NEWTON FUND

PROGRAMME DESCRIPTIONS

The Newton PhD Programme

Building up a talented pool of well trained, internationally active doctoral students is an essential step towards establishing world-class research systems. Improving mobility at the doctoral level is also an important factor in facilitating cross border research collaboration, as connections made at this level can be sustained over longer periods and can percolate through to other members of research teams. It offers benefits to doctoral researchers in terms of intellectual development, career progression, access to existing and emerging world class facilities and access to comparative research, environments and populations. RCUK, the British Council and HE International Unit are committed to providing opportunities for postgraduate students in the UK and partner countries to build strong, strategic, sustainable bilateral collaborations and international networks.

The aim of the Newton PhD programme is to facilitate the capacity building of individuals, and the building of sustainable, long-lasting links between UK and overseas institutions, through PhD scholarships, placements, and partnerships. The spread of opportunities from individuals to institutional partnership will ensure that individual excellence and potential is recognised, as well as embedding the approach in institutions to bring benefit to future generations of students and allow them to build on the strengthened relationships between the two countries. These opportunities will be focussed on research areas which have been identified at the country level as important for fulfilling Newton Fund goals.

The programme will:

- Provide opportunities for international training and development at the doctoral level, including incoming and outgoing PhD scholarships
- Support international placements for PhD students and allow engagement of PhD supervisors in international links,
- Develop international joint training pathways,
- Build links at the institutional level to facilitate two way exchange of students and staff, supporting training and skills development in cohorts within partner institutions
- Support knowledge transfer of the UK approach to PhD training and skills development to partner countries, including via access to RCUK Centres for Doctoral Training and Partnerships,
- Through these approaches the programme will support the production of highly trained researchers in partner countries with international experience, able to contribute to the absorptive capacity for research and innovation and thus bring about economic and social benefit.

The programme will be managed in partnership by RCUK, British Council and the HE International Unit, together with national partners. The three strands of the programme can be selected individually or as a package, depending on the country needs and existing initiatives. More detail is shown in the Annex overleaf.

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Annex – PhD Programme elements

British Council, HE International Unit and RCUK will work together to manage this programme, with each element having a lead UK partner.

PhD Scholarships - British Council Lead

- Funding for individual partner country students to undertake full PhD studies in the UK, or vice versa.
- Newton Funds can be used to cover partner country researchers; UK PhD students' costs must be covered by the partner funding
- Potential to use existing PhD scholarship mechanisms in country but to ringfence additional funding for students to go to the UK

PhD Placements - British Council Lead

- Funding for individual partner country PhD students to spend a period of their study (up to one year) in the UK, or vice versa (again UK PhD student costs must be covered by the matched funding).
- The amount of funding per placement will be discussed with the national partner, but an approximate amount could be up to £10k per placement.
- This will also allow the PhD supervisors to visit the host group for a short time while the PhD placement is taking place.
- Potential to use existing mechanisms; if these are not in place a new call and open selection process will be created.

PhD partnerships – RCUK Lead

- Institutional partnerships between UK and partner country HEIs and research institutions, focussed on PhD training and skills development.
- Open to all UK institutions eligible for Research Council funding that have capacity to provide excellent post graduate training. UK institutions would work with potential partners from Newton Fund countries and the proposals will be jointly submitted by the two partner institutions.
- It is expected that support would be provided for students to participate in a short-term exchange for up to six months. Flexibility will be available for institutions to use the funds in the most appropriate way possible, and mobility of supervisors will be encouraged as part of the programme.
- Awards will be in the range of £50k - £150K per partnership, and calls and peer review approaches would be negotiated bilaterally with funding partners, with the expectation that these will be coordinated by RCUK.

Newton Researcher Links Programme

(A component of the Newton Researcher Mobility Programme)

International researcher mobility has been shown to have a beneficial effect on research productivity. Mobility opportunities can develop human capital and act as a gateway for promising researchers to build up valuable international contacts and networks.

