reviewed shows that international R&I collaboration led to the building of human capital, whether as a direct stated aim of the programme, project or fund, or as an additional benefit which collaboration brings to participants and the wider society. Human capital can be understood as the available workforce and their skills, education, knowledge, and wellbeing.

Capacity building was assessed in the evaluations through both quantitative and qualitative approaches. Improvements in individual capacity building were typically measured through beneficiary surveys e.g. of the participants' subjective perceptions of improved research



management and administrative skills (HSRI). In some cases such surveys used objective measures (albeit ones reported by respondents).

The same approach was also used to assess the creation or deepening of networks and partnerships and to assess changes in mindsets. For instance, the Writing Workshops evaluation drew conclusions by asking through surveys if participants reported that taking part helped them to create such networks. Similarly, the FIC evaluation used the same approach to ask beneficiaries if participation had improved their understanding of international research agendas.

### Improved knowledge and skills

A high number of evaluations reported that international R&I collaboration had a positive impact on researchers' knowledge and skills. These included improvements in professional technical skills and also personal capacity development, including building self-confidence and patience.

Different collaborations reported different outcomes in terms of knowledge and skills development. This reflects both the types and purposes of collaborations and the focus of evaluators' reports, which had different methodologies and areas of interest.

- The HSRI reported that researchers improved their knowledge and technical skills in areas including research leadership, research management and administrative skills, community engagement and knowledge transfer skills<sup>36</sup>. Similar outcomes were found for the US National Science Foundation's PIRE programme: participants reported increased self-confidence in their field of study (69%) and had a better understanding of how scientists work on real problems (81%) after working together<sup>37</sup>.
- The British Academy has run 'Writing workshops' since 2018 with support from DSIT through the GCRF. Evidence suggests that the workshops have successfully supported researchers in the Global South in developing publications and funding proposals, not only by increasing their academic writing skills but also by helping them gain understanding of how to navigate the publication process. Results show that most workshop participants were more likely to develop and submit grant proposals due to the workshop<sup>38</sup>. Moreover, some of the workshop participants managed to get funding after the workshop. For instance, one participant obtained a funded position at an elite university in their home country, and the student received a position as a research fellow at a UK university. The LIF programme, which also targeted early career

---

<sup>36</sup> Technopolis (2021c). Review of the Health Systems Research Initiative-Final report. Available at: <https://www.ukri.org/wp-content/uploads/2021/06/MRC-130121-HSRI-ReviewFinalReport.pdf>

<sup>37</sup> ABT Associates (2015).

<sup>38</sup> British Academy (2021). Review of the British Academy Writing Workshops programme. Available at: [https://www.thebritishacademy.ac.uk/documents/4657/Review\\_of\\_the\\_British\\_Academy\\_Writing\\_Workshops\\_programme\\_executive\\_summary.pdf](https://www.thebritishacademy.ac.uk/documents/4657/Review_of_the_British_Academy_Writing_Workshops_programme_executive_summary.pdf)



researchers, was reported to have improved researchers' self-confidence and their entrepreneurial, personal and technical skills<sup>39</sup>.

- The BA Cities & Infrastructure programme was shown to have built the capacity of researchers from low- and middle-income countries to carry out interdisciplinary and challenge-led research and their understanding of how to disseminate their knowledge<sup>40</sup>.

Evidence from three papers suggests that R&I programmes are key to improving participants' technical and soft skills. For example:

- the Health Systems Research Initiative (HSRI) evaluation suggests that the programme improved participant researchers' and institutions' knowledge and technical skills<sup>41</sup>.
- Similar results are found in the MRC-DFID Concordat programme review and the evaluation of the Royal Academy of Engineering Global Challenges Research Fund (GCRF) Africa Catalyst programme<sup>42</sup>. Evidence from both papers shows that capacity building is a key achievement of the programmes.

One of the expected R&I outputs of the projects funded by the FIC was publications co-authored between researchers and innovators in the UK and partner countries. The FIC evaluation also finds that the programme produces more outputs per million pounds invested than other UKRI grants which support international collaboration.

The HSRI-funded projects have also led to capacity development for Low-or Middle-Income Country (LMIC) and High-Income Country researchers and institutions. The evaluation found that improved knowledge and technical skills was the most significant capacity development outcome in both LMICs and HICs.

Megaprojects are enormous multi-country initiatives and research infrastructures which are generally created to solve great societal challenges. The evaluation of the European Southern Observatory (ESO) reported similar outcomes to the collaborations explored above, with human capacity developed as a direct and indirect result of researchers working together.

The ESO has a tailored programme of support at different career levels with fellowship and studentship programmes. It also reported the building of personal attributes, knowledge and skills that would expand human capital, with participants from the UK reporting that it had a significant or critical impact on their ability to work in an international environment and on their

---

<sup>39</sup> Royal Academy of Engineering (2021). Five years of the Leaders in Innovation Fellowships Programme Evaluation of the Leaders in Innovation Fellowships Programme - Final report, Vol 1. Main report. Available at: <https://raeng.org.uk/media/sbjntfjg/lif-5yr-book-jul2021-final-web-even-lower-spreads.pdf>

<sup>40</sup> Technology Development Group (2020). British Academy Cities & Infrastructure Review report. Available at: <https://www.thebritishacademy.ac.uk/documents/3298/Technology-Development-Group-Evaluation-British-Academy-Cities-Infrastructure.pdf>

<sup>41</sup> Technopolis (2021b).

<sup>42</sup> Royal Academy of Engineering (2022). Evaluation of the GCRF Africa Catalyst programme- Final report. Unpublished

experimental skills, as well as their team working, project management, communication, computing and problem-solving skills<sup>43</sup>.

Some of the evidence highlighted challenges. One evaluation found that participants were empowered at an individual level, with those who collaborated directly building their skills and knowledge. However, these improvements were not necessarily transferred to their organisations and the wider community. This finding underlines the challenge of sustaining the impact of an intervention when individuals who develop their capacities leave the organisation in question.

The evidence also shows that the human capital impacts of international collaboration are sometimes seen more on early career researchers, who are given access to the knowledge and skills of their more senior collaborators that they may not otherwise have had, rather than on more senior researchers. An example of a programme which sets out to address this potential imbalance is the MRC-DFID Concordat which included five fellowship schemes aimed at different career stages (for example, career development awards for early career researchers and Senior Clinical Fellowships)<sup>44</sup>.

### Networking and Partnerships

Almost all the evidence reviewed showed the positive impact of international R&I collaboration in creating and strengthening networks and partnerships.

Networks and partnerships have an influence on R&I capacity, allowing participants to expand their knowledge base, access new ideas and practices and work together in sharing technologies to solve common challenges. Often the creation of networks and partnerships between those involved in a project was a measurable goal or an explicit part of the process of implementation. For example:

- The Writing Workshops programme helped to build a strong foundation for partnerships between researchers in the UK and other countries, with over 90% of respondents stating that the programme helped participants with creating networks and partnerships. However, fewer respondents believed that it encouraged collaborations where all could contribute equally (78%)<sup>45</sup>.
- The FIC evaluation finds that the programme has improved the ability of a large majority of UK researchers and innovators to work with international teams and increased understanding of their capabilities, research agendas and priorities<sup>46</sup>. Some respondents stated that FIC has played a crucial role in understanding how the UK may collaborate with international research-industry sectors.

---

<sup>43</sup> Technopolis (2022b). Socio-Economic Impact evaluation study of the UK subscription to ESO - Final report. Available at:

<sup>44</sup> Medical Research Council and Department for International Development (2018).

<sup>45</sup> British Academy (2021).

<sup>46</sup> Technopolis (2021b).

- The PIRE programme was shown to have facilitated sustainable partnerships beyond the life of the projects it funded, with the most successful participants being those who had the opportunity to work collaboratively.<sup>47</sup>
- Examples of network building include the Africa Prize for Engineering Innovation. This programme had a gender focus; its specific aim was to build the capacity of female entrepreneurs. The programme achieved this by creating networks where alumni engaged in knowledge transfer, and by mentoring female entrepreneurs through a formal and informal buddy system<sup>48</sup>.

An unintended consequence reported by some projects was that the opportunities to collaborate and build networks were not equally distributed between participants. Evidence showed that in many cases Northern partners were more likely to travel than their Southern counterparts than the other way round. In the report on the impact of collaboration and the value of UK medical research to EU science and health, a minority of participants (699 of 6,907) left the country they were based in when they took the early career researcher grant. It was noticeable that most researchers (20% of those who moved countries) chose the UK, with smaller proportions moving to Germany (17%), France (10%) or the Netherlands (8%)<sup>49</sup>.

The US National Science Foundation PIRE programme showed a similar challenge: foreign investigators were less likely to travel internationally than US-based investigators (48%). Those who were given the opportunity to travel abroad, also mainly travelled to the funder's country, in this case the US (78%). Among those who were able to travel, many reported very positive results including discussing developments in the research field (83%), sharing data and resources (76%), meeting at conferences (67%), and planning and conducting research projects (57%)<sup>50</sup>.

### Career Advancement

There is a moderate degree of evidence that international R&I collaboration has a positive effect on researchers' career advancement. The BA Cities & Infrastructure evaluation noted a high level of career development amongst participants, with 88% of respondents reporting a positive impact on their careers. This impact was reported by both participants from LMIC countries and their collaborators in the UK<sup>51</sup>.

The Writing Workshops programme had a positive impact on participants' career development by enhancing their self-confidence and helping them progress as researchers (94%) and providing a better understanding of future steps (89%). While fewer respondents reported actual career advancements (81%), nearly all believed that the programme provided critical building blocks for early career researchers' advancement<sup>52</sup>. As noted earlier, after the

---

<sup>47</sup> ABT Associates (2015).

<sup>48</sup> Royal Academy of Engineering (2022). Africa Prize for Engineering Innovation- Final evaluation report. Unpublished

<sup>49</sup> Technopolis (2017).

<sup>50</sup> ABT Associates (2015).

<sup>51</sup> Technology Development Group (2020).

<sup>52</sup> British Academy (2021)

workshop some participants went on to submit or publish research or had successful funding applications.

## Mindset shifts

A mindset shift can be understood as a change in thinking as a result of exposure to new ideas, concepts and ways of doing things. We also found moderate evidence that international R&I collaboration promoted such shifts in 2 out of the 14 studies which mentioned impacts on human capital.

For example, the LIF programme was reported to have changed participants' mindsets on research and development, and the BA Cities & Infrastructure evaluation stated that collaboration facilitated a crucial mindset shift in LMIC researchers through exposure to interdisciplinary, challenge-led research. The report said that this opportunity will better enable them to effectively work on projects addressing the SDGs, and that the capacity-building has been effective.

