



UK-FUNDED RESEARCH ON CLIMATE CHANGE AND INTERNATIONAL DEVELOPMENT

The scope and reach of UK ODA and
Wellcome-funded research (2015 – 2020)

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Supporting documents are available on the UKCDR website

[Impact case studies](#)

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About UKCDR

The UK Collaborative on Development Research (UKCDR) is a collaborative of government and research funders working in international development, governed by the Strategic Coherence for ODA-funded Research (SCOR) Board. Our core contributing members include the Department for Business, Energy & Industrial Strategy; the Foreign, Commonwealth & Development Office (formerly Department for International Development); the Department of Health and Social Care; UK Research and Innovation; and Wellcome. UKCDR exists to amplify the value and impact of research for global development by promoting coherence, collaboration and joint action among UK research funders. For further information on UKCDR, please visit ukcdr.org.uk.

Commission of this report

In November 2019, the SCOR Board agreed on climate change as a strategic priority for 2020, and commissioned UKCDR to undertake an analysis on this subject. This takes place amid increased demand from UKCDR members to understand the collective UK offer for research on climate change and international development, particularly leading up to COP26. This project maps and analyses the scope and reach of UK Official Development Assistance (ODA) and Wellcome-funded research on climate change and international development, whilst providing an early opportunity to reflect on the impact of COVID-19 on this research landscape. By providing insight into UK investments in research on climate change and international development since the Paris Agreement, it aims to improve coherence and visibility of UK research investments, inform future research priorities and support the UK's engagement on the role of research and innovation ahead of COP26. The analysis builds on reviews by UKCDR (formerly UKCDS) in 2008 and 2011.

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- British Academy
- British Council
- Dpt. for Business, Energy & Industrial Strategy*
- Dpt. for Environment, Food & Rural Affairs*
- Department of Health and Social Care*
- Foreign, Commonwealth & Development Office (formerly Dpt. for International Development)*
- Met Office
- Royal Society
- UK Research and Innovation*
- UK Space Agency
- Wellcome Trust*

* Funder was also a member of the project Steering Group

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List of abbreviations and acronyms

BEIS	Department for Business, Energy & Industrial Strategy	LMICs	Low- and Middle-Income Countries
BRIC	Brazil, Russia, India and China	MICs	Middle Income Countries
COP26	26th session of the Conference of the Parties to the UNFCCC	NDCs	Nationally Determined Contributions
DEFRA	Department for Environment, Food & Rural Affairs	NGO	Non-Governmental Organization
DFID	Department for International Development	ODA	Official Development Assistance
DHSC	Department of Health and Social Care	OECD	Organisation for Economic Co-operation and Development
FCDO	Foreign, Commonwealth & Development Office	RCS	Research Capacity Strengthening
FCO	Foreign & Commonwealth Office	SCOR	Strategic Coherence for ODA-funded Research
FY	Financial Year	SDGs	Sustainable Development Goals
GCRF	Global Challenges Research Fund	SIDS	Small Island Developing States
HICs	High-Income Countries	UKCDR	UK Collaborative on Development Research
ICF	International Climate Finance	UKRI	UK Research and Innovation
IPCC	Intergovernmental Panel on Climate Change	UNFCCC	United Nations Framework Convention on Climate Change
LICs	Low Income Countries		

Executive Summary

This report presents a mapping and analysis of the scope and reach of UK Official Development Assistance (ODA) and Wellcome-funded research on climate change and international development between 2015 and 2020. It sets out the distribution of research funding during this period, examines some of the strengths, weaknesses and impacts of UK ODA and Wellcome-funded research, and looks ahead at some of the gaps, opportunities and research priorities for the future. It also provides an early examination of the impacts of COVID-19 on the climate-development research landscape.

With countries around the world being required to step up their climate ambitions at COP26, and with the impacts of climate change already becoming apparent in low- and middle-income countries, it is becoming increasingly important to understand the complex interactions between climate change and international development. The analysis is intended to improve the coherence and visibility of UK research investments, inform future research priorities and support the UK's engagement on the role of research and innovation. It gives an overview of the collective UK ODA and Wellcome-funded research offer on climate change and international development since the 2015 Paris Agreement, ahead of COP26 where countries will be called on to make bolder science-based commitments to address climate change.

The report also baselines the last full financial year of climate change research funding by the Department for International Development (DFID) prior to its merger with the Foreign & Commonwealth Office (FCO) to become the Foreign, Commonwealth & Development Office (FCDO), as well as establishing the collective UK ODA and Wellcome research funding prior to the COVID-19 pandemic.

COVID-19 illustrates the complex links between climate, development and health, whilst simultaneously exacerbating inequalities and putting research systems, resources and budgets under additional pressure. It is essential to consider how, under these circumstances, research can continue to deliver the impacts required to meet both climate and development goals.

This analysis used a mixed methods approach, combining qualitative and quantitative data, including a portfolio-level data analysis of UK ODA and Wellcome-funded projects, stakeholder interviews, survey analysis, case studies and workshop findings to draw out high-level research trends and impacts.

Below are the high-level key findings and recommendations from UKCDR's analysis. Full discussion of these points can be found in the key findings and recommendations sections respectively.

High-level key findings

1. The UK committed £564.2m into over 690¹ UK ODA and Wellcome-funded research projects on climate change and international development over five financial years (2015-16 and 2019-20).
2. A total of 111 countries were identified as partners in these research projects and/or primary intended beneficiaries, most commonly China (123 research projects), India (88), Kenya (69), Egypt (53) and Brazil (48).

¹ DEFRA and DFID data were provided at the programme level, so total number of projects is likely to be higher

3. Impacts perceived to arise from UK-funded research include influencing thinking, policy impact, research capacity strengthening, and the global standing of UK research; and there were calls from interview and survey participants for a more rigorous way of evaluating the impact of interventions. The case studies illustrate the variety of impacts that research has had over the last five years, including tools to inform policy, nationally determined contributions and UK funder decision-making; community engagement through co-design and co-production; and bringing together technologies to improve knowledge of rainfall variability.
4. UK-funded research on climate change and international development has an important role to play in understanding the opportunities, challenges and trade-offs associated with the COP26 priorities.
5. Mutual partnerships and openness to collaboration are key strengths of UK-funded research but understanding and aligning research to local contexts in practice could be improved.
6. Sustainability of the research funding cycle is a perceived weakness of UK-funded climate-development research.
7. Demand for research covered a wide range of topics, but mitigation, adaptation, disaster risk reduction, energy and food systems were the most commonly cited research priorities.
8. A significant proportion of survey respondents (45%) thought that UK-funded research was meeting current demands “to a moderate extent,” with partnerships between research disciplines and with in-country actors essential to ensuring research is demand-led and can take a systems approach.
9. The COVID-19 pandemic requires the research community to align further to maximise its impact with limited resources. The pandemic also presents opportunities for research to promote a low-carbon recovery, behaviour change, resilience, and shifting research leadership to in-country teams.

High-level recommendations

1. Research funders should work with partners to increase the proportion of funding going to the least developed and low-income countries which are most vulnerable to the impacts of climate change, and direct greater funding to applied and systems-based research.
2. Research funders should further prioritise alignment and collaboration in their strategies to support climate and sustainable development goals in the context of possible budgetary constraints and in the longer timelines required to achieve some climate impacts.
3. Research funders should consider more flexible approaches to facilitate and incentivise partnerships on a scale and in the locations needed to ensure that climate-development research is demand-driven, increasingly solutions-orientated and aligned with local priorities.
4. Research funders should continue to promote equitable partnerships when conducting research on a scale and in locations required to meet climate-development goals.
5. Researchers and research funders must draw on lessons learned from COVID-19, seek further ministerial commitments to “greening” the recovery from COVID-19.

Introduction

1.1 Setting the scene: research on climate change and international development

Understanding the relationship between climate change and international development is essential both to achieving the UN Global Goals and meeting the terms of the 2015 Paris Agreement. The World Bank calculates that without climate-informed development 100 million additional people could be forced into poverty by 2030¹. Poor and marginalised populations, Small Island Developing States (SIDS), and Low-Income Countries (LICs) are among the most vulnerable to the impacts of climate change². Moreover, without innovation, developing countries are increasingly likely to contribute to climate change as they experience population increases, urbanisation, and economic growth. The Intergovernmental Panel on Climate Change (IPCC) 2018 Special Report describes a “broad and multifaceted bi-directional interplay between sustainable development, including its focus on eradicating poverty and reducing inequality in their multidimensional aspects, and climate actions in a 1.5°C warmer world.”³

Research is critically important to identify conditions under which both climate and development goals can be achieved and to design strategies to maximise the synergies and minimise the trade-offs between the two. Examples of this may include:

- Exploring low-emission and climate-resilient solutions for food systems, health, livelihoods, and the built environment
- Developing resilience to extreme weather events in vulnerable areas
- Generating sustainable economic alternatives in communities with high dependency on fossil fuels for revenue and employment
- Understanding how challenges, trade-offs, and synergies will change differentially across geographic regions and time at different levels of warming

Research also includes considerations of climate justice, seeking to ensure an equitable distribution of both the risks and benefits associated with climate mitigation and adaptation.⁴

Paris Agreement and COP26

In November 2021, the UK will host the UN climate conference, the Conference of the Parties (COP26) to the United Nations Framework Convention on Climate Change (UNFCCC). Under the terms of the Paris Agreement, countries will report on their revised nationally determined contributions (NDCs) of greenhouse gas emissions for the first time since 2015, as well as their provisions of climate finance. This is significant since the existing NDCs are unlikely to be ambitious enough to keep warming within the Paris Agreement’s temperature goals.⁵ The UNFCCC has emphasised the central role of science in tackling climate change in the context of COP26. This report provides an opportunity to reflect on the scope and reach of UK-funded research since the Paris Agreement, in advance of COP26.

“Countries will need to make bolder science-based commitments at COP26, through their nationally determined contributions, to collectively meet the goal of keeping the global average temperature rise below 1.5 °C. We cannot postpone these commitments any further. These commitments must be accompanied by a full mobilization of all levels of governance and non-state actors in all sectors.”

UNFCCC 2019 annual report

In addition, COP26 provides a focal point for discussion and actions on climate change by a wide range of stakeholder groups on the following priority themes: Adaptation and Resilience; Nature; Energy Transition; Transport; and Finance. Research on international development has an important role to play in this context. To provide opportunities for members of the climate change and international development research communities to convene and to share learning and ideas in the context of the COP26 priorities, the UK Collaborative on Development Research (UKCDR) held a showcase webinar Supporting the COP26 priorities through research on international development and climate change in November 2020. The event recording, and booklet are available on the UKCDR website.⁶

UK funding landscape

Since 2015, the UK Government has taken a cross-government approach to spend its Official Development Assistance (ODA) budget and had increased the proportion of ODA spent on research towards a target of over £1.2bn by 2021. UKCDR estimate that between 2016 and 2020, prior to the pandemic, 9-10% of UK ODA was spent on research. However, in November 2020, the UK Government announced that the overall ODA spend would be temporarily reduced from 0.7% to 0.5% of Gross National Income (GNI) because of the coronavirus (COVID-19) pandemic. It is not yet clear what proportion of this will be allocated to research.

This report focuses on funding by Foreign, Commonwealth & Development Office (FCDO), the Department for Business, Energy & Industrial Strategy (BEIS) and its delivery partners, and the Department of Health and Social Care (DHSC), which UKCDR estimates have collectively accounted for more than 95% of the total ODA spend on research and represent UKCDR's core membership. It also includes research funding by Wellcome, another of UKCDR's core members and the largest provider of non-governmental funding for scientific research, and the Department for Environment, Food & Rural Affairs (DEFRA). The quantitative analysis in this report represents the last five full financial years of funding by the Department for International Development (DFID) before its merger with the Foreign and Commonwealth Office (FCO) to form FCDO in September 2020.

Under the 2015 Paris Agreement, the UK resolved along with other developed nations to scale up financial support with a concrete roadmap to achieve the goal of mobilising \$100bn per year by 2020 for climate action in developing countries.⁷ In 2019, the UK Government announced its intention to double its contribution through International Climate Finance (ICF) to at least £11.6bn by 2025-26, including up to £1bn for research and innovation through the Ayrton Fund to develop and test new technology targeted at tackling climate change in developing countries.⁸ This report provides an opportunity to reflect on the scope and reach of UK-funded research since the Paris Agreement and these changes in the distribution of ODA, in advance COP26, and to help inform the already substantial and growing focus on climate change by UKCDR's core members. These activities include, for example, FCDO's development of the CLimate And REsilience Framework (CLARE) programme and Wellcome's new strategy which places climate change as one of its three major priorities for the first time.

International Climate Finance (ICF) is a UK Government commitment to support developing countries to respond to the challenges and opportunities of climate change. Three government departments (DFID, BEIS and DEFRA) have had responsibility for investing the UK's £5.8bn of ICF between 2016 and 2021. ICF delivers all four aims of the UK aid strategy:

- Strengthening global peace, security and governance
- Strengthening resilience and response to crises
- Promoting global prosperity
- Tackling extreme poverty and helping the world's most vulnerable

This report includes ICF when it is spent on research, attributing that spend to the funder(s) responsible for making the funding commitment. ICF is also included in one of this report's case studies.

COVID-19

The COVID-19 pandemic poses an additional consideration for research on climate change and international development. COVID-19 illustrates the complex links between climate, development and health, whilst simultaneously exacerbating inequalities and putting research systems, resources and budgets under additional pressure. The urgency of the response to COVID-19 does not diminish the urgency of the climate crisis, or the need to find pathways to sustainable development. This must therefore be handled in parallel, with the challenges, trade-offs and opportunities for mutually beneficial action explored. This report will provide an early insight into the impacts of COVID-19 on the research landscape for climate change and international development.

1.2 Purpose

The purpose of this report is to provide a mapping and analysis of the scope and reach UK ODA and Wellcome-funded research on climate change and international development between 2015 and 2020.

By providing insight into UK investments in research on climate change and international development since the Paris Agreement, this report aims to improve the coherence and visibility of these investments, inform future research priorities and support the UK's engagement at COP26 on the important role of research and innovation. It also provides an early opportunity to examine the impacts of COVID-19 on the climate change and international development research landscape.

This report was commissioned by the Strategic Coherence for ODA-funded Research (SCOR) Board in November 2019, who identified climate change as a strategic priority for UKCDR in 2020. The analysis builds on reviews by UKCDR (formerly UKCDS) on UK-funded research on climate change and international development in 2008 and 2011. In addition to this document and its annexes, UKCDR has produced six case studies and a short policy brief summarising the key findings and recommendations from this project.

1.3 Scope

The report analyses quantitative and qualitative aspects of UK ODA-funded and Wellcome direct research and innovation investments and partnership activities

committed over the last five years, to provide an overview of these investments, their impacts, and opportunities, gaps and emerging issues for collective action.

This project looks at the intersection of UK ODA and Wellcome-funded research on:

- Climate change – including but not limited to adaptation and resilience (responding to climate change), mitigation (reducing or preventing climate change) and climate science (measuring climate systems)
- International development – including but not limited to eradicating poverty, reducing inequality and helping people in Low and Middle-Income Countries (LMICs) to build better lives for themselves

In addition, the report considers indirect, past (significant commitments that are still active) and pipeline commitments where relevant. Where UK Government-funded research may be relevant to climate change and international development but is not ODA-funded, it has been considered within the qualitative analysis to provide context and the report highlights where this is the case.

It excludes research which is not at least partially funded by UK ODA or Wellcome, and research that does not focus on both climate change and international development. The portfolio-based analysis may also exclude some projects which may be relevant to climate change and international development, but where this relevance is not made explicit or does not match the selection criteria agreed with the Steering Group.

Research questions

The report seeks to answer the following five questions developed in consultation with UKCDR members:

- What is the **total investment** of UK ODA and Wellcome on research on climate change and international development between financial years 2015-16 and 2019-20, and where does it go?
- What is the **potential impact** of UK ODA and Wellcome-funded research on climate change and international development?
- What are the **strengths and weaknesses** of UK ODA and Wellcome-funded research on climate change and international development?
- What are the **emerging demands** for UK ODA and Wellcome-funded research on climate change and international development?
- What is the **impact of COVID-19** on the research landscape on climate change and international development?

Datasets

This report focuses on research on climate change and international development funded by FCDO, BEIS and its delivery partners, and DHSC, DEFRA and Wellcome. Where possible, figures from the portfolio-level analysis of research funding presents the total UK ODA figures, as well as the total UK ODA plus Wellcome figures.

Please note that the portfolio-level analysis presented in this report includes data up to March 2020, prior to the DFID merger with the FCO to form FCDO. The portfolio-level analysis will therefore refer throughout to DFID, as will any discussion relating specifically to actions by DFID prior to the merger. Other parts of the report will reference FCDO.

Methodology overview

All methodologies, scope and design were developed collaboratively with UKCDR members and the Specialist Advisor. A full methodology breakdown can be found in Annex 2.

To answer the five questions presented in the scope, this project used a combination of the following quantitative and qualitative tools:

2.1 Portfolio-level analysis of UK ODA-funded and Wellcome-funded research projects

Data on research funding between 2015-16 and 2019-20 were collected from BEIS, DFID, DHSC (collectively accounting for more than 95% of the total ODA research budget)⁹, DEFRA and Wellcome. Additionally, data from BEIS-funded research programmes were collected via their Global Challenges Research Fund (GCRF) and Newton Fund delivery partners, including UK Research and Innovation (UKRI) whose ODA research budget between 2017-18 and 2019-20 totalled £831m, the most of any delivery partner.¹⁰ The analysis makes use of new funding commitments made by research funders when reporting financial information as opposed to other metrics such as the value of the active portfolio or spend by financial year. Funding commitments refer to the total amount of funds awarded by a funder to a given research project which may be spent over several years (potentially beyond the timeframe under consideration).

The timeframe was selected to provide a five-year time series culminating in the last full financial year for which data was available at the time of the analysis. It also represents the last five full financial years prior to the merger of DFID to form FCDO, and prior to the global lockdown due to the COVID-19 pandemic.

Table 1 - Funders contributing data to analysis of UK ODA and Wellcome-funded climate-development research (initiated between 2015-16 and 2019-20)

Funder
Dept. for Business, Energy & Industrial Strategy*
<i>Data obtained via delivery partners†:</i>
<ul style="list-style-type: none">Academy of Medical SciencesBritish AcademyBritish CouncilRoyal SocietyUK Research and InnovationUK Space Agency
Dept. for Environment, Food and Rural Affairs*
Dept. for International Development**
Dept. of Health and Social Care*
Wellcome

* indicates data obtained from ODA-funded research

†Non-exhaustive list of BEIS-delivery partners for ODA-funded research

⁹In September 2020, DFID merged with the FCO to form the FCDO. As the period under consideration for the analysis predates the merger, the historic UK ODA investments in climate change research by the present FCDO will be referenced as DFID throughout the report.

2.1.1 Data limitations from portfolio-level analysis

There are two important considerations regarding the analysis of the data from this component:

- *Financial information:* Many UK research funding schemes are designed such that grants are typically awarded to lead institutions based in the UK. While the lead institution may then disburse funds to partner institutions, including those abroad, it is not possible to obtain figures on in-country expenditure as this is not presently collected systematically across funders. Therefore, this report does not make an analysis of financial flows to LMICs, instead focusing on the number of projects when reporting on metrics involving LMICs.
- *DEFRA and DFID data:* Data obtained from DEFRA and DFID were given at the programme level. These programmes will likely have funded multiple research projects. The reported number of research projects on climate change funded by DEFRA and DFID should be considered as the minimum and are referred to as 'projects' rather than 'programmes' throughout this analysis for consistency with other funders' data.¹¹

2.2 Stakeholder Interviews

Semi-structured interviews were conducted with **30** UK and in-country stakeholders from **27** selected organisations. The stakeholders were selected in consultation with the project steering group and specialist advisor, and came from the following groups:

- UK funders (six in the UK)
- Other government departments/public sector bodies (one from the UK)
- Academic networks/centres of excellence (ten in Bangladesh, Brazil, Indonesia, Jamaica, South Africa and the UK)
- Civil society/Non-Governmental Organisation (NGOs)/think tanks (three in UK, India and Kenya)
- International research community (four representing perspectives from Europe, the Caribbean, UK and international), regional networks (one representing perspectives from Africa)
- Policymakers (two from Costa Rica and Lebanon)

More details on the selected stakeholders and the interview questions are available in the detailed methodology in Annex 2.

UKCDR received rich responses from different regional, country, sector and organisational perspectives, which were analysed and coded against an inductive framework to identify and categorise responses under key themes.

2.2.1 Data limitations of stakeholder interviews

The views expressed in the responses serve as a starting point to explore some of the perceptions and impact of UK research funding on climate change and international development. However, they should not be considered to embody the general views of the groups which those stakeholders represent. There were a small number of stakeholders interviewed in each group. Given this small sample size, these findings are not generalisable across all the stakeholder groups represented by respondents.

2.3 Case studies

Case studies giving insights into some key areas of the impact of UK ODA and Wellcome-funded research on climate change and international development were obtained through the Steering Group, who nominated the projects and investments for inclusion and desk-based research.

UKCDR received a total of 50 submissions (Annex 3). From this longlist, UKCDR shortlisted six case studies for the final report which were agreed with the Steering Group. The case studies were selected to reflect a range of research focuses and academic disciplines, geographic diversity in the country of focus, a range of types of impact, and to reflect a range of funders. UKCDR supplemented data provided by stakeholders with desk-based research.

2.3.1 Data limitations of the case studies

The case studies represent only the impacts reported by funders and other research partners in the context of the selected projects. Therefore:

- The impacts presented cannot be generalised to other projects or scenarios, or UK-funded research more broadly.
- The case studies may not reflect all impacts resulting from the project in question, as some impacts may emerge only over longer periods of time or may not have been identified by the research team and/or research users.