The Newton Researcher Links Programme is part of the wider Newton Fund Researcher Mobility Programme which is jointly run by the British Council and the UK National Academies. The Researcher Links component aims to stimulate initial links between, and support capacity building among, 'rising star' early career researchers in partner countries and the UK. It brings in more senior researchers to act as mentors and to share their knowledge and expertise with more junior researchers. It can be seen as a first step on the funding ladder for collaborative research and the growth of excellence, focussing on broadening horizons and building trust.

The programme will extend the British Council's Researcher Links initiative which is currently run together with national partners across several countries worldwide. It is designed to be a coherent global capacity building and mobility programme with flexibility to ensure that it can be adapted to country needs. The programme is coordinated centrally in the UK, but the country-specific priority areas, guidelines and national selection process are flexible and developed together with national co-funding partners, in order to respond to different country contexts and priorities.

The programme will:

- Offer opportunities for mobility of early career researchers between the UK and partner countries, enabling them to forge partnerships for future collaboration
- Support capacity building of early career researchers, through bilateral workshops led by senior researchers which enable knowledge exchange and career development as well as a broader appreciation of international opportunities
- Through these mechanisms the programme will support advancement in research areas that have a direct and long-term impact on the economic development and social welfare of the partner country, or in areas with the potential to develop human capacity in-country (including through up-skilling partner country researchers in areas which could contribute to jobs creation).

This programme will be managed by the British Council and developed in partnership with national co-funders. Calls for proposals will be open, competitive and coordinated in the UK and across Newton Researcher Links countries. There will be a two-step selection process, involving UK selection panels and partner country review, with the final decision making being made together with national co-funders based on the quality of proposals and extent to which they meet the country priority areas. Within the UK, the national Academies will support the promotion of the scheme and the UK selection process. More detail on the programme is shown in the Annex overleaf.

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Annex – Possible Grants under the Newton Researcher Links Programme (Note that the details will be decided in discussion with national partners)

1. Travel grants (between 1 month and 6 months) awarded to partner country researchers to travel to the UK to undertake research projects or undergo research training:

Calls for proposals will be open to early career and senior researchers, but must include an element of capacity building for the partner country researcher. Short term visits are included as a way to support equality and diversity, enabling researchers with families or teaching commitments to initiate international collaborations over a short period which can then be continued by working remotely. The host and the sending institution must demonstrate their support for the visit.

2. Travel grants awarded to UK researchers (1-3 months) to visit the partner country for the purpose of sharing their knowledge and expertise with researchers:

Calls for proposals will be open to early career and more senior researchers, but they must demonstrate the benefit to the partner country research group. This could include research visits where the purpose is to set up a longer term research collaboration which will build capacity of researchers in the partner country. It could also include visits to train researchers in a particular technique or research methodology which is important for development related research. The host and the sending institution must demonstrate their support for the visit.

3. Grants for workshops aligned with the in-country Newton Fund priority areas and designed for UK and partner country researchers to share their research and establish relationships for longer term collaboration:

Workshops will have a focus on capacity building and establishing potential collaborations, and therefore go beyond traditional workshop formats solely focussed on sharing research outputs. They will be awarded in an open call to joint proposals from UK and partner country senior researchers. Early career researchers from both countries will be included in order to build relationships at a point in their careers with maximum impact over their lifetime.

In some cases the workshops will be directly organised and run by the British Council or national partner; in other cases a grant will be awarded to the workshop coordinator. In the latter case, there will remain a need for strong oversight and monitoring from the British Council/Partner.

Researcher Links can potentially be run across **all Newton Fund countries** and it will build upon the existing programme running in some, but not all Newton Fund countries. Some countries already have a national partner and these will be involved in any discussions on the future of the programme under the Newton Fund.

Newton International Collaboration Programme
(A component of the Newton Researcher Mobility Programme)

Programme description

This scheme, which builds on existing mobility schemes administered by the Royal Society, the Royal Academy of Engineering and the British Academy, will support early career and established researchers in visiting, and embarking on research collaborations with, their UK counterparts.