## Institutional capacity

**Table 8: Capacity building for institutions**

Measure of institutional research capacity	No. of evaluations	Name of initiative
Improvements in research infrastructure, technology, and creation of databases	3 out of 7	<p><b>Programmes (1):</b> Health Systems Research Initiative (HSRI)</p> <p><b>Fund (1):</b> Fund for International Collaboration (FIC)</p> <p><b>Megaprojects (1):</b> European Southern Observatory</p>
Establishment of national and international networks and partnerships	5 out of 7	<p><b>Programmes (2):</b> Raising Learning Outcomes in Education Systems (RLO), Leaders Innovation Fellowships (LIF)</p> <p><b>Funds (1):</b> Fund for International Collaboration (FIC)</p> <p><b>Programmes (1):</b> GCRF Africa Catalyst</p> <p><b>Projects (1):</b> British Academy Writing Workshop.</p>

There is strong evidence of international R&I collaborations building institutional capacity to undertake research, according to the criteria set for assessing the quality of evaluations for this study (at least three studies of moderate or high quality from different contexts providing consistent findings).

Improvements in institutional capacity were measured in different ways in the evaluations reviewed, for instance through open-ended qualitative discussions with programme implementers on the results of collaboration activities (HSRI, RLO).

### Improvements in research infrastructure, technology and creation of databases

There is strong evidence of international R&I initiatives delivering these kinds of improvements. Evidence shows that UK scientists and engineers have developed novel technologies (i.e., next-generation lasers and time reference systems) through the European Southern Observatory Partnership<sup>53</sup>. In addition, the evaluation of the Health Systems Research Initiative shows that through the programme, there were improvements in research infrastructure and generation of datasets.

Results from the evaluation for the Fund for International Collaboration show, for instance, that researchers and innovators agreed that FIC projects provided access to research infrastructure that did not exist nationally and which is fundamental to attaining their research objectives<sup>54</sup>. The FIC evaluation also found that the projects funded have also started producing other R&I outputs, including new research databases, models or tools.

### Establishment of networks and partnerships

An important element of capacity-building is enhancing national and international networking by promoting partnerships among institutions and researchers. Evidence from the 'Writing Workshop' organised by the British Academy suggests that the workshop stimulated professional networking between researchers in the Global South and the UK<sup>55</sup>.

The results also indicate that many connections and partnerships between participants are long-lasting. Additionally, evidence from the Raising Learning Outcomes in Education Systems research programme suggests that the programme fostered collaboration and connections among grant holders or beneficiaries mainly through Annual Workshops.

The evaluation of the Global Challenges Research Fund (GCRF) Africa Catalyst programme indicates that several new partnerships were established with other professional engineering bodies and policymakers in the sub-Saharan African awardees' own countries<sup>56</sup>. Most SSA and UK respondents expressed that they were already working further with their partners or planned to do so.

The Leaders Innovation Fellowships programme evaluation finds that participants established partnerships thanks to the networking opportunities and continuity of mentoring support. Evidence from the Africa Prize for Engineering final evaluation finds that alumni are engaging

---

<sup>53</sup> Technopolis (2022b). Evaluation of the benefits of UK Membership European Southern Observatory partnership. Available at: <https://www.ukri.org/wp-content/uploads/2022/02/STFC-240222-BenefitsUKEuropeanSouthernObservatoryPartnership.pdf>

<sup>54</sup> Technopolis (2021b).

<sup>55</sup> British Academy (2021).

<sup>56</sup> Royal Academy of Engineering (2022).

in knowledge transfer with other alumni and entrepreneurs through formal and informal mechanisms (i.e., mentoring, buddying and WhatsApp groups).

Results from the FIC evaluation show that FIC has created collaborations among researchers and innovators; nearly 38% of the partnerships supported by FIC projects are with overseas partners and 84% are new to UKRI<sup>57</sup>.

## Research uptake and impact

The evaluations provide strong evidence that a variety of R&I collaboration initiatives (financed by both ODA and non-ODA funds) can produce research that is then taken up, leading to changes in the real-world. Results at impact level are very diverse (including for example education, climate science, health, engineering, agriculture and urban infrastructure and planning).

**Table 9 Examples of impacts**

Impact	No. of evaluations	Name of initiative
Improved policies in different sectors (flood management, health, agriculture, urban development)	8 out of 11	<b>Programmes (6):</b> HSRI, CARIAA, BBSRC AMR, FAC, BA Cities & Infrastructure programme, PIRE <b>Project (1):</b> CSSP <b>Megaprojects (1):</b> ESO
Intellectual property, spin-out companies, increase in revenue	3 out of 11	<b>Programmes (2):</b> BBSRC, LIF <b>Megaprojects (1):</b> ESO
Improvements in teaching quality and learning outcomes in education	2 out of 11	<b>Programmes (2):</b> RLO, HEP SSA
Improved health	1 out of 11	<b>Programmes (1):</b> HSRI

Nine of these examples are for ODA projects and two for non-ODA projects (one of these being a US government initiative). This distribution of examples is solely a reflection of the

<sup>57</sup> Technopolis (2021b).

evidence review sample approach, and not of the respective potential of ODA/non-ODA R&I collaborations to deliver impact.

The measures to assess that impacts were achieved are very diverse, reflecting the wide variety of changes in the real world described in the evaluation reports. The methods for these are similarly varied depending on the change being assessed. For instance, intellectual property and numbers of spin-outs can be assessed from programme data reported by participating institutions such as numbers of patents or new companies formed (ESO). In other cases, e.g. contribution to improved policies, these impacts are identified through qualitative descriptions of the contribution of research to policy making processes (e.g. HSRI, CARIAA).

## ODA initiatives

### 1. Climate Science for Service Partnership China

The Climate Science for Service Partnership China is a collaboration between research institutes in the UK and China. Its research supports the development of climate services, ranging from seasonal rainfall forecasts for the Yangtze River Basin to tools for urban planners to protect cities from the risks of weather events such as heatwaves or flooding.

This collaboration, built via dozens of workshops and visiting scientist exchanges, successfully moved entirely online during the Covid pandemic and has now published more than 400 peer-reviewed studies, many generated jointly by UK and Chinese scientists<sup>58</sup>.

Emerging evidence of impact includes an initial evaluation of the usefulness of the Yangtze River valley summer rainfall service, drawing on surveys of users from the disaster risk reduction, agriculture, water resources, and hydropower sectors, which found that this service has been useful in developing a positive flood control plan, “*effectively stopping the flooding, and reducing the flood pressure.*”<sup>59</sup>

### 2. Work on anti-microbial resistance funded by the BBSRC

The Biotechnology and Biological Sciences Research Council invests around GBP 30 million each year on research into the global threat of anti-microbial resistance. An evaluation found that this investment had produced “*high-quality research that was internationally leading*”: for example, 22% of BBSRC AMR research articles were in the top 10% of related Web of Science publications<sup>60</sup>.

The evaluation also found evidence of economic and social impact from this AMR research, while noting the need for the BBSRC to be more ambitious in working to increase this impact. 8% of grants led to new intellectual property, 4% to spin-outs and 11% to influence on policy and practice<sup>61</sup>.

---

<sup>58</sup> Scaife. A et.al (2021).

<sup>59</sup> Scaife. A et.al (2021).

<sup>60</sup> Technopolis (2022c).

<sup>61</sup> Technopolis (2022c).



An example of impact was a fellowship which led to the successful engineering of phage-based diagnostics which can discern bacterial and viral infections in under a minute, far faster than existing diagnostics. This has led to the creation of Lucidix Biolabs, a University of Warwick spin-out<sup>62</sup>.

### 3. Higher Education Partnerships in sub-Saharan Africa (HEP SSA)

HEP SSA, a programme of the Royal Academy of Engineering, aims to address the shortage of engineering skills in sub-Saharan Africa by ensuring that the higher education system produces engineers with the skills and knowledge to meet the needs of industry.

An evaluation found that the programme was “*well designed and able to generate outputs, outcomes and impacts that meet or exceed its objectives*”<sup>63</sup>. Impacts included, for example, the mainstreaming of problem-based learning in universities, wider implementation of teaching and assessment practices, higher levels of curriculum reviews and more secondments to industry than planned.

### 4. Health Systems Research Initiative

This initiative aims to generate research to strengthen and improve health systems in low- and middle-income countries which is directly relevant to decision-makers and practitioners.

An independent evaluation concluded that the initiative has produced rigorous research and that there are cases where this research has informed government policy reports (for example, on mental health care in South Africa) or contributed to broader policy discussions, for example on national health insurance schemes in Indonesia and quality in private health care in Tanzania.

Findings from HRSI-funded projects had also influenced changes to policy or practice in Bangladesh, Vietnam, India, South Africa and Kenya. There has also been evidence of scale-up. For example, Uganda, Burkina Faso, Nigeria and the Democratic Republic of Congo are trying to learn from Kenya’s experience of implementing smart, risk-based health systems regulation, which is the focus of one HSRI project<sup>64</sup>.

Research funded by the HSRI leveraged a further GBP 21.4 million in further funding<sup>65</sup>.

This evidence of take-up of the research has not yet translated into evidence of strengthened health systems in low- and middle-income countries, because most projects are still ongoing, and because it is difficult to attribute system or policy change to one research project.

---

<sup>62</sup> Technopolis (2022c)

<sup>63</sup> Royal Academy of Engineering (2022).

<sup>64</sup> Technopolis (2021c).

<sup>65</sup> Technopolis (2021c).



Nonetheless, the evaluation found some evidence of health benefits for study participants. For instance, in an intervention trial in China, up to 650 patients experienced lower blood pressure, stroke recurrence, hospitalisation and mortality as well as overall improvements in lifestyle<sup>66</sup>.

## 5. The Collaborative Adaptation Research Initiative in Africa and Asia

The Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA) was a UK-Canadian programme which supported research on adaptation to climate change for vulnerable populations in Africa and Asia, such as those living in deltas, semi-arid lands or snowpack-dependent river basins.

The investment allowed 19 main organizations to produce 10-20 research papers each, to conduct extensive capacity building and to allow a variety of key development stakeholders in each country to actively participate in CARIAA<sup>67</sup>.

An evaluation found that the programme produced high-quality research which was in general very innovative, and which had contributed to the development of over 20 local or national plans and strategies, and to over a dozen policies in 11 countries<sup>68</sup>.

The evaluation found limited evidence of communities making decisions based on the evidence generated by the CARIAA research, including district-level use of evidence for development planning in Kenya and Botswana, but noted that this impact was likely to increase with time<sup>69</sup>.

The evaluators found that the research was “*foundational*” on many topics as it had the potential to spearhead new areas of research and to influence discussions and decisions on climate change for years to come<sup>70</sup>.

## 6. Leaders in Innovation Fellowships

Leaders in Innovation Fellowships (LIF) is a programme of the Royal Academy of Engineering which helps engineers around the world to commercialise their innovations by providing them with access to experienced mentors, an international network of peers, and high-quality skills training.

A survey of LIF alumni found that 67% of respondents agreed that LIF had contributed to the strategy of a company, 64% agreed that LIF had contributed to a change of company culture and 60% agreed that LIF had contributed to the growth of the company<sup>71</sup>.

About 60% of respondents said that LIF had helped to improve their understanding of business opportunities in their country and almost half had seen a positive commercial impact from their

---

<sup>66</sup> Technopolis (2021c).