2.4 Survey

UKCDR surveyed 282 respondents to explore perceptions of the impact and future priorities of UK-funded research on climate change and international development. Of these, approximately half (49%) were based in LMICs, with the largest proportion in Africa and Asia (29% and 14% of all respondents, respectively). Most respondents (63%) described themselves as research practitioners or academics, or being from academic networks (28%), research delivery partners (16%), the international community (13%), government departments (12%), and NGOs (9%).¹² For more details on the survey participants and the survey questions see the detailed methodology in Annex 2. The survey was circulated via UKCDR's networks, using a non-representative snowball sampling technique. UKCDR used summary statistics and coding of open responses to analyse survey responses.

2.4.1 Data limitations of the survey analysis

The survey findings reflect only the perceptions expressed by those who responded to the survey. Therefore:

- The responses should be understood as perceptions of impact and future demand and not taken as a record of actual impacts, or a comprehensive predictor of future demand.
- Since the survey sample is not proportionally representative, the responses are not generalisable across the entire research sector for climate change and international development.

2.5 Workshop

UKCDR hosted a virtual workshop on the afternoons of 3-4 December 2020 to consult with selected stakeholders on the report's recommendations based on the project's early findings, and to reflect on the impact of COVID-19 on the research landscape for climate change and international development. This workshop was the latest opportunity to generate new content for the report prior to publication.

30 stakeholders were invited to participate in the event. These included stakeholder interviewees engaged earlier in the project and UKCDR members and stakeholders. The workshop content was based primarily on UKCDR's draft findings, with additional input from selected presenters and recordings from UKCDR's showcase webinar Supporting the COP26 priorities through research on international development and climate change. The workshop was delivered with a team of facilitators to support engagement in a virtual setting and was based on a combination of plenary presentations, discussion and focused small break-out groups.

2.5.1 Data limitations of the workshop analysis

In the rapidly changing landscape of COVID-19, the findings can reflect only the insights of the stakeholders on the dates of the workshop (3-4 December). The workshop was held as late in the project process as possible, to ensure that these findings would be as up-to-date as possible at publication, but they do not reflect developments following the workshop date.

Findings

3.1 What is the total investment, and where does it go?

This section presents the findings from the portfolio-level quantitative analysis of UK ODA and Wellcome-funded research. It seeks to answer the question: *What is the total investment of UK ODA and Wellcome on research on climate change and international development, and where does it go?*

3.1.1 Total investment and major funders

Between April 2015 and March 2020, the UK Government departments with the largest ODA research budgets (BEIS, DEFRA, DFID, DHSC) and Wellcome committed a total of £564.2m to at least¹³ 694 research projects on climate change (see Table 2). When solely considering ODA-funded research, these commitments were largely driven by DFID (49.3%) and BEIS (43.3%). This reflects the broader scope of both funders' respective research portfolios relative to other funders' with more specific thematic remits (such as DHSC), as well as their larger ODA budgets.

Table 2 - Total commitment of UK ODA and Wellcome climate-development research (initiated between 2015-16 and 2019-20)

Funder	Number of Projects	Amount Awarded
BEIS	549	£231.6m
AMS	12	£362k
British Academy	18	£2.9m
British Council	313	£13.9m
Royal Society	57	£9.2m
UKRI	140	£154.4m
UK Space Agency	9	£50.8m
DEFRA	≥ 3*	£36.0m
DFID	≥ 96*	£263.8m
DHSC†	3	£3.7m
Wellcome†	44	£29.1m
Total: ODA only	651	£535.1m
Total: ODA and Wellcome	694	£564.2m

Totals may not add up due to rounding

* Total number of individual research projects could be obtained by neither DEFRA nor DFID

† Total includes one research project jointly funded by DHSC and Wellcome totalling £308k

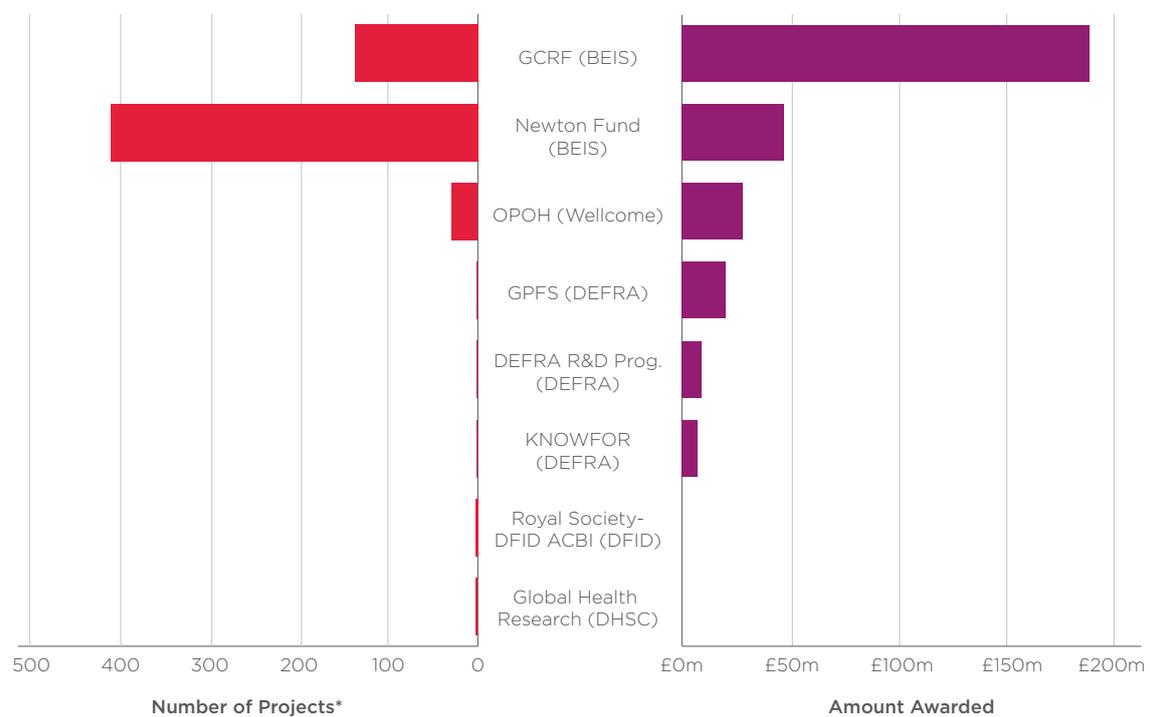
Both of BEIS' flagship research and development ODA funds feature prominently in the overall portfolio of UK-funded research on climate change. GCRF awarding the most funds and the Newton Fund awarding the most research projects (see Figure 1). In the

case of the latter, the overall value of the portfolio will be larger given the matched funding component by partner countries under the Newton Fund model.

Regarding the data on DFID-funded projects and commitments provided by the department (all but 3 of the 96 projects), as this was given at the programme level (see Section 2.1.1) no information was provided on funding projects. This means that it is not possible to give an accurate project count for most of the £263.8m-worth of commitments made by DFID (98.6%) in Figure 1.

While only two climate change research projects were funded under DHSC’s Global Health Research programme, average grant amounts rank first among all other programmes (£1.8m) followed by GCRF (£1.3m) and Wellcome’s Our Planet Our Health (OPOH) programme (£944k).

Figure 1 – Named funding programmes in the overall portfolio of UK ODA and Wellcome-funded climate-development research that have committed at least £1m (initiated between 2015-16 and 2019-2020)*



* Figure does not include the majority of commitments made by DFID as information on funding programmes was not made available. Additionally, the total number of individual research projects could not be obtained by DEFRA.

Acronyms: **ACBI** = Africa Capacity Building Initiative; **GCRF** = Global Challenges Research Fund; **GPFS** = Global Programme Food Security; **KNOWFOR** = International Forestry Knowledge; **OPOH** = Our Planet Our Health; **R&D** = Research and Development.

Extending the analysis of funding programmes, Figure 2 summarises the distribution of commitments made by funders under each funding programme during the five-year period (again, without considering either DEFRA’s or most of DFID’s commitments) according to the indicated start date of a project by financial year. While it is fully acknowledged that a project’s start date is not indicative of when the funds for a given project were committed, it helps provide an approximate understanding of the changes in funding commitments over the five-year period under consideration.

Among the three funding programmes with data across at least four financial years, both UKRI’s GCRF and Wellcome’s OPOH programme (both launched in the second half of 2015) made their largest commitments during the 2017-18 financial year – accounting for 56.2% and 47.0% of their overall commitments during the five-year period under consideration, respectively.

Figure 2 – Distribution UK ODA and Wellcome-funded climate-development research by named funding programme (2015-16 to 2019-20)*



*Figure includes names funds by financial year approximated by indicated start date of individual research project

Figure does not include commitments made by DEFRA or most of the commitments made by DFID as information on funding programmes was not made available.

†Smaller Wellcome programmes (less than £1m over the five-year period) have been grouped together under the 'Other Wellcome Programmes (x8)'. The names of these are Discretionary Award – Directorate (£691k total); H&SS (£298k); HRCS Postdoctoral Grants (£29k); PhD Training Fellowship for Clinicians (data on disaggregated funding amounts unavailable as this data is stored at the programme level); Public Engagement Fund Small (£100k); Small Arts Award (£31k); Small Co-Production Fund (£80k); and Sustaining Health Award (£333k).

Contextualising total investment

To understand the size of the ODA research investment relative to overall UK ODA climate change budget, the UK has pledged to provide at least £5.8bn-worth of ODA to address the causes and impacts of climate change (known as ICF) in the five-year financial period between 2016-17 and 2020-21. While this time frame varies from the portfolio analysis (2015-16 to 2019-20), and is not directly comparable, taking an average of funding as a proxy across this period shows that ODA funding for climate change research is approximately 9.7% of ODA funding for climate change more broadly. This mirrors the UK's high distribution of the overall ODA budget to research, which also stands at 9-10%.

A UKCDS¹⁴ 2011 report found that between 2004-05 and 2007-08, allocation of funding for "climate change research relevant to developing countries" was £47.1m. The method used in the 2011 report is similar but not identical to that used in this report, since research advancements meant that the keywords used to select appropriate projects had to be updated, and the Environment Research Funders Forum (ERFF) database analysed in

the 2011 report is no longer updated. Direct comparisons must therefore be treated with caution. However, UKCDR's analysis suggests a substantial change in the amount of research funding for climate change and international development. The UKCDS analysis represents average annual funding of £11.8m between 2004-05 and 2007-08, compared to average annual funding allocated between 2015-16 and 2019-20 of £112.8m (more than a nine-fold increase). While Wellcome was not analysed in 2011, a 2008 UKCDS report found that Wellcome's direct spend on climate change and health in 2004-05 was approximately £1m, compared to an average annual allocation of £5.8m across the period of this review. This suggests a step change in the way that climate change and international development has been prioritised and funded during the period in which the UK made its climate commitments as part of the Paris Agreement.

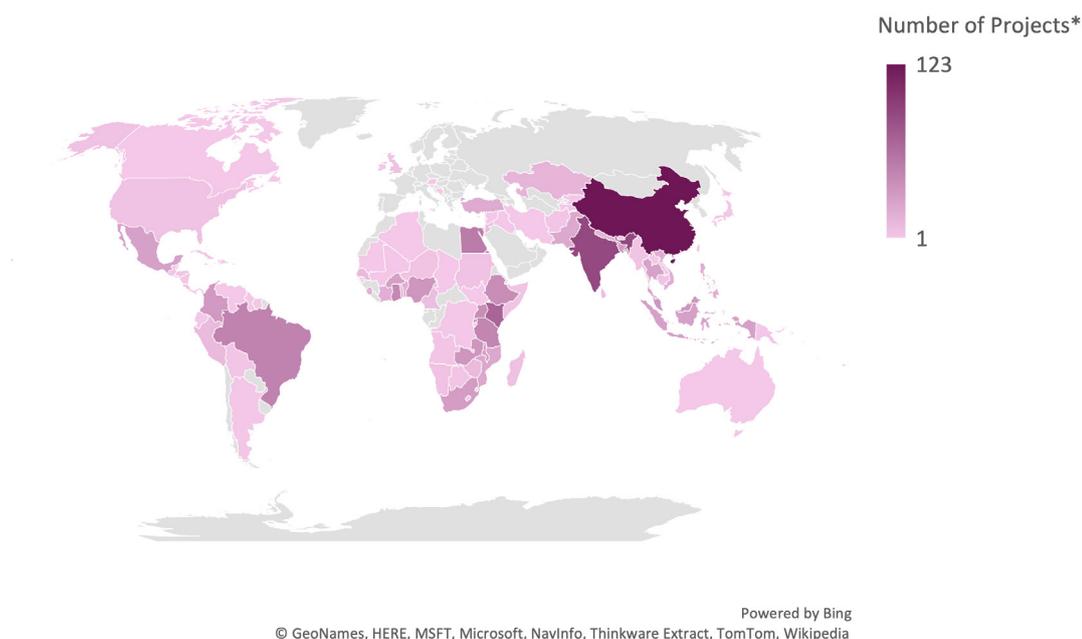
3.1.2 Countries of focus

Countries of focus are all ODA-eligible countries identified as primarily benefitting from the research project and/or location where funded research activity takes place. A total of 111 countries were named as a country of focus with respect to the (at least) 694 UK ODA and Wellcome-funded research projects on climate change (see Figure 3), averaging two countries of focus per project. Due to the nature of climate change research, 83 of the 694 projects included in this analysis (12.0%) are not country specific as they address climate change issues from a 'global good' perspective and are therefore not associated with any specific geographies other than being relevant to LMICs. In addition, out of the 111 named countries of focus, 100 are LMICs. The remaining 11 named High-Income Countries (HICs) came largely from Wellcome-funded projects which were identified as being relevant to international development, but which also named one or more HIC as a country of benefit or location where funded research activity would take place.

Of all 111 named countries, China was most frequently listed as a country of focus (123 research projects), largely driven by commitments made under the Newton Fund (107 research projects). As well as being home to many of the world's poorest people, China is the world's largest greenhouse gas emitter. Funders highlighted that action by China is critical to delivering global climate goals and is key to the UK's COP26 objectives. Furthermore, China is a driver of global growth and has increasing presence on the global stage on climate change and is eligible to receive ODA funding. Along with China, the top five countries of focus with the greatest number of projects are India (88 research projects), Kenya (69), Egypt (53) and Brazil (48) – all notable for being middle-income countries (MICs). A large majority of the UK ODA and Wellcome-funded research on climate change considered in this analysis lists at least one MIC as a country of focus (83.8%) - with a greater emphasis placed on upper-middle income countries (53.0% of all research projects considered). Among all nations classified as among the least developed and LICs, Tanzania was listed as a country of focus for most projects (46), followed by Ethiopia (41) and Uganda (41). A full list of the 100 LMICs named as a country of focus can be found in Annex 5.

When considering the geographic distribution of the total value of projects, there is comparatively more focus placed on Africa and South Asia. This is driven by the commitments made by DFID which are larger in size relative to other funders and where DFID typically had a stronger geographic focus.

Figure 3 - Countries of focus of UK ODA and Wellcome-funded research on climate change (initiated between 2015-16 and 2019-20)



Individual research projects may have multiple countries of focus.

* Total number of individual research projects could not be obtained by either DEFRA or DFID and information on specific countries could not be obtained by DEFRA.

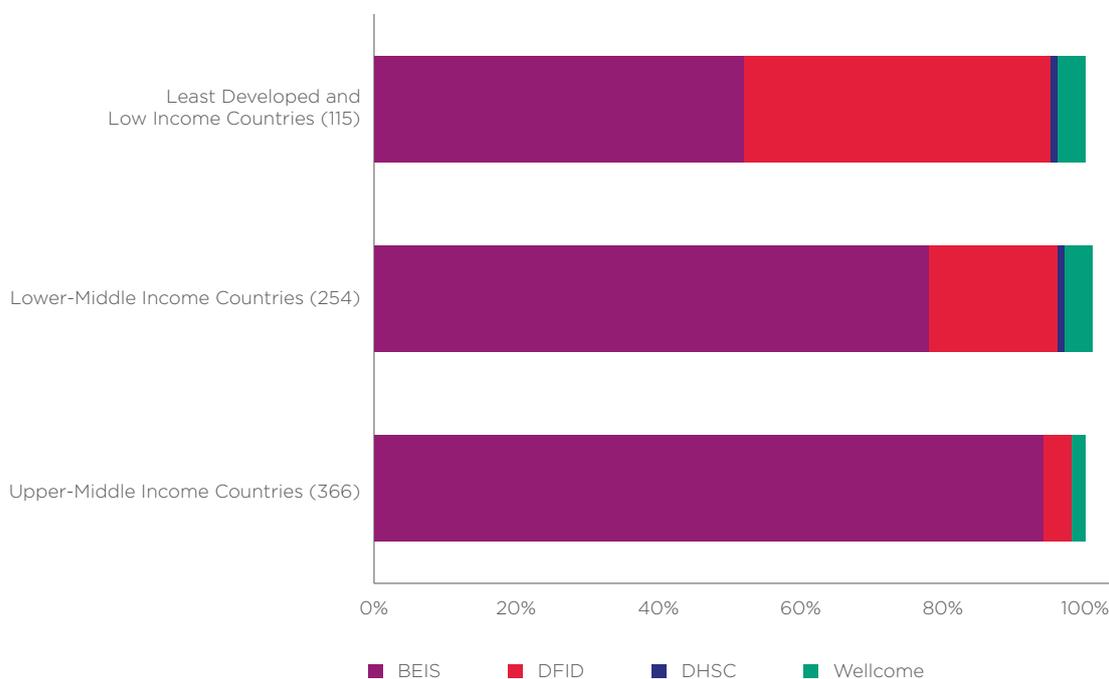
There are several factors to consider when contextualising the amount of research which focuses on MICs. Firstly, since it was not possible to break either sets of data obtained from DEFRA or DFID down to the project level, there will be undercounting of the number of projects in certain countries – particularly LICs as they are at the heart of DFID’s (now FCDO’s) departmental focus. Secondly, countries with higher levels of emissions (such as the higher levels of industrial activity, more energy-intensive standards of living and more urbanised populations which are more commonly found in MICs) may be more likely to be the focus of mitigation-related climate change research. Finally, research capacity may play a crucial role in the distribution of funding, as referenced in UKCDS’ 2011 climate change report, observing that “Research capacities and capabilities in China, India, Brazil and South Africa are growing rapidly. Accordingly, there is a need to review strategic relationships with these countries if the UK is to benefit from new opportunities for research collaboration and funding.” Funders noted that, through partnerships, they can leverage research infrastructure in countries such as China to address global challenges. One funder highlighted that “China’s level of investment, and the urgency of findings international solutions to global challenges, make collaboration with and influencing China essential.”

Some programmes and projects are multilateral initiatives. These may include partnerships between the UK and, for instance, China and India, but also include partners from LICs– with resulting impacts of direct benefit to all parties. From 2020-21, the UK’s partnerships with China and India under GCRF and the Newton Fund will have a renewed focus on delivering global development impact. The UK will continue to work in close partnership with these countries on cutting-edge research, with the primary objective of delivering benefit to developing countries around the world, as well as secondary benefits in the UK, China and India.¹⁵

Looking at the income groups (as defined by the Organisation for Economic Co-operation and Development’s (OECD) Development Assistance Committee list) more closely, Figure 4 suggests that the countries of focus of DFID-funded research are concentrated on the least developed and LIC and LMIC groups (51.0% and 47.9% of DFID’s portfolio, respectively) – which is expected, given DFID’s focus on advancing economic

development in the world's poorest countries. This contrasts to 62.7% of BEIS' portfolio on climate change research focusing on upper-middle income countries.

Figure 4 - Breakdown of LMIC countries of focus of UK ODA and Wellcome-funded climate-development research by income group† (initiated between 2015-16 and 2019-20). Number of projects* indicated in brackets.



Research projects may have multiple countries of focus that span across multiple income groups.

*Total number of individual research projects could not be obtained by DFID, which means that the number of projects for DFID should be considered a minimum. Number of projects and information on specific countries could not be obtained by DEFRA..

† Each country's assigned income group is based on the classification determined by the OECD's Development Action Committee [list](#) at the time of the award.

3.1.3 Lead institutions, partner institutions and collaborations

Lead institutions

The £564.2m of UK ODA and Wellcome research funding on climate change (initiated between April 2015 and March 2020) was disbursed to 205 lead institutions from across 21 countries. For reasons outlined in Section 2.1.1, most of these institutions (135) are based in the UK and were the lead on 592 of the 694 research projects included in this analysis.

Table 3 presents the ten lead institutions awarded the most UK ODA and Wellcome funding for climate change research during the five financial years under consideration, comprising of different types of organisation, including universities, research institutes and the private sector. As DFID data was provided at the programme level, many of the institutions named in the department's data are partner institutions who manage calls and awards (rather than carry out research) and are therefore considered different to conventional lead institutions. For this reason, the institutional data provided by DFID has been omitted from Table 3 and has instead been placed separately in Table 4.

Table 3 – Top 10 lead institutions awarded the most (non-DFID) UK ODA and Wellcome funding on climate-development research (initiated between 2015-16 and 2019-20).

Rank	Institution (Country)	Amount Awarded
1	UK Centre for Ecology and Hydrology (UK)	£25.4m
2	Satellite Applications Catapult (UK)	£20.5m
3	University College London (UK)	£14.4m
4	Econometrica (UK)	£14.3m
5	University of Leeds (UK)	£12.4m
6	National Oceanography Centre (UK)	£11.9m
7	University of Cambridge (UK)	£9.9m
8	University of Manchester (UK)	£9.9m
9	United Nations Institute for Training and Research (Switzerland)	£9.6m
10	Monash University (Australia)	£8.5m

Table 4 - Top 5 institutions awarded the most funding by DFID to manage research calls and awards on climate-development research (initiated between 2015-16 and 2019-20).