Programme aims

This scheme aims to help strengthen the research and innovation capacity of researchers from Newton fund countries by assisting them in visiting or sending staff and students to the UK and developing networks, research projects and partnerships with their UK hosts/counterparts and the wider UK research and innovation community. The main aims of the programme are to:

1. **Strengthen existing research capacity of the Partner countries** - by facilitating training and skill transfer from the UK to partner countries.
2. **Support excellent research** - by linking the best researchers in the UK with the best researchers and their groups in partner countries and providing support for initial exploratory research.
3. **Establish long term research links** - between both partners to ensure sustainable research capacity in partner countries and benefit to the UK research community in the longer term.

UK researchers may also undertake reciprocal visits to their overseas counterparts for the purposes of providing training to their partner's groups and transferring knowledge and skills. Our experience of the mobility schemes currently run by the Academies is that these outward visits have clear and measurable development impacts in the host country.

Benefits to partner countries and the UK

The programme brings numerous capacity strengthening benefits to participants from partner countries including training and skills development, access to networks, facilities and funding opportunities, to seeding of long-term collaborative partnerships. Evidence from existing mobility schemes show that collaborations created through these schemes are often durable, go on to attract larger-scale funding from other sources, and can often expand outwards from the individual researchers to encompass long-term partnerships between research groups. UK researchers will also benefit from the opportunity to develop collaborations with the best researchers from partner countries.

Delivery

The delivery partners will include the Royal Society, the British Academy and the Royal Academy of Engineering. We are hoping to work closely with partners who will be able to

assist in promoting the scheme and help us target the best talent available. All Academies will deliver the scheme using established selection mechanisms. We will make appointments across the Natural Sciences, Engineering, Social Science and Humanities. Applicants must have a PhD or equivalent research experience and hold a permanent or fixed-term contract in an eligible university or research institute, which must span the duration of the project. Awards may vary in length but are available for up to three years.

Matched funding

We are seeking to establish matched funding agreements with organisations in partner countries. Because we are using existing selection mechanisms we expect that the programme will be delivered unilaterally by the UK partner and that matched funding will be provided through a parallel programme run by the partner country. Where this is not possible we will consider managing a programme on behalf of both partners.

Contacts

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Newton Advanced Fellowship

Programme Description
This programme will focus on supporting early to mid-career international researchers (up to 15 years post PhD) who have already established (or are well advanced in the process of establishing) a research group or research network and have a research track record. The focus will be on developing their research strengths through collaboration and providing support for more formalised training and development. The award will be made for one, two or three years and provide a salary top up, research support, training costs and travel and subsistence enabling the holder to spend short periods training in the UK with the intention of transferring knowledge and research capabilities between partners.

Programme Aims
We will recognise and fund for up to three years early career group and network leaders in partner countries to develop their research by linking them with some of the best research groups in the UK. The primary aims of the programme are to:

- Support the development of a well-trained research community.
- Strengthen research excellence in partner country by supporting promising independent early to mid-career scientists/scholars and their research groups/networks.
- Establish long term collaborative links between the next generation of research leaders and their groups and networks in partner country and the UK to benefit both research communities.

Benefits to Partner and the UK
The primary benefit to the partner country will be access to the world leading research groups from the UK's best universities. We believe that by establishing these collaborations between the best and brightest and their research groups and by providing training and opportunities for skill transfer we can support the development of a cohort of outstanding researchers in partner countries. As this cohort move into research leadership positions they will influence the development of a strong research community and a more robust research and innovation infrastructure. It is also likely that they will continue to strengthen research links between the UK and the partner country having a positive impact on the quality of research and innovation.

