Department for
Business, Energy
& Industrial Strategy

The Newton Fund

Final Evaluation Report Annexes

February 2022

TETRA TECH
International Development

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Annex 1: Newton Fund Expenditure

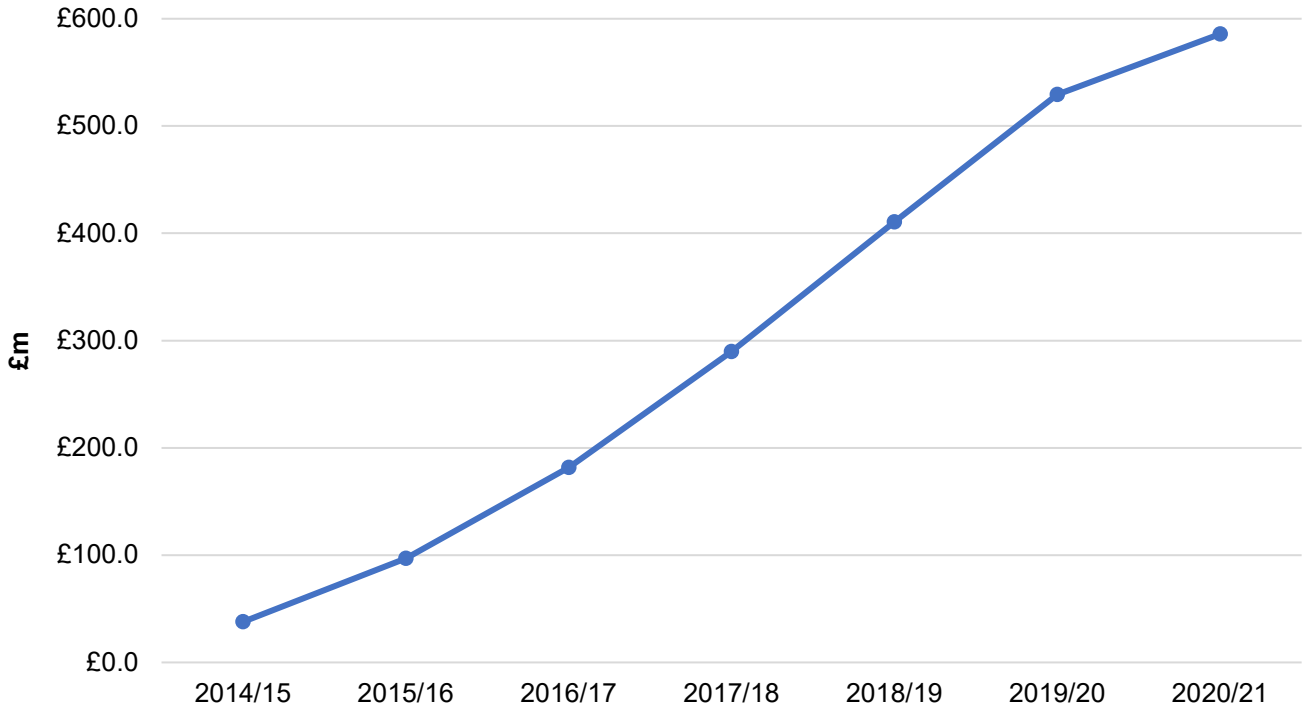
This Annex provides an overview of the Newton Fund's estimated spend since its launch in 2014, including summaries of spend by Partner ***Country, Delivery Partner (DP) and sector activity****. The data is sourced from the Newton Fund BEIS Activity Tracker[1], capturing spend up to and including Financial Year (FY) 2020/21.[2]*

Data consideration: All spend figures are estimates based on BEIS' Newton Fund internally sourced data and will be subject to final quality assurance. The figures represent actual spend recorded to the end of FY 2020/21 and exclude core costs and funds allocated to projects that were indicated to have been 'stopped' from the Fund (i.e. activity has been cancelled or indefinitely postponed before an activity started).

Estimated Newton Fund expenditure

Figure 1 details the annual (and total) estimated Fund spend up to and including FY 2020/21. The estimated total spend was £585.8m.

Figure 1: Estimated cumulative annual (and total) DP spend (£m)



[1] BEIS 'Activity Tracker' is an excel-based internal monitoring tool which is updated quarterly by the UK DPs. The tracker provides expenditure for seven FYs 2014/15 to 2020/21. Previous versions of the tracker were used in the 2018 Mid-Term Evaluation Report and the sampling methodology for the Final Evaluation Partner Country Case Studies. Data shown in this Annex was accessed in March/April 2021. Data for FY 2020/21 were not finalised at time of access and so may differ from Fund financial data in later publications.

[2] The Fund officially ceased funding new projects as of March 2021. All awards that have completed mean that there is no more financial spend from the UK i.e. all final payments on the activity, including final reconciliation, have been made.

Partner Country and DP expenditure

Since the Fund launched in 2014 there have been 18 Partner Countries in total, with 17 active partnerships at this stage of the evaluation (see figure 2 below).[3] All countries selected to enter partnerships were on the Organisation for Economic Co-Operation and Development - Development Assistance Committee (OECD-DAC) list of Official Development Assistance (ODA) recipients at the time of selection.[4] Selection was based on countries:

- Identifying under the UK Foreign Office Emerging Powers Initiative (2010) as a country with whom the UK should be increasing its efforts to engage;
- Being included in the DAC list of ODA recipients;
- Demonstrating research and innovation excellence and a strong appetite to work with the UK to increase their research and innovation capacity for economic and social goals.

Three categories of indicators were applied to assess and rank countries: 1. Current potential for research; 2. Future potential, and 3. Innovation collaboration potential.

There are 15 UK DPs which are listed in Figure 2 below (*denotes partner is part of UKRI). UK DPs implement Newton Fund programmes and were selected through a competitive process conducted by BEIS.[5] Selection criteria included:

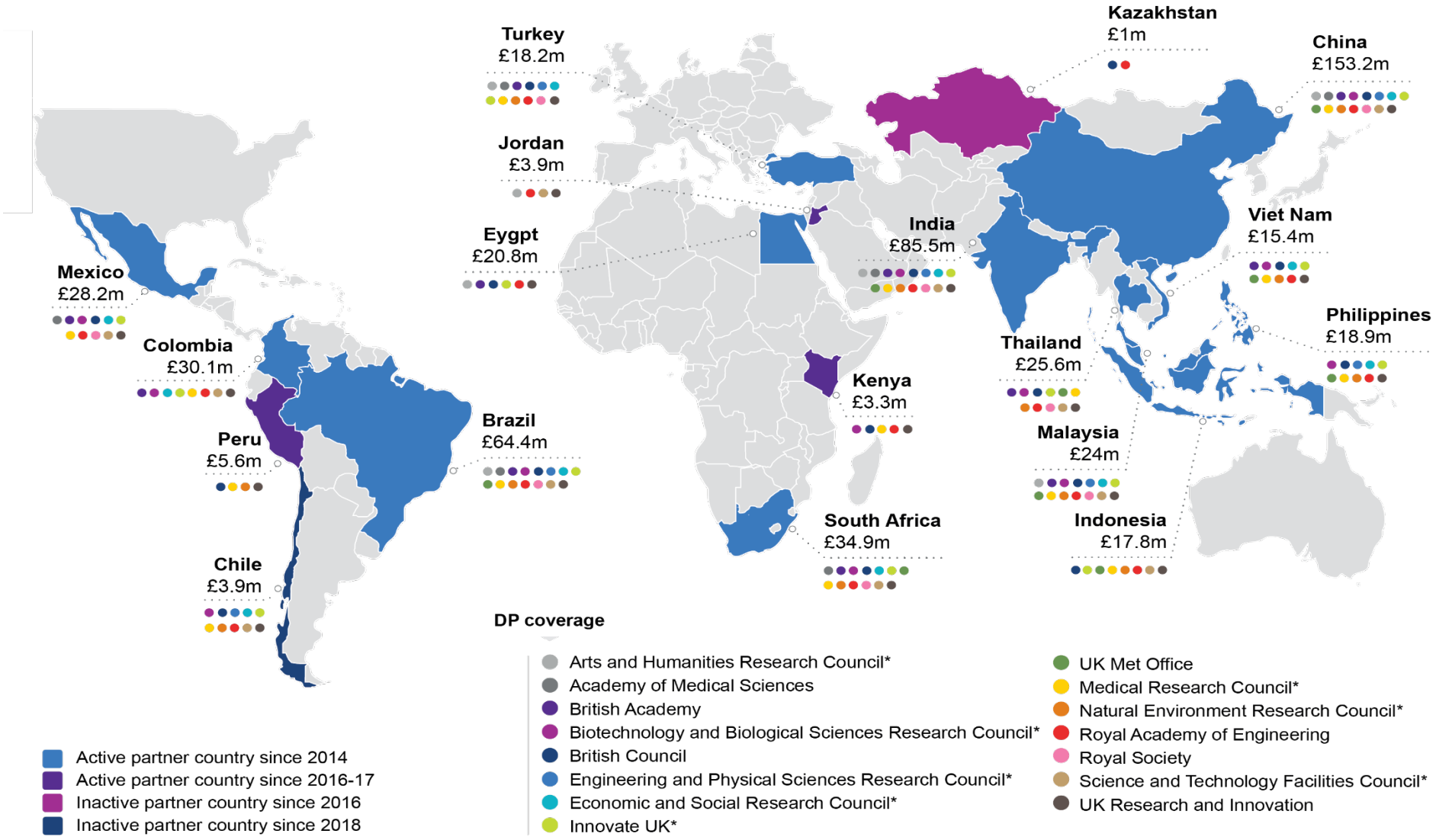
- Meeting ODA eligibility;
- Demonstrating capacity to meet demands and priorities of Partner Countries;
- Demonstrating ability, and proven track record to deliver large scale research and innovation programmes effectively.

DPs receive funding from the Newton Fund through annual allocations. Programmes and calls are co-designed by DPs and in-country DPs as co-funders.

Figure 2 below presents the estimated funding distribution by Partner Country (actuals up to December 2020) and country coverage provided by DPs. China has benefitted from the largest volume of Newton funding overall for joint UK-China programmes. Approximately £153.2m of spend benefitted China by FY 2020/21 to reflect the match funding model, followed by India at £85.5m and Brazil at £64.4m. These three countries have consistently been the largest beneficiaries of Newton funding, committing to matched resources or effort. Kenya, Jordan and Peru currently benefit from the lowest amounts of funding for joint Newton programmes, in part reflecting their late addition to the Fund's portfolio in 2017.[6] Not all partners are active in all countries. Brazil, China, and India have activities funded by all the participating DPs, and all DPs except for the Academy of Medical Sciences operate in Malaysia.

[3] These encompass the original 15 partners (Brazil, Chile, China, South Africa, Thailand, Thailand, Colombia, Egypt, India, Indonesia, Turkey, Philippines, Mexico, Malaysia) along with Kenya, Jordan, and Peru, who joined the Fund in 2017. Kazakhstan is currently inactive, though still an official Partner Country.
[4] All partner countries are on the OECD DAC (Development Assistance Committee) list of ODA recipients. Chile graduated from the OECD-DAC eligibility list in 2017 but remains a Newton Fund partner on regional initiatives.
[5] BEIS Newton Fund Operational Framework (2020). Available at: Newton Fund: operational framework - GOV.UK (www.gov.uk)
[6] Chile is shown to receive the third lowest funding in Figure 2 - however this value is subject to the caveat explained in footnote 7.

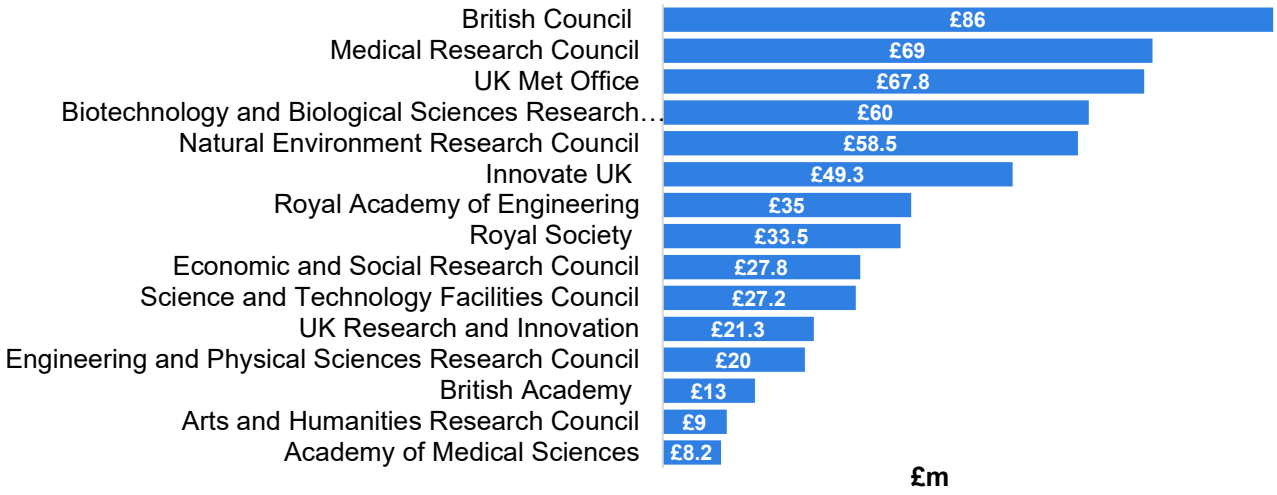
Figure 2 - Estimated funding distribution by Partner Country and DP country coverage[7]



[7] The three-year Newton-Picarte Fund (the joint Newton UK-Chile initiative) ran from 2014 to 2017 before Chile graduated from the Development Assistance Committee (DAC) list and became ineligible to receive Official Development Assistance (ODA) funds. Chile, however, remains a Newton Fund partner on regional initiatives.