<sup>67</sup> Baastel (2018).

<sup>68</sup> Baastel (2018).

<sup>69</sup> Baastel (2018).

<sup>70</sup> Baastel (2018).

<sup>71</sup> Royal Academy of Engineering (2021).

participation in LIF, with the same proportion saying that they had registered patents, trademarks or other intellectual property rights<sup>72</sup>.

## 7. ESRC-FCDO Raising Learning Outcomes in Education Systems

Raising Learning Outcomes (RLO) was a programme created to build evidence for policy and practice on how to improve learning outcomes in developing countries. An evaluation found that the RLO programme has produced a rich and diverse research portfolio, which significantly contributes to an expanding and deepening body of knowledge on raising learning outcomes in education systems in developing countries<sup>73</sup>.

## 8. The Future Agricultures Consortium

The Future Agricultures Consortium is an Africa-based alliance of research organisations with a network of 90 researchers across Africa and around the world. There is evidence (although not consistent, programme-wide evidence) that organisations are using FAC knowledge products in their own advocacy work, in project design, to guide their own policy and to complement their own research and internally derived evidence.

The FAC evaluation noted that participants valued the FAC for providing a broad, multi-country evidence base and in developing interesting perspectives and framing on research issues. It also recorded perceptions that FAC products are of high quality<sup>74</sup>.

## 9. British Academy's Cities & Infrastructure programme

The Cities and Infrastructure programme funded inter-disciplinary research into making cities sustainable and resilient, with the aim of influencing policy in developing countries. An evaluation found that projects funded by this programme had made significant contributions towards impacts in low- and middle-income countries which are relevant to the Sustainable Development Goals. A range of impacts were measured across each of 17 projects supported by the programme, including changes in policy, regulation and standards<sup>75</sup>.

## Non-ODA initiatives

## 10. British Involvement with the European Southern Observatory

The European Southern Observatory (ESO) is an inter-governmental organisation for ground-based astronomy which has 16 member states. The UK had contributed 16% of the ESO's revenues, as of 2021<sup>76</sup>.

British scientists have been involved in significant discoveries using ESO telescopes which have advanced our understanding of the universe, while scientists and engineers have been

---

<sup>72</sup> Royal Academy of Engineering (2021).

<sup>73</sup> NIRAS LTS International (2022).

<sup>74</sup> Upper Quartile (2014).

<sup>75</sup> Technology Development Group (2020).

<sup>76</sup> Technopolis (2022b).

heavily involved in the development of ESO instruments which have led to a wide range of novel technologies including active and adaptive optics and next-generation lasers.

Nearly half of new ESO papers now involve a UK author, up from just 13% in the period before the UK joined (in 2002), and 15-20% of proposals for observation time come from UK institutions. The ESO has awarded 24 fellowships, 24 studentships and 39 internships to British nationals since 2004<sup>77</sup>.

## 11. Partnerships for International Research and Education (PIRE)

PIRE, which is run by the US National Science Foundation, is a competition for proposals for interdisciplinary research on scientific challenges related to climate change and clean energy.

Evaluation has found that the scheme has successfully promoted opportunities for US scientists and engineers to engage in international collaborations and increased their capacity to do so.

The evaluation found that PIRE journal articles had a higher impact, measured by citations, than an average journal article. Nearly three-quarters of principal investigators noted that their PIRE projects had advanced knowledge or led to discoveries that might help address global challenges which were unlikely to be solved by the efforts of one country acting alone<sup>78</sup>.

## Gender-related results

The evaluations confirm some well-known aspects of gender inequality of the R&I landscape both in the UK and overseas, with these features reflected in different rates of participation by women and men in several of the initiatives reviewed. For instance, the Newton Fund evaluation notes that only a third of award holders were women, reflecting the situation in the wider UK research landscape<sup>79</sup>. The evaluation of the US PIRE programme similarly found that only a minority (between a quarter and a third) of the principal investigators for projects it funded were female. In developing countries, fewer than a fifth of lead researchers for PIRE projects were women<sup>80</sup>.

Several initiatives set to improve gender equality outcomes including through their design and management processes and/or through the subjects of the research collaborations they supported. The evaluations provide strong evidence of partial success in this task. The fact that achievements were limited (as exemplified in the following cases) highlights considerable grounds for concern, with relevance for the future design of international R&I collaboration initiatives. For instance:

---

<sup>77</sup> Technopolis (2022b).

<sup>78</sup> ABT Associates (2015).

<sup>79</sup> Tetra Tech international Development (2022).

<sup>80</sup> ABT Associates (2015).

- The Joint Fund evaluation noted that the programme mandated the application of a gender lens in the selection and approval of projects, resulting in a strong focus on gender inequality in the research it funded<sup>81</sup>.
- The Raising Learning Outcomes evaluation found that the programme took an inclusive approach to gender and equity though with mixed success. Among the projects funded by the programme only one had a specific gender focus<sup>82</sup>.
- The Writing Workshops project introduced career development and writing workshops primarily targeted at early career Black and African women academics<sup>83</sup>.
- The evaluation of the GCRF Africa Catalyst programme confirmed a strong equality, diversity and inclusion focus in the programme, with 91% of project staff responding to a survey confirming that their projects embedded gender-inclusive approaches, at least to some extent<sup>84</sup>.
- The evaluation of the Higher Education Partnerships in Sub-Saharan Africa found that around a third of projects had managed to integrate gender-balance considerations into their projects, a third were in the process of doing so and the remaining third had not done so<sup>85</sup>.
- The MRC-DFID Concordat evaluation also found that gender balance was a concern, although steps to improve this led to similar levels of applications being received from men and women during the course of the initiative<sup>86</sup>.
- The Africa Prize for Engineering Innovation took steps to improve the diversity of applicants, resulting in the proportion of female applicants rising from 9% in 2014 to 21% in 2021<sup>87</sup>.
- DSIT introduced mandatory gender equality statements for all Newton Fund activities, albeit at a relatively late stage (2020) given that the Fund was launched in 2014.
- While the evaluation of the Newton Fund-supported Leaders in Innovation Fellowships highlights the initiative's significant potential to contribute to gender & inclusion objectives, aspirations to achieve this were not included in the programme theory of change, or its underlying assumptions about the pathways to change<sup>88</sup>.
- The UK Public Health Rapid Support Team (UK-PHRST) evaluation noted that although gender equality, equity and human rights were considered in project design, there was limited evidence that this was translated into implementation practices<sup>89</sup>.

A range of measures were used in the evaluations to measure gender-related results. These include quantitative measures, such as the number of applications where the lead researcher

---

<sup>81</sup> Tetra Tech international Development (2022).

<sup>82</sup> NIRAS LTS International (2022).

<sup>83</sup> British Academy (2021).

<sup>84</sup> Royal Academy of Engineering (2022).

<sup>85</sup> Royal Academy of Engineering (2022).

<sup>86</sup> Technopolis (2018).

<sup>87</sup> Royal Academy of Engineering (2022).

<sup>88</sup> Tetra Tech International Development (2022)

<sup>89</sup> Itad (2021). End-point evaluation of the UK Public Health Rapid Support Team (UK-PHRST)- Final report. Available at: <https://www.lshtm.ac.uk/media/52581>

was female (as recorded in programme administrative data). In other cases the evaluations made qualitative assessments on how far gender considerations were integrated into programme design (LIF) or operational practices (UK-PHRST), or whether these had informed the choice of subjects for research (Joint Fund, GCRF Africa Catalyst).

Findings from the evidence on how gender concerns can be better addressed are discussed in the section on mechanisms and key success factors below.

## Other benefits to the donor country

International R&I initiatives improve research quality, strengthen the capacity of researchers and institutions, and promote research uptake. They may also lead to other benefits for the donor country. Using the evidence reviewed, we have classified other donor country benefits as commercial or non-commercial. Commercial benefits involve a monetary benefit (i.e., increase in exports, foreign direct investment, market access etc). In contrast, non-commercial benefits denote activities with no financial gain. They relate to improving a donor country's science diplomacy and soft power, access to world-class skills or the perception of the country as an innovation leader.

Evidence from the documents reviewed shows that of the 34 papers, 7 highlight outcomes showing the achievement of other benefits by the donor country. This provides strong evidence that R&I initiatives can deliver different kinds of such benefits, based on the number of studies showing this, the consistency in findings, the quality of the studies and the variety of different contexts involved. However, the relatively small number of examples highlights that such outcomes are by no means automatic (other than those relating to improvement of donor country academic networks, which are 'hard-wired' into international R&I collaborations). Evidence from other ODA programmes (e.g. evaluations of the UK Cross-Government Prosperity Fund) highlights that delivery of commercial secondary benefits in particular requires careful planning<sup>90</sup>.

Table 10 summarises the evidence by the type of other donor benefit and programme. These are then described in more detail below.

**Table 10 Evidence on other donor country benefits**

Type of secondary benefit	Other donor benefit	No. of evaluations	Name of initiative
---------------------------	---------------------	--------------------	--------------------

---

<sup>90</sup> Tetra Tech International Development (2021) Prosperity Fund Year 3 Secondary Benefits Evaluation [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1090016/Prosperity-Fund-Year3-Secondary-Benefits-Evaluation-Report.odt](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1090016/Prosperity-Fund-Year3-Secondary-Benefits-Evaluation-Report.odt)

Direct commercial benefits	Trade and Investment	4/7	<p><b>Fund (1):</b> Newton Fund.</p> <p><b>Programme (1):</b> Leaders in Innovation Fellowships (LIF).</p> <p><b>Megaprojects (2):</b> European Organization for Nuclear Research (CERN). European Space Agency (ESA).</p>
Non-commercial benefits	Development of world-leading academic networks	4/7	<p><b>Funds: (2):</b> Newton Fund, GCRF</p> <p><b>Megaprojects (2):</b> CERN; European Southern Observatory (ESO).</p>
	Perception of the donor country as leader of innovation and preferred partner for R&D opportunities	3/7	<p><b>Programme (2):</b> Leaders in Innovation Fellowships (LIF); GCRF Africa Catalyst.</p> <p><b>Megaprojects (1):</b> ESO</p>
	Science diplomacy and soft power	3/7	<p><b>Programme (1):</b> LIF</p> <p><b>Megaprojects (2):</b> CERN, ESO.</p>

## Commercial benefits

### Trade and Investment

There is some evidence of R&I initiatives promoting export sales and an increase in company revenues. For example, the Newton Fund final evaluation highlights that partnerships have created opportunities for collaboration between the UK and partner countries, though the evaluation states that it is too early to determine if the opportunities have unlocked trade and investment opportunities.

The evaluation of the Leaders in Innovation Fellowships suggests that the most evident economic and commercial benefits for the UK derived from LIF alumni setting up their company, office and/or marketing their products in the UK.