Delivery
The delivery partners will include the Royal Society, the Academy of Medical Sciences and the British Academy. In order to attract some of the best early to mid-career scientists and scholars from Newton Fund countries, we are hoping to work closely with partners who will be able to assist in promoting the scheme and help us target the best talent available. The Royal Society and British Academy will deliver the scheme using established selection mechanisms. The Advanced Fellowship programme will make appointments across the Natural Sciences, Engineering, patient orientated research, Social Science and Humanities. Applicants must have a PhD or equivalent research experience and hold a permanent or fixed-term contract in an eligible university or research institute, which must span the duration of the project. Collaborations should focus on a single project involving overseas-based scientist/scholar ("the Applicant") and UK-based scientist/scholar ("the Co-applicant"). Awards are available for a period of up to three years.

Matched funding
We are seeking to establish matched funding agreements with organisations in partner countries. Because we are using existing selection mechanisms we expect that the programme will be delivered unilaterally by the UK partner and that matched funding will be provided through a parallel programme run by the partner country. Where this is not possible we will consider managing a programme on behalf of both partners.

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Newton International Fellowship

This programme is an extension of the existing Newton International Fellowship programme currently run by the Royal Society and the British Academy. The Academy of Medical Sciences will become a partner allowing us to extend the disciplinary remit to include clinical research.

The Newton International Fellowship scheme will enable talented early career post-doctoral researchers from the partner country (with no more than seven years' active full time postdoctoral experience) to spend two consecutive years undertaking research at a host university or research institution in the UK. The fellowships will support talented researchers, enabling them to benefit from an extended period within a first class research environment in some of the UK's best universities. All subject areas will be eligible. The award will be made for two consecutive years and provide a stipend, research monies, and basic relocation costs.

Programme Aims
We will recognise and support talented early career researchers from partner countries to develop their research capabilities by hosting them for an extended period with some of the best research departments in the UK. The primary aims of the programme are to:

- Support the development of a well-trained research community
- Strengthen research excellence in partner countries by identifying and supporting promising early career postdoctoral researchers.
- Establish long term collaborative links between the next generation of research leaders in partner country and the UK to benefit both research communities.

Benefits to Partner and the UK
The primary benefit to the partner country will be access to some of the best research departments in the UK's world leading universities to increase skills, knowledge and networks. We believe that by hosting promising individuals within such departments for an extended period we can support the development of a cohort of outstanding researchers who will influence the development of a strong research community and a more robust research and innovation infrastructure. It is likely that they will continue to strengthen research links between the UK and the partner country having a positive impact on the quality of research and innovation.

Delivery
The Newton International Fellowship programme will make appointments across the Natural Sciences, Engineering, Medical Science, Social Science and Humanities. The delivery partners will include the Royal Society, the Academy of Medical Sciences and the British Academy.

Matched funding
We are seeking to establish matched funding agreements with organisations in partner countries. Because we are using existing selection mechanisms we expect that the programme will be delivered unilaterally by the UK partner and that matched funding will be provided through a parallel programme run by the partner country. Where this is not possible we will consider managing a programme on behalf of both partners.
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Innovation Leadership Programme

The Royal Academy of Engineering's Innovation Leadership Programme is a framework for strategic innovation collaboration between the UK and emerging powers, built around two innovation capacity building programmes, addressing researchers and institutions respectively.

The programme is overseen and anchored by a bilateral forum of senior engineers from the UK and the emerging power in question- an **Innovation Node,** which will be focused on one or several national or global challenges that affect the lives of poor people in developing countries.

The first role of the Node is to design a strategic framework for UK-emerging power innovation collaboration within the challenge area identified, over the five years of the Newton Fund and beyond, in conjunction with SIN and UK agencies, existing academic and industrial links and networks, and representatives of other related Newton programmes in country, such as Research and Innovation Bridges. The Node will also oversee a joint programme of innovation capacity building, addressing both institutions and individuals, including through two instruments designed by the Academy: **Leaders in Innovation Fellowships** and **Higher Education Partnerships**. The Innovation Node could be hosted by a key innovation institution or agency in the emerging power, with the aim of creating a hub for UK-emerging power knowledge exchange, and a base for dissemination of messages and knowledge throughout the research and innovation ecosystem.