Spend varies significantly between Delivery Partners. UKRI and its affiliate research bodies have spent the largest amount of funding to date at around £342.3m, followed by the British Council at £86m and Met Office with £67.8m (Figure 3).

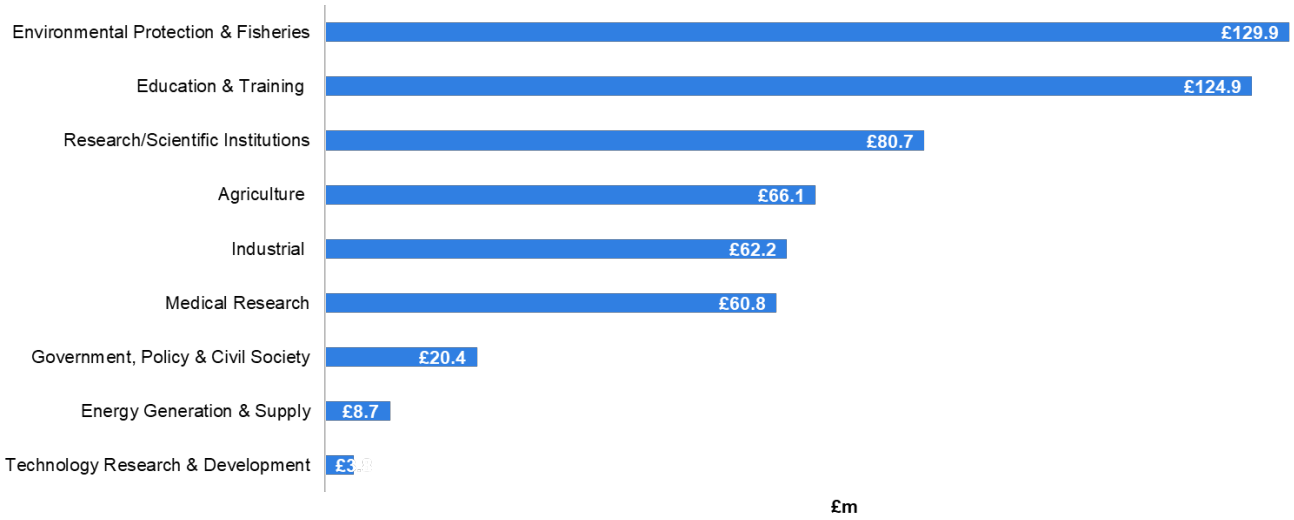
Figure 3: Estimated activity spending by DP



Estimated sector activity expenditure

Two sectors represent almost 50% of total estimated funding: general environmental protection and fishing (23.3%); and education and training (22.4%). A significant proportion of funding is allocated to industry and agriculture (23%), medical research (11%) or is unspecified (15%). Fifteen countries have activities dedicated to general environmental protection and this is a major focus of activity in China, India, and Malaysia. Education and training activities are a particular focus in South Africa, Brazil, and Mexico. Agricultural activities are a focus in Brazil and China, and industry activities are less prevalent (they occur mostly in India). Medical research projects are a major focus in South Africa, India, China, and Brazil.

Figure 4: Estimated activity spend by sector (£m)[8]



[8] Estimate figures excludes funds allocated to 'Administrative costs' which are non-sector allocable.

Annex 2: Approach and Methodology

This annex details the approach and methodology used for the Final Evaluation of the Newton Fund. It covers the Evaluation Questions (EQs) and sub-questions; approach and methodology; and the four main evaluation components (i.e. engagement, management and communication, primary and secondary data collection methods; analysis and synthesis), and finally the limitations.

Evaluation questions

The Final Evaluation addresses **six key EQs** supported by several sub-questions as shown in Table 1 below. The EQs were adapted from the request for proposal, considering the evidence gaps identified during the previous phases of the evaluation. The questions are structured following the OECD-DAC criteria. As part of Newton Fund Final Evaluation Strategy, the evaluation team developed an Evaluation Framework to guide the data collection and analysis of primary and secondary data during the evaluation. The framework organises and links the six key EQs, sub-questions, the judgment criteria used to answer the questions, and the indicators used to inform our judgment. After conducting the research, the evaluation team analysed and triangulated the findings from different sources against a series of judgement criteria established in the framework. Table 1 (below) outlines the Evaluation Questions and supporting sub-questions.

Table 1: Key Evaluation Questions (EQs) and supporting sub-questions

DAC criteria and overarching evaluation questions	Sub questions/fund level Theory of Change pathway
1. Does the design (and objective/s) of the Newton Fund address the problem stated in line with needs? **Relevance**	1.1 Are the activities and outputs consistent with the intended outcomes and impacts of the Newton Fund? 1.2 To what extent has the Newton Fund targeted, reached, and benefited its intended recipients? Are there gendered differences in terms of benefits realised? 1.3 To what extent have the funded activities targeted the economic development, welfare, and poverty issues in partner countries?
2. To what extent has the Newton Fund complemented and contributed to the work of other stakeholders in the sector? **Coherence**	2.1 How successfully has the Newton Fund worked with other organisations/ programmes to achieve results they would not have achieved otherwise? 2.2 Has the Newton Fund's coordination with other stakeholders led to the mainstreaming/ uptake of best practice?
3. Has the Newton Fund achieved its objectives? **Effectiveness**	Fund effectiveness is judged on the extent to which it has achieved its Interim Outcomes in Fund Theory of Change (ToC). Outputs and interim outcomes are considered shorter-term and within the 'control' of the Fund. It is expected that interim outcome level change will be realised between 5-7 years after the fund cycle has begun. 3.1 Effective, multidisciplinary collaborations between UK and Partner Countries produce quality research publications 3.2 Global Research and Innovation ecosystem addressing development challenges established and maintained 3.3 Research, innovation and translational capacities between Partner Countries and the UK has improved 3.4 Socially inclusive solutions are tested; investment leveraged for development; spin-outs created 3.5 Products, services and policies from collaborative research and innovation partnerships are developed and strengthened through a global platform 3.6 UK is established as a partner of choice to invest in sustainable partnerships
4. To what extent was the Newton Fund delivered efficiently? **Efficiency**	4.1 Has the Newton Fund delivered good value for money? 4.2 To what extent have the funded activities provided additionality?

5. To what extent has the Newton Fund delivered results? **Impact**	Longer – term results are judged on the extent to which the Fund has made progress towards or achieved its Long-Term Outcomes in Fund ToC. Long term outcomes are within the 'influence' of the Fund. It is expected that long-term outcomes will be realised between 7-10 years after the Fund cycle begun. Where relevant, sub-EQs have been answered under respective outcome areas. 5.1 New evidence influences policy and practice changes in partner countries, regionally and globally - Is there a demonstrable link between Newton Fund activity and current or potential future poverty reducing economic development in the partner countries? - Is there any demonstrable sustainable impact on gender equality or environmental sustainability in the partner countries? 5.2 Equitable partnerships and ecosystems that incentivise innovation and policy application are sustained 5.3 Strategic partnerships unlock opportunities[9] (foreign direct investment; trade) between UK and partner countries 5.4 UK is positioned as an international advocate/global leader in Research & Innovation - Has the Newton Fund led to a change in perceptions of the UK in partner countries? Has this led to any wider benefits such as new or wider opportunities for collaboration and trade?
6 Are the benefits that have been achieved by the Newton Fund likely to be sustained? **Sustainability**	6.4 How well has sustainability (and the pre-conditions for sustainability) been factored into programme implementation from the beginning and with what actual and potential effects? 6.5 What are the longer-term impacts from the Newton Fund that can be anticipated beyond the evaluation period?

[9] 'Opportunities' are interpreted as direct economic benefits arising from Newton-funded research for partner countries and the UK (as the Funds' expected secondary benefits). These benefits include the commercialisation of research outputs; wider economic opportunities for businesses through collaboration and partnerships with the UK (and with Newton partner countries) and the development of broader economic links between partner countries and the UK.

Approach

The Newton Fund involves a wide range of activities with myriad contextual conditions influencing potential outcomes. These include activities designed to have a **direct effect** on target groups (e.g. scientists and businesses) in specific countries while other activities are designed to have a **less direct but more pervasive and widespread effect** (e.g. embedding an innovative culture in institutions and governments).

A **counterfactual evaluation** design seeks to answer the question: 'what would have happened with or without the intervention?' A purely counterfactual evaluation design using control groups would not capture the Newton Fund programme effects fully or accurately, nor would it tell us whether and how it works. For instance, where the Newton Fund aims for change in innovation infrastructure and policy making at a national level, there will be no true counterfactual scenario of what would have happened without its intervention. **Quasi-experimental**[10] and counterfactual approaches are therefore unsuited to evaluating this type of Fund, as there is no possibility of establishing a control group or comparator.

A challenge for the Final Evaluation is to establish whether the observed outcomes are attributable to the Newton Funded project interventions (and would not have happened otherwise). The Newton Fund was likely to be just one of several factors influencing change in complex government systems. This gives rise to the '**attribution problem'** – the challenge of attributing a particular change to a particular programme when other factors are also contributing. The evaluation gathers subjective counterfactual evidence from beneficiaries through scenario-framed questions, as part of the survey (e.g. "If you had not received Newton Fund funding, what other options would you have considered?"). While this approach presents various biases compared to a counterfactual approach, we consider it appropriate for evaluating the Newton Fund since it provides a useful way of understanding beneficiaries' motivations, choices, and alternatives.

To address these challenges and answer the EQs, the Newton Fund evaluation adopted a theory-based approach, using case-based portfolio evaluation as the main analytical approach.

Theory-based

A theory-based approach allows the exploration of the underlying theories behind the Fund. Theory-based evaluations have two components: conceptual and empirical.[11] Theory-based evaluations explain the theory behind the programme and explore how programmes cause intended or observed outcomes. The value of such an approach is in generating knowledge; not only knowing that a programme is effective (i.e. that a causal relationship exists between A and B) but also explaining the underlying causal mechanisms (i.e. how and why A causes B).

We focus on testing the underlying theories and the likelihood that the Fund has caused the intended results. For the final phase, elements of a developmental evaluation[12] approach were applied to support learning and accountability. This seeks to situate evaluation away from the typical divide between formative or summative, and places it as an evolving process within and

[10] Quasi-experimental design establishes a cause-and-effect relationship between an independent and dependent variable. The independent variable is the cause (its value is independent of other variables in the study). The dependent variable is the effect (its value depends on changes in the independent variable). See: Thomas, L. (2020) Available at: https://www.scribbr.com/methodology/quasi-experimental-design/

[11] Rogers et al. (2000).

[12] Developmental evaluation is associated with the facilitation of continuous development loops and supporting innovation and fund redesign. However, this was beyond the mandate of the Newton Fund evaluation.

alongside the Fund. The summative element focuses on the achievements of the Fund, including how and why the Fund contributed to expected results providing BEIS with an assessment of the results achieved after seven years of implementation.

Case-based evaluation

As the main analytical approach, case-based evaluation involves the 'systematic generation and analysis of cases' where cases can be framed at any level of analysis, including people, communities, projects, programmes, institutions, policies, countries or events (Intrac, 2017).[13] This approach is most suited to the evaluation because it enabled each 'case' to viewed in its entirety and how it has played out within the context of the wider Fund. Recognising the Fund operates at three different levels – portfolio; programme and grant – we selected cases that reflected aspects of the Fund across these three levels. Case topics were selected purposively[14], to collect the empirical evidence needed to answer the six evaluation questions, and to provide insights into aspects of the Fund not investigated to date (for example gender equality, value for money and secondary benefits). In total we conducted 16 overarching case studies, within which sub-cases (62 in total) were generated for the purposes of within case analysis. Each case study drew on a range of stakeholder interviews (see Annex 4) and an extensive document review. The studies were complemented by other modules such as the online and telephone surveys and data harvesting exercise.