Rank	Institution (Country)	Amount Awarded
1	International Bank for Reconstruction and Development (USA)	£48.8m
2	Shell Foundation (UK)	£40.6m
3	Bill & Melinda Gates Foundation (USA)	£30.5m
4	PwC (UK)	£26.8m
5	Innovate UK (UK)	£19.8m

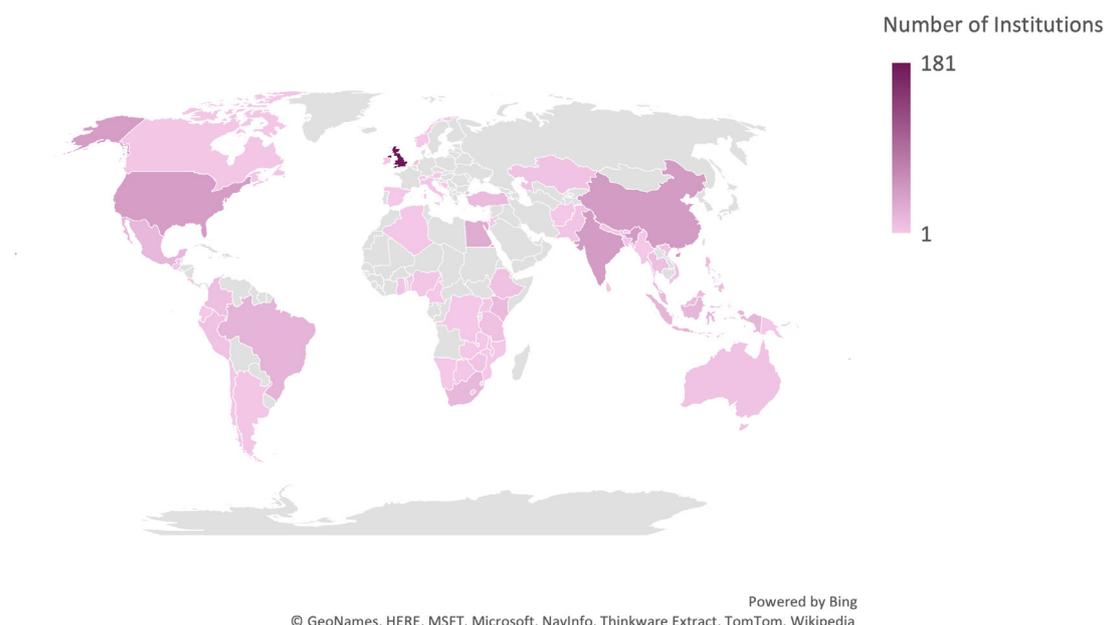
Overall, most of the 205 lead institutions are universities (59.0%) – with University College London awarded the greatest amount of funding among all universities. Additionally, Australia’s Monash University is the only non-British university to be included among the top ten institutions awarded the most funding.

Of the total 205 lead institutions, 40 are based in a LMIC, with the African Agricultural Technology Foundation awarded the greatest amount of funding (£7.8m), ranking 25th overall among all institutions.

Partner Institutions

Expanding the analysis to all institutions beyond solely the lead institutions analysed above, a total of 615 institutions from across 64 countries were identified as participating in UK ODA and Wellcome research funding on climate change. Of these institutions, 181 are based in the UK – four times the number of institutions based in either of the countries with the second-highest number (China and India each with 45 institutions). However, while the UK has the greatest number of institutions, more than half of the 615 institutions (58.9%) are based in 50 LMICs (Figure 5). Within this, almost half of all LMIC institutions are based in upper-middle income countries (176), closely followed by those based in lower-middle income countries (143) with a small amount based in LICs and least developed countries (43).

Figure 5 - Location of institutions involved with UK ODA and Wellcome funding for climate-development research (initiated between 2015-16 and 2019-20).



LMIC-based institutions were involved with 429 of the research projects on climate change (61.8%). Among all LMIC institutions, the Chinese Academy of Sciences was involved with the greatest number of research projects (Table 5). While India has the same number of institutions involved overall in UK ODA and Wellcome-funded research as China, individual Indian institutions (Indian Institute of Technology Delhi and Indian Institute of Tropical Meteorology) were involved with, at most, four research projects on climate change.

Table 5 - LMIC institutions involved with the greatest number of UK ODA and Wellcome-funded climate-development research projects (initiated between 2015-16 and 2019-20).

Rank	Institution (Country)	Number of Projects*
1	Chinese Academy of Sciences† (China)	15
2	University of Malaya (Malaysia)	10
3	University of São Paulo (Brazil)	7
=4	Dalian University (China)	6
	Nanjing University (China)	
	Tianjin University (China)	
	University of Cape Town (South Africa)	
=8	Alexandria University (Egypt)	5
	Khon Kaen University (Thailand)	
	Tanta University (Egypt)	
	University of Ghana (Ghana)	

* Total number of individual research projects could not be obtained by either DEFRA or DFID and information on specific institutions could not be obtained by DEFRA.

† Includes listed institutions listed as Chinese Academy of Sciences (13 projects), Institute of Geographic Sciences and Natural Resources (1), Institute of Electrical Engineering, and the Institute of Tibetan Plateau Research (1)

Collaborations

Partnership and collaboration are key principles for improving knowledge production for climate change. The most frequent collaborations between any two of the 615 institutions involved with the climate change research portfolio are highlighted in Table 6. Of the institutions listed, only one is based in an LMIC (Khon Kaen University in Thailand). More widely, while partnerships between two LMIC-based institutions occurred 430 times, there are no instances of partnerships between two LMIC-based institutions occurring more than once. This suggests that there is scope for UK research funding programmes to address how partnerships with and between LMIC institutions can be developed further after they have been formed.

Table 6 - Most common collaborations between two institutions on UK ODA and Wellcome-funded climate-development research (initiated between 2015-16 and 2019-20)

Institutions	Number of Collaborations
<ul style="list-style-type: none"> University of Cambridge (UK) and University of York (UK) 	4
<ul style="list-style-type: none"> National Oceanography Centre (UK) and Plymouth Marine Laboratory (UK) University of Cambridge (UK) and University of Southampton (UK) University of Manchester (UK) and Khon Kaen University (Thailand) 	3
{66 partnerships}	2

The analysis was also broadened to the national level to include all partnerships that occur between institutions within two different LMICs, due to the lack of repeat partnerships at the institutional level (Table 7). Interestingly, of the 11 international pairings listed in Table 7, all but one of them involve at least one African country. Additionally, while the greatest number of LMIC institutions involved with UK ODA and Wellcome-funded research on climate change are based in China (Figure 5), and several institutions based in the East Asian region feature in the list of LMIC institutions involved with the greatest number of research projects (Table 5), partnerships between institutions based in China and those based in other LMICs do not occur more than once.

Table 7 - Most common international collaborations between two institutions based in different LMICs on UK ODA and Wellcome-funded climate-development research (initiated between 2015-16 and 2019-20)

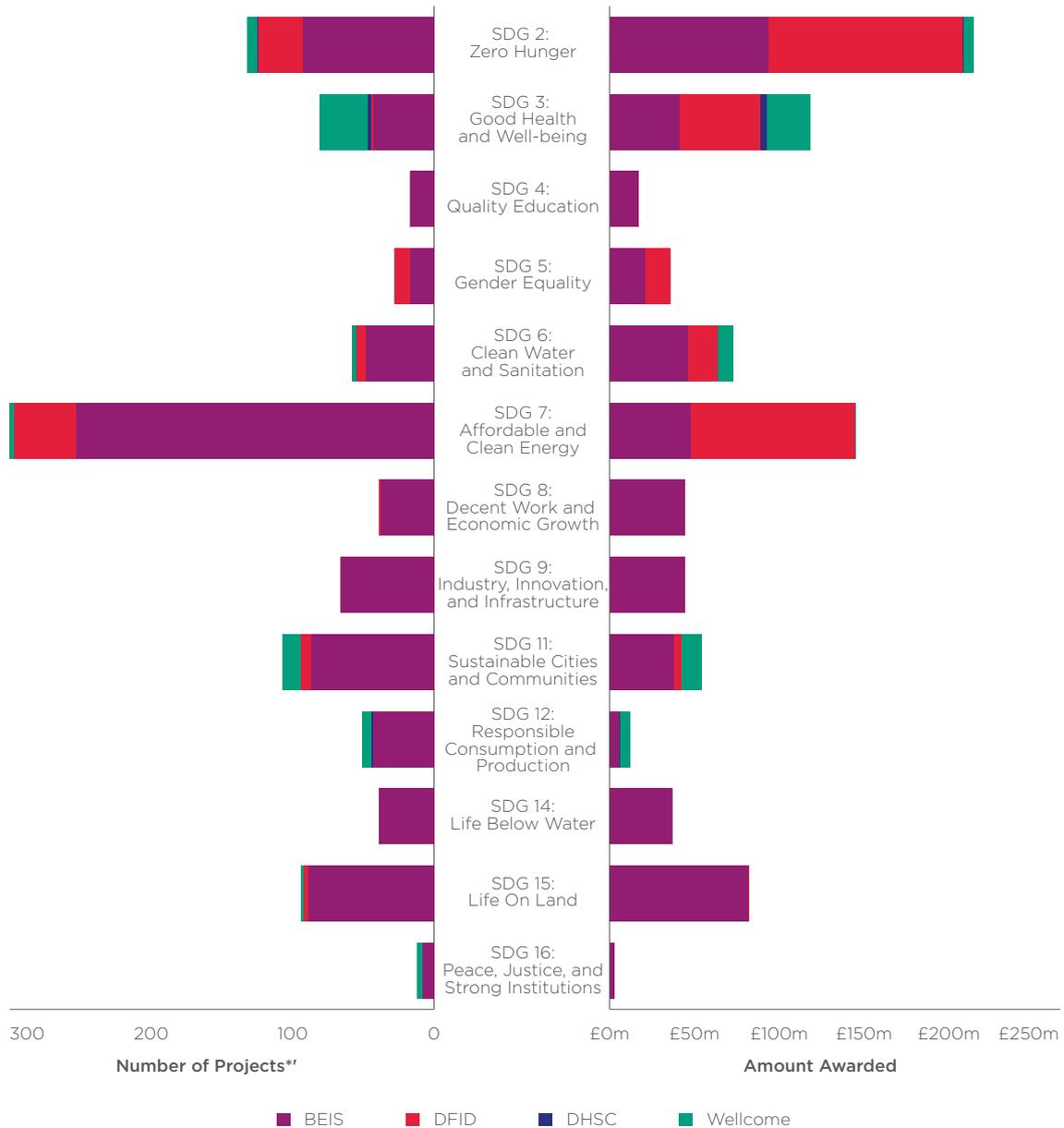
Countries	Number of Collaborations
<ul style="list-style-type: none"> South Africa and Kenya 	3
<ul style="list-style-type: none"> Ethiopia and India Ethiopia and Kenya Ethiopia and South Africa Ghana and South Africa India and Kenya India and South Africa India and Tanzania Indonesia and the Philippines Kenya and Tanzania South Africa and Zimbabwe 	2
{102 partnerships}	1

3.1.4 Research focus

Sustainable Development Goals

Given the interdisciplinary nature of topics relating to climate change, each research project was assigned with as many of the United Nations' Sustainable Development Goals (SDGs) as were relevant to understand the thematic breadth of the portfolio under examination (Figure 6). Of the 17 SDGs, four were not considered for projects to be classified against as their concepts (as communicated by their respective targets and indicators) are either deeply embedded within each funders' overall ODA research funding strategy (SDG 1: No poverty, SDG 10: Reduced inequalities and SDG 17: Global Partnership for the Goals) or, in the case of the SDG on Climate Action (SDG 13), is relevant to all research projects on climate change.

Figure 6 - Breakdown by SDG of UK ODA and Wellcome-funded research projects (initiated between 2015-16 and 2019-20) *†



* Total number of individual research projects could not be obtained by either DEFRA or DFID.

† Research projects may be assigned with multiple SDGs. Funding amounts therefore indicate the value of all research projects relevant to that individual SDG only. Adding funding amounts across SDGs will not equate to the value of the portfolio of individual funders or the overall portfolio of UK ODA and Wellcome-funded research on climate change.

Given that the SDGs were intentionally designed so that each goal would be linked to others, in addition to the interdisciplinary nature of the topic of climate change, it is unsurprising to see not only that UK ODA and Wellcome-funded research addresses each SDG, but that certain SDGs feature more prominently in terms of committed funds and/or number of research projects due to their natural linkages to climate change (particularly SDG 2: Zero Hunger and SDG 7: Affordable and Clean Energy).

As was the case with the income groupings of the countries of focus, it can also be seen from Figure 6 the differences in approaches used between the two largest funders considered in this analysis (BEIS and DFID) when funding climate change research. BEIS adopted a broader approach addressing all SDGs, whereas DFID have concentrated their portfolio on a more specific set of thematic areas.

3.2 What is the potential impact?

This section seeks to answer the research question: *What is the **potential impact** of UK ODA and Wellcome-funded research on climate change and international development?*

It is acknowledged that impact is often difficult to measure, particularly soft or indirect impacts, and that impact often occurs many years after the funding period. These challenges are intensified when the field in question is broad and interdisciplinary, as is the case with research on climate change and international development. Many of the impacts being observed over the last five years, and on which stakeholders have been asked to comment, will result from research funded prior to the period of focus of this report, rather than the funding represented in the portfolio analysis (Section 3.1). UKCDR's case study selection criteria considered projects funded since 2009-10 to illustrate impacts over the last five years, but acknowledges that, even over this period, some impacts may not be fully realised. Similarly, some impacts resulting from research funding included in the portfolio analysis may not emerge until 2030 and beyond.

The analysis in this section is therefore not intended as a comprehensive audit of all impacts resulting from the research funded by UK ODA and Wellcome-funded on climate change and international development over the past five years. Instead, it illustrates a wide range of the impacts which have been seen to emerge over the last five years, explores perceptions of these impacts among the research community, and identifies areas where UK-funded research might have the greatest impact in the future.

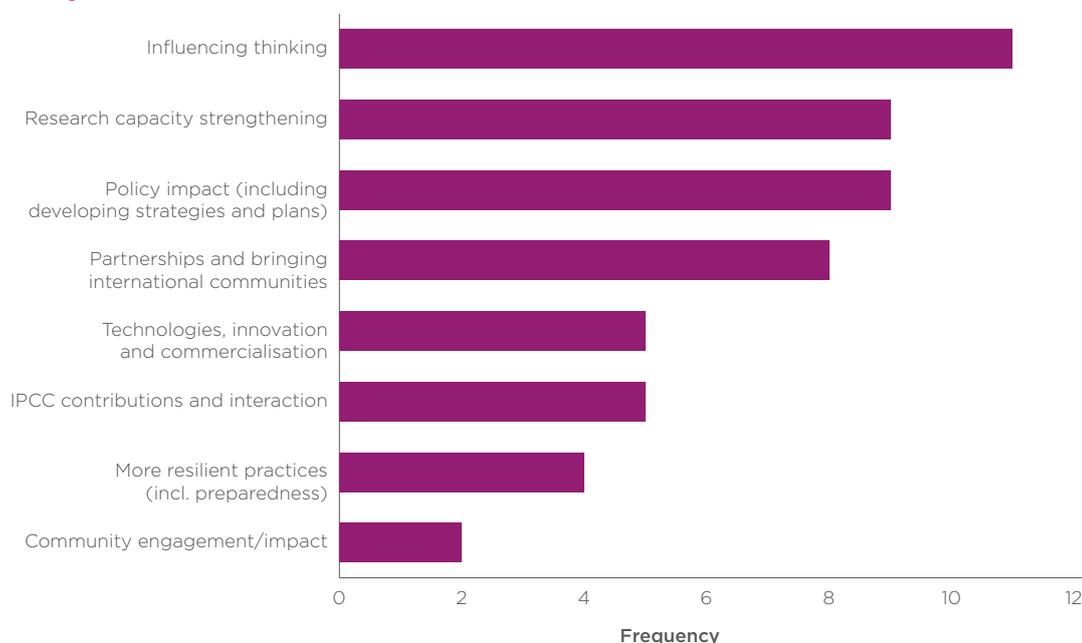
3.2.1 Types of impact resulting from UK-funded research on climate change and international development

The case studies and stakeholder interviews highlight a wide range of impacts arising from UK ODA and Wellcome-funded research on climate change and international development. This includes, but is not limited to:

- Influencing thinking
- Capacity building (both for researchers and decision-makers)
- Impacting policy (including developing strategies and plans)
- Producing partnerships, collaborations and bringing international communities together
- Developing technologies, innovation and commercialisation
- Contributing on a global level (particularly through IPCC contributions and interactions)

- Improving community resilience preparedness
- Community engagement
- Institutional reform

Figure 7 – Coded interviewee responses to the question: “What impact has resulted from UK-funded research on climate change and international development over the past five years”



Number of respondents: 26

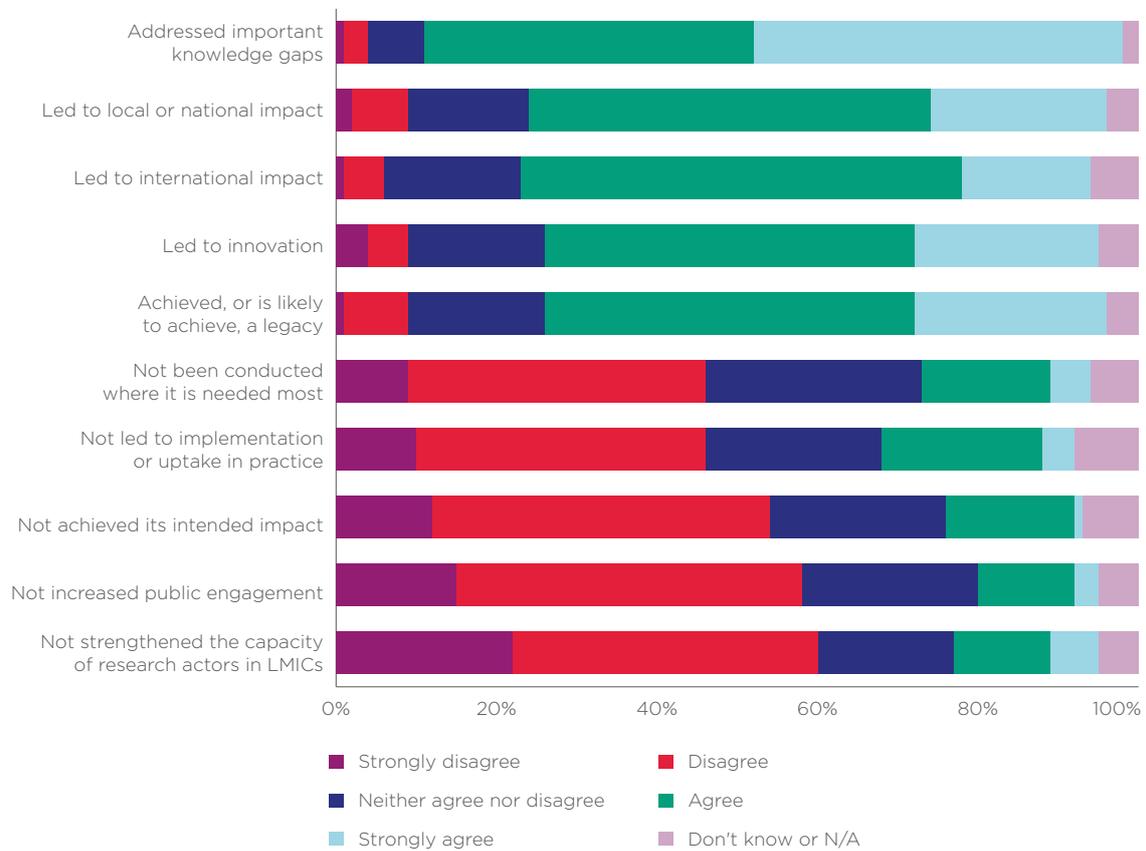
Of these, interviewees most frequently highlighted the impacts of UK-funded research in **influencing thinking** at the conceptual level (Figure 7). Interviewees spoke of UK-funded research as playing a “thought-leadership role” by (1) increasing understanding, knowledge and expertise in climate change and international development, (2) framing the conversations and debates around climate change and (3) raising awareness on the problem of climate change through research. One UK academic summarised that “the UK has drawn attention to the questions, it has framed some of the conversations, and it has raised the level of debate and types of conversations around sustainability and climate over the last 20 years”. In particular, interviewees cited climate science and services, energy, health and wellbeing, cities and urban planning, agriculture and farming, food systems and security, and water and sanitation as examples of where UK-funded research has an impact in influencing thinking.

Another frequently-raised impact was **research capacity strengthening**– both at the individual level (through scholarships) and systems level (e.g. support for research systems, think tanks and tools for managing research). **Policy impact** was also mentioned by multiple respondents, including the development of strategies and national plans. Some examples given include: Costa Rica’s decarbonisation strategy, China’s and Brazil’s national adaptation plans, and Zambia’s Agriculture Diversification Strategy. A UK academic said, “in aggregate there are likely many specific examples of where a national government has adopted insights from UK research in a policy document or in a target or new technology”. In terms of international climate policy, the UK’s IPCC contributions and interactions were also highlighted.¹⁶ A UK academic commented: “Looking at IPCC and special report on global warming and 1.5 degrees that came out in 2018 – [that] had enormous global impact, UK people played a significant part in getting that report out” and a representative from an educational institution in India reflected “on the climate science side, UK researchers have contributed a lot – on climate modelling and on the calibration side.”

3.2.2 Perceptions of UK-funded research among the research community

To understand broader perceptions of the impacts of UK-funded research among the research community within a more formalised framework, UKCDR used the survey of those involved in the delivery and use of climate- development research. The 189 respondents who self-identified as having been involved in, or aware of, UK-funded research projects on climate change and international development in the last five years were asked to rate how strongly they agreed or disagreed with a series of statements on different types of impact. To attempt to reduce acquiescence and extreme response biases (where respondents may be more likely to select “agree”, or to consistently select either very positive or very negative responses), half of the statements were phrased negatively (“Not...”). The responses to the 10 statements are represented in Figure 8. Furthermore, figure 9 shows these responses adjusted to account for the average difference between these positively and negatively phrased questions (see detailed methodology Annex 2).