Leaders in Innovation Fellowships are intended to build the capacity of researchers in partner countries to commercialise their innovations. The programme will be aimed at researchers who are in the process of developing their business proposition, and will be advertised through an open competitive call. Successful applicants will be invited to the UK to participate in an intensive programme of training, networking, and buddying/mentorship, followed by a placement within a research intensive university, high tech SME, or other suitable host organisation, where they will be exposed to the day to day issues facing technology driven enterprises. The Academy's Enterprise Hub runs a successful Enterprise Fellowship programme for innovative UK engineers, and a key element of this programme will be the creation of links and networks between Enterprise Fellows and their counterparts from emerging powers; Fellows will also be introduced to UK and international sources of risk and innovation financing. Following their return, the researchers will be offered 6 months of salary recovery in their home institution, which will allow them to focus on commercialising their innovation; in this period they will also remain in contact with UK based mentors or buddies, and receive assistance from mentors based in their home country.

Higher Education Partnerships are aimed at increasing the innovation capacity of higher education institutions in emerging powers, primarily through creating structured and strong partnerships with locally based industry. These partnerships, which are inspired by industry-academic collaboration schemes delivered by the Academy in the UK and Sub-Saharan Africa, are driven by a set of intensive bilateral academic and industry exchange placements. Typical outputs can include enhanced research partnerships with industry, changes to teaching curricula and methods to promote action led, innovation focused learning, and improved technology transfer capacity. A hub and

spoke model will ensure that knowledge and models are captured and transmitted around institutions with similar needs; as the programme develops there will also be an opportunity to share learning across different Newton countries, and with alumni of similar programmes from Africa and the UK.

Contacts

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Professional Development and Engagement Programme

For research and innovation to have a deep and long lasting effect on economic development and social welfare, there needs to be an enabling environment which supports the optimal take up and impact from research outputs. A central element of this environment is how researchers continue to develop their skills and are supported through the 'life cycle' of their career.

The Professional Development and Engagement Programme will support the research environment and enable optimal impact from research, shaped by the demands and development priorities of the partner country.

The programme will:

- Support skills development in researchers, research managers, and support staff, to give them the knowledge and skills they need to better access funding, communicate their research, translate their research into benefit and work strategically and internationally.
- Support dialogue and knowledge exchange on research governance and strategic research policy development to ensure that the research environment in partner countries is more conducive to achieving maximum impact from high quality research.
- Build opportunities for researchers to engage with the wider community and with policy-makers so they are able to be more responsive to the needs of poorest communities and policy decisions are informed by up to date research evidence.

The programme will support Professional Development & Community Engagement Centres hosted by partner country Institutions, and will also allow bespoke activity based on particular country needs.

The Centres will be hubs for training and/or community engagement activity, developing programmes of events to strengthen connections between researchers and the wider society in areas relevant to development.

Initially, UK providers would give training and provide resources. Over the later years, the programme would move towards joint development of resources and training of trainers to ensure longer term sustainability.

The Professional Development/Community Engagement Centres will deliver a menu of activities [see appendix overleaf], depending on the specific needs of the partner country. These can also be delivered on a bespoke basis outside of the professional development centres (for example as a series of training workshops or study visits) depending on country needs.

Potential partners in the UK include specialist skills providers, higher education institutions, other Newton Fund delivery partners, and experts in community engagement.

This programme will be managed by the British Council. Appropriate selection processes for each individual activity will be developed in partnership and agreed with national stakeholders.

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Activities for possible inclusion

1. **Skills training**

- Country stakeholders identify training needs of researchers, research managers and research policy makers. UK expertise is brought in to meet these needs and deliver training workshops as one-off or series
- Could include training in specialist English skills for researchers; communication skills (e.g. British Council Researcher Connect training); leadership; entrepreneurship; technology transfer; research management; intellectual property rights; quality assurance; ethics.