- **One case study** reviewed approaches to gender equality at the portfolio, programme and grant level.
- **Eleven case studies** examined the contribution of 33 sampled projects (sub cases) across eleven Partner Countries. Each case study assessed project progress against the ToC.
- **One case study** piloted BEIS' Value For Money (VFM) rubric. This included 3 sub-cases (assessment pilots) assessing project-level VFM which where were synthesised into a learning review.
- **One case study** consulted in-country partners on their experiences of the Fund, which included 6 Partner Countries (sub cases).
- **One case study** reviewed secondary benefits to the UK. It explored the logic of direct and indirect benefits to the UK as a result of partnerships promoted and facilitated through Newton Fund activities and drew out learning of relevance. It included 6 sub-cases exploring UK impacts.
- **One case study** provided insights into the nature of high-quality research to support the evidence base for the assessment of activities under the research pillar vie the country case studies. 14 projects (sub cases) were sampled to identify 'what' and 'how' research quality is achieved.

We applied elements of within and cross-case analysis, which enabled the evaluation to explore each individual case in its context, in detail, to describe and explore what changed and why; and draw out patterns and lessons across the multiple cases. We then took a portfolio approach to examine the interventions, using the Fund-level theory of change as the anchor to identify common patterns or differences across the cases. This enabled us to understand how

[13] Intrac- Case based evaluation (2017). Available at: Case-based-evaluation.pdf (intrac.org)
[14] A form of non-probability sampling in which researchers rely on their own judgment when choosing members of the population to participate in research.

and why particular changes came about and draw out insights that apply across the fund enabling us to answer the evaluation questions.

Evaluation components

The evaluation was structured around four main components, (Engagement, Management, and Communication; Country Baseline and End line Assessments; Primary Research (7 modules); and, Analysis and synthesis.

Component 1: Engagement, Management, and Communication

This component consisted of the re-design of the Evaluation Strategy[15]; ongoing management and progress reporting; the development of an Engagement, Learning and Dissemination Strategy[16]; the production of 12 learning products[17] containing findings from the individual data collection modules (which subsequently informed the main evaluation report); a secondary-data harvesting exercise and extensive engagement with stakeholders including with DPs, ICTs, BEIS and the Global Challenges Research Fund (GCRF) evaluation supplier.[18]

Engagement with the GCRF evaluation supplier and ongoing learning

The evaluation team proactively engaged with the GCRF evaluation supplier to ensure consistency and coherence, prevent duplication, and ensure maximise synergies. The GCRF evaluation supplier was contracted by BEIS in 2020, and the Newton Fund evaluation team set up monthly meetings with the new contracted GCRF team to provide an overview of the research conducted, in particular on the thematic approach to Gender, which includes the GCRF in its scope.

Other elements of the evaluation where engagement was useful and necessary to share lessons learnt included the development of the refined Theory of Change, where similar considerations may be useful, and the VFM assessments. Ongoing learning has been provided to BEIS based on a flexible mechanism to package and disseminate (internally or externally) learning from the evaluation research modules as they were delivered. The approach was tailored to deliver learning in the most appropriate way in line with the Engagement, Learning and Dissemination Strategy agreed with BEIS.

Harvesting and analysis of DP data

The purpose of 'Harvesting and Analysis of DP data' was to analyse and present Fund level data on Newton Fund outputs and outcomes achieved from 2014 onwards. The absence of comprehensive and consistent monitoring data on the outputs and outcomes of funded activities and Award Holders (and their characteristics) has been a limitation to the evaluation. The 'Harvesting and Analysis of DP data' aimed to fill this gap. In early 2020, the evaluation

[15] Newton Fund Revised Evaluation Strategy Report – Final Evaluation Stage (Coffey, 2019) - Internal document.
[16] Engagement, Learning & Dissemination Plan - Evaluation of The Newton Fund (Coffey, 2020) - Internal document.
[17] Includes; Tetra Tech International Development Newton Fund EDL plan; Gender Quality Review Learning Brief; Theory of Change blog; Gender Quality Review blog; VfM Learning briefs; VfM Synthesis workshop; DP Data Harvesting Seminar; UK Secondary Benefits Seminar; VfM seminar; GCRF Coordination calls and Final Report Learning and Dissemination Events.
[18] The GCRF evaluation supplier Itad Ltd. was contracted and began work in April 2020.

team received signed data sharing agreements from seven DPs[19] who agreed to share data related to a 'wish list' of data points.[20]

The evaluation team harvested as much useable data as possible from DPs to complement and, where possible, provide a further evidence base for the Final Evaluation of the Newton Fund. Additional analyses were conducted where possible to provide evidence against specific evaluation questions (for example, analyses of concentration of awards among specific top-ranked institutions). Despite limitations and caveats, the data has provided a significant advancement for the Fund to be able to demonstrate its high-level outputs, outcomes, and results.

Partner and stakeholder engagement

The Final Evaluation has been implemented in close collaboration with BEIS, through weekly updates as well as numerous internal reviews of workstream approach papers which offered an opportunity for BEIS to review and comment on emerging design choices. This regular engagement has facilitated and helped ensure the evaluation is meeting BEIS' needs, particularly at the final stage where a substantial re-design was conducted.

Newton Fund In-Country Teams (ICTs) and DPs have also been engaged at various points throughout the evaluation. Both the ICTs and DPs were involved in the re-design of the Fund Theory of Change, designing, and distributing the online survey, informing sample selection for case study modules, and advising on the design of the pilot value for money assessments. Where relevant, ICTs and DPs provided feedback on draft module reports, for example the Deep-dive Partner Country Case Studies, the Review of Gender Equality and in-country partner consultations. Our case study preliminary samples were circulated to BEIS and the In-Country Teams (ICTs) for an initial assessment on feasibility issues/political sensitivities before confirmation of sample.

Remote Partner Country Case Study debriefs with ICTs provided an opportunity to hear the views of teams and test/sense check findings against their understanding of how and why change is (or is not) happening. Draft Partner Country case study reports were shared with ICTs to provide an opportunity for comments before the reports were finalised. Insofar as possible, module reports (apart from VFM Learning briefs, In-country consultation report, Online and Telephone survey completion reports and Data Harvesting report) are published separately and available for stakeholders to use.

Component 2: Country Baseline and End Line Assessments

The Baseline and Endline assessments report on the evolution of 11 key science and innovation metrics in each active Partner Country during 2014-19 (collected in 2015 and 2020 respectively). They outline observed trends rather than the Fund's contribution to these changes. Metrics include:

- indicators of **short-term potential** relating to the country's science and innovation capacity and performance in the immediate term, as reflected in the degree of international collaboration, the international ranking of their publications and citation impact.

[19] British Council, Met Office, British Academy, Academy of Medical Sciences, Royal Society, RAEng, UKRI.
[20] Data points are outlined in the Tetra Tech International Developments Initial Analysis Newton Fund Monitoring Review (2016). This document is unpublished.

- indicators of **medium-term potential** relating to investments in the country's science and innovation capacity which are likely to influence its future performance. These include, for example, spending on R&D and international mobility of students.

All indicators are available as secondary published sources from Scopus, Scimago Journal and Rank, the UNESCO Institute for Statistics (UIS) the World Intellectual Property Organization and long-term studies such as the Global Competitiveness Index (GCI). Further data points could be added to improve the data series over time. Indicators can be used either as a time series within an individual country or as a relative measure across different countries, but they are not a measure of Fund impact. The assessments complemented the Partner Country case studies and were used to provide country-level context. They will be published as part of a package of publications separate to this report.

Component 3: Primary Research Modules

The Final Evaluation draws on primary data from seven modules. Summaries of these are also provided in the main report, section 3.2.1.

Methodological adaptations during Covid-19

Data collection for the Final Evaluation took place during a period of uncertainty and rapidly evolving circumstances due to the Covid-19 pandemic (March 2020 - January 2021). The evaluation team adapted all primary research methodologies to be conducted entirely remotely. This included all Partner Country case studies; the In-Country Partner Consultation; the UK Benefits Study and the Review of Research Quality. The switch to a remote based approach was agreed with BEIS in June 2020. Recognising the limitations of conducting Key Informant Interviews (KIIs) remotely, we conducted the early phase of the research on a pilot basis, enabling the team to revisit the risks associated and strengthen the approach. We conducted over 300 KIIs in total, drawing on our remote KII experience and best practices from other evaluations.

Module 1: Review of approaches to Gender Equality which provided insights into current Fund-level approaches by exploring BEIS' internal Fund-level processes and those adopted by UK DPs. It also explored approaches on similar funds across HMG and internationally. The review was formative, using mixed methods which included: KIIs with 11 stakeholders; an online survey (conducted between 22 January and 6 March 2020); a detailed document review of over 60 sources, and a validation workshop with BEIS. Our survey achieved an 85% response rate with 40 individuals contributing across the partners.[21] The review found that while BEIS is committed to improving its approach to gender equality in the administration of ODA funds, there are weaknesses at the Fund-level and much of the progress made has been at the DP level. Review findings were used as evidence sources to inform our analysis and response to EQ 1, on the extent to which there are gendered differences in terms of benefits realised, and, EQ 5, relating to the extent to which there is demonstrable sustainable impact on gender equality in partner countries. The review was published in August 2020, as part of a package of publications separate to this report.[22]

[21] At BEIS' request, the Gender Equality review covered both Newton Fund and GCRF.. There are 20 Delivery Partners in total across both Funds.

[22] Tetra Tech International Development Europe: Review of Approaches to Gender Equality the Newton Fund and the Global Challenges Research Fund (2020). Available at:

Module 2: Award Holder Online Survey and follow-up Telephone Survey to provide evidence of the extent of Newton Fund activities across the partner countries; to gather information about experiences of Award Holders in their projects; to collect feedback from Award Holders; and, to ascertain, where possible, any outcomes that have arisen as a result of their participation. It was designed to cover the evaluation criteria of relevance, effectiveness, sustainability, and impact and to gather a snapshot of the emerging impact of Covid-19 on Newton Fund award holders. The Final Evaluation Online Survey builds on the Mid-Term Evaluation Online Survey (launched in August 2017). The final (end line) online survey took place between March and October 2020, comprising:

1. Survey development: The online survey questionnaires were developed and reviewed by DPs, In-Country Teams (ICTs) and BEIS.
2. Piloting: Before launching the survey, the survey provider and the evaluation team conducted a pilot to identify any final adaptations necessary.
3. Data collection: The survey was live for a 6-week period from 24 July to 7 September 2020. The evaluation team, BEIS, ICTs, and DPs shared survey links with all Award Holders.
4. Data processing and cleaning: The dataset and codebook provided by the survey provider were cleaned in Microsoft Excel and analysed using the statistical software package Stata.
5. Analysis: A high-level analysis of the results was conducted. Where differences were observed between the results of the 2018 Mid-Term Evaluation and 2020 online surveys, this was specified.

Sample base

Based on information provided by the DPs and ICTs, the evaluation team know that more than 9,622 Award Holders were invited to participate in the online survey. In total, 1,516 valid responses were received from Award Holders for the 2020 online survey. This gave a response rate of 16% for those directly contacted.[23] Table 1 shows the number of Award Holders invited for the online survey by DPs and ICTs (the number of invitees is not known for all ICTs, these are marked 'unknown' in the Table). By comparison, the 2018 Mid-Term Evaluation survey received 862 valid responses (in late 2017), which puts the total number of responses received for the Final Evaluation survey in a reasonably favourable light[24].

Table 1: Number of Award Holders invited to participate in the 2020 online survey by Delivery Partners and in country teams

Channel		No. Award Holders invited to participate
Delivery Partner	British Council	2,559
	Academy of Medical Sciences	84
	UKRI	3,982
	Royal Academy of Engineering	1,325
	Royal Society	621
	Met Office	66

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908561/Review_of_Approaches_to_Gender_Equality_report.pdf

[23] The data required cleaning to remove duplicates, invalid responses (for example where data provided was contradictory).

[24] Note that the number of Award Holders contacts for the 2018 Mid-Term Evaluation survey was not reported by all Delivery Partners, so we do not have a comparable response rate.