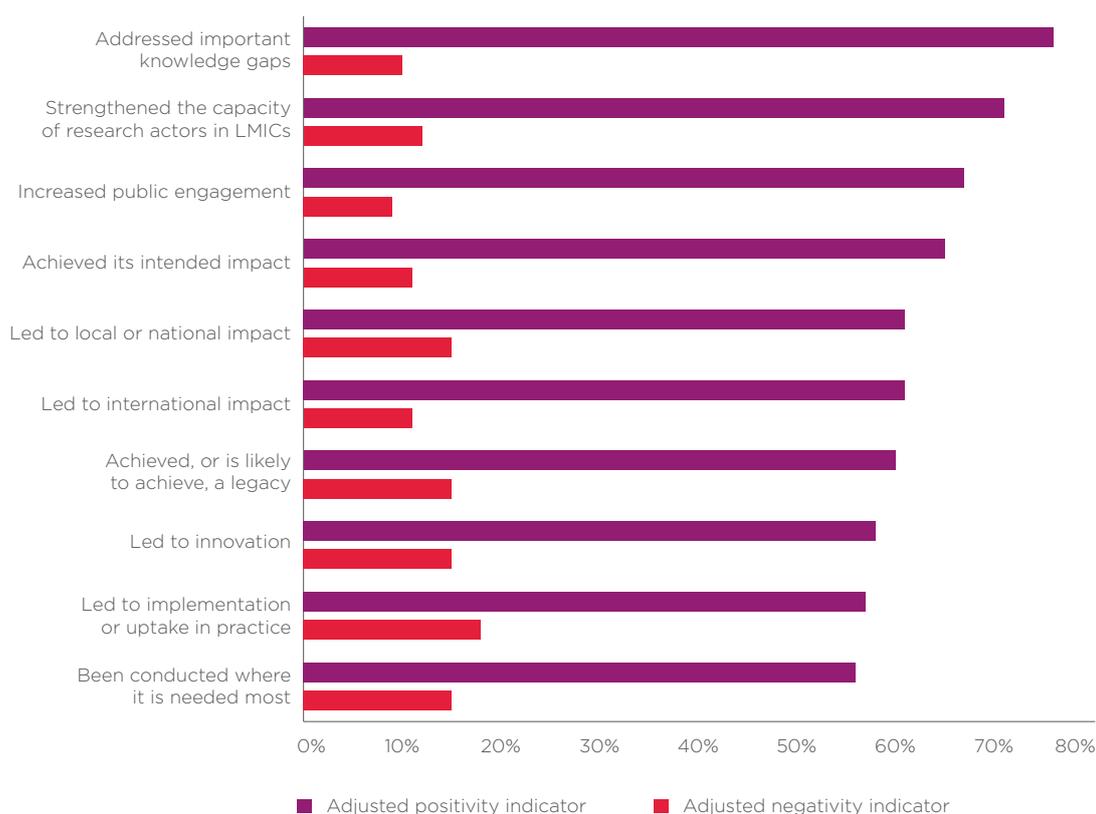
Figure 8 – Percentage breakdown of survey respondent’s responses to the question: “Over the last 5 years, UK-funded research on climate change had international development has...”



Notes: This question was asked to all survey respondents who self-identified as having been aware of or involved in UK ODA or Wellcome-funded, or other UK-funded, research on climate change and international development.

Positively and negatively phrased statements were arranged alternately within the survey but have been split in the figure above for ease of comprehension. Number of respondents: 166

Figure 9 – Adjusted positivity and negativity scores to the survey respondent's responses to the question: “Over the last 5 years, UK-funded research on climate change and international development has...”



To make the results more comparable, a “positivity indicator” was developed based on each total “Strongly agree” and “Agree” responses for all positively phrased statements, and each total “Strongly disagree” and “Disagree” responses for all negatively phrased statements. The average difference between the five positivity indicators for the positively phrased statements and the five positivity indicators for the negatively phrased comments was 21 percentage points. The positively phrased statements were therefore deflated by 10.5 percentage points, and the negatively phrased comments were inflated by 10.5 percentage points. The same process was followed for an “adjusted negativity” indicator, with an average difference of 12 percentage points.

As can be seen, survey respondents were most likely to agree that UK-funded research on climate change and international development had achieved impacts through addressing important knowledge gaps and strengthening the capacity of research actors in LMICs. This is consistent with the findings of the stakeholder interviews. However, this analysis also suggests that, while overall responses were still positive, respondents were less likely to agree that UK-funded research had led to innovation, implementation or uptake in practice or been conducted where it is needed most.

3.2.3 IPCC authorship and the UK’s global standing

The UK has a long history of taking a prominent role in the IPCC. Counts of lead and contributing authors in the IPCC Assessment Reports provide a crude measure of UK standing in the global science effort on climate change. Analysis by UKCDS in 2008 and 2011 found that in both the Fourth and Fifth Assessment Reports, the UK was second only to the USA in terms of lead and contributing authorship. Analysis of the Sixth Assessment report reveals again that this is true. Moreover, the representation of UK science in climate change mitigation has increased during this period. The UKCDS 2008 report found that in the Fourth Assessment Report UK authors received differing levels of representation between the three working groups, with the greatest (13% of authors) in Impacts, Adaptation and Vulnerability, and the lowest (4% of authors) in Mitigation of Climate Change. In the Sixth Assessment Report, UK-based authors have consistent representation (10% of authors, and second only to the USA in each category) across all three working groups: The Physical Science Basis; Impacts, Adaptation, and Vulnerability; and Mitigation of Climate Change.

3.2.4 Case studies

Six case studies have been developed to provide examples of how some of the impact types discussed above have been delivered in practice over the last 5 years ([see case studies on the UKCDR website](#)). They have been selected to represent a range of impact types, as well as a variety of project types, geographical and thematic foci, and research funders. All six case studies relate to research with a significant international development focus that is (at least partially) UK ODA-funded and/or Wellcome-funded. They have been selected to include a range of focuses across climate change mitigation, adaptation and resilience and climate science. The case studies are:

- Between a rock and a wet place – Exploring historical trajectories of exposure, governance and tenure to build resilience to multiple hazards in SIDS
- Climate Science for Service Partnerships (CSSP) Brazil
- Future Climate for Africa: Future Resilience for African Cities and Lands (FRACTAL)
- Health and climate change (Sustainable and Healthy Food Systems (SHEFS) and CLEAN-Air (Africa))
- International Climate Finance – Tools for informing decision making (2050 calculator and Ecosystem Service Valuation Database (ESVD))
- Patterns of resilience among young people in a community affected by drought – Historical and contextual perspectives

3.3 What are the strengths and weaknesses?

This section seeks to answer the research question: *What are the **strengths and weaknesses** of UK ODA and Wellcome-funded research on climate change and international development?*

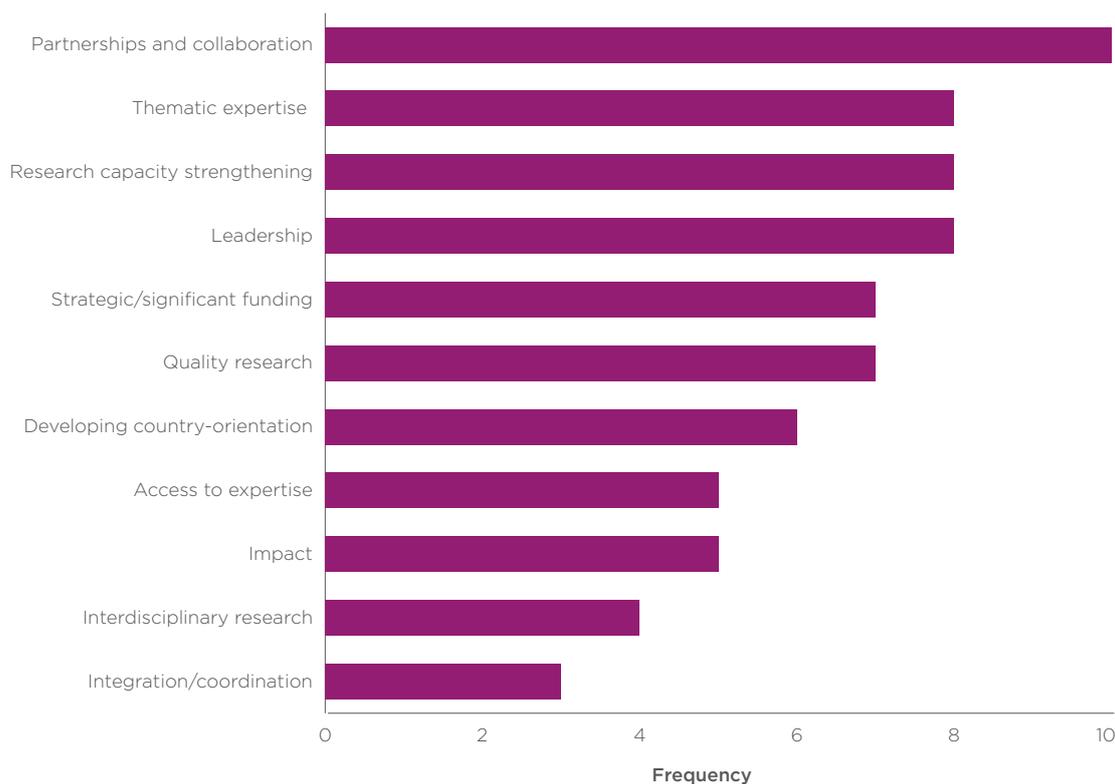
This section examines the perceptions of UK strengths and weaknesses in research on climate change and international development that were raised during stakeholder interviews and survey responses. Relevant to these strengths and weaknesses, it also examines interviewees' perceptions of how the scale and scope of UK funding for climate change and international development research compares to other countries' funding, and of the UK's role in global fora for climate change and international development.

3.3.1 UK strengths in research on climate change and international development

“The UK is among top four countries in world importance with leadership in committees in all climate issues [in both] global policies on mitigation and adaptation.”

Academic, Brazil

Figure 10 – Stakeholder interviewee perceptions of the UK’s strengths in research on climate change and international development



Partnerships and collaboration were identified as one of the UK’s key strengths in research on climate change and international development, as highlighted in Figure 10. Stakeholder interviewees observed that UK strengths lie in fostering strong, mutual, joint and equal partnerships (promoted through for example the Newton partnership model¹⁷ and co-production in a partnership between the African Centre for Technology Studies and University of Sussex which has developed into the Africa Sustainability Hub).¹⁸

The UK’s strengths also lie in having both existing partnerships and an ability to develop collaborations with LMIC institutions; willingness and demand from partner countries to collaborate; and openness to collaboration and sharing within the UK climate change research community itself. One stakeholder in South Africa highlighted that UK funding has enabled long-term consortia and networks leading to the continuation of partnerships in a new model: "our Centre of Excellence partly emerged out of a large project funded by the Collaborative Adaptive Research in Africa and Asia (CARIAA)¹⁹ programme which we were originally leading, and through which we had built up established relationships." They also noted that the "UK is actively changing how it supports research and is attuned to some of the latest commentary on what is needed for advancing transformation in climate change" and that funding partnerships, such as those with International Development Research Centre (IDRC) help to strengthen UK-funded research in meeting demand in LMICs.

Leadership in climate change research was also highlighted as a strength. Respondents associated this with the UK’s world leading scientists, thought leadership, cutting-edge research, influence, legitimacy, evidence-based voice and high profile in the climate change arena. Stakeholders also highlighted the UK’s leadership role in helping to shape and drive global agendas across both mitigation and adaptation, its unique capacity to link both development and science, and the standing and reputation of UK institutions on the global stage – including the Met Office whose influence was highlighted by several stakeholders. It was noted that the UK has invested substantially in expanding the network of Met Offices for delivery of weather and climate services around the world, and

one stakeholder from the international community described the UK Met Office as “the gold standard for the world” and that “other nations look to the UK Met Office to develop their own”.

The UK’s strengths in **thematic areas** were emphasised in relation to its breadth of expertise and were deemed to be particularly strong in the physical sciences, climate modelling and meteorology, climate science and climate change and health. On the latter, a UK academic stated: “Wellcome Trust was an early pioneer in this area, investing significantly in planetary health, but the key issue now is the extent to which it will scale up more focused investment in climate change and health.”

“[The UK has a] Full pantheon of expertise in climate change across spectrum from modelling, tipping points right the way through to understanding social, cultural and human dynamics.”

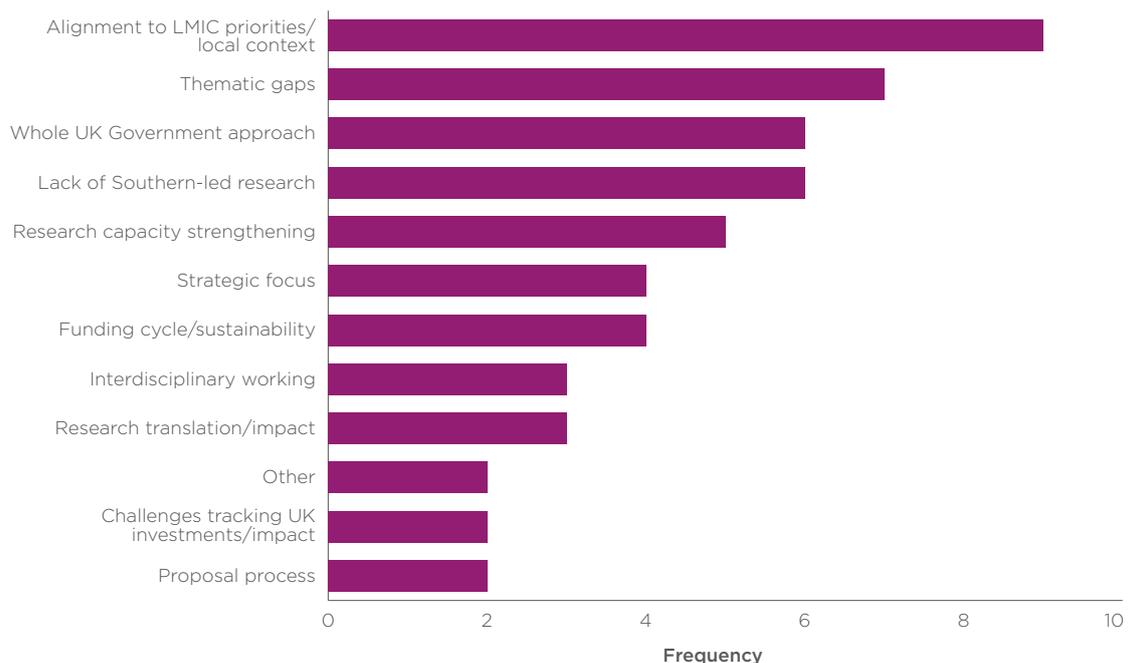
UK academic

Research capacity strengthening in climate change was also highlighted by stakeholder interviewees and these are discussed in Section 3.4.3 along with weaknesses mentioned.

Survey respondents who had been aware of or involved in UK ODA and Wellcome-funded research over the last five years were also asked for their thoughts on the strengths of this research. As with interviewees, the most commonly cited strength was partnerships and collaboration (30% of respondents). 30% also highlighted that UK research funding was strategic, significant and well-managed, while 24% stated that developing country orientation was a strength (see Figure 10). Other areas that were raised by survey respondents include the reputational and diplomatic impact of UK-funded climate change research; that research addresses important and pressing climate issues; equity; innovation; and the breadth of subjects funded.

3.3.2 UK weaknesses in research on climate change and international development

Figure 11 – Stakeholder interviewee perceptions of the UK’s weaknesses in climate-development research



Number of respondents: 26

Although partnerships and collaboration were seen as the UK's key strength, nine stakeholders highlighted areas to improve on in **understanding and aligning to local contexts in practice** (see Figure 11). Issues highlighted by interviewees include researcher ideas being developed from an international perspective before understanding the context for implementation, review panellists potentially not understanding the local context to make funding decisions, difficulties conducting research in areas with the most vulnerable communities (due to for example security, networks and infrastructure), and a divide between expected outcomes and the reality when a technology is deployed on the ground. A representative from an NGO in Kenya commented that there is a need to have champions who can understand the system and advise UK funding streams on what climate change priorities should be funded. A stakeholder from a regional network in Africa commented on the need to work with teams and organisations in Africa to understand needs – particularly on current discussions to build a resilience centre in Africa. A member of a climate centre of excellence in Bangladesh also commented that UK-based research has limited utility for decision-making in developing countries: “It’s been good in terms of publications but has zero resonance in decision making. [It has had] Very little impact on things happening in the developing world from the climate change arena.”

There were diverse perspectives on the **thematic weaknesses and gaps** in UK-funded climate change and international development research. Key gaps mentioned were climate mitigation, mitigation and adaptation links at a community level, health, water, energy, applied sciences, insufficient funding for innovation, and the need for a holistic approach to tackling climate change. One UK academic commented that, for climate change and health, in particular, visionary cross-sectoral work at scale is needed, which UKRI and GCRF would be well-positioned to deliver. Further details on these themes are explored in the section on emerging demands (Section 3.4).

While multiple UK-funded programmes aim to support **Southern-led research**, comments by some interview respondents suggest that this may not yet be felt in practice in some areas of climate change research. An interviewee from a climate centre of excellence in an LMIC commented “Although in theory open to competition from around world, I know of very few examples where developing country institutions were able to lead a consortium and investigations [in climate change]”.

“A lot of funding has to be led by UK-based researchers. There is need to leverage Southern leadership for Southern projects. I know there are always concerns about capacity, but there has been proven ability that a number of talented researchers in the South are able to do the work, publish, and lead big programmes that could be transformative to the continent.”

Interviewee from NGO, Kenya

There was consensus amongst the respondents that Southern leadership for projects should be supported by the UK. Linked to concerns about alignment with LMIC needs described earlier, several mentioned **lack of direct UK funding in LMICs** as a weakness to UK research meeting demand. Not only are funding decisions being made in the UK, but projects are often led, and agendas set, by researchers in the global North. Furthermore, many calls have a requirement that they are led by a UK-based organisation. Interviewees described an increasing recognition of the need to decolonise research funding. Recognising the need to build equity across the research cycle, promoting equitable partnerships has been a longstanding area of work for UKCDR. UKCDR have produced a range of resources on equitable partnerships²⁰ to support and enable the collective understanding of research priorities and bilateral funding initiatives (such as Newton) promoting joint agenda setting.

A need for a clear **whole UK Government approach** was identified by six interviewees. One academic from India commented that links between UK funders and UK organisations reviewing IPCC work could be improved, while one UK funder suggested that there may be a role for a coordination system on climate across UK Government that is comparable to those in place on energy and health²¹. The SCOR Board provides a mechanism to improve the coordination of international development research funding, and it is hoped that projects such as this report will provide an opportunity to enhance alignment specifically relating to climate change.

“The whole UK Government has been extremely disappointing, particularly given its role in climate change research. It hasn’t capitalised on the opportunity to be a leading force in climate change impact research and climate change solutions with a focus on health.”

UK academic

Another barrier to UK research meeting demand flagged by interviewees was **modes of funding and funding cycles**. Several interviewees mentioned that longer and more flexible timescales for climate research funding would help meet demand and build programmes of the scale and complexity needed that embed climate science in practice, curricula and capacity building.

The most common weakness raised by survey respondents was the **sustainability of the funding cycle** (18% of respondents), also raised in interviews. One respondent highlighted that the short funding cycles meant that there was not enough time to embed or sustain outcomes, while funding models and call timescales tended to benefit established partnerships, rather than allowing for new partnerships to be built in countries less supported by the UK (where there may be a need for research). As with interviewees, survey respondents (17%) perceived weaknesses in specific strategic thematic focuses, while 13% of respondents also raised lack of alignment to LMIC priorities (see above). In addition, 14% of survey respondents highlighted barriers to translating research into impact, such as lack of stakeholder links at the national and global level to increase research uptake, and room for improvement in ensuring that learning is incorporated within future programming. Other weaknesses that were raised by survey respondents include: bureaucracy, funding going to lead institutions based in the UK, and the challenges of communicating complexity alongside key political messages.

3.3.3 How does the scale and scope of UK research funding compare to other countries?

Nearly half of the interviewees stated that a feature of UK funding, in comparison to other countries, was their position as **one of the leading donors**, with a strong reputation and influence in the climate change space in terms of the size of its overall investment and ambition in scope. One UK funder commented that "The UK is one of the leading donors with international development and has been leading on climate". A representative from an NGO in Kenya stated that "the UK has put in place massive funding linked to climate change, for example, UKRI supporting research on global challenges including climate change to tune of £20 million" and "the diversity of funding the UK Government has put in place could accumulatively be massive compared to other countries, who do not have such diverse funding windows."