There is evidence of involvement in science megaprojects generating significant economic benefits for the UK. For instance, the European Space Agency (ESA) programme evaluation found that 32% of ESA contractors reported follow-on sales leading to the creation or retention of employment<sup>91</sup>. Moreover, evaluation results estimate a very high rate of return on the UK's contribution to the agency, of 1:9.8. In other words, every pound invested by the UK in the programme generates an estimated £9.80 of benefits, including direct and indirect effects, and benefits from ESA-derived activities.

Similarly, the evaluation of the benefits to the UK from CERN identifies access to contracts and new market opportunities as significant benefits for the UK<sup>92</sup>. The evaluation finds that CERN membership gives UK companies continued access to contract opportunities, with nearly 500 British firms having sold goods and services to CERN over the last decade. These contracts were awarded by various UK firms, ranging from small precision engineering companies through to global technology firms and pension fund managers. UK suppliers said there were wider benefits beyond the value of the contracts themselves, for example, access to new market opportunities and the prestige of being a supplier to CERN.

### **Inward investment**

Identifying whether initiatives to support international R&I collaboration have any influence on inward investment was a key issue of interest for DSIT for this review. However, the review identified no evidence on this issue. Although some of the evidence documents discuss economic impacts, this is limited to discussions of the effects discussed above and in the following paragraphs. Searches for the terms “FDI”, “foreign direct investment”, “inward investment” or “industrial investment” identified no mentions in any of the review documents for instance.

To check if this was a reflection of the UK-focus of the sample, the same search terms were used for six studies from other countries which had been identified as relevant to the study aims and containing content on benefits to donor countries. However, these also recorded no relevant mentions.

As a final check, a search on Google was made using the terms: “international R&I collaboration/partnership/cooperation”- with “FDI”, “foreign direct investment” and “inward investment”. This identified a number of documents highlighting the very well-known associations between research excellence in universities (in the UK and elsewhere) and the attraction of inward investment. However, a review of these documents reveals no reference at all to a specific relationship between international R&I collaboration initiatives and FDI<sup>93</sup>.

One of these documents, a newly published study on the relationship of universities and FDI, suggests that this finding is characteristic of the wider literature. The study notes, for instance,

---

<sup>91</sup> Technopolis (2022a).

<sup>92</sup> Technopolis (2020c). Evaluation of the Benefits that the UK has derived from CERN - Main report. Available at: <https://www.ukri.org/wp-content/uploads/2022/07/STFC-040722-EvaluationBenefitsUKDerivedFromCERN-MainReport.pdf>

<sup>93</sup> See, for instance Reid, G. and Smith A. (2019) [Changes and choices: advice on future frameworks for international collaboration on research and innovation](#) and also Brown A., (2023) [The role of universities in driving overseas investment into UK Research and Development which have no references to R&I collaboration.](#)



that beyond general trends associating FDI with university research, “*more granular information about the national origins of FDI and different types of investment, such as capital investment, commercialisation activity, R&D projects, and talent development, is hard to come by*”<sup>94</sup>.

The conclusion drawn here is that it is likely – at least from the UK, which has been the focus of this study – that there is no evidence on this specific relationship. This is an interesting, but perhaps not a surprising finding for the following reasons. It is clearly the case that there is a close positive relationship between a strong science and research base in the UK and the attraction of investment. As one aspect of that base, international R&I collaborations must surely strengthen the UK’s overall attractiveness as a place to invest. However, the funding for collaboration initiatives, while significant in aggregate terms, is only a very small part of research funding in general, or R&D spending in particular<sup>95</sup>, so such initiatives would provide just one contributing factor among many in strengthening that science and research base.

It is also the case that the value of spending in the UK from international R&I collaboration initiatives will generally be relatively low for a specific locality such as a university city. This would make effects hard to detect, even if collaboration did in fact play a contributory role in improving the attractiveness to international investment of such cities. For instance, Newton Fund grants were distributed to a sizeable number of different universities.

This is likely to make it hard for research to show a direct relationship between research collaborations and inward investment in such a locality. Mega-projects would probably be an exception to this rule due to the scale of the investment (though the three documents reviewed did not mention this, and in any case all three – European Space Agency, European Southern Observatory and CERN are all based outside the UK).

## Non-commercial benefits

### Development of world-leading academic networks

There is strong evidence of the value to UK researchers of participating in international R&I. This includes evidence reported elsewhere that such collaborations can produce higher impacts both in academic and economic terms<sup>96</sup>.

The Newton Fund evaluation found evidence of a stronger UK research base and the generation of knowledge for addressing global challenges relevant to the UK<sup>97</sup>. The evaluation of GCRF flagship investments also found a key (and likely long-lasting) impact on broadening the capability of new and different UK actors to engage in development research<sup>98</sup>.

---

<sup>94</sup> Mason, A (2023) [Universities and foreign direct investment: what, why and how?](#)

<sup>95</sup> For instance, R&D spend in the UK was [GBP 62 billion in 2020 according to the Office for National Statistics](#). In comparison, the combined spend on the GCRF (GBP 1.5 billion), Newton Fund (GBP 750 million) and FIC (GBP 160 million) over their entire lifetimes was GBP 2.41 billion.

<sup>96</sup> See, for instance the 2021 [UK Innovation Strategy: leading the future by creating it - GOV.UK \(www.gov.uk\)](#)

<sup>97</sup> Tetra Tech International Development (2022).

<sup>98</sup> Royal Academy of Engineering (2022).



There is also evidence of the positive impacts to the UK of its investment in research centres like the CERN and ESO which provide access to world-class skills and knowledge. For instance, results showed that nearly 1,000 individuals participated in free training (worth more than £4.9m) across the various formal schemes offered by the CERN<sup>99</sup>. A significant number of individuals, including each year around 1,000 researchers, 300 CERN staff, 40 fellows and hundreds of individuals at UK suppliers to CERN, acquired skills and knowledge 'on the job'.

Similarly, the socioeconomic impact evaluation of the UK subscription to the ESO showed that it offers a wide range of training and skills development opportunities, including fellowship and studentship programmes, that are predominantly available to ESO Member States. Nearly 80 UK fellows and students have joined the training<sup>100</sup>. Results showed that most UK users reported that ESO had a positive effect on their ability to work in an international environment and on their experimental skills.

### **Perception of the UK as an innovation leader and preferred R&I partner**

There is strong evidence to show that sponsoring international R&I collaborations leads to the UK being seen as a leader in innovation and as a preferred partner for R&D opportunities and innovation (as illustrated in evaluations of the Leaders in Innovation Fellowships programme, Newton Fund and GCRF Africa Catalyst programme). This judgement is made on the basis of the number of studies showing this, the different contexts from which they drew their conclusions and the consistency of findings.

Results from the LIF programme evaluation for instance show that stakeholders saw benefits for the UK regarding relationships, connections, and development of networks between partner countries and the UK. Similarly, the reputation of the Royal Academy of Engineering (and of the UK as a leading engineering nation) is strong among the GCRF Africa Catalyst programme population. In addition, the projects have improved Sub-Saharan Africa awardees' views about having the UK as a preferred collaborator for engineering innovation and business.

### **Science diplomacy and soft power**

The evaluations provide limited evidence for the view that ODA spending on international R&I initiatives supports the UK's soft power. The main examples from the evidence base are in fact for science megaprojects, rather than ODA-supported initiatives. For instance, the Newton Fund evaluation makes relatively limited comment on soft power. Similarly, the evaluation of GCRF flagship investments says little on this issue, except to note that the 2021 UK government ODA budget reductions had negative implications for the UK's reputation and soft power, with reported perceptions "*that trust in the UK as a partner for R&I activities has been somewhat eroded as a result of the abrupt budget reductions.*"

There is evidence of benefits from the UK's investments in megaprojects like CERN and ESO (and to a lesser extent from LIF) realised in terms of science diplomacy, soft power, and engagement. For example, the UK's participation in CERN has been important to science diplomacy and has provided a neutral space for global collaboration. The evaluation of CERN

---

<sup>99</sup> Technopolis (2020).

<sup>100</sup> Technopolis (2022b).

substantiated this point through the following indicators which are taken as proxies for increased UK influence:

- Numbers of publications resulting from participation in CERN – the evaluation notes that that the UK would lose places in international publication rankings if it were to stop its involvement (the evaluation notes that over 20,000 UK publications have cited CERN articles, but not how many of those articles were authored by UK researchers).
- Findings from surveys of UK scientists and engineers working with CERN, asking them if this work had a significant (large or critical) impact on their own national and international reputation (85% agreed that it did).

There is therefore some evidence that shows that CERN enhances the UK's influence and also that UK involvement in various levels of CERN governance provides the UK government, UK funding bodies and the broader UK science base with a platform for international engagement, leadership and agenda-setting. CERN also provides UK scientists and engineers with a platform to engage in global initiatives and networks <sup>101</sup>.

The evaluation of the UK's ESO membership also shows that ESO provides wider opportunities and benefits to the UK, including a platform for international engagement, leadership and agenda-setting, an ability to influence decision-making, enhancing alignment with UK capabilities and priorities<sup>102</sup>. The LIF programme evaluation provides some evidence (albeit very limited) that the programme has generated added value to the international relationship between the UK and partner countries from a diplomatic or soft power point of view. This evidence is based on interviews and focus groups with a total of 151 LIF alumni, of whom two said that this was an outcome of the programme.

Overall, although there is a commonly-held and common-sense view in academic and policy communities that the UK's significant spending on R&I is an important component of its soft power, the evaluations provide only limited evidence of this.

### **Summary of outcomes and impacts described in this section**

Table 11 overleaf summarises in one place the outcomes and impacts described in this section, and incorporates the information from Tables 6, 7, 8 and 9. It incorporates information from 27 studies but excludes the remaining seven studies which did not provide substantive information on the types of results described in this section.

---

<sup>101</sup> Technopolis (2020).