	British Academy	307
Subtotal (invitation sent to Delivery Partner)		**8,944**
In-country Team	Brazil	493
	Chile	Unknown
	China	Unknown
	Colombia	Unknown
	Egypt	Unknown
	India	Unknown
	Indonesia	121
	Jordan	Unknown
	Kenya	Unknown
	Malaysia	182
	Mexico	Unknown
	Peru	88
	Philippines	Unknown
	South Africa	Unknown
	Thailand	Unknown
	Turkey	327
	UK	Unknown
	Vietnam	Unknown
Subtotal (invitation sent to in-county team)		**1,211**
Subtotal (invitation sent) (a)		**10,155**
Out of Office received (b)		**339**
Undelivered received (c)		**194**
Number of Award Holders successfully invited to participate (a) – (b) + (c)		**9,622**

The response rate of 16% in the 2020 online survey should be understood in light of the fact that respondents contacted may have been involved in activities at any time since the Newton Fund began in 2015. Given the long intervening period, we considered it reasonable to assume that for some potential respondents, their recollection of the Fund would have been low and hence they would have self-selected out of responding. Even for those who opted in, we included a screening question at the outset of the survey to determine familiarity with the Fund and screened out those who were not familiar with the Fund leaving us with a smaller but better-quality sample. Also, some Award Holders would have had low contact or very short-term involvement with the Newton Fund, which may reduce their inclination to respond to a survey. We were reliant on DPs, ICTs and BEIS ODA team to disseminate the survey, therefore we did not have full sight of whether all Award Holders received the survey

successfully. However, involving ICTs and BEIS in addition to DPs, unlike at Mid-Term Evaluation, proved beneficial by improving the chances of survey uptake.

Telephone Survey - 2020

The rationale behind the telephone survey was to allow additional analysis on issues over and above the scope of the online survey, giving a richer account of Award Holders' Newton Fund experiences in specific areas. The 2020 online survey provided information around the profile of respondents, outputs, results, challenges, benefits, and anticipated impacts. The telephone survey focused primarily on drilling down on certain results i.e. (expected) impact, sustainability, effectiveness, and potential UK benefits. The sample for the telephone survey comprised a sub-set who agreed to be contacted again following the 2020 online survey.

The Final Evaluation Telephone Survey built on the Telephone Survey (launched in December 2017) that was distributed for the 2018 Mid-Term Evaluation. It added fresh topics, namely effectiveness and followed up directly on responses regarding the effectiveness of the Newton Fund as reported in the 2020 online survey. The following activities took place between August and December 2020.

1. Survey development: The end line survey questionnaire was developed and reviewed by DPs, ICTs and BEIS.
2. Piloting: Before launching the survey, the survey provider (Ipsos) and the evaluation team conducted a pilot to identify any final adaptations necessary and reviewed the online survey data to ensure the usability of results. In doing so, the team identified the need to include additional clarification questions to establish the country of application of the Award Holder.
3. Translation: the survey was translated by an external provider into Mandarin, Portuguese, and Spanish. The scripts were checked, and some minor changes introduced.
4. Data collection: The survey was live from 13 October to 5 November. The average interview length was 31 minutes, ranging from 23 minutes to 43 minutes.
5. Data processing and cleaning: The dataset provided by Ipsos was cleaned in Microsoft Excel and analysed using the statistical software packages SPSS, Stata, and Excel.
6. Analysis: A quantitative and qualitative analysis of the results was conducted.

Out of the 1516 online survey respondents in 2020, 556 indicated that they would be willing to take part in a telephone follow-up and 217 valid responses were achieved (40% of the effective sample frame). There was at least one Award Holder who had responded to the survey in each active Newton Fund country. The team delivered the Newton Fund Final Evaluation Online Survey Completion Report in October 2020 and the Newton Fund Final Evaluation Telephone Survey Completion Report in December 2020.

Module 3: Partner Country Case Studies which covered 11 active Partner Countries.[25] Each case study assessed progress on planned outputs and outcomes (according to the ToC) for three projects within each country. A total of 33 projects were sampled. The research took place between July 2020 and January 2021. The case studies used qualitative methods involving a desk-based review of data from the Endline Assessments (Component 2) and available project documentation received from partners; KIIs with over 250 stakeholders purposively sampled in the UK and the Partner Country and emerging findings workshops for validation. Case studies were structured to gather data and insights according to the ToC and the six evaluation questions. Findings were used as evidence sources to inform the Fund-level

[25] China, Malaysia, Chile, Turkey, South Africa, Brazil, India, Philippines, Jordan, Peru, and Kenya.

analyses and synthesis in response to EQs 1-6. The 11 Partner Country Case Studies will be published as part of a package of publications separate to this report.

Module 4: In-Country Partner Consultation covered the six Partner Countries not sampled in Module 3.[26] The consultations used qualitative methods involving a desk-based review of country documentation and a total of 12 KIIs, purposively sampling two in-county delivery partners in collaboration with the ICTs. The research took place during the period November to December 2020. The approach was participatory, providing an opportunity to reflect on partnerships by identifying strengths and weaknesses and surfacing learning to further evidence the contribution of the Fund. Consultations were structured to gather data and insights according to the ToC, specifically EQ3 and EQ5. Findings were used as evidence sources to inform the Fund-level analyses and synthesis in response to EQ3 and EQ5. The consultations found that Fund partnerships are relevant and aligned with in-country partners' objectives; its broad scope has helped align priorities through shared objectives and that access to UK expertise and co-funding are main attractions for partners. Partnerships were also found to be flexible, to have created opportunities for researchers to access leading expertise and to have enhanced capacity and influence on national research and innovation ecosystems. Challenges included the alignment of systems and financial cycles and a recognition that partnerships could do more to nurture business – academia linkages.

Module 5: Review of BEIS' Value for Money Methodology took a formative approach supporting BEIS' development and piloting of a VFM rubric framework for the Fund. The purpose of the pilot was to inform the development of a broader Fund-level VFM strategy.[27] The rubric framework was applied across a sample of 57 projects (also sampled as part of the mid-term and final evaluation Partner Country Case Studies) during July 2020 and March 2021. The pilot applied qualitative research methods which included synthesising panel assessors' responses and facilitating learning workshops with BEIS. We produced two learning briefs which focussed on relevance, equitable partnerships, and capacity strengthening VfM criteria at the project level. Findings informed our analyses and synthesis in response to EQ 4. Findings were also used to strengthen the rationale for the methodology and provide recommendations for the future use of the rubric.

Module 6: UK Secondary Benefits Study explored the nature, type, and extent of UK (secondary) benefits arising from the Fund to date. The study applied qualitative primary and secondary methods including: a desk-based review of relevant Partner Country Case Study data (module 3); analysis of relevant data from the Award Holder online and telephone surveys (module 2); 16 KIIs with representatives from BEIS, Newton Fund Delivery Partners and academia; 6 secondary benefit case studies which involved 13 KIIs with UK-based Award Holders and collaborators. A purposive sampling approach was applied. The research took place between November 2020 and January 2021. The study found that the Fund is seen to be leveraging the strength of the UK in science and innovation to develop relationships with emerging research and innovation leaders. UK benefits were evident despite projects not being explicitly designed to produce direct benefits. These included developing academic links, high-quality academic outputs, tapping into Partner Country expertise, and in some cases, potential economic outcomes. Findings were used as evidence sources to inform the-Fund level analyses and synthesis in response to EQs 3, 4 and 5. The UK Benefits Study will be published as part of a package of publications separate to this report.

Module 7: Review of Research Quality provided insights into the nature and quality of research conducted. The review took a qualitative approach, complementing Module 5 where

[26] Colombia, Egypt, Indonesia, Mexico, Thailand, and Vietnam.
[27] Developing a Value for Money Assessment for BEIS ODA Research and Innovation, BEIS, internal document.

elements of research quality were assessed through the VFM rubric. The research took place between October and December 2020. Research methods included a rapid secondary review of Fund documentation including the BEIS VFM framework, academic literature, grey literature (documents from associated bodies, conference documents), and blogs/commentaries from relevant stakeholders which contained analysis on how research quality is achieved. We then conducted a structured review of 14 sample projects to identify 'what' research quality is and 'how' it is achieved in the Fund. The sample was derived from Partner Country Case Studies (Jordan, Kenya, Malaysia, Philippines, Turkey, Brazil, and Peru) and included projects with substantive research outputs. The review followed inductive and deductive searches for research quality characteristics across the sample. The review found that the Fund has delivered quality research more prominently in the areas of equitable partnerships, capacity strengthening and inter-disciplinary research. Research communication and uptake were found to be less considered in project designs. Findings were used to inform the Fund-level analyses and synthesis in response to EQs 3 and 4. The synthesis report will be published as part of a package of publications separate to this report.

Component 4: Analysis and Synthesis

The evaluation drew together insights from the case-based modules, survey and secondary data analysis to determine the extent to which the Newton Fund has, or will, contribute to improvements in economic development and welfare in Partner Countries, and whether it is delivered in a way that represents value for money. The data sources are summarised in Table 3 below. The team drew on information from Newton Fund published documents to provide context to findings where possible.[28]

The report draws conclusions about how and why Newton Fund interventions have (or have not) contributed to different outcomes, producing an evidence-based, refined Fund theory. Content analysis and thematic coding were the main analytical tools employed to undertake qualitative analysis across evidence sources, enabling the team to reduce large amounts of content into manageable evidence relevant to the evaluation questions. The analysis and synthesis process involved:

- **Systematically coding and triangulating** module findings to identify trends, themes, and patterns to generate insights and inferences. Data from interviews were categorised and coded against workstream-specific frameworks (which were typically constructed in alignment with the EQ-aligned interview topic guides), while allowing the team to also identify and cluster emerging themes. This combined deductive and inductive approaches and allowed the team to evolve the categorisation and coding as trends, themes and patterns became clearer.

- **Conducting a portfolio synthesis across cases** to analyse how and why different Newton Fund interventions contributed to outcomes in different contexts to produce an evidence-based set of findings. Analytical outputs from the individual workstreams were assembled against the evaluation questions and ToC in order to review all available evidence, and an assessment against EQs/ToC outcomes made on the basis of the combined evidence base. The strength of evidence against each EQ was also assessed and presented in the report. Findings were cross-checked with team members to check interpretation and ensure rigour and completeness.

[28] Documents include: Newton Fund Process Evaluation, Newton Fund Operational Framework, BEIS-ODA Annual Reports, Newton Fund 2018 Mid-Term Evaluation report, ICAI and International Development Committee reports and reviews and Newton Fund and Global Challenges Research Fund Annual Report.

- **Checking and validating emerging findings and conclusions** to ensure that the evidence underlying the findings was relevant and sufficiently rigorous to support the inferences made. Lead researchers also cross-checked each other's analysis and conclusions, and shared drafts with the core evaluation team to further validate and nuance findings.

Table 3: Overview of data sources used for Final Evaluation

Data Sources	Tool(s)/ methods	Scope / Sample
Thematic review of approach to gender	Documentation review; online structured questionnaire; and semi-structured face-to-face and telephone KIIs.	40 survey responses; 11 semi-structured KIIs
Online Award Holder survey	Online structured questionnaire (some open questions)	1516 Award Holder responses
Telephone Award Holder Survey	Semi-structured questionnaire	217 Award Holder responses (sample derived from online survey)
Partner Country Case Studies	Documentation review; semi-structured telephone KIIs.	33 project case studies over 11 countries; over 250 semi-structured KIIs
UK Secondary Benefits Study	Documentation review (including Partner Country case studies); survey analysis; semi-structured KIIs.	6 case studies; 16 semi-structured KIIs
Review of Research Quality	Documentation review of Partner Country case studies	14 Newton Fund projects
In-Country Partner Consultation	Documentation review; semi-structured telephone KIIs.	6 countries (unsampled in Partner Country case studies module); 11 semi-structured KIIs
Data harvesting	Analysis and harvesting of Delivery Partner Newton Fund Monitoring data	7 Delivery Partners

Country end-line S&I Assessments	Analysis of Science and Innovation metrics from online sources	17 active Newton Fund Partner Countries
VFM support for BEIS ODA Research and Innovation	Documentation review; engagement with BEIS	24 Mid-Term Evaluation Partner Country case studies

Strength of evidence

'Strength of evidence' relates to the internal validity of the evaluation findings. Our aim throughout the evaluation was to achieve a sufficient degree of confidence about the extent to which priority outcomes have occurred, and our theory about the Fund's contribution to the outcomes. Confidence in our findings and conclusions is underpinned by three broad considerations: These three considerations were used to develop a qualitative approach to assessing the strength of evidence.