In terms of the **types of research it funds**, some of the UK’s perceived strengths among interviewees compared to other countries included: climate science, transdisciplinary and interdisciplinary approaches, and normative science. However, one UK university noted:

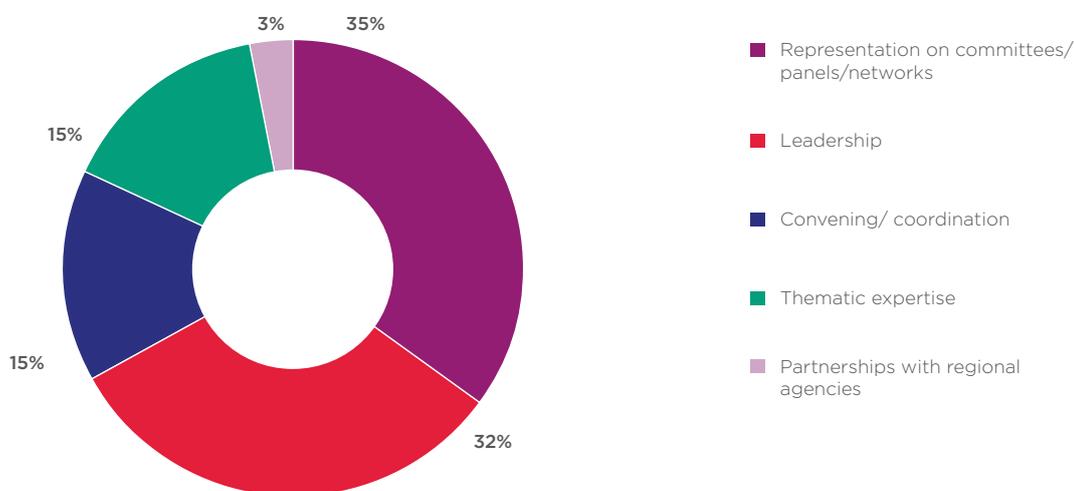
"It does seem that the UK is not really on a par for climate finance with China, US and India. For things like renewable energy, we seem to be lagging behind." The Ayrton Fund, announced in September 2019 and intended to run over five years from April 2021, is a UK Government commitment to spend £1bn of ODA funding on research, development and demonstration (RD&D) into clean energy technology and business models LMICs.

Some stakeholders also commented that countries also differed in their **approaches to funding international development research**. The ways countries interpret ODA in relation to climate change varies, and it was noted that some countries are still navigating tensions between implementation aid and aid for research capacity strengthening and knowledge generation. Several also touched on how differences in the approach to ODA spend on research promotes **LMIC leadership of research and equitable partnerships**. One respondent, based in Dhaka, Bangladesh, said "I don't apply with DFID because I know I'm not going to win". Canada's IDRC and the Climate Development Knowledge Network (CDKN), amongst others, were highlighted as examples of better ensuring that LMIC research entities can lead projects and win contracts. CDKN is part-funded by UK ODA.

3.3.4 What is the UK's role in global fora for climate change and development?

The UK's key roles in global and in-country fora or networks for climate change research and international development identified by interviewees were **representation on committees, panels and networks and leadership**.

Figure 12 – Stakeholder interviewee perspectives on the UK's role in global and in-country fora or networks for climate change and international development (e.g. committees, panels)



Number of respondents: 25

From the responses given, it was clear that there is strong representation by the UK on committees, panels and networks related to climate change research.

Multiple fora and networks with UK involvement were identified by interviewees. The IPCC was mentioned the most frequently by ten out of thirty interviewees. The UK has been involved in the IPCC since its inception with UK funded researchers acting as lead authors, reviewers and contributing authors, and taking a very prominent role in all three IPCC working groups. Particular strengths were noted around the UK's contributions to Working Group I (physical sciences) and Working Group III (mitigation), as well as the UK's permanent seats on IPCC focal point four and BEIS' ODA funding support for part of a technical support unit in India as part of Working Group III.

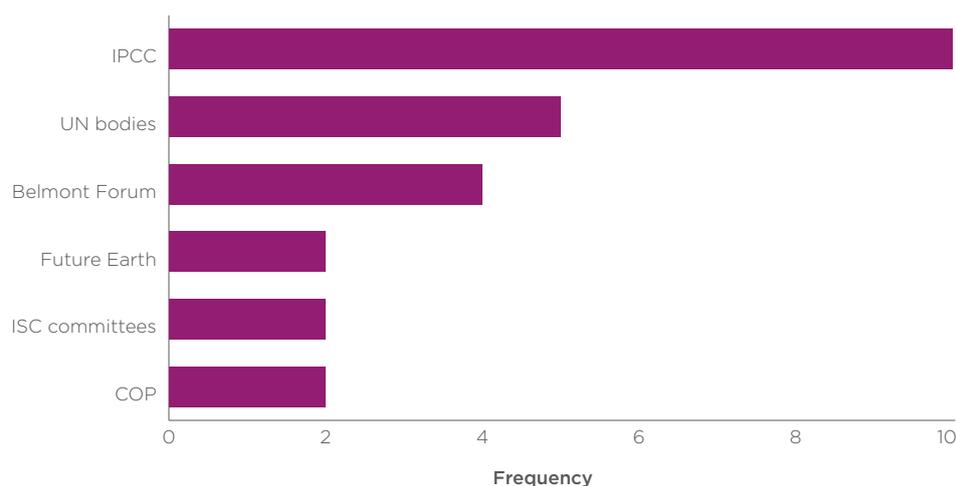
“UK science is hugely influential globally and in specific country settings because that is paving the way for the policies and the diplomatic efforts we see through things like COP26. And we are huge players in it. Leeds has seven lead authors and a review editor on the 6th Assessment Report, and that allows us to have a lot of influence and to use the science which is being funded in the UK to have an influence on an international scale.”

Interviewee from UK university

The UK’s involvement with the UN was also highlighted by interview respondents. Examples provided were the UK’s strong commitment to the UN SDGs, its UN body membership and subscription fee and UK funding for a technical support unit for mitigation options work. Other UN mechanisms with UK involvement identified were the Global Risk Assessment Framework, the UN Climate Action Summit, UN panels supporting disaster risk reduction (DRR), the World Adaptation Climate Programme Committee (which has FCDO representation), and the United Nations Framework Convention on Climate Change (UNFCCC), which has UK nominated representatives. An interviewee from an NGO in Kenya highlighted: “The UK has been able to support decisions at UNFCCC level, building on evidence that has emerged from the ground level.”

In addition, interviewees highlighted the significant role that the UK has played in the Belmont Forum, which the UK co-founded through the Natural Environment Research Council (NERC) in 2009. UK-funded research has supported the Belmont Forum’s vision of international transdisciplinary partnerships and focus on climate environment and health programmes (most recently through GCRF), Future Earth, International Science Committees and COP. Other representation noted was that the UK also has a permanent representative to the World Meteorological Organization (WMO) and the Met Office sits on the World Climate Research Committee (WMO-level committee).

Figure 13 – Stakeholder interviewee comments on the UK’s role in global and in-country fora or networks for climate change and international development research e.g. committees, panels



Number of respondents: 25

However, there are also gaps where interviewees felt the UK should be involved. Eight of the 30 interviewees raised that the UK could **partner with other countries** that receive less UK support through, for example, the Belmont Forum, of which several UK funders are not yet a member. A stakeholder from the international community commented that there is weak support from the UK for international science cooperation, including no national contribution to Future Earth. Respondents’ other suggestions include

fostering UK Government-led links and influence with other governments in helping to tackle climate change; better coordination on climate change and development within countries for example strengthening platforms for in-country citizen engagement in policymaking and science; and ensuring work with European partners continues.

3.4 What are the emerging demands?

This section seeks to answer the research question: *What are the **emerging demands** for UK ODA and Wellcome-funded research on climate change and international development?*

The section examines the current and expected future demand for both research themes as well as research mechanisms and instruments. Furthermore, it explores the extent to which stakeholders and survey respondents considered that current UK ODA and Wellcome funding is meeting demand, and the perceived enabling factors and barriers to meeting demand. This is based on background research, stakeholder interviews and survey responses.

3.4.1 IPCC report

The 2018 IPCC [Special Report: Global Warming of 1.5°C](#) found that research is “critically important” for identifying conditions under which both climate goals and the SDGs can be achieved, and in designing transformation strategies that maximise synergies and minimise trade-offs between action on climate change and on international development.²² It also found that this can be challenging, given the diversity of topics to address and the need for “high temporal, spatial and social resolution to address local effects, including heterogeneity related to poverty and equity”.²³

The IPCC report acknowledged that, on a global scale, there is a growing knowledge base on the links between a 1.5°C warmer world and the different dimensions of sustainable development but identified several research gaps. These include:

- Projections for real-world impacts of different levels of warming on the SDGs and sustainable development more broadly for households, livelihoods and communities
- Literature on differential localised impacts of climate change and their cross-sector interacting and cascading effects with multidimensional patterns of societal vulnerability, poverty and inequalities
- Evaluation of context-specific synergies and trade-offs between and across adaptation and mitigation response measures in 1.5°C -compatible pathways and the SDGs
- Interdisciplinary studies to connect socio-economic transformations and the governance aspects of low emissions and climate-resilient transformations (for example, understanding how governance structures enable or hinder different groups of people and countries to negotiate pathway options, values and priorities)
- Literature demonstrating the existence of 1.5°C-compatible pathways achieving the “universal and indivisible” agenda of the 17 SDGs
- Standard indicators to monitor low emissions pathways in local, regional and national contexts to allow comparisons of evidence grounded in specific contexts with differential circumstances, and to derive generic lessons on the outcome of decisions on specific indicators
- Implications of long-term climate change mitigation adaptation pathways with SDGs 1 (no poverty), 2 (zero hunger), 11 (sustainable cities and communities) and 16 (peace, justice and strong institutions) remain “largely underexplored”²⁴

Recognising that the gaps listed above may vary significantly in different contexts, that they may not translate to the demands expressed by those conducting and using research, and that the demand for UK-funded research specifically might have further nuances, this report presents below the perspectives of stakeholders accessed through UKCDR's interviews and survey to provide further insight into the types of demand being voiced for UK ODA and Wellcome-funded research. The results are split for analysis based on **research themes** (where interviewees discussed subjects which they considered were high priority research areas, for example health and climate, or risk, resilience and DRR); and **research mechanisms and instruments** (where interviewees discussed broader approaches to research such as transdisciplinary research to support systems thinking, and research capacity strengthening).

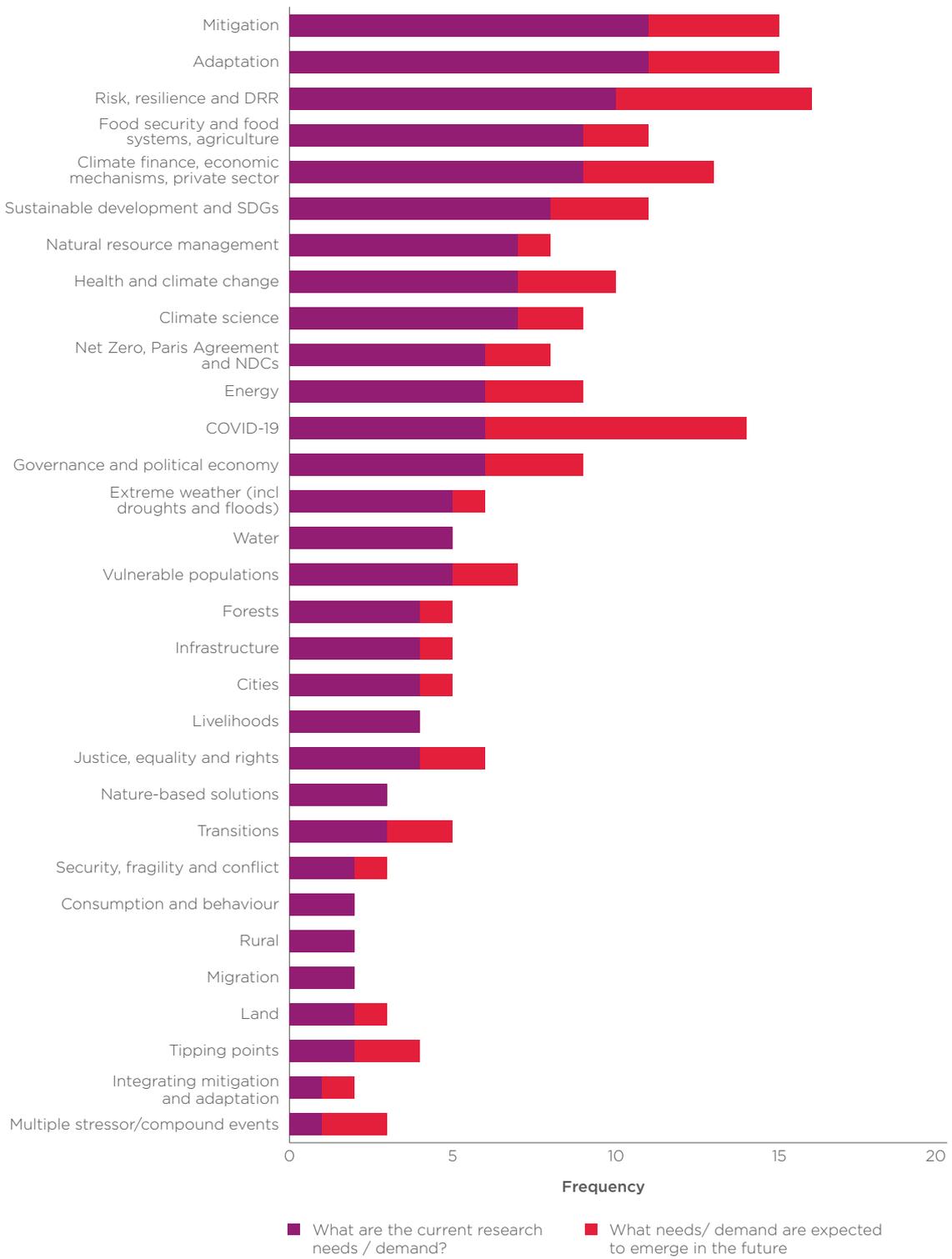
3.4.2 Demand for UK-funded research

Interviewees and survey respondents articulated their demands for UK-funded research on climate change and international development. The responses are broken down into research themes (such as adaptation, climate science and energy) and research mechanisms and instruments (such as capacity strengthening and aligning research, policy and practice). The breadth and diversity of the research demands illustrates both the cross-cutting nature of climate change across all aspects of international development, and the crucial role for collaboration and joint working by research funders to maximise impact and minimise duplication in knowledge generation for these subjects. However, demand patterns also emerge between different stakeholders involved in the generation and use of climate-development research. The section on demand by stakeholder type breaks down survey responses further to uncover underlying patterns in the types of perceived demand from different survey respondents, country income groups and regions.

Research themes

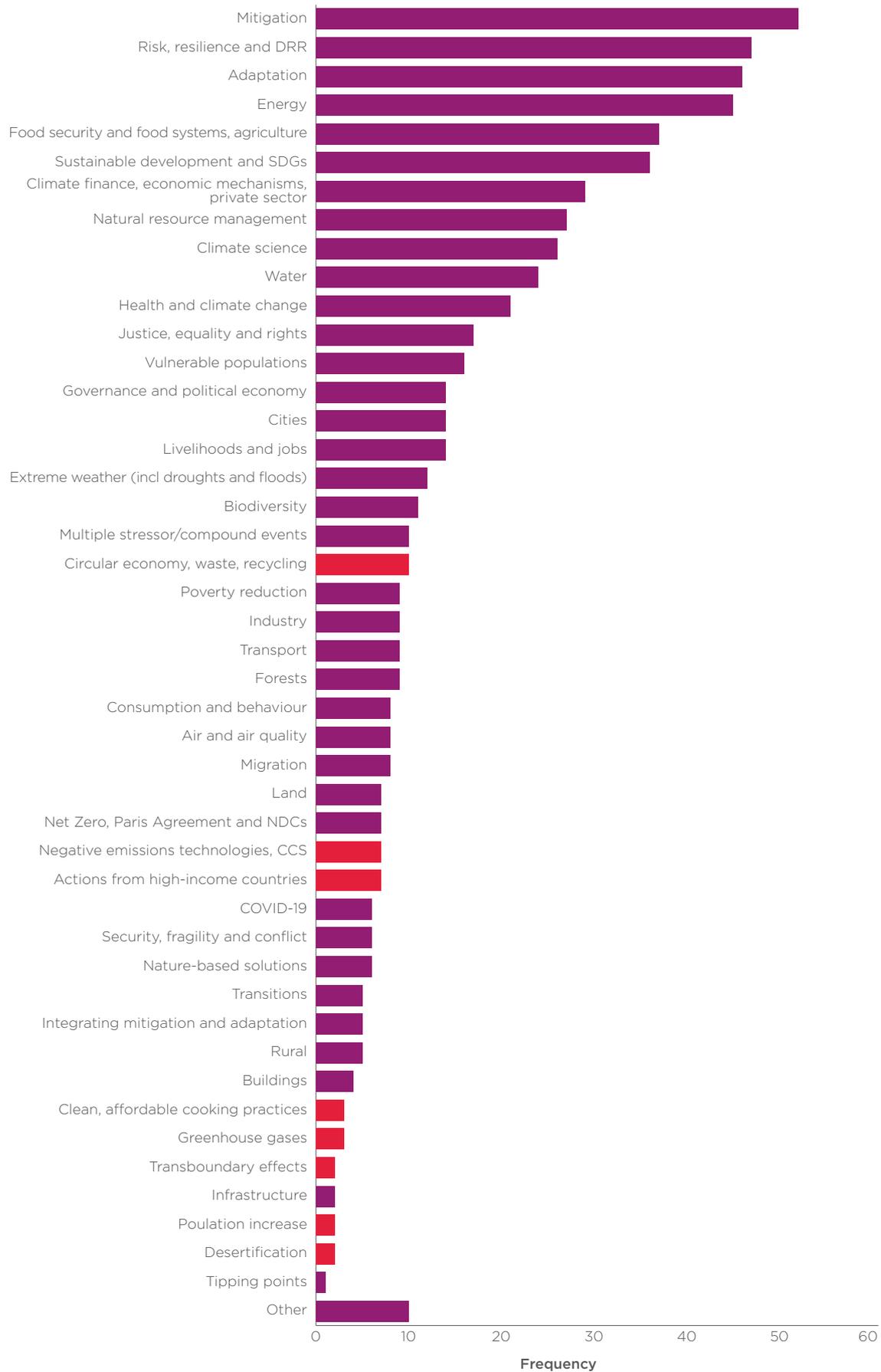
Stakeholder interviewees and survey respondents were asked what they considered to be the research priorities for climate change and international development. Responses covered both key research themes (for example, energy or food systems), and ways in which research needs to be conducted (here referred to as "research mechanisms", for example, transdisciplinary approaches and knowledge brokering). Figures 14 and 15 show the perceptions of demand relating to research themes. Given the in-depth responses from interviewees, their comments have been divided into their thoughts on the current research needs, and those needs that are expected to emerge in the future. Given the larger number of shorter survey responses, these relate only to respondents' perceptions of research priorities over the next five years but reflect a wider range of topics.

Figure 14 – Interview responses: perceptions of current and future demand - research themes



Number of respondents: 27

Figure 15 – Survey responses: perceptions of demand - research themes



Research themes raised by survey respondents but not by interviewees are highlighted in red.
 Number of respondents: 233

Both stakeholder interviewees and survey respondents were most likely to raise mitigation, adaptation and risk, resilience and DRR as priority research areas. Food security, sustainable development and the SDGs, climate finance and economic mechanisms, and health were also all among the top 10 themes raised by both groups.

Respondents differed in their stance on how to prioritise **adaptation** and **mitigation**. An academic from an LMIC commented that “for me adaptation is the number one problem of climate change because it affects the most vulnerable people in poor countries.” On the other hand, a UK funder highlighted that for them, mitigation was the biggest research gap: “There has been a lot of research to date in things like climate adaptation and climate services, but a lesser recognition that in the next 20-30 years emissions in Africa are going to be extremely high – it comes back to building in opportunities for development to be sustainable.” Several interviewees, survey respondents, and workshop participants emphasised the need to integrate research on adaptation and mitigation, understanding the relationship, synergies and trade-offs between the two.

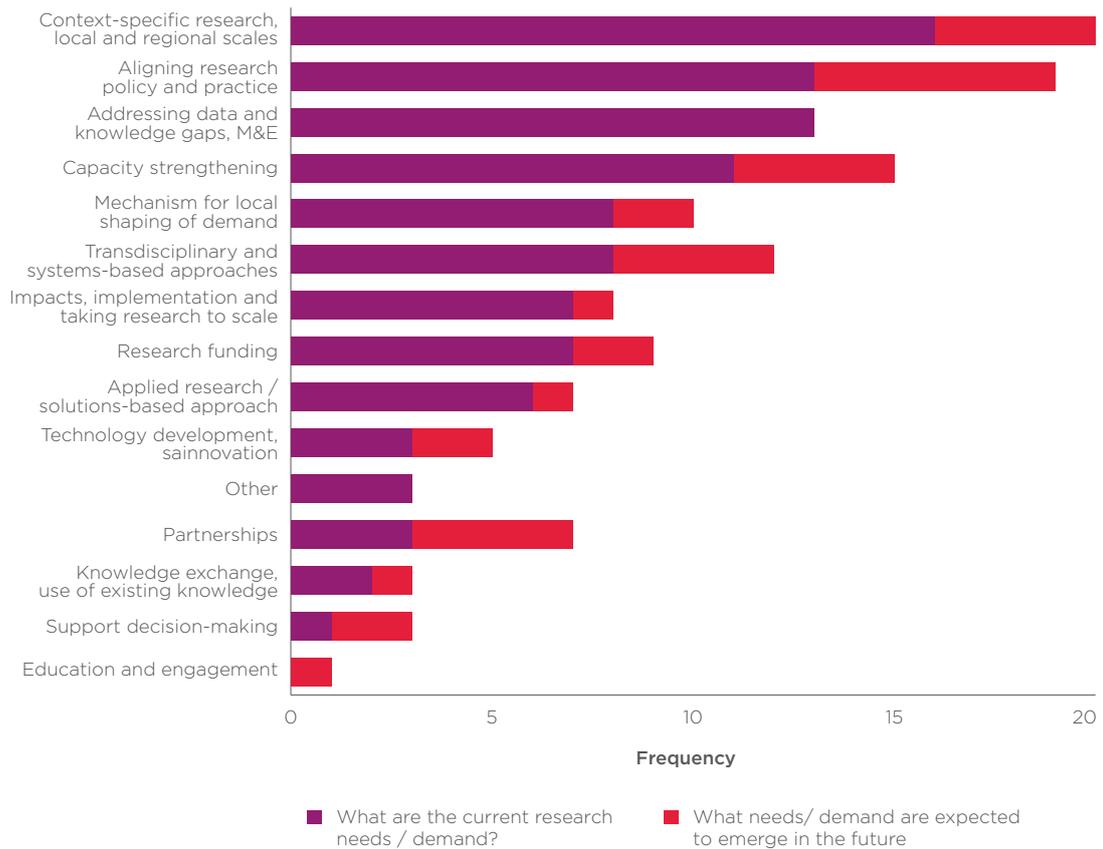
The multiple and complex ways in which climate change impacts systems which are crucial to sustainable development was highlighted in comments on **risk, resilience and DRR**. Interviewees highlighted how exposure to a changing climate compounds existing challenges within already demanding circumstances. In relation to energy, one academic explained that “the development goal is to provide clean and secure energy to a given community despite the fact that upstream glaciers are shrinking, landscape is becoming more unstable, and there are increased threats from extreme droughts and flood events impacting infrastructure.” A stakeholder from a research centre of excellence argued that research which pushes boundaries is essential for responding to these challenges: “It is tricky to achieve the transitions needed for a sustainable development model. There needs to be provocative research that pushes boundaries, yet the challenge comes with how to enable and support researchers to do that, particularly in states where it is quite dangerous to do such transgressive research.”