<sup>102</sup> Technopolis (2022b)

**Table 11 Summary of main outcomes and impacts described in different studies**

Title of study	Research quality			Research capacity - individuals					Research capacity - institutions		Impact	Secondary benefits				Gender results
	No. of publications	Citation rates	Positioning for use	Improved knowledge/skills	Improved proposal writing	Networking and partnerships	Career progression	Mindset shift	Improvements in research infrastructure, technology, databases	Establishment of national / international networks	Various - see main text	Commercial benefits (trade or investment)	World-leading networks for the UK	Perception of UK as leader in R&I	Science diplomacy / soft power	Various - see main text
Evaluation of the Africa Prize for Engineering Innovation (APEI)						1										1
Review of the British Academy Cities & Infrastructure programme		1		1			1	1			1					
Collaborative Adaptation Research Initiative in Africa and Asia (CARIAA) - Summative			1								1					
ESRC – FCDO Joint Fund for Poverty Alleviation Research Programme – Phase 3 Evaluation	1	1														1
ESRC-FCDO Raising Learning Outcomes programme evaluation report (RLO)		1	1								1					1
Evaluation of the Royal Academy of Engineering International Industry-Academia Linkage				1		1										
Evaluation of the Benefits the UK has derived from CERN											1	1				
Evaluation of the effectiveness and impact of BBSRC's investments in antimicrobial resistance research	1		1								1					
Evaluation of the Fund for International Collaboration (FIC)	1		1			1			1	1						
Evaluation of the Future Agricultures Consortium (FAC)			1								1					
Evaluation of the GCRF Africa Catalyst programme				1										1		1
Evaluation of the Global Challenges Research Fund: Stage 1b Synthesis report (GCRF)	1				1								1			
Evaluation of the Higher Education Partnerships in sub Saharan Africa (HEP SSA) Programme						1					1					1
Evaluation of the Leaders in Innovation Fellowships Programme (LIFF)				1		1		1		1	1			1	1	1
Evaluation of the National Science Foundation's Partnerships for International Research and Education (PIRE) Programme				1		1	1				1					
Humanitarian Innovation & Evidence Programme Evaluation (HIIEP)			1													
Impact evaluation of UK investment in the European Space Agency (ESA)	1	1	1								1				1	
Interim Evaluation of the UK Vaccine Network Newton Fund Final Evaluation Report	1		1								1	1	1			1
Review of the Health Systems Research				1							1					
Review of the Joint Global Health Trials																
Review of the MRC-DFID Concordat				1			1									1
Socio-Economic Impact evaluation of the UK subscription to European Southern Observatory	1	1	1	1		1	1		1		1	1	1	1		
The impact of collaboration. The value of UK medical research to EU science and health		1														
The U.K.–China Climate Science to Service Partnership	1					1					1					
End-point evaluation of the UK Public Health Rapid Support Team (UK-PHRST)																1
Writing Workshops programme report				1	1	1	1									1
<b>TOTAL</b>	<b>8</b>	<b>6</b>	<b>9</b>	<b>9</b>	<b>2</b>	<b>9</b>	<b>5</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>11</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>10</b>

## 4. Mechanisms and key success factors for achieving impact

The evidence from evaluations and other studies highlights a range of mechanisms and success factors that have helped to deliver successful international R&I collaboration initiatives. These can be described in terms of:

- those that are likely to support effective programming in general, including factors relating to strategic positioning, delivery arrangements and management processes, as well as the characteristics of successful R&I partnerships
- those that are particular to achievement of the specific outcomes described above (research excellence, capacity building, uptake and impact, other donor country benefits).

The strength of evidence for these mechanisms is generally judged to be moderate or high, based on strength of evidence criteria adopted for this review<sup>103</sup>.

However, there are some exceptions to this in the table, where only one study provided this support, marked with an asterisk to highlight that the evidence for them as revealed by this review is weaker.

**Table 12 Summary of mechanisms and factors for successful international R&I collaboration initiatives**

Focus area	Measures that have promoted success <sup>104</sup>
Strategic positioning and management processes	<ul style="list-style-type: none"> <li>• Focusing on a distinctive R&amp;I niche (GCRF, HSRI, Writing Workshops)</li> <li>• Defining clear standards (e.g., on gender &amp; inclusion or monitoring &amp; evaluation and learning) (GCRF) *</li> <li>• Promoting equitable partnerships, in relation to funding opportunities, processes and sharing of benefits (GCRF, HSRI, RLO, MRC-DFID Concordat, BA Cities &amp; Infrastructure, Newton Fund, LIF, UK-PHRST)</li> <li>• Building on structures, processes and relationships already successfully used by other initiatives and/or using overseas posts to benefit from local knowledge (HSRI, MRC-DFID Concordat, Newton Fund)</li> </ul>

<sup>103</sup> This is illustrated in the 'Methodology' section (p.18, 'Applying the strength of evidence criteria in practice').

<sup>104</sup> Measures marked with an asterisk in this table are only supported by a single study

Focus area	Measures that have promoted success <sup>104</sup>
	<ul style="list-style-type: none"> <li>• Adopting a flexible approach to project changes and budgets (RLO, HSRI)</li> <li>• Administering programmes efficiently – awarding grants promptly, using single reporting templates across delivery partners (UK Vaccine Network) *</li> </ul>
Promoting research quality	<ul style="list-style-type: none"> <li>• Adopting effective quality assurance mechanisms, including dedicated QA programme management roles (RLO, Joint Fund for Poverty Alleviation)</li> <li>• Including measures for building researcher capacity into workplans (HSRI, CSSP)</li> </ul>
Building institutional capacity	<ul style="list-style-type: none"> <li>• Defining and tracking the building of capacity (for institutions and individuals) and not treating this as an add-on (MRC-DFID Concordat)</li> </ul>
Supporting development of human capital for researchers	<ul style="list-style-type: none"> <li>• Incorporating measures into project plans to build the capacity of target audiences to use data (RLO) *</li> <li>• Creating opportunities for cohort-building, including through mentoring, alumni communities and secondments (GCRF, APEI, HEP SSA, RLO, Writing Workshops)</li> <li>• Creating opportunities for learning-by-doing through joint design of research, implementation of field research and joint opportunities for presenting results (HSRI, GCRF)</li> </ul>
Promoting research uptake and impact	<ul style="list-style-type: none"> <li>• Seeing the promotion of uptake as about cultivating relationships as much as disseminating research outputs (Joint Fund) *</li> <li>• Involving stakeholders in defining research questions and engaging with them during the research process (HSRI, GCRF, RLO, Joint Fund, MRC-DFID Concordat, GCRF Africa Catalyst)</li> <li>• Tailoring research outputs to specific audiences (Joint Fund) *</li> <li>• Publishing results in open access journals and making data available in open repositories (MRC-DFID Concordat) *</li> <li>• Assessing when windows of opportunity for influencing may open and retaining the flexibility to move quickly when they do (HIEP, RLO)</li> <li>• Creating specific programme management roles or support structures to champion uptake and impact (RLO, Joint Fund)</li> </ul>

Focus area	Measures that have promoted success <sup>104</sup>
Supporting gender-inclusive results	<ul style="list-style-type: none"> <li>• Defining gender-related objectives at the outset, ensuring these are reflected in programme objectives and theories of change and tracked continually (Newton Fund, GCRF Africa Catalyst, LIF)</li> <li>• Engaging gender or social development advisers at the design stage (LIF) *</li> <li>• Actively targeting women (and other disadvantaged groups) through calls for proposals (MRC-DFID Concordat) *</li> <li>• Ensuring projects adopt EDI policies (GCRF Africa Catalyst) *</li> </ul>

## Strategic positioning and management processes

The following success factors are highlighted in one or more of the evaluations considered for this review. Many of these are in fact common to development programming and are often supported by a wider body of evidence<sup>105</sup>. As a result, the fact that some of these points are only made in a single study should not necessarily be taken that there is only weak evidence for them.

Evaluations of initiatives as diverse as the GCRF, HSRI programme and Writing Workshops programme highlight **the need for a clear strategic vision and the need to address a distinctive niche** that does not duplicate other programmes or schemes. For instance, HSRI was praised by award holders for addressing a niche that was not well addressed by mainstream clinical research funding programmes.

**Capitalising on the prior experience and the institutional relationships established through previous initiatives** has substantial potential to add value in R&I collaboration programming. For instance, the Health Systems Research Initiative (HSRI) benefitted significantly from experience setting up and running the Joint Global Health Trials Initiative, which involved many of the same funders. This prior experience enabled a quicker and smoother launch, allowing funders to replicate management structures and processes already proven to work well.

Similarly, the review of the DFID - MRC Concordat (under which DFID provided funding and the MRC administered the grants) noted that this allowed DFID to benefit from the MRC's expertise, reputation for funding excellent health-related research, and transparent and mature research management processes (including a peer review college). Conversely, the MRC used DFID's international networks to increase the breadth and volume of its activities. Overall, this avoided duplication and created greater critical mass and better value for money.

<sup>105</sup> For instance: Burge, R and McGee R, (2022) New insights on adaptive management in aid programming; New insights on adaptive management in aid programming.

The Newton Fund's **use of overseas posts to benefit from local knowledge and representation** in supporting collaborations is another example of achieving synergies across government departments, as noted in the evaluation of the LIF programme.

A common theme for enabling factors for success is the need for flexibility, to be able to adapt programmes and structures to changes or unexpected events, particularly in riskier operating contexts. For instance, the HSRI evaluation noted that success was strengthened by reviewing the programme and its applications continuously and modifying these over time, for instance, through integrating much stronger capacity building requirements in later calls. The evaluation of the Collaborative Adaptation Research Initiative in Africa and Asia made the same point.

Examples of flexibility highlighted include **allowing for changes in project aims or workplans** where a convincing rationale is presented. The evaluation of the FCDO Raising Learning Outcomes (RLO) programme noted for instance that *“this trusting attitude allowed projects to be bold and take risks... which was really priceless”*. The HSRI evaluation made similar points, highlighting the **value of flexibility in allowing the shifting of spending between budget lines** and reorienting the research where needed. The breadth of scope in funding calls was also cited positively in the same evaluation because this gave researchers flexibility in how they address research questions.

The evaluation of the UK Vaccine Network highlights the importance of administrative efficiency – **with contracts being awarded promptly** to enable grantees to have the full research period outlined in their proposals. It also emphasised measures to reduce the administrative burden on grantees where possible, for instance **using a single reporting template** across all delivery partners and taking into account the information required for ODA auditing processes to avoid additional requests for this information.

The evaluation of GCRF highlights that delivery of development impact and fulfilment of ODA mandates is likely to be strengthened where **programme policies set clear standards for drivers of impact** such as guidelines on gender and inclusion or on monitoring, evaluation and learning processes.

## Effective and equitable partnerships

There is strong evidence across several evaluations highlighting the value of partnerships that engage deeply with non-UK partners and stakeholders and **place a strong focus on equity**. This value is likely to be realised in all dimensions of the collaboration process – on research quality, uptake and impact and building of R&I capacity both among institutions and researchers. There is one important caveat to this conclusion, discussed below.

**The value of decentralisation and strong participation by overseas partners** is also mentioned as a success factor in evaluations of:

- The LIF programme, where this is judged to have supported research excellence – in particular, underpinning the relevance, sustainability and efficiency of the intervention.



- The RLO programme, where strong participation by local institutions and stakeholders in long-term partnerships was considered instrumental in over-coming contextual challenges and achieving impact.
- Progress towards impact in the GCRF's six flagship investments, where collaboration with non-academic groups in lower- and middle-income countries (LMICs) and fairness in partnerships are highlighted as key factors laying the foundations for development impact – promoting uptake and use at an earlier stage than with a conventional research study.
- The work of the UK Public Health Rapid Support Team (UK-PHRST), where strong LMIC partnerships significantly increased the programme's ability to work in remote locations.
- The HSRI evaluation found that embedding local practitioners and policymakers in the co-creation of research was a key enabler both in producing high quality research and in ensuring it was used. It also found that close involvement of local researchers at every stage - from designing the research to undertaking fieldwork and analysing the results - strongly contributed to capacity building.