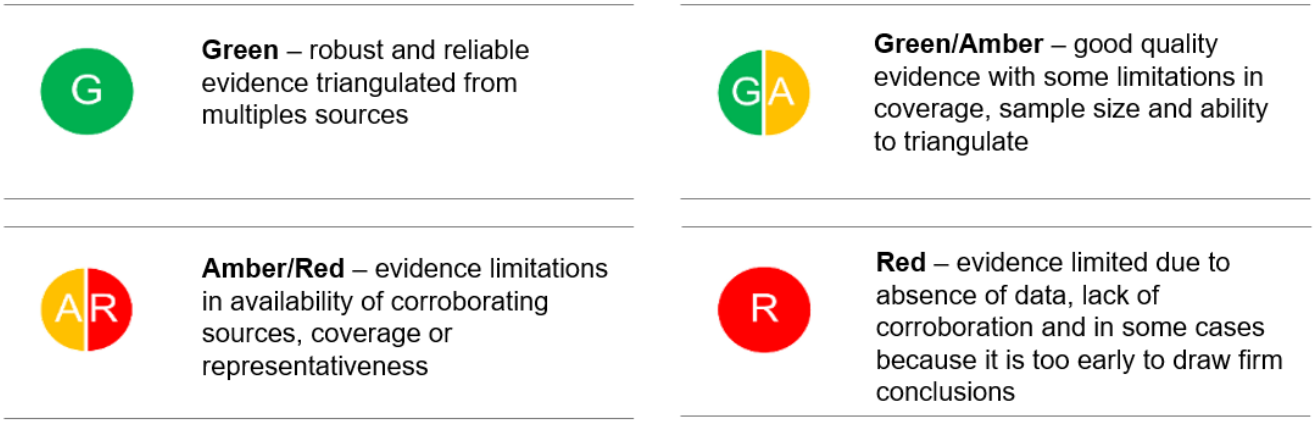
1. **The extent of triangulation across stakeholders, participants/non-participants, and/or data sources.** Triangulation was pursued on several levels:
    - **Within interviews, by asking for examples.** If a stakeholder claims to have observed an outcome, confidence that this is true is increased if they are able to give specific examples.
    - **Across stakeholders and types of stakeholders**. Confidence that an outcome has occurred is stronger if more people, across different groups, claim to have observed it. Where possible, this has included seeking out and comparing insights from participants who have less of a stake in the Fund being perceived as successful, and who, due to their position, have independent insights that provide corroboration and contextual information.
    - **Across data sources**: Where possible, we sought to triangulate insights from primary data collected through harvested DP monitoring data, and where possible with documents (e.g. policy documentation) produced by partners.
2. **A consideration of the position, knowledge, analytical capacity, reflexivity, and potential biases of primary informants** – recognising that individuals are positioned in unique ways in relation to the programme, with different levels of knowledge and capacity / willingness to analyse and reflect, as well as different incentives that may lead to bias. The position of a respondent in relation to the Fund gives them a particular perspective which needs to be considered, overlapping with the above considerations. An external sectoral stakeholder may be able to provide important independent insights about broader political economy issues but may not know much about the specific individuals or teams who took part in the Fund (and therefore their opinions should be weighed accordingly). A senior civil servant may have good insights into outcomes but may be unwilling to speak openly about the realities of incentives and power structures, and although they may not have participated directly in the Fund they have a stake in its success which implies the need to

mitigate possible bias. We considered these issues both during the sampling process and during the interview write up and analysis.

3. **A consideration of the broader context** – helping to ensure that explanations of change are grounded in an understanding of the political context and are not over-reliant on the explanations of programme participants.

These three considerations were used to develop a qualitative approach to assessing the strength of evidence, described in Figure 1 below. This is not designed to be a rigid framework, but rather a way to ensure that evaluative judgements were made systematically and would be comparable across the case studies.

Figure 1: Strength of evidence ratings



Ethics

Data collection and analysis were conducted in line with standard ethical research practices. While no formal clearance was required for this study, ethical considerations relating to the collection and analysis of data were considered on a rolling basis and in relation to specific workstreams. Specific measures included:

- Informed consent was collected from all research participants before commencing the data collection event.
- Anonymity was offered where possible to all research participants. In cases in which there was a risk a respondent could be identified through context, this was made clear to the respondent before commencing the interview, or the respondent was asked to review and consent to the draft text before publication.
- Possible harms arising from the publication were considered and measures taken accordingly. Key stakeholders including BEIS and the UK Delivery Partners were given an opportunity to review the report prior to publication to identify possible instances of harm.
- Monitoring data, which included details of Newton Fund-funded projects which had not been sampled as case studies, was treated sensitively in recognition that Award Holders were not necessarily aware that this evaluation was taking place. For example, during the data harvesting exercise we refrained from publishing details about specific projects listed in the monitoring data that would render them identifiable.

- General Data Protection Regulations (GDPR) apply to all our data collection activities. This means that data collected for the purposes of this evaluation is strictly protected and cannot be shared for other purposes. Data is stored under strict security measures and cannot be shared with any third parties.

Limitations

Certain methodological limitations have been identified across the modules and are summarised below.

Limited good quality monitoring and secondary data

The research process for the Final Evaluation encountered a lack of good quality monitoring and secondary data that would normally be required to conduct a structured and systematic triangulation and synthesis of secondary and primary data. This was known to be a factor throughout our evaluation.

The availability of monitoring data at output, outcome and impact levels vary by DP and quality. Similarly, the availability of data obtainable through secondary research varies between S&I indictors, time-periods, countries, and sources. We have used data to validate our qualitative findings wherever possible and to increase confidence in the strength of our findings. However, this has not been possible consistently across all our evaluation findings. We introduced a traffic light system to make this limitation transparent.

The Newton Fund BEIS Activity Tracker Data[29] is a useful source of data on actual and planned expenditure by a range of variables (pillar, Delivery Partner, sector etc) but the information it provides is by “activity”, which is typically at the level of a funding call. It does not provide project-level information comprehensively across the Fund. To address the gap in monitoring data, we sought to gather harmonised data across the Fund through our Data Harvesting and Analysis module. The data harvested in this way provides a useful overview on the nature and volume of outputs and outcomes being delivered by the Newton Fund, and Award Holder characteristics. However, the harvested data is subject to several limitations leading to data being considered as partial at Fund-level. This is due to un-standardised data reporting at Fund level and inconsistencies in data across partners, an issue routed in the varying monitoring capacity across partners which means data collection is not systematic. For this reason, not all data points could be readily aggregated owing to multiple formats.

In addition, there are several limitations in the data and sources used for the country metrics and indicators for the Baseline and Endline assessments module. For example, a complete time series of data, from 2014 to present, was not available for all indicators due to source specific limitations.[30]The purpose of the assessments is therefore to provide context for S&I trends within each country and to complement the Partner Country Case Studies.

Representativeness of primary data and Fund level findings

Given the limitations in monitoring and secondary data, the Final Evaluation findings are more qualitative in nature, with quantitative findings drawing on evidence from surveys. There are limitations around the representativeness of the samples used for qualitative data research.

[29] The BEIS ‘Activity Tracker’ is an Excel spreadsheet used as an internal monitoring tool by BEIS and updated quarterly by the UK Delivery Partners.
[30] Detail on the specific limitations on the S&I indicators and data sources used are found in the End line Assessments.

With the Partner Country Case Studies restricted to 11 countries and 33 projects, it is impossible to achieve "representativeness" in a strict statistical sense. The approach limits our ability to draw wider conclusions on the qualitative impacts in non-sampled countries. Similarly, the selection of projects sampled for Review of Research Quality, UK Secondary Benefits Study and VFM modules respectively are not fully representative of the activities funded by the Newton Fund as a whole. And sample sizes for online and telephone surveys, whereas robust in aggregate[31], do not allow for fully representative sub-samples at the level of each pillar or for each Partner Country.[32]

The traffic light system makes these limitations transparent. Our case-based approach is based on purposeful sampling, which means we have chosen the most information-rich cases in order to answer the EQs.[33] A case-based approach can also be highly context specific, limiting the validity of some findings at Fund level. We have ensured that primary research and data collection (surveys) were conducted across all active Partner Countries to ensure coverage across the fund activities. We have sought a minimum of two sources of data collection evidence to support our findings.

Confirmation, selection and response bias

There is a risk of selection and confirmation bias in purposive sampling approaches for the primary data modules. The research team sought to mitigate this by triangulating data with other project documentation and across multiple interviewees where possible, to assess the strength of evidence underlying different views under the primary research module and with other data collection modules. Also, the telephone survey was drawn from respondents to the online survey who indicated that they were willing to be re-contacted by phone. This sample is therefore self-selecting to a degree and may favour respondents who are more engaged with the Fund and the evaluation. To add, respondents may, for various reasons, provide responses that they think researchers wish to hear, rather than the reality. We mitigated this by providing clear guidance, being explicit that we are not assessing or evaluating their performance but focusing on learning from experiences. We asked for reasons behind given answers and sought examples to get beyond rhetoric.

Time-lag in observing impacts at all levels of Newton Fund

A theory-based evaluation approach enables us to measure progress and trajectory along causal pathways towards outcomes and impacts. Many of the changes the Newton Fund has sought to effect will take many years to realise and therefore fall beyond the lifetime of the evaluation; for example, policy changes in relation to research, or innovations in products and services. It may be longer still before impacts on economic development and social welfare arising from these outcomes can be observed. Thus, the evaluation seeks to assess the

[31] The absence of full data on the total population of award holders in the UK and in partner countries meant a full assessment of the statistical representativeness of the survey cannot be made. A useful benchmark used is the number of responses at 2018 Mid-Term Evaluation which received 862 valid responses (in late 2017).
[32] In addition, one specific limitation was discovered during the telephone survey (which was sampled from respondents to the online survey). The telephone survey revealed that a number of UK-based respondents (46 of 217) had selected the wrong country in the online survey (indicating their country of partnership rather than the UK). This means that some online survey respondents counted as non-UK respondents may have in fact been from the UK, and so answering from a UK perspective. Based on internal tests we do not expect this to have significantly impacted the online survey results. A secondary consequence is that this has resulted in a smaller population of UK-based responses although we do not expect this to have affected representativeness.
[33] See Annex 4 for Sampling Strategy.

progress being made towards achievements of these outcomes to detect significant changes within the lifetime of the Fund.

Remote based research due to Covid-19

Data collection for the Final Evaluation took place during a period of uncertainty and rapidly evolving circumstances due to the Covid-19 pandemic. The Covid-19 pandemic required the team to adapt research methodologies for primary data collection. This included switching to a remote based approach for the deep-dive country case study research, which was originally planned as three waves of country-visits from June to December 2020. In revising our case study approach we recognised that switching to a remote-based approach could have implications for the quality of data collected, as outlined in our April 2020 Concept Note to BEIS, including:[34]

- problems with connectivity, technical issues and limited telephone or internet coverage, which posed the risk of lowering the quality of calls and cause loss of rapport, creating abrupt feelings in interviews, and affecting the depth and quality of our findings.
- the absence of visual or nonverbal cues, inability to observe behaviour and body language, with the risk of telephone interviews becoming mechanical and cold.
- having little opportunity to establish rapport with respondents and having potentially shorter times for interviews as respondents may more easily become fatigued by telephone compared to face-to-face interaction.
- limited engagement, low response rates and little interest in participating in our research, which might limit the breadth and depth of our findings.
- the inability to visit laboratories or facilities, and limited scope for unplanned interviews with additional staff members, researchers, or others in the same institution.
- fewer opportunities for check-ins and informal conversations with in-country teams (ICTs), who are a rich source of data.

We mitigated these issues in several ways:

- we included additional time for document review prior to interviews so that conversations moved on to speaking about results, emerging impact, and challenges (to consider for shorter interview times and potentially lower quality interviews). However, it is important to consider that availability and quality of project data and information varied considerably across sampled interventions.
- we favoured video interviews wherever possible to limit the lack of nonverbal cues and to help establish rapport with respondents.
- we used telephone (and lower bandwidth platforms) and different web-based platforms (e.g. Microsoft Teams and Skype) depending on the context, accessibility, and preferences of respondents.

[34] These limitations are also relevant to the In-country partner consultations and UK Secondary Benefits study which involved remote-based KIIs as a data collection method.

- we had several email exchanges prior to interviews to create an initial connection and rapport with participants, and to set out the objectives and areas covered in the interviews by sharing topic guides prior to our calls.
- we organised follow-up interviews wherever possible to fill any remaining information gaps brought about by having shorter interview times. We also gathered interviewee insights on additional respondents and carried out additional interviews which emerged from email exchanges and interviews.
- we organised regular check-ins with ICTs via email or telephone and delivered online presentations and validation sessions with each ICT to share emerging findings after having carried out all interviews. This allowed us to ensure we had accurately reflected the Newton Fund's experience in each country.
- We involved interpretation support to support KIIs was assessed on a case-by-case basis, in consultation with the Newton Fund In-Country Teams.

Covid-19 effects on programmes and projects sampled

Findings across the primary data collection modules show that many sampled projects encountered delays and disruptions because of Covid-19. This included the stalling of project activities, travel bans, delayed funding and investments and the reprioritisation of Award Holders and researchers towards non-Newton funded Covid-19 related work. For these reasons, many of the intended outputs and outcomes could not have been achieved as planned, despite projects being 'on track' to achieving planned results prior to Covid-19. The Covid-19 pandemic has therefore been a significant external barrier to project progress towards impact. In turn, this has influenced to some degree our assessment and reporting on findings against the Newton Fund EQs, particularly 'effectiveness', 'sustainability' and 'impact' questions.

Overall, we feel the limitations listed above have not significantly compromised the quality of the evaluation findings.

Annex 3: Sampling Approaches

This annex details the individual sampling approaches used for the primary data collection modules detailed in Annex 2 – these include the Review of Approaches to Gender Equality; Partner Country Case Studies (and In-Country Partner Consultation); the UK Secondary Benefits Study and the Review of Research Quality.