COVID-19 was most frequently identified by interviewees as an emerging and future research demand, with the health-climate-development nexus also increasingly recognised as an area of importance more broadly. Stakeholders noted that the pandemic has exemplified the links between climate, development and health, and its intersectionality with other issues such as biodiversity. For example, habitat encroachment and loss, illegal wildlife trade and global travel are key risk factors for pandemics, and biodiversity loss can be both caused by and exacerbate climate change and can disproportionately impact poor communities who are more likely to rely on biodiversity as a food source and livelihood. One UK research funder commented that “looking at how we can restructure the recovery from COVID-19 as green and pro-climate (mitigation and adaptation) [is important] and that comes back to health co-benefits of climate mitigation and health impacts of climate adaptation. The 2015 Lancet report on climate change mentioned that tackling climate change will be the greatest global health opportunity of the century.”²⁵ An academic from Jamaica highlighted the importance of taking a multi-hazard approach to DRR research, practice and policy in relation to COVID-19: “we are currently in middle of a pandemic, and in next few days hurricane season will start – some of the actions required for hurricane response are in direct conflict with COVID requirements.”

Research mechanisms and instruments

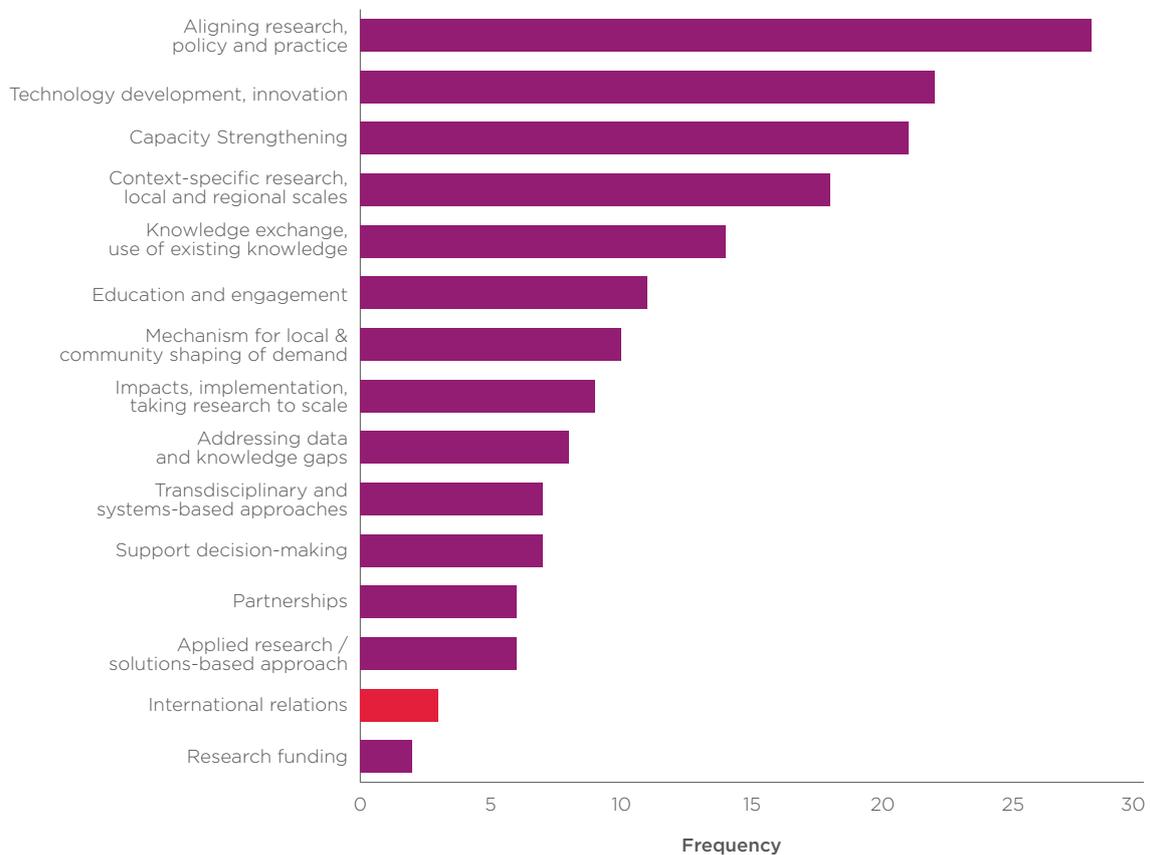
Figures 16 and 17 show the perceptions of demand relating to research mechanisms and instruments from stakeholder interviewees and survey respondents. Again, interview responses have been broken down into their thoughts on the current research needs, and those needs that are expected to emerge in the future, while survey responses relate only to respondents’ perceptions of research priorities over the next five years. Topics which appear in the survey responses but were not covered in the interview responses are highlighted in red in Figure 17.

Figure 16 – Interview responses: perceptions of current and future demand - research mechanisms



Number of respondents: 27

Figure 17 – Survey responses: perceptions of demand - research mechanisms



Research mechanisms raised by survey respondents but not by interviewees are highlighted in red. Number of respondents: 233

The research mechanisms and instruments that were raised most frequently by both interviewees and survey respondents included **aligning research, policy and practice**, **research capacity strengthening** (see Section 3.4.3) and **context-specific research focusing on the local or regional scales**. One survey respondent highlighted the need for an “emphasis on research uptake. Create opportunities for researchers to work more collaboratively with practitioners and policymakers. Train researchers on how to package results (other than research article publications) in a way that will facilitate research into use.” See Section 3.3 on strengths and weaknesses for more on perspectives on these topics. Interviewees were more likely to **highlight addressing data and knowledge gaps**, and **mechanisms for local shaping of demand and hearing from community-based voices**. Survey respondents were more likely to highlight **technology development and innovation**, and the importance of **knowledge exchange and brokering**.

Demand by stakeholder type

Analysing research demand by stakeholder type gives further insight into the different climate-development research priorities. Survey participants were asked to give open text responses to the question “What do you consider to be the research priorities for climate change and international development over the next five years?”. These responses were then coded, categorised and ranked by frequency for a range of survey respondent types (respondent role, income country type, and region). While the survey responses cannot be considered representative of the entire climate-development research landscape, they can give some additional insight into perceived research priorities for in different contexts. For context, Table 8 shows the ranked demand responses for all 282 survey respondents.

Table 8 – Top 10 most commonly cited climate-development research demand topics for all survey respondents

Rank	All survey respondents (n=282)
1	Mitigation (18%)
2	Risk, resilience and DRR (17%)
3	Adaptation (16%)
4	Energy (16%)
5	Food security, food systems and agriculture (13%)
6	Sustainable development and the SDGs (13%)
7	Economics, financial mechanisms, role of private companies (10%)
8	Aligning research, policy and practice (10%)
9	Natural resource management (10%)
10	Climate science (9%)

Note: Percentages represent the proportion of respondents who referenced these research demand priorities in their open text survey responses to the question “What do you consider to be the research priorities for climate change and international development over the next five years?”. Since most respondents cited one research priority, the low percentages should not be interpreted as low levels of support for the research topic.

Demand for research on mitigation, adaptation, risk, energy and food systems consistently scored highly across survey respondents. Tables 9 and 10 show research demand ranked by the income country group and region of the survey respondent’s primary location. Respondents from HICs were more likely to feel that energy was a climate-development research priority, while respondents from MICs and LICs were more likely to prioritise food systems and adaptation, respectively. LIC respondents were also far more likely than other people surveyed to prioritise technology development

and innovation. While respondents from all regions scored mitigation, adaptation and resilience highly, those in the UK were more likely to prioritise energy, while those in Africa were more likely to prioritise sustainable development and the SDGs and technology development and innovation. Food systems and natural resource management were more highly ranked for respondents from Asia.

Table 9 – Top 10 most common climate-development research demand topics by survey respondent primary country income group

Rank	High Income Country (n=133)	Middle Income Country (n=95)	Low Income Country (n=38)
1	Energy (20%)	Food security and food systems, agriculture (21%)	Adaptation (31%)
2	Mitigation (19%)	Mitigation (15%)	= Mitigation (24%)
3	Adaptation (14%)	Adaptation (14%)	= Risk, resilience and DRR (24%)
4	Risk, resilience and DRR (14%)	Sustainable development and SDGs (14%)	= Technology development, innovation (18%)
5	Sustainable development and SDGs (12%)	Risk, resilience and DRR (13%)	= Aligning research, policy and practice (18%)
6	= Aligning research, policy and practice (11%)	= Energy (12%)	Sustainable development and SDGs (16%)
7	= Natural resource management (11%)	= Economy, financial mechanisms, role of private companies (12%)	Energy (16%)
8	= Climate science (11%)	= Natural resource management (11%)	Livelihoods and jobs (11%)
9	= Food security and food systems, agriculture (10%)	= Climate science (11%)	= Health and climate change (8%)
10	= Economy, financial mechanisms, role of private companies (10%)	= Health and climate change (9%)	= Capacity Strengthening (8%)
		= Water (9%)	= Governance and political economy (8%)

Note: Survey participant categories representing less than 10% of overall responses were not included in these rankings (15 responses where no clear income category was provided).

Demand categories which were raised as priorities by the same number of survey respondents are ranked together.

Table 10 – Top 10 most common climate-development research demand topics by survey respondent primary region

Rank	All survey respondents (n=282)
1	Mitigation (18%)
2	Risk, resilience and DRR (17%)
3	Adaptation (16%)
4	Energy (16%)
5	Food security, food systems and agriculture (13%)
6	Sustainable development and the SDGs (13%)
7	Economics, financial mechanisms, role of private companies (10%)
8	Aligning research, policy and practice (10%)
9	Natural resource management (10%)
10	Climate science (9%)

Table 10 continued...

Rank	UK (n=117)	Africa (n=83)	Asia (n=39)
1	Mitigation (19%)	Adaptation (20%)	= Adaptation (28%)
2	Energy (18%)	Sustainable development and SDGs (17%)	= Mitigation (28%)
3	Adaptation (15%)	Risk, resilience and DRR (15%)	Food security and food systems, agriculture (23%)
4	Risk, resilience and DRR (15%)	Technology development, innovation (15%)	Risk, resilience and DRR (18%)
5	Sustainable development and SDGs (14%)	= Mitigation (13%)	Natural resource management (15%)
6	Aligning research, policy and practice (11%)	= Food security and food systems, agriculture (13%)	Health and climate change (13%)
7	Economy, financial mechanisms, role of private sector (10%)	= Energy (13%)	Sustainable development and SDGs (10%)
8	Climate science (9%)	Economy, financial mechanisms, role of private sector (12%)	= Aligning research, policy and practice (10%)
9	Food security and food systems, agriculture (9%)	Aligning research, policy and practice (11%)	= Water (10%)
10	= Natural resource management (9%)	= Health and climate change (8%)	= Education and engagement (10%)
	= Capacity strengthening (9%)	= Climate science (8%)	= Migration (10%)
	= Vulnerable populations (9%)	= Livelihoods and jobs (8%)	

Note: Survey participant categories representing less than 10% of overall responses were not included in these rankings (48 responses from respondents from Australasia, Caribbean, North America, MENA, South America, Europe and no clear region provided).

Demand categories which were raised as priorities by the same number of survey respondents are ranked together.

Table 11 shows demand by the primary role of survey respondents within climate change and international development research. Research delivery partners were more likely to prioritise aligning research, policy and practice than other respondent groups, while government departments mentioned climate science most often. Members of the international community were most likely to prioritise food systems, and scored biodiversity and research on the economy, financial mechanisms and the role of private companies than other respondent groups.

Table 11 – Top 10 most common climate-development research demand topics by survey respondent role

Rank	Research practitioner / academic (n=178)	Academic network (n=87)	Research delivery partner (n=44)
1	Adaptation (20%)	= Adaptation (25%)	= Mitigation (25%)
2	Risk, resilience and DRR (19%)	= Mitigation (25%)	= Aligning research, policy and practice (25%)
3	Mitigation (18%)	= Risk, resilience and DRR (21%)	Food security and food systems, agriculture (23%)
4	Energy (15%)	= Energy (21%)	Risk, resilience and DRR (20%)
5	Sustainable development and SDGs (15%)	= Food security and food systems, agriculture (18%)	Adaptation (18%)
6	Food security and food systems, agriculture (14%)	= Aligning research, policy and practice (18%)	Energy (16%)
7	Aligning research, policy and practice (10%)	Economy, financial mechanisms, role of private companies (14%)	Climate science (14%)
8	Economy, financial mechanisms, role of private sector (10%)	Sustainable development and SDGs (13%)	= Sustainable development and SDGs (11%)
9	Climate science (10%)	Capacity strengthening (12%)	= Technology development, innovation (11%)
10	Capacity strengthening (10%)	Natural resource management (9%)	= Economy, financial mechanisms, role of private sector (11%)

Rank (ctd)	International community (n=36)	Government department (n=34)
1	Food security and food systems, agriculture (31%)	Mitigation (31%)
2	Mitigation (28%)	Climate science (19%)
3	= Adaptation (22%)	= Adaptation (17%)
4	= Economy, financial mechanisms, role of private companies (22%)	= Technology development, innovation (17%)
5	= Natural resource management (19%)	= Economy, financial mechanisms, role of private sector (17%)
6	= Water (19%)	= Risk, resilience and DRR (14%)
7	= Biodiversity (19%)	= Sustainable development and SDGs (11%)
8	= Energy (17%)	= Energy (11%)
9	= Climate science (17%)	= Natural resource management (11%)
10	= Risk, resilience and DRR (11%)	= Water (11%)

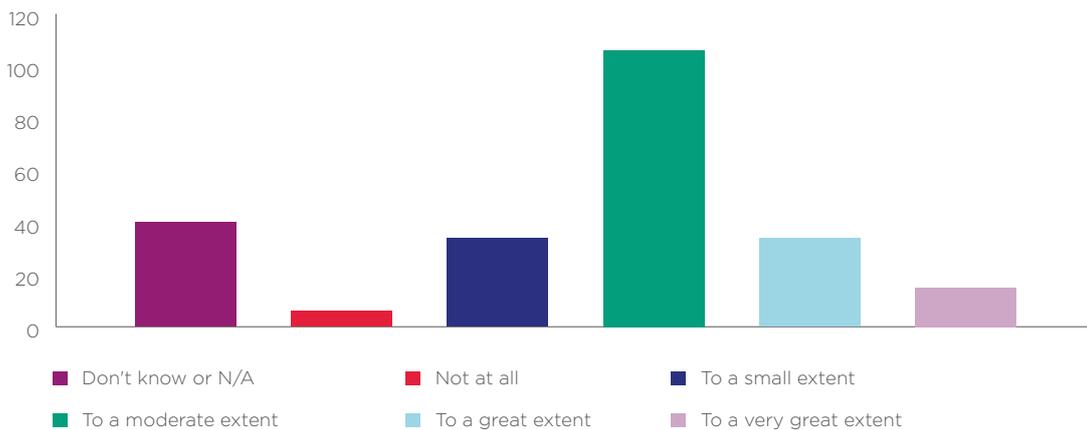
Note: Participants could self-identify as being from more than one group. Groups without 10% of respondents, and so not included in this analysis, are: NGO, Think Tank, Centre of Excellence, Regional Network, Civil Society, Public Sector Body, Policy-maker, Other, N/A

Demand categories which were raised as priorities by the same number of survey respondents are ranked together.

3.4.3 To what extent is UK ODA and Wellcome-funded research perceived to be meeting these demands?

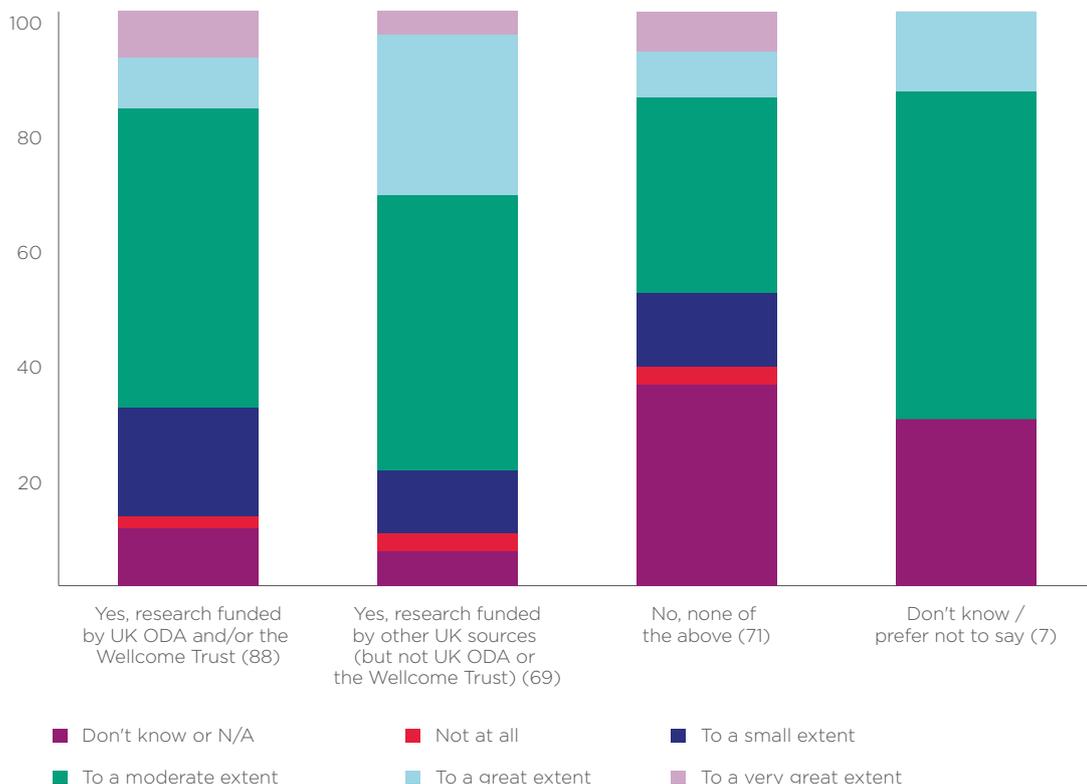
Survey respondents were asked to rank the extent to which they felt that UK-funded research was meeting current demands. Figures 18 and 19 show the overall responses, as well as the percentage responses based on whether survey respondents had been involved in or aware of research projects on climate change and international development over the last five years. A large proportion of stakeholders surveyed (106, or 45% of respondents) thought that UK-funded research was meeting current demands “to a moderate extent”.

Figure 18 – Survey responses: “To what extent is UK-funded research meeting current demands?”



Number of respondents: 235

Figure 19 – Survey responses: “To what extent is UK-funded research meeting current demands, based on survey respondent’s reported involvement or awareness of UK-funded climate-development research over the last five years?”