2. **Support for research governance and management**

- Development of effective research governance and management systems to maximise impact of research and benefit to people in developing countries
- Best practice sharing, training and study tours and work shadowing for senior research managers/policymakers/SME leaders
- Aim to work with UK stakeholders to develop a programme for overseas delegations and run several times a year for delegates from various Newton Fund countries
- Advice from UK experts on building up research infrastructure at national/institutional level
- Could include open call for high-level policy fellowships, either for UK or partner country research policy professionals, for placements which will strengthen research policy making in partner countries at institutional and national level
- Example areas could include: Peer review; quality assurance; open access to research; technology transfer; IP frameworks; research ethics; academia-industry collaboration; dissemination of research and science journalism

3. **Engaging researchers with end-users**

- This component supports community engagement and the research-policy interface, so that the research that is performed in partner countries can be applied to address relevant issues for the poorest communities, and to support evidence-based policy making.
- This can be focussed around the country priority themes under the Newton Fund, or on specific research areas where activity is taking place in the **Programme** or **Translation** areas
- Could include a variety of activities designed to bring together researchers with local stakeholders (e.g. NGOs, community groups, local governments etc.) to help shape and direct future research programmes, and disseminate research findings in order to encourage uptake of new practices supported by research evidence (e.g. health interventions; new agricultural practices)
- Supporting the engagement of researchers with local communities, policy-makers and NGOs will enable more effective uptake of research relevant to development needs.

STEM Education Programme – Supporting Science, Technology, Engineering and Maths Education

In order to build strong research and innovation nations, there must be a steady supply of talented students equipped with the knowledge, skills and desire to follow a career in Science, Engineering, Technology and Maths (STEM). Countries have recognised that, for this to be achieved, there is a need to improve STEM teaching and learning at the primary, secondary and tertiary level, ensuring that curricula are robust, up to date and relevant to the experience of the student, and that teachers have the training and resources to support optimal learning. It is also recognised that new approaches to STEM education can be valuable, including increased use of technology assisted learning, informal science learning approaches, and initiatives to engage traditionally underrepresented groups, such as girls, in science education.

The STEM Education Programme will support knowledge exchange and partnership opportunities between the UK and partner countries on STEM education approaches and in doing so build the human resource capacity in a vital area for economic development and social well-being.

The programme will:

- Support dialogue and knowledge exchange between the UK and partner country around STEM education approaches for improved curricula for primary, secondary and tertiary STEM education.
- Support development of new and improved pedagogies and teaching and learning resources, relevant to partner country context and development need, leading to enhanced capacity for teaching STEM subjects.
- Support centres of excellence for STEM education in partner countries through partnerships with UK experts.
- Equip students with a better understanding and appreciation of STEM education in an international context

This will mean more students with relevant skills and knowledge pursue a STEM-related career, thus building absorptive capacity for research and innovation in country.

The programme will support a range of activities (see annex overleaf) which can be combined flexibly to support the particular needs of the partner country.

Potential partners in the UK include university teams specialising in STEM education; Higher Education Academy; Science Learning Centres; Association for Science Education and equivalent associations for Engineering and mathematics; British Science Association; STEMnet; London Science Museum; and Universities with expertise in community engagement.

This programme will be managed on a competitive basis by the British Council. Appropriate selection processes for each individual activity will be developed in partnership and agreed with national stakeholders.

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Annex - Activities that can be included under the STEM Education Programme

- STEM curriculum development and consultancy; UK experts on STEM education to work with national partners to improve STEM curriculum.
- Partnerships for STEM resource development; UK experts to work with and train teachers and STEM education professionals in country to develop context-specific STEM resources.
- Pilot innovative approaches to formal and informal STEM learning, for example by establishing a national STEM Ambassadors network, encouraging more interaction between active scientists and school students; or by supporting new STEM teacher training approaches.
- Summer programme for school students at UK universities or research institutes to give an experience of STEM in an international environment.