Module 1: Review of Approaches to Gender Equality

The Review of approaches to Gender Equality comprised three workstreams: internal review; external rapid review, and analysis and synthesis.

For the internal review, respondents for key informant interviews were purposively selected from among the BEIS ODA Research and Innovation Team and ODA Research Management Team. A total of 5 semi-structured KIIs with BEIS staff were carried out by Tetra Tech. The Internal Review also ran two surveys of 11 DPs and nine UKRI members, using a tailored online questionnaire for each group. Overall, the survey achieved an 85% response rate[35] with 17 out of 20 DPs participating and 40 individuals contributing across the partners.

The external rapid review examined available information against a list of criteria[36] (which was co-created with BEIS). The research team conducted 6 semi-structured targeted KIIs with focal points for a total of 5 selected funds.[37]

Module 3: Partner Country Case Studies

This section details the approach and criteria used to develop the sample of countries, calls and projects for the Partner Country case studies.[38]

Country sample

A total sample of 11 countries were agreed with BEIS against a list of criteria: China, Malaysia, Chile, Turkey, South Africa, Brazil, India, Philippines, Jordan, Peru and Kenya.[39] Six of these countries were included in the 2018 Mid-Term Evaluation of the Newton Fund case study research.[40] This approach allowed the evaluation to maximise opportunities for learning over time. The sample includes 3 additional countries (Jordan, Kenya, and Peru) due to the Newton

[35] Innovate UK, Economic and Social Research Council and the Department of Economy, Northern Ireland did not provide a response.
[36] Criteria included: level of comparability with the Newton Fund and the GCRF in terms of: Aims/objectives, types of activities; countries targeted/grantees, budget size, implementation period, existence of a gender equality strategy.
[37] The Prosperity Fund, Conflict, Stability and Security Fund (CSSF), Joint Fund for Poverty Alleviation Research, Partnerships for Enhanced Engagement in Research (PEER) and Gender, Growth and Labour Markets in Low Income Countries Programme. All are UK government funds with the exception being the USAID PEER programme.
[38] A Newton Fund 'call' is a general term covering all types of funding opportunity under the Newton Fund.
[39] The criteria used for the country selection were: coverage of all regions covered by the Newton Fund; coverage of different levels of existing innovation and capacity of partner countries (as defined by the 2015 Global Innovation Index rankings and BEIS' initial assessment of capacity); learning opportunities from new ways of working regionally in countries that either graduated from the DAC list or have ODA sensitivities; or operating in/ recovering from crises; and inclusion of Peru, Jordan, Kenya; countries not been explicitly included in the evaluation scope until now.
[40] China, Malaysia, South Africa, Brazil, India, and the Philippines. Mexico and Egypt, which were part of our 2018 Mid-Term Evaluation sample, were replaced with Turkey and Chile respectively to increase opportunity for learning.

Fund's expanded scope. Non-selection of countries (or calls) does not reflect significance, quality, or importance.

Call sample

Data from BEIS' Newton Fund Activity Tracker (of January 2020) allowed the research team to determine 'call' activity and identify 3 'calls' per country, giving a total of 33 in the sample for the evaluation.[41] The following criteria were used to develop the call sample and is detailed in **Box 1**.

1. ensuring coverage of all DPs
2. ensuring coverage of the 3 different pillars
3. reflecting emphasis on spending/ thematic priorities in each country
4. allowing for longitudinal analysis by including 6 projects analysed as part of the Mid-Term Evaluation.

Box 1: Call sampling approach

1. **Initial analysis of DPs' spending per country.** We calculated a Location Quotient (LQ) for each DP in each country. The LQ is a measure of the relative concentrations of funding in the different sampled countries. The LQ is the ratio of DP funding in a specific country to that DP's funding in the entire Newton Fund portfolio.[42] An LQ of 1 means an average proportion of funding; an LQ of 2 shows twice as much funding from a particular source as would be expected from the global average, and an LQ of 0.5 shows half as much funding as expected. We identified DPs with an LQ of at least 1 in the sampled countries.
2. **Ensuring all DPs are covered in the sample.** Based on an assessment of where DPs were channelling the most funding, we compared spend across countries to ensure at least one call per DP was included in the sample (to ensure coverage). The number of DP calls included in the sample was proportionate to their spending in the Newton Fund as a whole.
3. **Creation of a long list of calls.** Having identified 3 DPs to be included in the sample for each country, we reviewed the list of calls for each sampled DP in the Activity Tracker. We created a list including the 3 activities with the highest levels of spending for each DP (our 'long list' of calls) to include high-relevance initiatives in each country.[43] The long list was then used to randomly select one call per DP.
4. **Screening for 'red flags' in country**. The preliminary sample was circulated to BEIS and the In-Country Teams (ICTs) for an initial assessment against feasibility and political sensitivities before the long-listed calls were taken forward. Some adjustments were made based on feedback on the level of activity observed in-country.

[41] The BEIS Activity Tracker (of January 2020) was the main database detailing Level B activities, objectives and spending up to FY2019-20.
[42] To find the LQ for each DP in each country, we first looked at the share of each DP spending in each country, by calculating the ratio of DP spending to total Newton Fund spending in that country. Then, we calculated the share of each DP spending in the Newton Fund as a whole, which is the share of total DP spending in relation to overall Newton Fund spending in its whole portfolio. To calculate the LQs for each DP, we divided their ratio of spending in the specific country by their ratio of spending in the Newton Fund as a whole. This shows where funding from a DP is concentrated, as compared to their patterns of spending in the entire Fund.
[43] In cases where DPs had less than 3 activities in the country, we reviewed those which were available. For some countries, DPs only had one activity to choose from.

Project sample

The evaluation team consulted with BEIS ODA Research and Innovation, ICTs, and DPs to identify specific projects under each selected call. In finalising the sample, practical and logistical considerations included location, timing, cooperation/ willingness of project stakeholders to support research. We revisited up to one project per country previously covered at the 2018 Mid-Term Evaluation to allow for longitudinal analysis. The sample included 'best' case examples and projects which have proven more challenging and which offer scope for lesson learning. Table 1 below presents the final case study sample; projects in **bold** indicate the re-sampled projects from the Mid-Term Evaluation.

Table 1. Project sample for Newton Fund Partner Country Case Studies

Country	Delivery Partner	Pillar	Call	Project	Sector
Brazil	Academy of Medical Sciences	People	Newton Advanced Fellowship (2018/19)	Strengthening Skills on Structure-based Drug Discovery for Novel Anti-schistosomal therapeutics	Multisector education/ training
	ESRC (UKRI)	**Research**	**Joint Research Call - Social Science of the Nexus and Healthy Cities**	**(Re)Connect the Nexus: Young Brazilians' experiences of and learning about food-water-energy.**	**Research/ scientific institutions**
	Met Office	Research	Climate Science for Service Partnership (CSSP) Brazil	Work Package 3 (WP3) – Impacts and Disaster Risk Reduction	Environmental research
Chile	ESRC (UKRI)	People	Comisión Nacional de Investigación Científica y Tecnológica and Research Council of United Kingdom International Research Partnerships Call	Governing the educational and labour market trajectories of secondary TVET graduates in Chile	Multisector education/ training
	Innovate UK	Translation	Chile-UK Experimental Development Call	Project Hephaestus: Sustainable Economic Development of Medium-Sized Mineral Extraction Companies in Chile	Industrial policy and administrative management
	UKRI	Research	UK-Chile Broadening Impact Call	Making soil erosion understandable and governable at the river basin scale for food, water, and hydropower sustainability in Latin America	Research/ scientific institutions
China	Met Office	Translation	Climate Science for Service Partnership (CSSP) China	Work Package 5	Environmental research
	Royal Society	People	Newton Advanced Fellowships (Year 4 round 2)	Small molecule inhibitors targeting the 2OG-oxygenase JMJD6 – towards a new breast cancer therapy	Multisector education/ training

	STFC (UKRI)	**Research**	**Joint development with China of remote sensing technologies and techniques for agricultural and environmental monitoring**	**PAFiC: Precision Agriculture for family farms in China**	**Fishery research**
India	**BBSRC; DBT (UKRI)**	**Research**	**Indo-UK Centre for Improvement of Nitrogen use Efficiency in Wheat (INEW)**	**Joint Centres in Agricultural Nitrogen - Indo-UK Centre for Improvement of Nitrogen use Efficiency in Wheat (INEW)**	**Agricultural research**
	EPSRC (UKRI)	Research	UK-India Joint Virtual Centre for Clean Energy	Joint UK-India Clean Energy Centre (JUICE)	Environmental research
	NERC (UKRI)	Research	India-UK Water Quality	Antimicrobial resistance (AMR) and pollutants: interactive studies and novel sensor technologies	Environmental research
Jordan	AHRC (UKRI)	Research	Cultural Heritage and Development in Jordan	Learning from Multicultural Amman: Engaging Jordan's Youth	Culture and recreation
	British Council	People	Researcher Links Workshop	UK-Jordan Joint Workshop on Sustainable Catchment Management and Water Security	Industrial policy and administrative management
	Royal Academy of Engineering	Translation	Industry-academia partnerships programme (IAPP)	UK-Jordan Educational and Research Partnership to Build Capacity of Power Grid to Integrate Solar PV Systems	N/A
Kenya	British Council	People	Researcher Links Workshop	Improving food security and nutrition in Kenya: Strengthening Indigenous Leafy Vegetables research and innovation capacity	Multisector education/ training
	MRC (UKRI)	Research	UK-Kenya Joint Partnershiop on Non-Communicable Diseases	Household air pollution and risk of oesophageal cancer: a case-control study in Western Kenya (HAP ESCCAPE)	N/A

	Royal Academy of Engineering	Translation	Leaders in Innovation Fellowships Programme (LIF)	LIF Programme 4	N/A
Malaysia	EPSRC (UKRI)	Translation	Joint call for small scale research and networking activities with South East Asia, including Malaysia	Micro Bubble Aeration System for Nursery Pond of Shrimp Aquaculture in Malaysia Under Energy, Water Quality and Biofloc Circulation Constraints	Technological research and development
	Innovate UK, EPSRC (UKRI)	**Translation**	**Research and Innovation Bridges**	**Next Generation Green Data Centres for Environmental and Business Sustainability**	**Small and medium-sized enterprises (SME) development**
	MRC (UKRI)	Research	UK-Malaysia Joint Health Research Call in Non-Communicable Diseases (2017-2019)	The Identification of Genetic Vulnerabilities in Head and Neck Cancers for The Development of Novel Therapies	Medical education/ training
Peru	British Council	Translation	Institutional Links (2018)	Novel approaches to understand the state of biodiversity and support livelihoods	Multisector education/ training
	MRC (UKRI)	Research	UK-Peru: Relationship between Food, Nutrition and Health	New strategies to reduce anaemia and risk of overweight and obesity through complementary feeding of infants and young children in Peru	N/A
	NERC (UKRI)	Research	Peruvian Glacial Retreat and its Impact on Water Security and Resilience to Natural Hazards	CASCADA: Toxin or Treat?	Environmental research
Philippines	**BBSRC (UKRI)**	**Research**	**UK-China-Philippines-Thailand-Vietnam Call for Collaborative Research Proposals in Rice Research'**	**Developing Rice Resources for Resilience to Climate Change & Mitigation of Carbon Emissions**	**Agricultural research**
	British Council	People	Researcher Links Travel Grant	Assessment of internal timing and sleep among Filipinos: validation of Philippine variants of the Munich Chronotype Questionnaire for evaluating the circadian rhythm	Research/ scientific institutions

	Met Office	Translation	Weather and Climate Science for Service Partnership (WCSSP) Southeast Asia	Work Package 3	Environmental research
South Africa	British Academy	People	Newton International Fellowships (Year 4)	Unseen infrastructures: post-colonial migration, unseen labour and maintenance and repair in British Cities	Multisector education/ training
	Royal Society	People	Institutional Links	Low-cost technologies and microbial assessment for safe drinking water in South Africa	Multisector education/ training
	STFC (UKRI)	**People**	**African VLBI Network Training Programme - upskilling students in STEM subjects to develop a sustainable African economy: extension**	**Development in Africa with Radio Astronomy (DARA)**	**N/A**
Turkey	British Council	Translation	British Council-TUBITAK Institutional Links	Interdisciplinary Research Links for Medical AI: Management of Musculoskeletal Injury	Research/ scientific institutions
	British Academy	People	Newton Advanced Fellowships (Year 5 round 1)	Syrian Refugees in Turkey: Understanding Local Government Responses	Multisector education/ training
	UKRI	Research	RCUK-TUBITAK Research Partnership Call	Innovating the Turkish supply chain for services in humanitarian aid	Research/ scientific institutions

Module 4: In-Country Partner Consultations

This module covered the six Newton Fund Partner Countries which were not sampled for the Partner Country Case Study module. A sample of KIIs was agreed in consultation with ICTs who identified up to five in-country funding partners, according to the criteria set out in Table 2. Where possible, the sample included at least one government partner (funding programmes) and a partner involved directly in delivery/commissioning of work. Overall, a total of 12 KII's were carried out with the stakeholders listed in Table 3.