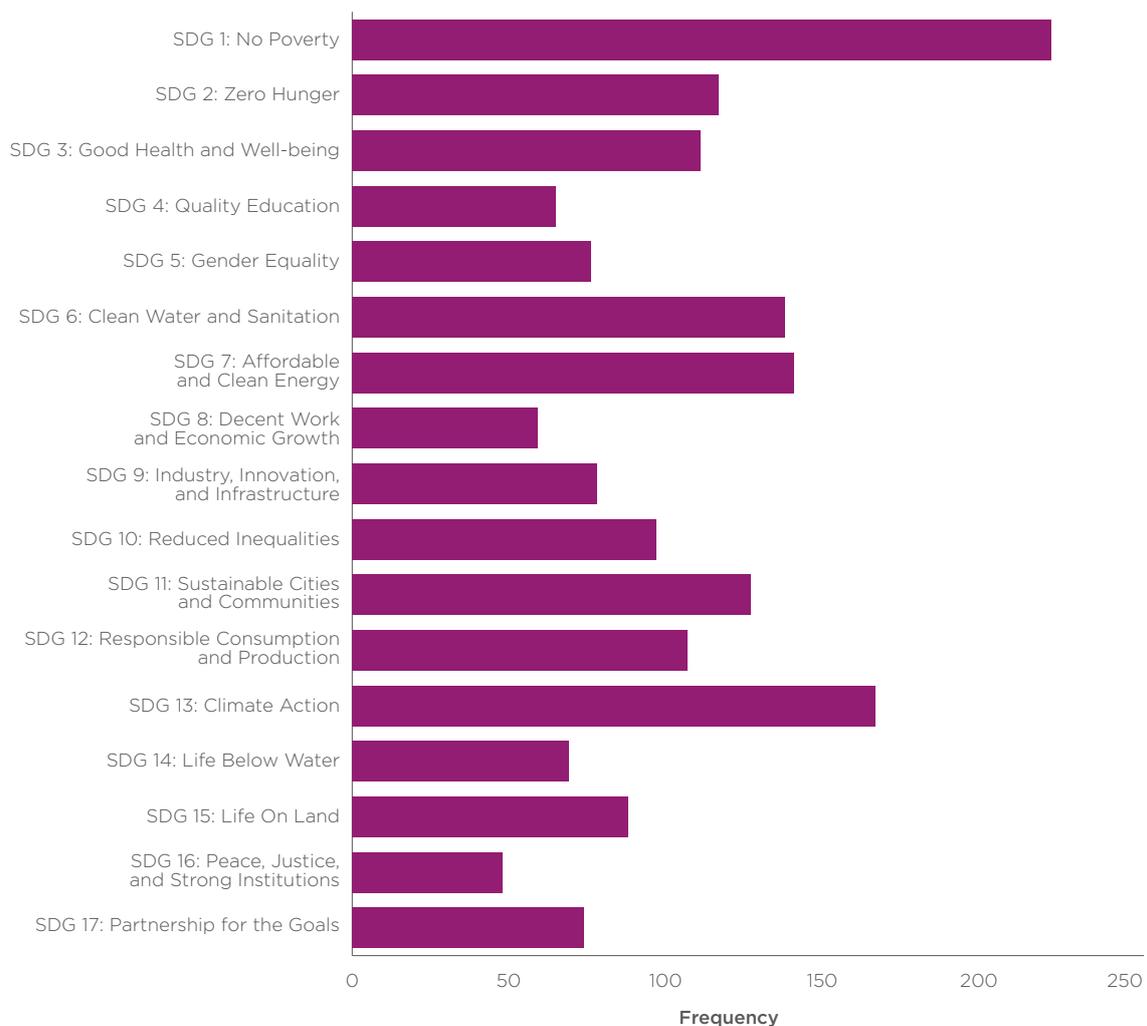
Number of respondents: 235

Stakeholder interviewees responded similarly to survey respondents to this question, with a large proportion stating that UK research met current demand to a moderate extent. Some interviewees pointed to the ability of research to influence agendas, and the opportunities for LMIC research institutions to input into research projects at the start of projects as signs that UK-funded research was meeting demand. Others, however, said that funding was insufficient for the scale and pace required to respond to climate change, and that UK-funded research is not demand-driven. One interviewee said that they were “not sure that UK-funded research has actually asked what the demand and priorities are”, whilst another argued that it is not always beneficial or appropriate for the UK Government to meet demand. Several stated that it would be impossible for UK-funded research to meet demand completely, particularly for the vast scope of climate change research, since “the more you research, the more you know you don’t know”.

Research demand and the SDGs

Survey respondents were asked to select up to five of the SDGs which they considered to be priority areas for research on climate change and international development (see Figure 20). In addition to SDG 1 (No poverty) and SDG 13 (Climate action), other particularly highly rated SDGs include SDG 6 (Clean water and sanitation), SDG 7 (Affordable and clean energy), and SDG 11 (Sustainable cities and communities).

Figure 20 – Survey responses: “Which SDGs do you consider to be priority areas for research on climate change and international development?”



Number of respondents: 239

These perceptions of priority areas can be compared to the breakdown by SDGs of UK ODA and Wellcome-funded research projects initiated between 2015-16 and 2019-20 (Figure 6, Section 3.1.4). Table 12 maps the ranking of the survey demand for each of the SDGs (with 1 being the highest and 17 the lowest) against the rankings for the number of projects and the value of the projects from the portfolio analysis.

Table 12 – SDG rankings for demand survey, number and value of UK ODA and Wellcome-funded climate-development research projects (initiated between 2015-16 and 2019-20)

SDG	Demand ranking (Survey)	Number of projects ranking (Portfolio analysis)	Value of projects ranking (Portfolio analysis)
SDG 1: No poverty	1	N/A	N/A
SDG 2: Zero hunger	6	2	1
SDG 3: Good health and well-being	7	5	3
SDG 4: Quality education	15	12	11
SDG 5: Gender equality	12	11	10
SDG 6: Clean water and sanitation	4	7	5
SDG 7: Affordable and clean energy	3	1	2
SDG 8: Decent work and economic growth	16	9	8
SDG 9: Industry, innovation and infrastructure	11	6	7
SDG 10: Reduced inequalities	9	N/A	N/A
SDG 11: Sustainable cities and communities	5	3	6
SDG 12: Responsible consumption and production	8	8	12
SDG 13: Climate action	2	N/A	N/A
SDG 14: Life below water	14	10	9
SDG 15: Life on land	10	4	4
SDG 16: Peace, justice and strong institutions	17	13	13
SDG 17: Partnerships for the goals	13	N/A	N/A

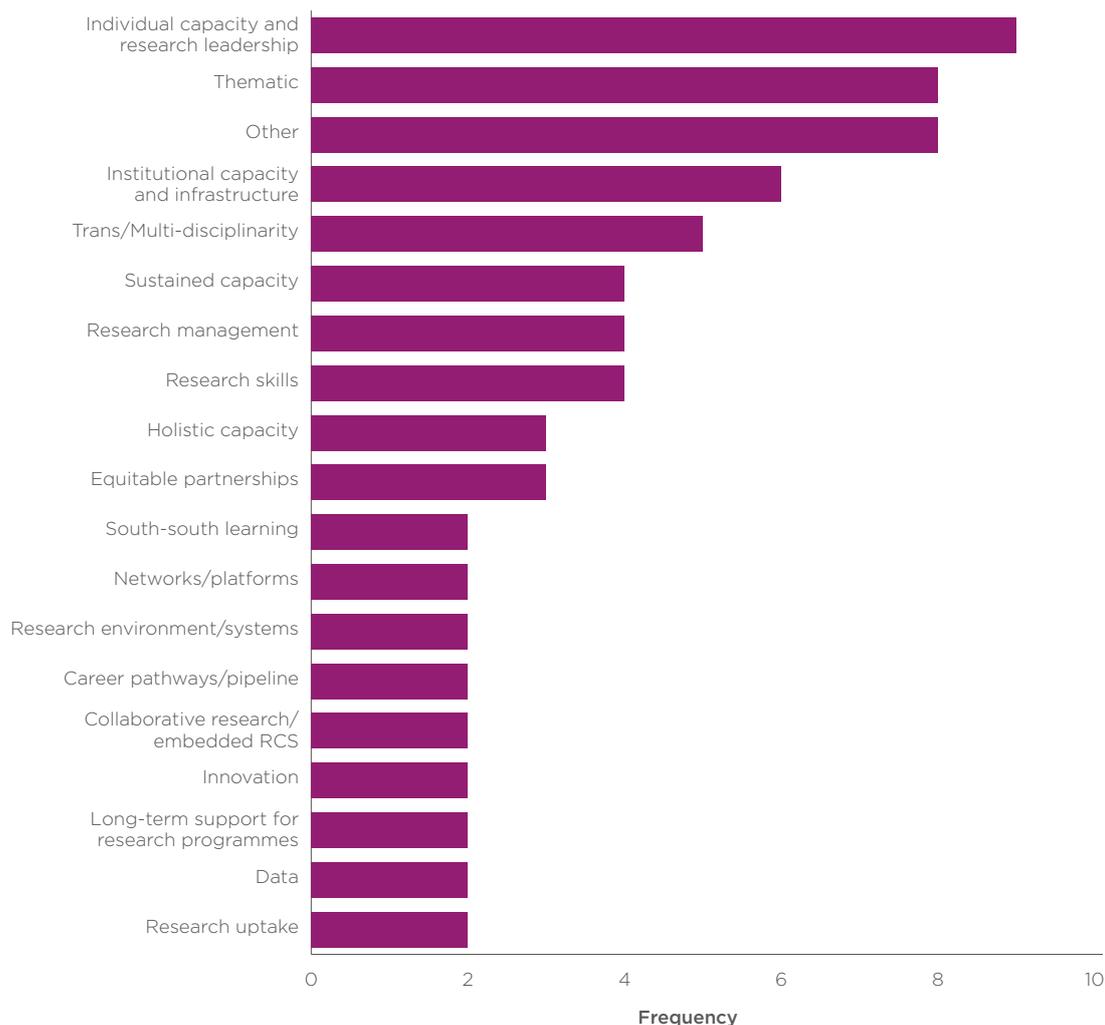
Note: Of the 17 SDGs, four were not considered for projects to be classified against as their concepts are either deeply embedded within each funders' overall ODA research funding strategy (SDG 1: No poverty, SDG 10: Reduced inequalities and SDG 17: Global Partnership for the Goals) or, as in the case of the SDG on Climate Action (SDG 13), is relevant to all research projects on climate change.

The analysis above shows reasonably strong parallels between the perceptions of the SDG priorities and the funding of research projects over the last five years. Where discrepancies arise, this could be in part explained by the fact that research projects may be assigned with multiple SDGs, and certain SDGs are more likely to be coded as relevant to a greater number of projects by research funders (for example, SDG 15: Life on Land). Additionally, the total number of individual research projects could not be obtained by DFID. The figures used for this ranking represent a minimum number of projects, and the actual figures may produce slight changes in the rankings.

3.4.4 Research capacity strengthening demand

Stakeholders interviewed identified a diverse range of research capacity strengthening needs in LMICs in climate change and international development (see Figure 21).

Figure 21 – Interview responses to the question: “What are the research capacity strengthening needs in research for climate change and international development?”



Number of respondents: 26

'Other' includes categories mentioned only once by stakeholders, including: climate policy; ensuring quality applicants/students for fellowships; addressing demand for deployment; coupling research with implementation aid programmes on climate change; linking up research capacity strengthening across UK Government and internationally; regional support to the Caribbean and Small Island Developing States (SIDS) which are particularly vulnerable and disproportionately impacted by climate change; and mechanisms to address brain drain and UK research capacity.

“A big missing gap in Africa is [support for] late to early-mid career researchers. One good thing is the Future Leaders- African Independent Research (FLAIR) programme, which is aimed at those with a couple of years post-doc experience to help them develop an independent career. However, FLAIR only supports this first step, as there is not follow up to support the researcher beyond the initial 3-5 years. To get from PhD to a full-time faculty position is often a 10+ year process, so we need to think about longitudinal support and how research funding is structured for this next generation at different career stages, going forwards.”

Intervieww from climate centre of excellence, South Africa

Climate research leadership and individual capacity were mentioned the most frequently by interviewees as important in creating the next generation of climate scientists and decision makers and in creating research impact in-country. **Thematically**, stakeholders commented that there was stronger capacity in physical sciences in LMICs (with a strong focus in meteorology) and that breadth in climate change research expertise was needed. Other thematic priorities in research capacity strengthening mentioned included modelling, putting social sciences at the forefront and embedding climate science in the training and thinking of future engineers, accountants, managers and planners. Several stakeholders also mentioned the need for institutional capacity and **infrastructure** in LMICs. A regional network in Africa commented on the need for a long-term commitment to Africa through regional climate capacity and centres (with the highest standard, environment and equipment), and a UK academic highlighted the need for transdisciplinary climate and health centres.

In response to the question on the research needs in LMICs (see Section 3.4.2), research capacity strengthening was the second highest research mechanism/instrument mentioned. Stakeholders commented on the need for sustained capacity, South-South learning, country capacity to provide transparent data (e.g. in monitoring carbon emission and safeguarding), support for late to early-mid career researchers and longer-term career pathways (for example through follow on or linked UK fellowship funding) and support for LMIC contributions to high-level processes such as IPCC through, for example, mentoring of young authors.

Research capacity strengthening activities currently funded by the UK

The **UK funds/organisations** working on research capacity strengthening most frequently mentioned by interviewees were the Newton Fund and GCRF, followed by DFID, the Met Office and Wellcome. Each were recognised for different aspects and strengths in research capacity strengthening:

- **Newton** for scholarships, small research grants, exchanges, support for building up university structures, accrediting degree programmes, mobility grants and encouraging research collaboration and networking. One academic noted fostering collaboration with leading UK scientists in Brazil and PhDs have supported research development back in Brazil.
- **GCRF** for mentoring, joint research and collaboration, transfer of knowledge and skills, embedded knowledge managers, partnering more experienced researchers with early career researchers and its strong support to an African Research Universities Alliance (ARUA) climate centre of excellence (with no requirement for UK partners which was valued in its recognition of the need to build research capacity in Africa).
- **DFID** for major climate change research capacity strengthening programmes including the CLARE programme and Climate Impacts Research Capacity and Leadership Enhancement (CIRCLE).

“There have been major developments at the UK MET Office over the last c.8 years for UK climate modelling...Core model development was funded through the UK MET Office, and application and expansion and evaluation within Africa and with African climate scientists has been done through the FCFA programme – huge capitalisation on the world-leading capabilities in research that are available through institutions like the Met Office.”

UK funder

- **Met Office** for its weather and climate research capacity strengthening work and skills and models transfer including in Future Climate for Africa (FCFA), the Newton Fund Weather and Climate Science for Service Partnership Programme (WCSSP) and collaboration with Future Earth Partnership for Resilience and Preparedness (PREP) platforms.
- The **African Academy of Sciences (AAS)** for African-led climate change research capacity strengthening initiatives to strengthen research leadership in the continent including Developing Excellence in Leadership, Training and Science in Africa (DELTAS) which has recently issued an opportunity to set up a centre of excellence for climate research, and the Climate Research for Development (CR4D) in Africa initiative which has funded 21 early career researchers and one year Rising Research Leaders grants.
- **Wellcome** for its centres of excellence model including in DELTAS (see above under AAS).

“Through this [CIRCLE] programme, almost 100 postdoc fellows have been trained in different areas of climate impact. Many of them have risen to senior positions in climate research on this continent. It was a very successful programme, it was funded by DFID and received a really good impact levels and assessment at the end.”

Regional network, Africa

Research capacity strengthening, however, was also highlighted as a weakness of UK-funded research. Several stakeholders felt there had been a failure over decades to build research capacity in LMICs, for example, in developing research institutes to lead research consortia and bid for/win contracts, and UK funding for large consortiums risks leaving smaller universities behind. A UK funder commented that there should be a focus on capacity on ground across a range of sectors due to the cross-sectoral nature of climate change to deliver at scale. One UK academic also noted GCRF has moved from a strong focus on research capacity strengthening to more emphasis on research excellence and interdisciplinarity.

A few stakeholders also commented on **future research capacity strengthening for impact** – including an interviewee from a regional network in Africa saying that “it would be nice to have proper regional fund to involve different players” and a UK academic highlighting there is no “major programme to create a large cadre of doctoral and post-doctoral positions.”

3.5 What is the impact of COVID-19 on the research landscape?

This section seeks to provide an insight into the research question: *What is the impact of COVID-19 on the research landscape for climate change and international development?*

Given rapid changes in both the nature of COVID-19 and its impacts on the research landscape, the findings below are drawn primarily from a specially convened workshop of selected research funders, practitioners and users, from the UK and overseas, on 3rd-4th December 2020. This was the latest stage in this project that new insights could be generated for this report.

3.5.1 Overview

The COVID-19 pandemic currently poses an unavoidable additional dimension when considering research on climate change and international development. The urgency of the response to COVID-19 does not diminish the urgency of the climate crisis, or the need to find pathways towards sustainable development. Moreover, COVID-19 compounds many of the challenges in both areas. It presents not only a major public health crisis, but also a threat to economies, livelihoods, and the equitable distribution of development outcomes among vulnerable populations. The OECD describes the pandemic as “inextricably intertwined with global environmental issues such as biodiversity loss, climate change, air and water pollution, and waste management, both in terms of its origin and the implications for environmental outcomes and the future well-being of societies around the world.”²⁶ However, these links mean that the recovery also offers an unprecedented chance for progress towards sustainable development. The UN Research Roadmap for the COVID-19 recovery notes that “the socio-economic recovery from COVID-19 provides an opportunity for the transformative changes needed to achieve the better and brighter future envisioned by the SDGs.”²⁷ COVID-19, climate change and international development must therefore be addressed in parallel.

Research has a crucial role to play in identifying the conditions under which objectives on COVID-19, climate and development can be achieved and to devise strategies to maximise synergies and minimise trade-offs between them. The sections below set out some of the emerging thematic research priority areas discussed by workshop participants, as well as considerations on how COVID-19 has changed how climate-development research is being conducted now and for the foreseeable future. Finally, there are reflections on the impact of COVID-19 on the research funding landscape, particularly in the context of changes to the UK ODA budget, and how the research community can continue to play its important part in changing circumstances. It finds that COVID-19 has brought to the fore the links between the environment, health and development, and has magnified the vulnerability of certain communities, many of which were already at risk from climate change. The pandemic response presents opportunities for research to support emissions reduction, resilience and behaviour change, to increase access for many researchers and to shift responsibilities to in-country teams. The economic consequences of COVID-19 also increase the need to take advantage of opportunities for collaboration, applied research, co-production with policymakers and robust and resilient programme design.

3.5.2 Priority research themes

Building back better

Workshop participants were asked to reflect on the research themes on climate change and international development which were emerging as priorities due to the COVID-19 pandemic. A major emerging theme was the importance of “greening” the recovery and “building back better”. This included, not only recovering from the pandemic in a way that supports emissions reductions and increases resilience and adaptive capacity, but also that responds to the inequalities that are being laid bare by COVID-19. With COVID-19 emphasising the importance of understanding links between health, environment and climate, participants emphasised that there are opportunities to take advantage of the co-benefits of health and climate change through an interdisciplinary approach. Additionally, while the commitment to “building back better” was welcomed, it was felt that relatively little research is being funded on the many economic stimulus packages with a climate, low-carbon or sustainable development focus.

Behaviour change

There is also an opportunity to take lessons learned through COVID-19 around behaviour change, which could be transferred to local issues specific to climate change and international development. For example, learning on achieving wide-spread behavioural changes, such as social distancing, could be applied to promote the behaviours required to reduce emissions or increase resilience and adaptive capacity within a community. This might be particularly important after COVID-19 when there is a risk that over-compensatory behaviour, such as increased travel, might reverse some of the environmental benefits. While the pandemic has seen estimated emissions reductions of 7%²⁸ (returning to levels from 10 years ago), and reductions in air pollution, this trajectory would need to be maintained to meet climate and SDGs, rather than a return to “business as usual” following the recovery. Some participants also highlighted a need to explore the impacts on major systems if behaviour changes were maintained, such as the repercussions on the distribution of energy demand.

Vulnerable communities

Participants noted how COVID-19 has magnified the differences in the capabilities of different countries to address global challenges. Particularly the differences in healthcare access between communities brought about by socioeconomic inequalities. The impact of the pandemic is heightened for those communities that already demonstrate the greatest vulnerability to global threats – such as the slow and rapid onset impacts of climate change. Enabling vulnerable groups to respond to these challenges and understanding extremely varied specific local contexts is a challenge for both COVID-19 and climate change research, and there may be co-benefits and learning to be drawn between the two.

Links between the environment and COVID-19

Underlying much of this, participants highlighted a need for research to increase understanding of the links between climate change, international development and COVID-19, and to ensure learning for future epidemics and pandemics. In this respect, more data collection, and monitoring, evaluation and learning tools are needed on the impact of COVID-19 beyond health issues.

UKCDR and Global Research Collaboration for Infectious Disease Preparedness (GloPID-R) have produced the [COVID-19 Research Project Tracker](#), a live database of funded research projects across the world related to the COVID-19 pandemic. The tracker is a part of the [COVID CIRCLE](#) initiative which aims to coordinate funding efforts, connect networks of researchers, and collate learnings to inform future epidemic and pandemic responses with a focus on lower-resource settings. The tracker shows that, as of March 2021, 71 COVID-19 research projects worth \$8.4 million were tagged against the emergent priority area “environmental impacts.”²⁹ These projects were from 20 funders including UKRI, National Science Foundation (NSF) and Consejo Nacional de Ciencia y Tecnología (CONACYT) Mexico, with research taking place in Argentina, Brazil, Canada, China, Denmark, Germany, Ireland, Italy, Japan, Luxembourg, Mexico, Norway, the Philippines, Spain, Sweden, Thailand, the United Kingdom, the United States and Zambia. Examples of funded research include the impact of physical distancing practices on greenhouse gas emissions, air quality and carbon neutrality ambitions; COVID-19 and water cycles; and changes to energy behaviours during lockdown.

Other important research themes raised by workshop participants include:

- Unemployment and migration related to COVID-19 and lockdown restrictions
- Land management changes during COVID-19, particularly forests, and how to strengthen ecosystems-based approaches

- Risk and COVID-19, including compound risks such as responses to natural disasters during COVID-19
- Aligning policy-relevant research with policy to enable co-production with policy-makers on designing cities, food systems and behaviour change, and relevance for COVID-19 and climate change
- Research assessing the utility of the agile funding approach used during the pandemic, and exploring which methods are most successful for flexing funds and learning rapidly

3.5.3 Impacts on how research is carried out

Project progression

The challenges associated with moving to virtual working and reduced movement are especially pronounced in the climate-development research, as much relies heavily on fieldwork which cannot be done virtually and on partnerships between researchers across academic disciplines and with a wide range of stakeholders. COVID-19 was seen to have impacted less on projects in their later stages, where relationships and modes of working are already established. However, it was said to have particularly compromised the timelines of projects in the scoping or fieldwork stages. Flexible project management, engagement with grant recipients to understand challenges and funding extensions have been used to allow progression where possible. However, funding extensions were only seen as a temporary solution with questions remaining on the continuity of research more generally (especially if the economic recovery from the pandemic lasts for an extended time).

Access to fieldwork and partners

Participants expressed their concerns around the reduced access to fieldwork with certain vulnerable groups during the pandemic, and the loss of nuance in communication through virtual working – particularly in international partnerships. There was also a call for the research community to provide more guidance on research ethics during the pandemic, mirroring the increased guidance on updating research methodologies. All researchers were said to be finding it harder to follow policy networks in a virtual environment, which may be changing rapidly due to COVID-19, and so there was a concern that research increasingly risks falling behind the dynamism of the policy landscape without action.