The evaluation of GCRF flagship investments identifies three dimensions of fairness (opportunity, process and benefits), drawing on conceptual work identified in the Research Fairness Initiative developed by the Council for Health Research for Development. It found that positive perceptions of fairness in all three of these among local participants and stakeholders are positively associated with achieving three or more outcomes and outputs, indicating that the effort required to establish truly equitable partnerships is highly worthwhile. Examples of more equitable collaborative arrangements in each dimension include:

**Opportunity** – providing an extended and sufficient time period for the development of new partnerships, and dedicating funding for ODA receiving country partners to co-develop proposals. The British Academy Cities & Infrastructure Review highlights the value of paired UK/LMIC researchers acting as co-leaders for different disciplines in supporting close collaboration. Conversely, the GCRF evaluation notes that for two of the six grant programmes covered, short timelines for application and award processes disadvantaged setting up new partnerships, as new partners could not be engaged sufficiently with the application process ending-up being led by a UK institution.

**Process** – allowing recipient country partners to be joint applicants and allocating funds through them; ensuring that local researchers are not only included in data collection and analysis but also fully involved in the publication process. Simple measures such as rotating meetings to accommodate different time zones and being mindful that English is a second language for some participants were also mentioned. The RLO evaluation summarises a key point: *“what appears to have made the difference in particularly impactful projects... is the willingness to take the time to listen to research partners and the flexibility to modify plans and*



*timelines to allow for meaningful engagement, even when this comes in the way of ‘getting things done’<sup>106</sup>.*

**Benefits** – the GCRF-funded GROW awards actively ensured fairness in intellectual property rights, with 88% of respondents from overseas partners saying that these were shared equally among all partners<sup>107</sup>. The RLO evaluation identified that opportunities for networking, publications and conference presentations were highly valued by southern partners.

The RLO evaluation also indicates how monitoring indicators can be used to support equitable partnerships, comparing RLO with two other ESRC-FCDO collaborations – the Joint Fund for Poverty Alleviation Research and the Ecosystem Services for Poverty Alleviation (ESPA). The proportion of Southern authorship (as a percentage of total publications) was notably higher in ESPA (62%) compared to RLO (52%) and the Joint Fund (42%). The evaluation notes that it is not possible to say how influential the use of a specific indicator was in this case, but also states that future programmes should consider adopting this to ensure Southern authorship remains a consistent focus.

**However, there is an important caveat to the extensive evidence associating equitable ODA-funded partnerships with stronger performance.** In particular, there is strong evidence to indicate that trade-offs can exist in ODA programming between partnerships that produce high quality research compared with those that build capacity in challenging contexts<sup>108</sup>. This is illustrated by three studies (all of good quality, drawing similar conclusions in relation to programmes implemented in a wide range of contexts):

- The comparative review of seven R&I collaboration initiatives (including the Newton Fund and GCRF), which noted for instance that collaborations in the Swiss Programme for Research on Global Issues for Development were more effective when partners already had higher levels of capacity.<sup>109</sup>
- The evaluation of the FIC, which reported that while publications from international projects generally had higher citation impacts, co-authoring with emerging countries tended to have a lower impact.
- The evaluation of the GCRF signature investments, where the need to allow time and patience to achieve capacity-building goals is noted. However, this implies that if the goal was simply to conduct the research, this might at times be achieved more quickly by weakening the focus on capacity-building.

This highlights the need for the strategic focus of the project (e.g., on either of these objectives) to be reflected in the way the programme is designed and the measures it encompasses for development and implementation of partnerships (e.g., a preference for high quality research might follow the Newton Fund in focusing on middle-income countries and recipient country institutions with a track record of collaboration).

---

<sup>106</sup> NIRAS LTS International (2022).

<sup>107</sup> Royal Academy of Engineering (2022).

<sup>108</sup> The evidence here identifies a trade-off but does not have a bearing on how this should be managed.

<sup>109</sup> Evaluating ODA-funded granting for global health and development research

**It should also be possible to incorporate both top-down, directive and bottom-up and more participatory approaches in a single programme**, as highlighted by the successful MRC-DFID Concordat. This included both top-down strategic funding schemes and a decentralised response mode – the latter designed to engage in a less directive way with recipient country partners. Response mode funding was distributed through research boards and panels with multiple grants, and researchers were given more freedom to determine their research agenda and approach. In contrast, the strategic schemes had just one or a small number of funding rounds and were focused on specific issues such as antimicrobial resistance, adolescent health or methodological research.

Similar provisions for the GCRF were discussed in its evaluation, which pointed out **that an open call requires less time to develop than a targeted call**, where there typically needs to be a previous process of dialogue and strategic prioritisation.

The sample for this evidence review included relatively few evaluations of non-ODA initiatives. It is however worth noting the findings of a NESTA review of collaborations within OECD countries which found that programme success was closely aligned with the characteristics of the participants, with companies and some science partners with particular characteristics (above average performance, already well-networked, experienced with collaboration, strongly motivated etc) tending to be associated with successful collaborations<sup>110</sup>.

Finally, although the importance of fair partnerships is highlighted in several studies (all of moderate or high quality, from different contexts and making similar points), These include a 2022 comparative study of seven ODA collaborative R&I programmes which noted that creating equitable partnerships is often a challenge<sup>111</sup>. For instance, an evaluation of the Swiss Programme for Research on Global Issues for Development mentioned in this comparative study described the flow to partners through Swiss institutions as “*inherently asymmetrical*”. The HSRI evaluation noted similar challenges in stimulating successful applications by LMIC-led partners<sup>112</sup>.

## Promoting research quality

The evidence strongly confirms that the central factor underlying production of excellent research is the nature of the partnerships themselves, as illustrated in the points made in the preceding section, which highlights several different good quality studies from different contexts making similar points. That is, international R&I partnerships that broaden access to

---

<sup>110</sup> Cunningham, P. and Gök, A. (2012)

<sup>111</sup> Evaluating official development assistance-funded granting mechanisms for global health and development research initiated in high-income countries – hereafter ‘Evaluating ODA-funded granting for global health and development research’. The seven evaluations reviewed were for: Science for Global Development (Netherlands), Global Health and Vaccination Research (Norway), Norway—Global Partner (Norway), Programme for Development Research (Sweden), Programme for Research on Global Issues for Development (Switzerland) and the GCRF and Newton Fund.

<sup>112</sup> It is notable that the Newton Fund’s built-in structure for co-development between the UK and partner countries is identified as the clearest example among the seven initiatives of a process for identifying common priorities.

skills, experience, knowledge, understanding of local contexts, networks and resources tend to promote high quality research.

Other specific issues that help to ensure that research collaborations deliver quality in practice are also mentioned by some evaluations, including:

- **Effective quality assurance mechanisms for research proposals and outputs.** For instance, the HSRI evaluation notes that the programme's proposal review mechanisms worked well. Similarly, the discouragement of non-peer reviewed outputs by the UK-China Climate Science for Service Partnership is mentioned in its evaluation as promoting scientific quality.
- The evaluation of the RLO programme highlights **the value of a specific role created to maximise research quality and promote best practice** between RLO-funded projects (the Programme Research Lead). This role included, for instance, identifying thematic and methodological synergies between projects.
- Incorporating specific provisions for **researcher capacity-building** into grant programmes where needed.
- Being careful to **ensure that programme administration and rules processes do not undermine research quality**. There is some evidence (e.g. see discussion of the experience of the UK Vaccine Network earlier in this section) of the importance of good administrative practices in promoting research quality. Examples include allowing the flexibility to change research plans or to vire items between different budget lines when needed, as well ensuring that grants are paid promptly.

## Building the capacity of institutions

The value of incorporating capacity-building elements into collaborative R&I initiatives is highlighted by several evaluations including those: for the Higher Education Partnerships in Sub-Saharan Africa (HEP SSA), the six GCRF signature investments, the MRC-DFID Concordat and the RLO programme.

The GCRF evaluation notes that **mutual capacity development of LMIC and UK individuals and institutions is a key pathway to impact** that needs to be defined and tracked accordingly. An example of this from the same evaluation is the GCRF-funded Future Leaders African Independent Research initiative, which was **noted for its efforts to create opportunities for capacity and cohort-building** (i.e., supporting durable networks between researchers).

Other evaluations provide strong evidence of the importance of effective targeting of capacity-building efforts. For instance, the MRC-DFID Concordat purposefully aimed at early-career researchers to ensure it was differentiated from other capacity-building initiatives. Similarly, the RLO evaluation recommended that capacity-building elements should address the core intellectual agenda of the research proposal **and not be treated separately**, focusing on specific ways in which capacity-building would improve research quality and impact. It noted

that **effective examples of capacity-building include learning-by-doing**, through co-design of research and implementation, as well as field-based research methods for developing country staff and opportunities for them to author/co-author journal and conference papers.

## Supporting development of human capital for researchers

The evidence base highlights the value of several different mechanisms for strengthening researcher capabilities. As with other conclusions drawn in this study, this contention is underpinned by the number of good quality studies from different contexts making similar points. For instance, many evaluations highlight the fact that capacity building is a natural by-product in implementing R&I programmes, with researchers augmenting their skills and experience through on-the-job learning. In addition, the evidence highlights successful interventions which are designed to achieve this objective both directly and indirectly.

**Direct approaches to building researcher skills.** Typically, these work through training and mentoring activities. The following mechanisms are highlighted in the evaluations of the following initiatives:

- the British Academy's Writing Workshops scheme runs training programmes and mentoring by other academics and journal editors to encourage skills development, advise on career development and promote research uptake from developing countries.
- The Africa Prize for Engineering Innovation (APEI) includes a training programme focused on developing entrepreneurial capacities among participants.
- The APEI has an engineering-specific **mentoring element** (where participants can choose a preferred mentor from a pool).
- The Writing Workshops and APEI evaluations also highlight the value of its formal and informal mechanisms **to foster an alumni community**. For the latter, this included training opportunities, further mentoring, buddying and informal WhatsApp groups. Furthermore, it found evidence of long-term engagement of alumni.
- The HEP SSA evaluation noted that knowledge-sharing and community-building activities were also valued highly, **with secondments and staff exchanges** singled out for their contribution to building human capital.
- The RLO evaluation incorporated activities into its workplan to **strengthen the capacity to use data for policy and planning** among government counterparts and other key stakeholders.

Working purposefully to integrate capacity development opportunities **can also provide indirect opportunities for researchers** to learn and improve their skills. This was highlighted in the HSRI evaluation, which also noted superior outcomes for 'on-the-job' training compared to formal training. A principal investigator from the HSRI scheme noted for instance "[i]t allows the building of capacity of local researchers on the job through involving them at every stage of the design of the field work and of the analysis and interpretation. Because that's how they really build their skills. A week's training workshop isn't going to do it." Similarly, the evaluation

of the GCRF signature investments noted the FLAIR programme's stated objective and accompanying measures to create opportunities for collaboration and cohort-building between FLAIR fellows and other researchers.