Table 2: Selection criteria

Criteria	Description
MoU	Partner is a signatory to an MoU with UK counterpart
Funding	A significant[44] share of Newton Fund projects/work is apportioned to this partner
Coverage	Partners' funding covers strategic activities (i.e. flagship activities or high impact activities)
Role	Partner provides funding and/or commissions and makes decisions on apportioning funding to programmes

Table 3: Stakeholders consulted

Name	Position	Organisation	Type	Country
Yadira Casas	Programme Lead	Ministry of Science and Technology	Government	Colombia
Alejandro Hincapie Beana	Programme Lead	Ruta N	Local Innovation Agency	Colombia
Adhi Hermanu	Deputy Director	Ministry Research and Technology/National Agency for Research and Innovation	Government	Indonesia
Adam Bakhtiar	Programme Officer	Indonesia Science Fund	Quasi-Governmental Body	Indonesia
Eric Harrsch	Director International Cooperation	National Council of Science and Technology	Quasi-Governmental Body	Mexico

[44] Significant being a majority, this is judges at the discretion of the ICTs.

Dámaris Moreno	Director Innovation	Ministry of Economy	Government	Mexico
Tran Thi Thu Huong	Director General	Department of International Cooperation, Ministry of Science and Technology	Government	Vietnam
Dr Pham Dinh Nguyen; Hoàng Thanh Vân	Deputy Director; Programme Planning Officer	National Foundation for Science and Technology Development (under the Ministry of Science and Technology	Government Agency	Vietnam
Shaimaa Lazem	Programme Lead	Science Technology and Development Fund	Government Agency	Egypt
Haitham Hamza	Head of CDM	Central Department for Missions (CDM), Ministry of Higher Education and Scientific Research	Government	Egypt
Prof. Pongpan Kawetatip	Vice President	Thailand Science Research and Innovation	Government Agency	Thailand
Dr. Kanchana Wanichkorn	Vice President	Office of National Higher Education Science Research and Innovation Council	Government Agency	Thailand

Module 6: UK Secondary Benefits Study

UK benefits were explored under the following four workstreams: desk-based analysis of online and telephone survey data; KIIs with HMG and the UK research and innovation ecosystem staff, and case studies focusing on UK benefits. In addition, the team drew upon findings from Module 3.

A total of 16 KIIs were chosen for their positions within HMG and the UK research and innovation ecosystem and ability to provide a portfolio-level view of Newton Fund activity. These included key stakeholders identified by BEIS as being able to provide perspective by virtue of their role and stakeholders identified by the research team directly. A final list of interviewees is in Table 4 below.

Table 4: List of interviewees for KIIs[45]

Name	Organisation	Title
Alice Gast	Imperial College London	President of Imperial College London
Linsey Billing	FCDO	Head, Science, Innovation and Technology Team, Global Economic Issue Directorate
Michael Booth	UKRI	Head of International Development Partnerships
Dajana Dzanovic	Universities UK	Head of Strategic Partnerships
Helen Fletcher	UKRI	Head of International Development
Janet Geddes	Innovate UK	Deputy Director - Global
Phillip Lewis	British Academy	Head of International Research & Policy
Chris Maskell	BEIS	Head of Research & Innovation ODA Funds
Peter Piot	London School of Hygiene and Tropical Medicine	Chair of UKCDR's SCOR board and Director of LSHTM
Benjamin Reid	NESTA	Head of International Innovation
Liesbeth Renders	BEIS	Head of ODA Research Management Team
Niraj Siraf	Innovate UK	Newton Fund Programme Manager and India Partnership Manager
Nee-Jo Teh	Knowledge Transfer Network	Head of International and Development

UK case studies

Six case studies were selected purposively to sample projects which had reported, or expected to achieve, some form of UK benefit. Case studies were identified from a range of sources, including projects which had reported specific outputs in UKRI data; projects for which examples of secondary benefits were apparent in published outputs; projects which had been reviewed for mid-term country reports (and reported that they expected to produce secondary benefits), and projects which were featured in UKRI/Newton Fund promotional material or were otherwise suggested by interviewees.

[45] Three further interviewees did not provide permission to be named in this report: two representatives from Delivery Partners and one who worked for a university in a role that gave them oversight of the use of ODA funds.

The case studies included 13 KIIs with UK Award Holders and in some cases additional collaborators, coupled with desk research from previous reports and UKRI project data where available.[46] The case studies were:

- The emergence of Zika virus in Brazil: investigating viral features and host responses to design preventive strategies
- Development of an oral, thermostable enteric fever vaccine (PRORALVAC)
- NUCLEUS: a virtual joint centre to deliver enhanced Nitrogen Use efficiency via an integrated Soil-plant systems approach for the UK & Brazil
- Understanding biomass value chains and the environment-food-energy-water nexus in Malaysia through whole-systems analysis and optimisation (BEFEW)
- BIOREVIEW: Biorefining Value from Industrial Waste
- T-DEB[47]

Module 7: Review of Research Quality

The review followed an inductive and deductive search for evidence of the research quality criteria in a sample of 14 project case studies drawn from the Partner Country Case Studies for Jordan, Kenya, Malaysia, Philippines, Turkey, Brazil, and Peru (see Table 5). These projects were selected to showcase the diversity of the portfolio and cover some of its priority areas in the different countries. Coverage included Research pillar projects as well as People and Translation pillar projects with substantive research outputs. Data collection module timelines dictated that case studies on Chile, China, and India could not be used.

Table 5: Newton Fund Projects sampled for the review

Country	Project Title	Delivery Partner	Sector
Brazil	(Re)Connect the Nexus: Young Brazilians' experiences of and learning about food-water-energy	UK: ESRC; BR: CONFAP, FAPESP	Sustainability/ Energy/ environmental education
Brazil	Work Package 3: Climate Impacts and Disaster Risk Reduction	Met Office; Ministry of Science, Technology, and Innovation (MCTI)	Climate resilience
Brazil	Strengthening skills on structure-based drug discovery for novel anti-schistosomal therapeutics	Academy of Medical Sciences, CONFAP, CNPQ	Researcher capacity building/ parasitical neglected tropical disease / drug discovery

[46] In addition, one further interview was undertaken but not included as a full case study as the contact was not able to share extensive details about the project outcomes.
[47] Rothamsted Research - T-DEB Company Profile (2020). Available at: Rothamsted Research - T-DEB Company Profile (tdebproject.com)

Jordan	Learning from Multicultural Amman: Engaging Jordan's Youth	AHRC (UK) Department of Antiquities (Jordan)	Museum education Youth engagement in cultural heritage Tourism industry
Kenya	Household air pollution and risk of oesophageal cancer: a case-control study in Western Kenya	Medical Research Council National Research Fund	Oesophageal cancer Household air pollution Clean-energy alternatives
Malaysia	The identification of genetic vulnerabilities in head and neck cancers for the development of novel therapies	MRC Academy of Sciences Malaysia (ASM)	Public health OSCC type cancer Vaccines and novel therapies
Malaysia	Newton: Micro bubble aeration system for nursery pond of shrimp aquaculture in Malaysia under energy, water quality and biofloc circulation constraints	Engineering and Physical Sciences Research Council (EPSRC) Ministry of Higher Education (MoHE)	Aquaculture Agri-technology Food security
Peru	Novel approaches to understand the state of biodiversity and support livelihoods: the distribution and degradation levels of Mauritia flexuosa stands in Amazonia	British Council (UK) CONCYTEC (PE)	Sustainable tropical forest management Use of innovative technology (Unmanned Aerial Vehicles - UAVs)
Peru	CASCADA: Toxin or Treat?	NERC (UK) CONCYTEC (PE)	Water quality and water resource management Resilience to glacial retreat
Peru	New strategies to reduce anaemia and risk of overweight and obesity through complementary feeding of infants and young children in Peru	MRC (UK) CONCYTEC (PE)	Infant and young child feeding Malnutrition and dietary risks NCDs: Anaemia and overweight/obesity
Philippines	Developing Rice Resources for Resilience to Climate Change & Mitigation of Carbon Emissions	UK Biotechnology and Biological Sciences Research Council (BBSRC) Philippines Department of Agriculture – Philippine Rice Research Institute (PhilRice)	Agriculture Climate resilience Biofuel/energy

		Vietnam Ministry of Science and Technology	
Turkey	Innovating the Turkish supply chain for services in humanitarian aid	UKRI (UK) and the Scientific and Technological Research Council of Turkey – TÜBİTAK (Turkey)	Humanitarian aid / resilience logistics/ support services
Turkey	Interdisciplinary Research Links for Medical AI: Management of Musculo-Skeletal Injury	British Council (UK) and The Scientific and Technological Research Council of Turkey – TÜBİTAK (Turkey)	Medical/ ICT/ Processing/ healthcare systems and strengthening
Turkey	Syrian Refugees in Turkey: Understanding Local Government Responses	British Academy (UK) and the Scientific and Technological Research Council of Turkey – TÜBİTAK (Turkey)	Capacity building/ research/ refugees

Annex 4: Theory of Change Narrative

This annex sets out the Newton Fund's Theory of Change (ToC) in detail, outlining the intervention logic and associated results hierarchy.

Theories of Change (ToCs) are iterative tools that are periodically reviewed during the evaluation cycle. They can serve a range of functions including for planning and strategising, communication and for evaluation purposes. The **Initial Analysis Phase** of the evaluation designed a Fund-level ToC, which is central to the Theory-Based Evaluation approach. The **Mid-Term Phase** used the ToC to test causal pathways and identify how change happens. The **Final Evaluation** revised the ToC to provide an updated framework for the Fund evaluation. The re-design improved the ToC's utility and relevance; its readability as a communication tool while retaining enough detail to reflect the complexity of the Fund.[48]

The revised ToC builds on the original design and additional consultations with key stakeholders conducted in early 2020.[49] It is a **Fund-level ToC,** meaning that it does **not represent the detail of the various partnerships, awards or country level strategies of the Newton Fund**. Instead, it represents the intended outcomes and impact at Fund-level and defines the pathways by which the Fund intends to deliver change.

Intervention logic

The Newton Fund was not designed with a detailed intervention logic[50], thus the evaluation has aimed to demonstrate the logic through its Theory-based approach and update it to reflect the focus of the Fund as it evolves. The revised ToC reads from left to right, detailing the logic (or pathways of change) from the activities through to impact and the necessary stages in between.

The theory recognises the associated levels of 'control', 'influence' and 'concern' that set the parameters for assessing the contribution of the Fund to any observed changes (some of which may also be attributable, in part, to other factors or interventions beyond the Newton Fund).

- Level of Control: The Fund, its partners and the primary interventions, relationships, and the capacities to produce interventions and outputs.
- Level of Influence: Take up by Fund stakeholders and other actors in the research and innovation space, influence on behaviours, relationships, practices, institutions.
- Level of Concern: Further take up and influence leading to socio-economic change and development impact.

[48] Davies R. (2018). Available at: https://cedilprogramme.org/wp-content/uploads/2018/11/Inception-Paper-No-15-Rick-Davies-Representing-theories-of-change.pdf
[49] A ToC Workshop with ICTs in February 2020; Remote Based ToC Review with UK Delivery Partners (May 2020); Evaluation team learning from applying and testing the ToC (May 2020); BEIS review of revised ToC (June 2020).
[50] Coffey International Development (2016) Evaluation of the Newton Fund: Strategy – Internal document.

The ToC is underpinned by several assumptions[51], which have been categorised according to the levels of change. Figure 1 below illustrates the logic flow of the ToC.

Figure 1: Results hierarchy and logic

Reflecting gender equality, equity, poverty, and inclusion

The Fund is expected to address equity and poverty related issues for end beneficiaries (those who will benefit from a reduction in poverty and/ or economic development in developing countries).[52] All activities need to demonstrate how they are aiming to contribute to a reduction in poverty, and how they aim to further sustainable development (development that is likely to generate lasting benefits for the population of the country to which it is provided) or improve the welfare of the population of Newton Fund countries. Gender equality, equity, poverty, and inclusion issues addressed by the Newton Fund are **not explicitly stated or targeted at the activity, output, and interim outcome levels** beyond the fact that new research and innovation should be **socially inclusive and address development challenges**.

Activities > Outputs

Activities are inputs funded by the Newton Fund and delivered/managed by Delivery Partners. Outputs are direct and measurable results of activities. Activities and Outputs are considered short-term and within the 'control' of the Fund. It is expected that Output level change will be realised up to 5 years after the Fund cycle has begun. Thus, the Newton Fund should be able to demonstrate how it has contributed towards the achievement of each within the Fund lifecycle.