Career pathways

COVID-19 has affected career pathways disproportionately for certain groups. More limited opportunities in the field and for face-to-face working has a greater impact on the career progression of early-career researchers looking to gain experience and develop networks. LMIC-based researchers were said to be additionally impacted by the economic fallout of COVID-19 limiting access to research grants that have enhanced individual and institutional capacities, created long-lasting networks and strengthened collaborations that have led to the production of high-impact research tackling global development challenges. Full participation in research is further impacted for those who have limited access to internet or technologies, and stakeholders cited incidents of those with care-giving responsibilities having to pull back from career-shaping opportunities as well as publications and grant applications. These issues have long-term impacts not only on the individual, but also for the overall health of the research community which is missing out on the inputs and perspectives which these individuals provide.

Opportunities to increase connectivity

The pandemic has also brought opportunities to increase connectivity and reduce emissions from travel for those that have access to technologies that allow participation. Participants noted that a global transitioning to virtual ways of working during the pandemic has allowed researchers to participate in meetings and workshops at reduced cost and without the need for travel which has particularly increased accessibility for LMIC-based workers. The pandemic has increased understanding of the technological limits of what can be done virtually, and highlighted gaps in the research capacity across projects and institutions.

Equitable partnerships

Some funders also highlighted that the pandemic has prompted discussions on how to future-proof research programmes against global disruptions by making them less reliant on international travel. This has helped shift responsibilities to in-country teams, including those based in LMICs, thereby increasing their participation and allowing leadership to flourish close to the research site. The global pandemic can therefore be used as an opportunity to continue working towards achieving more equitable partnerships (one of the key principles of UK-funded research programmes), and, again, as an opportunity to demonstrate where future investments should be made – especially in terms of field-based capacities.

3.5.4 Impact on the climate-development funding landscape

Achieving greater impacts with a reduced budget

Considering the economic consequences of COVID-19, participants spoke at length of the importance of taking advantage of opportunities for partnerships. These collaborations are linked to efficiencies, to interdisciplinary research areas impacted by COVID-19, and to areas where co-benefits can be demonstrated, maximised and communicated effectively – as has been the case for research at the intersection of topics relating to health and climate change. Participants also emphasised an increased need for applied or solutions-based research to maximise effective action in a limited timeframe in response to climate change.

Engaging policymakers

Co-production with policymakers was also seen as important. Not only to meet the needs of communities (as the pandemic has disrupted communications with communities to understand their needs and perspectives on topics such as climate change), but also to promote the political buy-in in a world of reduced research funding and increased budgetary pressures as governments work towards achieving medium-to-long-term objectives of greening the recovery from COVID-19 and transitioning to a carbon-neutral future. Getting firm commitments at a ministerial level can help push funding and operations forward, and COP26 provides an opportunity for the research community to influence announcements on next steps for climate change in the recovery from COVID-19. While the global pandemic has placed a lot of pressure on political and administrative capacities, participants highlighted that it also represents real-life examples of how countries have approached the use of science in policy, with potential insights on behaviour, decision-making, and issues around cascading impacts and compound risk – which are also relevant to climate change.

In a post-COVID-19 world with reduced research budgets and international travel for an uncertain period, participants stressed the importance of designing robust and resilient research and funding programmes to cope with and understand how to pursue climate action, equitable partnerships (particularly with non-academic actors), bridge disciplines (such as between health and climate sciences) and promote uptake from the private and policy sectors.

Note on Analysis

The report findings are based on analysis of the portfolio-level analysis, stakeholder interviews, case studies, survey and workshop, with analysis shared with data providers for validation. The findings were then distilled to key findings intended to answer the project research questions:

1. What is the total investment of UK ODA and Wellcome on research on climate change and international development between 2015-16 and 2019-20, and where does it go?
2. What is the potential impact of UK ODA and Wellcome-funded research on climate change and international development?
3. What are the strengths and weaknesses of UK ODA and Wellcome-funded research on climate change and international development?
4. What are the emerging demands for UK ODA and Wellcome-funded research on climate change and international development?
5. What is the impact of COVID-19 on the research landscape on climate change and international development?

This process was carried out in consultation with the project Steering Group and Specialist Advisor.

The key findings were shared with selected stakeholders at a virtual workshop in December 2020, along with additional input from strategic leaders and in-country stakeholders. Participants were split into groups and asked to consider the following questions to feed into recommendations for the report:

- Thinking about the key findings and your own expertise, what do you think the research community should be doing next? All breakout groups had the same theme.
- What one recommendation would you make (based on the theme of your break-out group) to maximise the value of UK-funded research on climate change and international development?
 - Thematic research priorities
 - Overarching funding strategy
 - Partnerships
 - Research mechanisms and enablers
 - “Wild card” – any other topics which might be relevant

Workshop participants were also asked to reflect on the impact of COVID-19 on the research landscape.

The workshop findings and report findings were combined to develop recommendations and the COVID-19 chapter. These were shared with the workshop participants, Steering Group and Specialist Adviser for comments and further refinement.

The key findings and recommendations follow.

Key findings

The UK committed £564.2m into at least 694 UK ODA and Wellcome-funded research projects on climate change and international development between 2015-16 and 2019-20.

The total ODA contribution during this time was £535.1m across at least 651 projects, of which DFID (49.3%) and BEIS (43.3%) were the largest funders. While direct comparison has limitations given methodological differences, UKCDR estimates that this may represent more than a nine-fold increase in average annual funding allocation since the period 2004-05 to 2007-08 analysed in UKCDS' 2011 report. The UK has pledged to provide at least £5.8bn-worth of ODA to address the causes and impacts of climate change (known as ICF) between 2016-17 and 2020-21. Taking an average distribution of funding across this period, then ODA funding for climate research can be estimated at approximately 9.7% of ODA funding for climate change more broadly. Wellcome-funded research was not included in the UKCDS 2011 analysis, but the 2008 report found that, in 2005, Wellcome spent £1m in work that was directly related to climate change, compared to £29.2m identified in this report as being committed in the last five years.

A total of 111 countries were identified as partners in these research projects and/or primary intended beneficiaries, most commonly China (123 research projects), India (88), Kenya (69), Egypt (53) and Brazil (48).

A total of 615 institutions from 64 countries were involved in these projects, of which 59% were based in LMICs, mostly within MICs. UK-based institutions were the lead on 592 of the 694 research projects. While partnerships between two LMIC-based institutions occurred 430 times, there are no instances of partnerships between two LMIC-based institutions occurring more than once. Excluding SDGs which are relevant to all UK-funded research on climate change and international development, (SDG 1: No poverty, 10: Reduced inequalities, 13: Climate action and 17: Partnerships for the goals), the greatest amount of funding during this period went to climate-development research projects which aligned with SDG 2: Zero hunger (£210.7m), and the greatest number of projects aligned with SDG 7: Affordable and clean energy (at least 300 projects).

Impacts perceived to arise from UK-funded research include influencing thinking, policy impact, research capacity strengthening and the global standing of UK research, and there were calls from interview and survey participants for a more rigorous way of evaluating the impact of interventions.

Over 80% of survey respondents agreed or strongly agreed that UK-funded research had addressed important knowledge gaps (although many interviewees raised the challenges of measuring and evaluating impact). Potential ways of enhancing potential impacts include using more applied research, being driven by LMIC priorities and localising climate actions and decision-making. The six case studies illustrate some of the varying ways that research has had impacts over the last five years, including tools to inform policy, nationally determined contributions and UK funder decision-making; community engagement through co-design and co-production; and bringing together technologies to improve knowledge of rainfall variability. Other impacts illustrated are the formation of regional networks to facilitate resilience and recovery from extreme events; developing capacity in communicating with decision-makers; and implementing solutions to reduce emissions and improve health and air quality. Funding has also continued to support the UK's global standing for research excellence, with the UK second only to the USA in authorship for the IPCC 6th Assessment Report.

UK-funded research on climate change and international development has an important role to play in understanding the opportunities, challenges and trade-offs associated with the COP26 priorities. The COP26 priorities (Adaptation & Resilience, Nature, Energy Transition, Transport and Finance) have both unique challenges and opportunities in the context of LMICs. Research on climate change and international development is already doing much to achieve real-world impacts in the context of these priorities, ranging from shaping policy and practice and building knowledge to generating new engagement, relationships and capacity strengthening. In November 2020, UKCDR hosted a webinar to showcase impacts resulting from UK-funded research, and to provide learning around research to achieve the COP26 priorities. The event recording and accompanying booklet can be found on the UKCDR website.³⁰

Mutual partnerships and openness to collaboration are key strengths of UK-funded research. Interview respondents highlighted that this is demonstrated in a range of ways, including:

- Through strong and mutual partnerships (through, for example, the Newton partnership model and co-production in the Africa Sustainability Hub)
- Long-term consortia and networks (which for example has led to the continuation of partnerships in the ARUA centre of excellence on climate and development from the CARIAA programme)
- Existing partnerships with LMICs
- The ability to forge new collaborations
- A demand from partner countries to collaborate and an openness to collaboration within the UK climate change research community

Other strengths raised frequently by interviewees include the UK's global agenda, reputational and thought leadership; thematic expertise, particularly in climate sciences; research capacity strengthening; and the UK's profile on committees, panels and networks, particularly the IPCC. Survey respondents emphasised strengths around the strategic focus, significance and management of research funding (30% of respondents), and the developing country orientation of UK-funded research (24%).

There are however still **areas to improve on in understanding and aligning research to local contexts in practice.** A range of issues raised by interviewees in this area include researchers developing research ideas from an international perspective before understanding the context for implementation, review panellists potentially not understanding the local context when making funding decisions, inability to conduct research in areas with the most vulnerable communities, a divide between expected outcomes and the reality when a technology is deployed on the ground, and a perception that UK-based research has limited utility for climate-related decision-making in developing countries. Some respondents suggested working with champions/teams on the ground to advise UK funders on climate research priorities and to better understand needs.

Sustainability of the research funding cycle is a perceived weakness of UK-funded climate research. Short funding cycles can reduce the time available to build equitable partnerships required to co-design research and to embed and sustain outcomes, which can be a particular challenge when climate impacts are expected among populations where existing research relationships may not exist. It was suggested that more flexible timescales for climate funding would help to meet demand and to build programmes of the scale and complexity needed that embed climate science in practice, curricula and capacity building. Other weaknesses raised frequently by interviewees include specific thematic gaps (mitigation, health, water, applied sciences and the need for a holistic approach), the need for a clearer whole UK Government approach and the lack of funding for Southern-led research.

Demand for research covered a wide range of topics, but mitigation, adaptation, disaster risk reduction, energy and food systems were the most commonly cited research priorities. The breadth and diversity of research demand illustrates both the cross-cutting nature of climate change and the crucial role of funder collaboration to maximise research impact. Survey respondents from HICs were more likely to prioritise research on energy, while those from MICs and LICs were more likely to prioritise food systems and adaptation respectively. Other research demand included climate finance and economic mechanisms, natural resource management and nature-based solutions, climate science, water, sustainable development, health, and meeting international commitments such as the SDGs, and Paris Agreement. COVID-19 was identified as the greatest emerging and future research demand area, in a broader context of increased focus on the many intersections between health, climate and biodiversity. Stakeholders also raised demand for specific ways of conducting research, or “research mechanisms”, particularly aligning research, policy and practice and producing context-specific research to maximise impact and ensure that research is being conducted where it is needed most. Others frequently cited the importance of research including technology development and innovation; capacity strengthening; responding to demand for data and knowledge gaps; and enabling knowledge exchange.

A significant proportion of survey respondents (45%) thought that UK-funded research was meeting current demands “to a moderate extent”, although some commented that it might not be appropriate or possible for UK-funded research to ever meet demand. Enabling factors for UK-funded research meeting demand included partnerships and collaborations between research disciplines and with in-country actors; monitoring and evaluation to understand the extent to which research impact met demand; and to feed lessons learned into future project design. Barriers to funding meeting demand included the need for more direct UK funding to LMICs; the need for longer and more flexible research timescales; the need to further develop both research capacity; and more transdisciplinary working to enable a systems approach.

The COVID-19 pandemic requires the research community to align further to maximise its impact with limited resources and presents opportunities for research to promote a low-carbon recovery, behaviour change, resilience, and shifting research leadership to in-country teams. COVID-19, climate change and international development must be addressed in parallel, and research has a crucial role to play in identifying the conditions under which objectives on COVID-19, climate and development can be achieved and devising strategies to maximise synergies and minimise trade-offs between them. The COVID-19 pandemic has brought to the fore the links between the environment, health and development, has magnified the vulnerability of certain communities, many of which were already at risk from climate change, and presents a requirement to “green” the recovery. The economic consequences of COVID-19 increase the need to take advantage of opportunities for partnerships, applied research, co-production with policymakers and robust and resilient programme design.

Recommendations

The recommendations below are aimed at international development research funders, as well as wider members of the research community. They are based on UKCDR's key findings and consultation with selected key stakeholders in an interactive workshop in December 2020. Workshop participants were invited to work collaboratively to develop recommendations based on their own knowledge and the gaps identified by UKCDR in their analysis. These recommendations were then refined further in consultation with the project Steering Group, in light of changes to the ODA budget.

Recommendation 1: Gaps in demand. Research funders should work with partners to increase the proportion of funding going to the least developed and LICs which are most vulnerable to the impacts of climate change, and direct greater funding to applied and systems-based research.

Currently, more UK-funded climate change research projects are directed towards MICs, reflecting their more advanced research capacities and established track records of climate change relative to other LMICs. Research funders should look at opportunities and barriers to directing a greater proportion of research funding and research and capacity building activities towards the least developed and LICs – especially fragile states, SIDS and areas most vulnerable to the impacts of climate change. Research funders should also explore opportunities to fund more applied or solutions-based research. While descriptive research, needs assessments and pilot studies still have important roles to play, stakeholders called for increased priority to be placed on research which focuses on solutions, reflecting the need to maximise effective action in the limited time available for climate action. This research will often be transdisciplinary to promote systems-based thinking and should seek to bridge the existing gaps between climate adaptation and mitigation research, reflecting the synergies between these two subjects and the risks of unintended trade-offs between emissions reductions and climate change response if not fully understood.

Recommendation 2: UK-led coordination. Research funders should further prioritise alignment and collaboration in their strategies to support climate and SDGs in the context of budgetary constraints and in the longer timelines required to achieve some climate impacts.

Reductions to the UK ODA budget coincide with the need for urgent and widespread action on climate change, including in low-resource settings, as well as the forthcoming COP26 and commitments on the SDGs and Paris Agreement. Research has a crucial role to play in maximising the impact of this reduced budget and in identifying the conditions under which those goals can be achieved. It is essential to maximise the synergies between international development research funders' strategies and priorities on climate change and improve coordination both nationally and with international funders to maximise alignment and minimise duplication. It has been suggested that one way to achieve this might be an overarching strategy across UK research funders on climate change and international development, against which impact and progress can be measured. This structure could help to promote stronger formal connections between research programmes and more technical interventions, as well as helping to anticipate and minimise adverse consequences and trade-offs. It is essential that stakeholders and partners from LMICs form a central part of this process to ensure that this approach is demand-led and is based on equitable partnerships.

Recommendation 3: Partnerships. Research funders should consider more flexible approaches to facilitate and incentivise partnerships on a scale and in the locations needed to ensure that climate-development research is demand-driven, increasingly solutions-orientated, and aligned with local priorities.

There is wide consensus that climate-development research must be demand-driven, increasingly solutions-orientated and aligned with local priorities. New partnerships and relationships are required to align research with the areas of greatest need and to form the transdisciplinary and systems-based approaches required to meet the demand for solutions-orientated research. While funding which promotes partnerships with researchers in LMICs is welcome, climate-development research requires a wider range of partnerships including local communities, governments, NGOs, the private sector and other stakeholders. Research funders should consider allowing longer or more flexible funding cycles where possible to help researchers identify, develop and maintain the relationships, including “South-South” partnerships (where suitable), which are essential to ensure that research is driven by local priorities and maximise its potential to inform policy and practice. UK researchers can make use of Science and Innovation Network (SIN), Research and Innovation Hubs and embassies to identify and make links to in-country actors. Communications to influence and engage with policymakers and the public should be built in from the start, with funding set aside for facilitating connections. Funders and researchers should consider ways of incentivising and coordinating new and needed partnerships. In addition, learning and best practice in partnerships should be shared among the research community. Consideration would need to be given to whether this is best done through informal networks or more formal sharing mechanisms, and to explore enabling factors and barriers for increasing the number of partnerships between two or more Global South actors.

Recommendation 4: Equity. Research funders should continue to promote equitable partnerships when conducting research on a scale and in locations required to meet climate-development goals.

Building partnerships on a scale and in locations not previously achieved, and in fragile environments, makes considerations of equitable partnerships more important than ever. This might include targeting funding programmes to encourage applications from traditionally underfunded countries, working with regional bodies to co-develop the research agenda, capacity strengthening to improve the competitiveness of grant applications, and ensuring global South representation on selection panels. UKCDR produces several resources to support the development of equitable partnerships and is currently working on best practice guidance for implementation.

Recommendation 5: COVID-19. Researchers and research funders must draw on lessons learned from COVID-19, seek further ministerial commitments to “greening” the recovery from COVID-19.

Research is central to a climate-compatible recovery from the COVID-19 pandemic and ensuring that commitments to “build back better” from the pandemic benefit some of the most vulnerable communities which are often most adversely affected by both COVID-19 and climate change. The research community should seek to secure further ministerial commitments for ongoing action on climate change and development, and COP26 presents a particular opportunity for this. Researchers and research funders should draw on learnings from COVID-19 which are relevant to climate change research, particularly on behaviour change, supporting risk reduction in varied local contexts, accessing vulnerable communities, how science can inform policy, low-carbon research methods, and agile, solutions-focused research. Research funders should also explore ways to mitigate the impact of lockdown on the careers of certain groups, such as early career researchers, caregivers and those with limited technological access, to maximise the ongoing health and diversity of the climate-development research community.

Notes

- 1 [Rapid, Climate-Informed Development Needed to Keep Climate Change from Pushing More than 100 Million People into Poverty by 2030 \(worldbank.org\)](#)
- 2 [World-Social-Report-2020-Chapter-3.pdf \(un.org\)](#)
- 3 [Chapter 5 — Global Warming of 1.5 °C \(ipcc.ch\)](#)
- 4 In defining climate justice, Glasgow Caledonian University's Centre for Climate Justice states: "the poorest and most vulnerable people in society are bearing the biggest burden of climate change, but they are the people least likely to have contributed to the human causes of climate change and are less likely to be able to adapt to its impacts." Director of the centre, Professor Tahseen Jafry, explains: "Climate justice recognises humanity's responsibility for the impacts of greenhouse gas emissions on the poorest and most vulnerable people in society by critically addressing inequality and promoting transformative approaches to address the root causes of climate change." ([Centre for Climate Justice | GCU](#))
- 5 [Chapter 5 — Global Warming of 1.5 °C \(ipcc.ch\)](#)
- 6 [Supporting the COP26 priorities through research on international development and climate change | UKCDR](#)
- 7 [The Paris Agreement | UNFCCC](#)
- 8 [British scientists to help tackle climate change through new £1 billion fund - GOV.UK \(www.gov.uk\)](#)
- 9 According to estimates by UKCDR
- 10 Annex 3, [Research and innovation funding allocation: 2017 to 2021 \(publishing.service.gov.uk\)](#)
- 11 Data obtained from DFID were given at the 'component level' – the most granular level of detail recorded on DFID's monitoring system as a full data request could not be fulfilled for this report. Specifically, each 'component' is funding that leaves the department at the level of a financial agreement with a first-tier partner for a given programme.
- 12 Survey respondents could identify as having more than one role, so percentages do not total 100.
- 13 Since DEFRA's and DFID's data are provided at the programme level, rather than the project level, it is not possible to calculate the exact number of projects funded by either department during this period. We can calculate that DEFRA funded at least 3 projects and DFID funded at least at least 96 projects (but likely more in both instances). The total number of ODA and Wellcome-funded projects is therefore at least 694 (including the 99 projects between DEFRA and DFID).
- 14 The UK Collaborative on Development Science (UKCDS) was UKCDR's predecessor body
- 15 [Newton Fund and Global Challenges Research Fund Annual Report 2018-2019 \(newton-gcrf.org\)](#)
- 16 While IPCC science and research is not specifically ODA-funded, it is an indication of the global standing of UK climate change research
- 17 [The Newton Fund - Operational Framework \(publishing.service.gov.uk\)](#)
- 18 The [Africa Sustainability Hub](#) aims to create a network of researchers working on sustainable development in Africa, across innovation, sustainability and climate change.
- 19 [CARIAA](#) was a seven-year programme funded by Canada's International Development Research Center (IDRC) and DFID (now FCDO) to build the resilience of vulnerable populations and their livelihoods in three kinds of climate change hot spots in Africa and Asia: deltas, semi-arid lands, and glacier- and snowpack-dependent river basin.
- 20 [Finding and building effective and equitable research collaborations or partnerships | UKCDR; Equitable Partnerships Hub | UKCDR](#)
- 21 NAO (2017) [Cross-government funding of research and development](#)
- 22 [Global Warming of 1.5 °C — \(ipcc.ch\)](#)
- 23 Ibid.
- 24 Ibid.
- 25 The Lancet report mentioned by the UK research funder is '[Tackling climate change: the greatest opportunity for global health](#)', H. Wang, R. Horton, The Lancet, 2015,
- 26 [Policy Brief: Making The Green Recovery Work For Jobs, Income And Growth - Oecd \(Oecd-IlLibrary.Org\)](#)
- 27 UN Research Roadmap for the COVID-19 Recovery: Leveraging the Power of Science for a More Equitable, Resilient and Sustainable Future
- 28 [ESSD - Global Carbon Budget 2020 \(copernicus.org\)](#)
- 29 [COVID-19 Research Project Tracker by UKCDR & GloPID-R | UKCDR](#) [figures as of 23rd March 2021]
- 30 [Supporting the COP26 priorities through research on international development and climate change | UKCDR](#)



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