## Promoting research uptake and impact

The importance of equitable partnerships in contributing to the success of international R&I collaborations across a range of outcomes has already been discussed. For promoting uptake and impact, the key issue identified by different evaluations (including those for the HSRI, GCRF, RLO, Joint Fund, MRC-DFID Concordat and the Africa Catalyst programme) is that of **involving a range of stakeholders in defining research questions and then engaging with them on emerging and ultimate findings** throughout the implementation process. Mechanisms for achieving this include, for instance, engaging stakeholders in advisory roles via steering groups or advisory boards.

These evaluations highlight the importance of developing appropriate research outputs, tailored to different audiences, in formats which make the implications of evidence explicit (e.g., through customised briefings and hands-on support). However, although only one evaluation (of the Joint Fund) states this explicitly, the emphasis on engaging with a broad set of partners throughout the research process in all the evaluations mentioned here underlines a key insight. This is that key success factors for promoting uptake and impact should be understood as much in terms of **developing and cultivating a set of relationships** with different stakeholders, as much as about creating a set of products to be disseminated.

The comparative study on ODA-funded R&I programmes noted the same recommendation by evaluators in four separate programmes<sup>113</sup>, **to build measures for research uptake into all collaborative R&I projects from the outset**. This includes measures such as requiring a portion of grant budgets to be spent on dissemination activities, holding periodic meetings between researchers and policymakers and facilitating regular dialogue between project partners and societal and policy actors. Furthermore, as the Joint Fund evaluation noted, the best examples of research uptake occurred when target audiences were very carefully identified.

The importance of engaging non-academic organisations is underlined by the evaluation of six GCRF signature investments, which found (on the basis of research across all six programmes) that programmes which involved three or more non-academic stakeholders were significantly more likely to report higher levels of research uptake. The RLO evaluation similarly noted that **long-term partnerships were a key enabling factor for impact**, and that most (though not all) of these partnerships emerged from existing collaborations and connections. A proviso on this final point is not to conclude that new partnerships were not in themselves

---

<sup>113</sup> Source: Cassola et al (2022) Evaluating ODA-funded granting for global health and development research <https://doi.org/10.1186/s12961-022-00859-6> The four programmes were the Newton Fund, the Swiss Programme for Research on Global Issues in Development, Pov Peace Programme and the NOR-GLOBAL/humanitarian policy research activity

conducive to uptake and impact, but that short programme timescales left little time to establish new collaborations.

Other considerations to promote uptake include **publishing results in open access journals and making project data available** by open repositories (as did some projects financed through the MRC-DFID Concordat). Both the HIEP and RLO evaluations noted the importance of timing. Both noted the importance of **building on existing momentum for policy change, and also taking advantage of ‘windows of opportunity’** when political leaders (at national or global level) become interested in changing policies. These are typically short moments before attention focuses elsewhere, highlighting again the importance of programme plans and budgets with flexibility to respond to these opportunities.

Distinctive ways of designing programmes to achieve these goals are mentioned in the evidence base. Both the RLO and the Joint Fund were supported through **a specific mechanism to increase uptake and impact** – the Impact Initiative for international development research. The Impact Initiative aimed to achieve this by identifying synergies between the programmes and grant holders, and supporting them to exploit opportunities for influence, as well as developing programme-level research communication outputs. Evaluations for both programmes highlighted the value added by the Impact Initiative, although the Joint Fund evaluation noted this **would have been stronger if the support had been present from the outset and fully integrated** into the initial and follow-on funding processes.

In contrast, the African Prize for Engineering Innovation provided support after the products submitted to the prize had already been developed. Supported entrepreneurs received training on understanding business readiness, pitching for investment and on media communications. This provided valuable results, with half of all prize participants subsequently raising equity capital for their businesses. This provides another example of planning for uptake from the outset, albeit the support to promote this uptake was offered at a different moment to the example cited in the previous paragraph.

## Supporting gender-inclusive results

The fact that many of the evaluations highlight that mixed gender impacts were achieved indicates an area for improvement, even for those programmes that put gender-equality concerns at the forefront of programme design from the outset. It is notable however that while some evaluations offered evidence on the types of measures adopted to achieve positive gender results, few provide detail on how successful these measures proved to be in practice.

Given the criteria set for assessing the strength of evidence, the fact that in some cases only a single study highlights some of these points indicate that the evidence for some of them (at least as revealed by this evaluation) is not always strong. However, it is also the case that all of



the points cited below align with what is recognised as good practice in integrating gender issues into development programming<sup>114</sup>.

- **Defining gender-related objectives from the outset**, and ensuring that theories of change, logframes and related programme monitoring processes adequately reflect these. The LIF evaluation highlights the value of engaging a gender or social development adviser to undertake this task systematically.
- This includes ensuring, for instance, that **collection of gender-disaggregated data** is provided for, both for UK and overseas participants. The RLO evaluation notes that counting the number of research grants that report undertaking gender analysis or disaggregating by gender or other structural inequalities was associated with a high success rate against this measure, with 90% of grants doing this, against a target of 70% - a positive impact measure in its own right.
- Ensuring that funded projects adopt an **Equality, Diversity and Inclusion policy** as part of their project (this is mentioned in the Africa Catalyst evaluation, though the consequences of this are not reported).
- Ensuring that **processes for calls for applications actively target both men and women** (evidence from the MRC-DFID Concordat indicates the programme had some success in doing this, with applications from women increasing during the course of the programme).
- **Making sure that inclusive approaches to engaging with women (and other groups) is incorporated into research processes** (e.g. ensuring that sampling strategies reflect this principle and building in sufficient time for gender disaggregated activities such as focus groups and feedback sessions, as highlighted in the RLO evaluation).

## Promoting other donor country benefits

References to other benefits for the UK are scarce in the sample of documents reviewed for this study. This may reflect a number of issues, including that evaluations of ODA-funded initiatives typically focus on developing country impacts and that the agenda of directing aid spend to areas likely to have stronger benefits for the UK is a relatively recent development<sup>115</sup>. It is notable in this context that the description of UK benefits from ODA programmes as ‘secondary benefits’ was only conceptualised with the UK Prosperity Fund launched in 2017.

It is difficult therefore to identify factors that promote the achievement of such other benefits from this evidence review (though studies for the Newton Fund and Prosperity Fund not included in this review have separately done this). The main exception to this finding is the benefits that the UK derives from participating in mega projects such as CERN, the ESA and

---

<sup>114</sup> See, for instance:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/708116/Strategic-vision-gender-equality1.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/708116/Strategic-vision-gender-equality1.pdf)

<sup>115</sup> [Independent Commission for Aid Impact \(2019\) The use of UK aid to enhance mutual prosperity](#)

ESO where the research benefits for UK science and commercial benefits for UK companies are very substantial.

Given their very specific nature, these projects do not in themselves provide models for other R&I international collaboration initiatives<sup>116</sup>. In considering whether to co-invest with other countries in future mega-projects, an important consideration to take into account would be the fact that the UK economy has a sub-sector of high-tech companies which is well positioned to provide highly specialised and refined products and services to such initiatives. This would position it well to derive similar benefits in future.

The other finding indicated in the three evaluations that cover this issue is that the UK's active role in setting the strategic direction for the mega-projects allows it to derive greater benefits than might otherwise be the case. The precise mechanism for this effect is not fully clear. For instance, the ESO evaluation notes that the UK's participation allows it to guide the ESO's work towards areas of existing interest for the UK. While the evaluation does not state this, a reasonable (albeit unproven) assumption would be that this increases the likelihood that there will already be UK companies and other institutions with the capability to provide goods or services relating to these areas.

## 5. Conclusions

This review has highlighted a very substantial body of evidence on the outcomes and impacts of international R&I collaborations, identifying 152 documents. Although not all of these were judged to be highly relevant for the purposes of this review, it is clear that this is only a proportion of the total evidence, and that a large number of other evaluations and studies (both published and unpublished) is likely to exist.

At the same time, the fact that similar themes and points are regularly repeated in the 34 documents reviewed in detail for this study indicates that it is possible to draw reasonably strong conclusions in answering the three research questions.

To provide a summary answer to Question 1, the different types of outcomes and impacts achieved by international R&I collaboration initiatives include not only the delivery of research, but also high-quality research that addresses key development issues and subjects of global concern, as measured by a range of different measures. When implemented effectively, these initiatives can also successfully promote the uptake of research, helping to achieve positive real-world impacts. In doing so the implementation of R&I collaborations can also provide substantial benefits for both the individuals involved and the institutions they work for.

In relation to Question 1a, there is very little evidence in the studies reviewed to demonstrate how far past initiatives helped to achieve industrial and international inward investment. However, it is generally considered that there is a well-established relationship between

---

<sup>116</sup> For instance, the total sums of money required are enormous – they are by their nature beyond the capacity of a single country to finance (or to initiate), and they are therefore very distinctive to the other international R&I collaborations supported by the UK



research and science excellence and inward investment in the UK and other countries. The lack of evidence for the influence of international R&I collaboration interventions would therefore seem more likely to reflect the relatively small size of such initiatives compared to hugely larger amounts spent on research and innovation more widely, rather than because they do not contribute at all.

Apart from the specific question of inward investment, there is good evidence to show that international R&I initiatives can provide a range of benefits to donor countries. This is strongly the case in relation to strengthening academic research networks. Other commercial benefits may also be achieved, albeit under very specific conditions and where this is planned for. The evidence for international collaboration promoting the UK's soft power is relatively weak in the evidence base, although it is very widely believed that such collaboration does achieve this in wider policymaker and diplomatic circles.

In terms of answering Question 2, the research for this study provides good evidence of a range of factors and conditions that promote successful outcomes and impacts that should be considered in designing future international R&I collaborations. These include considerations for strategic positioning and the design of management processes, and issues relating to the specific desired outcome for the initiative under design (i.e., in relation to research quality, capacity building, or promoting uptake and impact etc).

It is very important however to note that there is no 'model' of success that can be transplanted from one context to others. If anything, the review highlights the need for careful planning and design phases, patience in developing partnerships, and effective monitoring, evaluation and learning processes to assess what is working well and what needs to be adjusted during the course of implementing an initiative. This applies equally to all initiatives, whether at fund, programme or project level.

Although the research for this study should provide a valuable guide in particular for the design of ODA-funded initiatives, its conclusions could be usefully added to by further research focused on non-ODA interventions and by examining more closely the experience of countries other than the UK.