There are three pillars of activities – **People; Research and Translation** – which are inter-related. Activities have been grouped under each pillar to represent the core 'categories' of support funded by the Newton Fund. The People Pillar is central to the Research and Translation pillars, illustrating the Fund's focus on people, equitable partnerships, and collaborations. The pillars are interlinked, synergies are illustrated between the pillars by linkages at output level.

People Pillar

Activities are focused on **improving capacity (expertise and skills) to conduct, engage, produce, and translate research and innovation.** Building individual, institutional, network and translation capacities is expected to enable equitable partnerships and collaborations to be formed between Partner Countries and the UK.

[51] Internal and or external factors that may positively or negatively influence the sequence of events described by the narrative summary.
[52] The Newton Fund 'What is ODA?'. Available at: http://www.newtonfund.ac.uk/about/what-is-oda/

Four capacity domains are identified: individual, institutional, network and translation. These capacities are expected to be improved by supporting **Partnerships; Professional Development**; **Placement Schemes** and **Education.**[53]

Partnerships established between Partner Country Higher Education Institutions (HEIs) and UK based HEIs are expected to facilitate access to equipment, facilities, and funding across institutions, acting as multiplier for opportunities. By creating access to **Professional Development** opportunities, students, researchers, and university managers are expected to gain skills[54] that **improve research practices and processes** in Partner Country HEIs. Policy professionals are also expected to gain skills in innovation, applied research and commercialisation to improve institutional environment for local innovation and encourage evidence-based policy making.[55]

Researcher Mobility and Fellowship Schemes aim to **increase educational mobility** as well as strengthen **capacity to engage, produce and translate** research, through mobility grants, scholarships and fellowships offered by UK based HEIs for PhD students, early and mid-career researchers. Support to **Education** though technical training is expected to improve quality and increase interest in partner countries.

A key output of the People Pillar is to build individual, institutional, network and translation capacity to enable partners, professionals, and researchers to **conduct, engage, produce, and translate collaborative research and innovation** because of newly gained skills. It is expected that strengthening these capacities will lead to the **production of higher quality research outputs.**

Research Pillar

Activities are focused on **research collaborations that aim to identify and address specific development challenges** faced in partner countries, or in other parts of the world where collaborative research can make a difference on a regional or global scale. Activities under this pillar are expected to generate new knowledge and possible solutions to these local, regional, and global challenges. This pillar seeks to complement the People Pillar by enabling participant researchers and institutions to gain new skills[56] by exposing them to different ways of working research and innovation dialogue.

Joint Research Collaborations are expected to increase the number of multidisciplinary partnerships established between Partner Countries and the UK and produce high quality international research. Producing **new knowledge** in relevant research areas[57] and collaborating through international **Platforms,** is expected to **enhance relevance, visibility, and opportunities** to apply research.

[53] Education activities include broad technical training and Science, Technology, Engineering and Maths (STEM) specific.
[54] i.e. peer-review systems, research planning, online platforms, guidelines against plagiarism.
[55] i.e. the Leaders in Innovation Fellowships Programme; and Scoping the innovation training needs of policy makers in the Pacific Alliance.
[56] When funding a research project, a large spectrum of individuals is involved, from the Principal Investigator to a wider network of PhD students. This implies that many of the 'indirect' participants under the Research pillar will be exposed to new ways of working, new skills and will likely travel as part of the research project, thereby contributing to building their capacity and enhancing their experience to conduct further research.
[57] Aligned with Newton Fund objectives and ODA compliance criteria.

Translation Pillar

Activities under this pillar are aimed at developing and supporting **innovation infrastructure** by bringing together Partner Country and UK research and innovation expertise. Collaborations are encouraged and established through **Network Linkages** between academia, industry or third sector, or business to business to create opportunities to apply innovative research to inform evidence-based policy making or establish a route to market (via commercialisation). The People and Research Pillars seek to complement the Translation Pillar by building the capacity of people and institutions to undertake and identify innovative research more effectively. Overall, this pillar is expected to raise the profile of research use and **contribute to the development of new products/ solutions/ policies derived from science and innovation research**.

Creating **Network Linkages** between industry – academia (or third sector) and business to business, is expected to create new partnerships and strengthen existing ones. With the right infrastructure in place, this will lead to new solutions being created to address local and global development challenges**.** Supporting **Innovation Infrastructure** will strengthen institutional links, encourage the exchange of expertise, and create commercial pathways for innovative solutions addressing local and global development challenges. Research relevant to the policy arena is also an important aspect of this pillar, where benefits to policy change are more the focus than commercial gain.[58]

If the Fund adopts a coordinated approach, this should enhance Partner Countries understanding of the UK funding landscape, research and innovation expertise that can be leveraged resulting in **UK R&I reputation, expertise and talent being enhanced** by connecting researchers and entrepreneurs, supporting professional development, the translation of ideas into businesses and products, and building global research networks.

Not all activities fall exclusively under one pillar. Some activities are designed to bridge the three pillars, to encourage synergies or might be precursors to future work.[59] Such activities are intended to support the development of linkages between researchers working in the UK and partner countries, in support of future collaboration[60] as well as strengthening national and institutional research infrastructure to support policy influence, decision-making, and the sharing of knowledge between researchers and industry partners, leading to commercialisation.[61]

[58] i.e. Met Office's programme Weather and Climate Science for Service Partnerships in China; RAEng's Innovation Node: Sustainable Manufacturing.
[59] i.e. networking events such as Researcher Links, Researcher Connect Workshops provide links between the People and Research pillars.
[60] For example, a scheme in the Philippines, run by the British Council, involves grants for workshops in priority research areas defined at a country level. These grants allow UK and Partner Country researchers to share their research and establish relationships for longer term collaboration. The workshops must have a focus on capacity building (People pillar) and on establishing potential collaborations (Research pillar), and therefore go beyond traditional workshop formats solely focused on sharing research outputs. They target early career researchers from both countries to facilitate building relationships at a point in their careers with maximum impact over their lifetime.
[61] i.e. the Met Office's programme Weather and Climate Science for Service Partnerships in China is delivering research and knowledge support to facilitate the development of prototype services for specific sectors - water resources and energy - to be used by local decision-makers. A similar programme in South Africa is helping improve South Africa's national weather modelling infrastructure (Research) to develop more accurate forecasts and early warning systems for a range of users, including but not limited to policy makers.

Assumptions

The Fund markets itself in Partner Countries raising awareness of UK research and innovation expertise/opportunities that can be leveraged.

Partners, researchers, managers, policy and industry professionals in the UK and Partner Countries become aware of, and participate in, Newton Fund opportunities.

Partner Countries are not deterred by the perception of ODA in their countries; and see the opportunity as beneficial and equitable.

Partner Countries provide a match contribution and local leadership. Fund objectives and perceptions of success are aligned between the UK and partners.

UK Delivery Partners invest in the development of new knowledge, skills and research capacity and translational research capacity.

Awards and grants are designed in a socially inclusive way.

Outputs > Interim Outcomes

Interim Outcomes are intermediary results which are necessary to achieve long-term outcomes of the Fund. Outputs and Interim Outcomes are considered shorter-term and within the 'control' of the Fund. It is expected that Interim-Outcome level change will be realised between 5-7 years after the Fund cycle has begun. Thus, the Newton Fund should be able to demonstrate how it has contributed towards the achievement of each within the Fund lifecycle.

Intended Fund-level outputs provide greater clarity on the expected achievements of each pillar (People, Research and Translation), and how they complement each other. The ToC specifies nine output areas which are expected to be achieved as a result of the activities across the pillars. These intended outputs may be concurrent or sequential, depending on the focus of each programme. Outputs are expected to result in the achievement of three core Interim Outcomes:

- **Effective, multidisciplinary collaborations between UK and Partner Countries produce quality research publications;**
- **Research, innovation and translational capacities between Partner Countries and the UK are improved;**
- **Products, services and policies from collaborative science and innovation partnerships are developed.**

Two supporting Interim Outcomes expect that enhanced international research collaborations and improved capacity of researchers, institutions and policy professionals will result in the creation of a **Global research and innovation base addressing development challenges** which will, in the long-term, support and influence innovation and evidence-based decision-making; and that enhanced innovation infrastructure, translational capacity will result in **new solutions being tested, investment leveraged for further development and the creation of spin-outs**. These supporting outcomes play a central role in connecting the three-core Interim Outputs, demonstrating synergies between outputs, and creating space for research and innovation to influence policy making and leverage commercial opportunities. Should the

Interim Outcomes be realised, this will lay the foundation for establishing the **UK as a global partner of choice in research and innovation** having created and promoted partnerships between governments, universities and researchers, guided by development impact and research excellence.

Assumptions

UK based research institutions are the 'partner of choice'; and have the research and innovation ecosystem to support Partner Country research

Joint research is collaborative; a common strategy is in place between partners to improve quality, relevance, and sustainability.

HEIs in Partner Countries access, and benefit from the UK research and innovation ecosystem.

Infrastructure and investment (ecosystem) are in place to enable participants to act on improved capacity /new skills.

Research and knowledge outputs are internationally co-authored and of publishable quality.

There is sufficient uptake in translational research.

New knowledge and socially inclusive innovations are produced.

Interim > Long-Term Outcomes

Long term Outcomes are necessary to achieve the impacts of the Fund. They are considered within the 'influence' of the Fund. It is expected that long-term outcomes will be realised between 7-10 years after the Fund cycle begun. Thus, the Newton Fund should be able to demonstrate emerging contribution towards the achievement of each moving towards the end of the Fund cycle.

Should the Interim Outcomes be achieved, the results are expected to lead to three Long Term Outcomes which bring together the changes expected at the earlier stages of the Fund cycle. Central to the attainment of these long-term outcomes (and the impact of the Fund) is the **sustainability of equitable science and innovation partnerships and ecosystems that incentivise innovation and policy application**. It is expected that a combination of improved research and innovation capacity, effective collaborations and the creation of a solid research base addressing development challenges will result in **policy influences/changes being adopted on a local, regional, or global scale,** ultimately contributing to equitable growth and welfare in partner countries. Similarly, it is expected that improved translational capacity, collaborative partnerships between industry-academia, tested solutions, investments and spin-outs created will result in **wider strategic opportunities between UK and Partner Countries being unlocked**, ultimately contributing to economic growth, poverty alleviation in Partner Countries and on a larger scale.

Should the long-term Outcomes be realised, this may lead to the **UK being established as a global R&I 'partner of choice' investing in sustainable partnerships** through the creation of a global hub for research and innovation**,** forming and strengthening industry-academia partnerships that support emerging technologies, and investing in collaborative partnerships.

Assumptions

There are pre-existing effective research dissemination and communication channels in the UK, Partner Countries and globally.

Improved research infrastructure supports innovation and evidence-based decision-making.

Research mobility participants return to their home country and contribute to improving research locally.

Intended end users can access and engage in the development of products/technologies to ensure efficiency and usability.

Policy, legal and regulatory environment is supportive of new innovations, research, and investments/commercialisation.

Co-investments demonstrate complementarity and equity.

Changes in UK and/ or in-country Delivery Partners' priorities and capabilities do not impact on overall direction.

The Fund has the capacity to engage with other programmes (GCRF and Prosperity Fund) to encourage synergies and share learning.

Long-Term Outcomes > Impact

Impacts are considered much more long term and within the 'Concern' of the Fund. It is expected that impacts will be realised between 10-15 years after the Fund cycle has begun. Thus, the Newton Fund may not be able to demonstrate what contribution it has made towards the achievement of impact until long after the Fund cycle has ended.

The Newton Fund aims to strengthen research and innovation capacity in Partner Countries and unlock further funding through which the UK and Partner Countries can build strong and sustainable relationships. Ultimately, its goal is to **contribute to progress towards equitable growth and welfare supporting poverty alleviation in LMICs, contributing** to the achievement of the **Sustainable Development Goals** in the longer term.

If the Long-Term Outcomes are achieved, the Fund is expected to make progress towards addressing local, regional, and global development challenges thus contributing to the overall expected impact. Partner Countries should be better prepared and more resilient to local and global challenges, **promoting economic growth and welfare and tackling poverty.** Consequently, the **UK will be better positioned as an international research and innovation advocate and global leader**, for better research governance, ethics, and impact as a result of its contribution to the global research and innovation infrastructure.

Assumptions

Partnerships and capacity are built in an equitable manner.

UK researchers and individuals continue to interact and engage with partners overseas after the activities are completed.

Research ecosystem incentivises innovation and policy application.

Innovative products, services and knowledge are adopted in partner countries

Partner Countries have stronger focus on national, regional, and global development priorities.

Commercial and institutional collaborations between the UK and Partner Countries are sustained.

HEIs, industry and university–business collaborations influence productivity gains in Partner Countries and the UK.

Global (in)security and regional (in)stability does not impact the continuity of international collaborations

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