# Annex 1: References

## List of evaluations reviewed

ABT Associates (2015) Evaluation of the National Science Foundation's Partnerships for International Research and Education (PIRE) Program-Volume 1-Final report. Available at: <https://files.eric.ed.gov/fulltext/ED563795.pdf>

Baastel (2018) Collaborative Adaptation Research Initiative in Africa and Asia- Summative Evaluation- Final report. Available at: <https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/57296/IDL-57296.pdf>

British Academy (2021) Review of the British Academy Writing Workshops programme. Available at: [https://www.thebritishacademy.ac.uk/documents/4657/Review\\_of\\_the\\_British\\_Academy\\_Writing\\_Workshops\\_programme\\_executive\\_summary.pdf](https://www.thebritishacademy.ac.uk/documents/4657/Review_of_the_British_Academy_Writing_Workshops_programme_executive_summary.pdf)

Cassola et al. (2022) Evaluating official development assistance-funded granting mechanisms for global health and development research that is initiated in high-income countries. Available at: <https://doi.org/10.1186/s12961-022-00859-6>

Cunningham, P. and Gök, A. (2012) The Impact and Effectiveness of Policies to Support Collaboration for R&D and Innovation. Available at: [https://media.nesta.org.uk/documents/the\\_impact\\_and\\_effectiveness\\_of\\_policies\\_to\\_support\\_collaboration\\_for\\_rd\\_and\\_innovation.pdf](https://media.nesta.org.uk/documents/the_impact_and_effectiveness_of_policies_to_support_collaboration_for_rd_and_innovation.pdf)

Danish Agency for Science, Technology, and Innovation (2011) Economic Impact of International Research and Innovation Cooperation - Analysis of 25 years of Danish participation in EUREKA. Available at: <https://repository.fteval.at/id/eprint/56/1/Economic%20Impact%20of%20International%20Research%20and%20Innovation%20Cooperation.pdf>

Independent Commission for Aid Impact (2017) Global Challenges Research Fund-A rapid review. Available at: <https://icai.independent.gov.uk/wp-content/uploads/ICAI-GCRF-Review.pdf>

Itad (2018) Evaluation of Humanitarian Innovation and Evidence Programme- Summative Phase Two. Available at: [https://assets.publishing.service.gov.uk/media/5d31b732e5274a14efbe50dd/Evaluation\\_of\\_HI\\_EP\\_summative\\_phase\\_two.pdf](https://assets.publishing.service.gov.uk/media/5d31b732e5274a14efbe50dd/Evaluation_of_HI_EP_summative_phase_two.pdf)

Itad (2021) End-point evaluation of the UK Public Health Rapid Support Team (UK-PHRST)- Final report. Available at: <https://www.lshtm.ac.uk/media/52581>

Itad (2022) Global Challenges Research Fund, Stage 1b Synthesis Report. Unpublished

KPMG (2016) FCDO Chevening Evaluation. Available at:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/638058/FOI\\_0662-17\\_document.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/638058/FOI_0662-17_document.pdf)

LTS International (2021) ESRC – FCDO Joint Fund for Poverty Alleviation Research Programme - Phase 3 Evaluation final report. Available at: [https://www.ukri.org/wp-content/uploads/2022/08/ESRC-080822-](https://www.ukri.org/wp-content/uploads/2022/08/ESRC-080822-JointFundPovertyAlleviationResearchProgrammePhaseThreeEvaluation-FinalReport.pdf)

[JointFundPovertyAlleviationResearchProgrammePhaseThreeEvaluation-FinalReport.pdf](https://www.ukri.org/wp-content/uploads/2022/08/ESRC-080822-JointFundPovertyAlleviationResearchProgrammePhaseThreeEvaluation-FinalReport.pdf)

Manchester Metropolitan University (2020) UK Vaccine Network Project- Interim Evaluation final report. Available at:

[https://devflow.northeurope.cloudapp.azure.com/files/documents/UKVN-Evaluation\\_final-report\\_FINAL-20210426080446.pdf](https://devflow.northeurope.cloudapp.azure.com/files/documents/UKVN-Evaluation_final-report_FINAL-20210426080446.pdf)

NIRAS LTS International (2022) Raising Learning Outcomes (RLO) Phase 1 Programme Evaluation ESRC-FCDO- Final report. Available at: <https://www.ukri.org/wp-content/uploads/2022/08/ESRC-020822-RLOFinalReport.pdf>

Royal Academy of Engineering (2021) Five years of the Leaders in Innovation Fellowships Programme Evaluation of the Leaders in Innovation Fellowships Programme - Final report, Vol 1. Main report. Available at: [lif-5yr-book-jul2021\\_final\\_web\\_even\\_lower\\_spreads.pdf](lif-5yr-book-jul2021_final_web_even_lower_spreads.pdf)

Royal Academy of Engineering (2022) Africa Prize for Engineering Innovation- Final evaluation report. Unpublished

Scaife. A et al. (2021) The U.K.–China Climate Science to Service Partnership. Available at:

<https://doi.org/10.1175/BAMS-D-20-0055.1>

Science and Technology Facilities Council (2022) Benefits of the UK-ESO Partnership.

Available at: <https://www.ukri.org/wp-content/uploads/2022/02/STFC-240222-BenefitsUKEuropeanSouthernObservatoryPartnership.pdf>

Technology Development Group (2020) British Academy Cities & Infrastructure Review Report. Executive summary available at:

<https://www.thebritishacademy.ac.uk/documents/3298/Technology-Development-Group-Evaluation-British-Academy-Cities-Infrastructure.pdf> Full report may be requested directly from the British Academy.

Technopolis (2016) Evaluation of the Academy's International Industry-Academia Partnerships Linkage Programmes- Final report. Available at: <https://raeng.org.uk/media/y5ffizeb/evaluation-of-the-academys-international-industry-academia-linkage-programmes-final-report-2016.pdf>

Technopolis (2017) The impact of collaboration: The value of UK Medical research to EU science and health. Available at:

[https://www.cancerresearchuk.org/sites/default/files/main\\_report\\_v8.pdf](https://www.cancerresearchuk.org/sites/default/files/main_report_v8.pdf)

Technopolis (2018) Review of the MRC-DFID Concordat- Final report. Available at: <https://www.technopolis-group.com/wp-content/uploads/2020/04/MRC-DFID-Concordat.pdf>

Technopolis (2019) Review of the Joint Global Health Trials funding scheme- Final report. Available at: <https://www.ukri.org/wp-content/uploads/2021/11/MRC-301121-JGHTRReview-FinalReport.pdf>

Technopolis (2020) Evaluation of the Benefits that the UK has derived from CERN - Main report. Available at: <https://www.ukri.org/wp-content/uploads/2022/07/STFC-040722-EvaluationBenefitsUKDerivedFromCERN-MainReport.pdf>

Technopolis (2021a) Evaluation of the Higher Education Partnerships in sub-Saharan Africa (HEP SSA) Programme- Final report. Available at: <https://raeng.org.uk/media/up4jwhpm/hep-ssa-evaluation-executive-summary.pdf>

Technopolis (2021b) Evaluation of the Fund for International Collaboration (FIC) Baseline and Interim Process Evaluation - Technical report. Available at: <https://beta.ukri.org/wp-content/uploads/2022/07/UKRI-27072022-FIC-Baseline-and-Interim-Process-Evaluation-Technical-Report.pdf>

Technopolis (2021c) Review of the Health Systems Research Initiative-Final report. Available at: <https://www.ukri.org/wp-content/uploads/2021/06/MRC-130121-HSRI-ReviewFinalReport.pdf>

Technopolis (2022a) Impact evaluation of UK investment in ESA. PART A: First impact evaluation of CMIN19 investments. Available at: [https://www.technopolis-group.com/wp-content/uploads/2022/10/3617-Impact-Evaluation-Report\\_PART-A\\_220427\\_FINAL.pdf](https://www.technopolis-group.com/wp-content/uploads/2022/10/3617-Impact-Evaluation-Report_PART-A_220427_FINAL.pdf)

Technopolis (2022b). Socio-Economic Impact evaluation study of the UK subscription to ESO - Final report. Available at: <https://www.ukri.org/wp-content/uploads/2022/07/STFC-040722-SocioEconomicImpactEvaluationUKSubscriptionESO-FinalReport.pdf>

Technopolis (2022c). Evaluation of the GCRF Africa Catalyst programme- Final report. Unpublished

Tetra Tech International Development (2022) The Newton Fund- Final evaluation report. Available at: <https://www.newton-gcrf.org/wp-content/uploads/2022/02/newton-fund-final-evaluation-report.pdf>

Michaelis C. et al. (2018) Portfolio Evaluation 1 – Integration of ICF- Final report. Available at: [https://iati.fcdo.gov.uk/iati\\_documents/47047338.pdf](https://iati.fcdo.gov.uk/iati_documents/47047338.pdf)

Hetherington H. (2019) Compass Portfolio Evaluation 2: Mobilising private finance through demonstration effects, Final Report. Available at: [https://iati.fcdo.gov.uk/iati\\_documents/55449840.pdf](https://iati.fcdo.gov.uk/iati_documents/55449840.pdf)

Halpin C. et al. (2020) Compass Portfolio Evaluation 3: Support for policy change, Main report. Available at: [https://iati.fcdo.gov.uk/iati\\_documents/56814448.pdf](https://iati.fcdo.gov.uk/iati_documents/56814448.pdf)

Upper Quartile (2014). Evaluation of the Future Agricultures Consortium (FAC), Final report. Available at: <http://www.future-agricultures.org/wp-content/uploads/2017/06/Evaluation-of-FAC-final-report.pdf>

UK Research and Innovation (2022) Evaluation of the effectiveness and impact of BBSRC's investments in antimicrobial resistance research. Available at: <https://www.ukri.org/wp-content/uploads/2022/11/BBSRC-161122-EvaluationOfTheEffectivenessAndImpactOfBBSRCsInvestmentsInAMRResearch.pdf>

## Other references

Brown, A. (2023) The role of universities in driving overseas investment into UK Research and Development which have no references to R&I collaboration. Available at: <https://www.hepi.ac.uk/wp-content/uploads/2023/03/The-role-of-universities-in-driving-overseas-investment-into-UK-Research-and-Development.pdf>

Burge, R. and McGee, R. (2022) New insights on adaptive management in aid programming . Available at: [New insights on adaptive management in aid programming - Institute of Development Studies \(ids.ac.uk\)](https://www.ids.ac.uk/publication/new-insights-on-adaptive-management-in-aid-programming/)

Tetra Tech International Development. (2021) Prosperity Fund Year 3 Secondary Benefits Evaluation. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1090016/Prosperity-Fund-Year3-Secondary-Benefits-Evaluation-Report.odt](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1090016/Prosperity-Fund-Year3-Secondary-Benefits-Evaluation-Report.odt)

Mason, A (2023) Universities and foreign direct investment: what, why and how? Available at: <https://www.universitiesuk.ac.uk/universities-uk-international/insights-and-publications/uuki-blog/universities-and-foreign-direct>

Reid, G. and Smith, A. (2019) Changes and choices: advice on future frameworks for international collaboration on research and innovation. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/844488/Changes\\_and\\_Choices.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/844488/Changes_and_Choices.pdf)

Woolcock, M. (2013). Using case studies to explore the external validity of 'complex' development interventions. Available at: [https://bsc.cid.harvard.edu/files/bsc/files/270\\_woolcock.pdf](https://bsc.cid.harvard.edu/files/bsc/files/270_woolcock.pdf)

---

This publication is available from: [www.gov.uk/dsit](http://www.gov.uk/dsit)

If you need a version of this document in a more accessible format, please email [alt.formats@dsit.gov.uk](mailto:alt.formats@dsit.gov.uk). Please tell us what format you need. It will help us if you say what assistive technology you use.