Technical Training and Employability Programme

In order to expand and improve science and research capacity, there is a recognised need for a larger and better skilled workforce. Advances in technology have permeated across multiple industrial sectors (including in the health, agriculture and energy sectors) as well as in academia, and employers are now demanding that employees have stronger practical and technical skills to support this, including the competence needed to manage teams in technical areas.

The Technical Training and Employability Programme will focus on increasing the pipeline of talent, particularly for technical roles (laboratory, engineering, environmental, or forensic technicians for example), and ensuring that future labour market needs can be met. This will include building the relevant employability and practical skills needed to work in the sector.

This programme will:

- Support dialogue, partnership working and capability amongst employer representative bodies, education institutions and other social partners with a focus on workforce planning and skills forecasting in areas essential for economic and social development.
- Build a framework for technical skills development for relevant occupations.
- Pilot schemes to improve the level of technical, practical and employability skills in the sector.
- Establish sustainable structures and supply pipelines, enabling more effective research and innovation in areas relevant to economic development and social well-being.

The programme will support a range of activities (see annex overleaf) which can be combined flexibly to support the particular needs of the partner country. Activities will be in two areas:

- Developing and piloting of new innovative approaches for technical science and research occupations to support increased capacity
- Meeting future skills needs in science and research

Potential partners in the UK include the Association of Colleges; Sector Skills Councils; and UK awarding bodies. British Council will take the role of convenor and facilitator.

This programme strand will be managed by the British Council. Where appropriate, competitive selection processes for each individual activity will be developed and delivered in partnership with national stakeholders.

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Annex - Activities that can be included under the Technical Training and Employability Programme

1. Developing and piloting of new innovative approaches for technical science and research occupations to support increased capacity:
    - Supporting partnerships between education institutions and employers in the UK and overseas to develop and pilot new innovative skills development approaches and curricula based on industry needs.
    - Developing a common agreement on what employability (soft) skills should be included in curricula for relevant science and research technical occupations and piloting the introduction of an integrated curriculum.
    - Running of an Apprenticeship pilot scheme for laboratory technicians, based on the UK Apprenticeship model and involving partners from UK and overseas.

2. Meeting future skills needs in science and research:
    - Supporting dialogue and partnership working to build capacity and expertise in skills forecasting and labour market planning to provide intelligence about future needs for technical occupations in science and research.
    - Piloting the creation of permanent employer engagement mechanisms for education institutions and at the regional level.
    - Internship schemes supporting partner country college and university students to undertake internships or exchanges in UK universities and businesses (and potentially vice versa) to build technical and employability skills and support mobility, international collaboration and innovation.
    - Principal shadowing schemes for delegations of UK college principals to spend time in vocational colleges in-country to encourage the exchange of ideas and best practice (e.g. in college management techniques or in the provision of Technical & Vocational Education & Training (TVET) more generally).

Building the capacity of those providing careers advice about the industries and ensure they have up-to-date information about career opportunities

Collaborative Research Fund, Joint Centres & Innovation Infrastructure Programmes

This pillar will focus on excellent research with international development goals, developing capacity and addressing research needs in this area, including with new partner countries. Joint research programmes will be designed and delivered in partnership with the relevant funding partners in each country, and delivery mechanisms will be sensitive to the strategic and operational needs of each partner.

A component will be allocated to support linked preparatory activities in country including networking and workshops. These sorts of activities are essential to ensure the programmes have maximum reach and can deliver quickly post award.

In addition to the research programme approaches, there will also be the opportunity to develop 'Joint Centres', providing support for key research institutions to link up with counterparts in Newton Fund countries to form long-term sustainable and productive links. The nature of these partnerships will be different according to the development research ambitions and the research area, and this represents an opportunity to commit early to support high quality partnerships to develop excellent and creative approaches.

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Research and Innovation Collaboration Programme

Newton Institutional Links

Tackling global challenges (such as extreme weather conditions, food and energy security and meeting the social and economic needs of a growing and ageing population) requires an integrated research and innovation approach, bringing together communities from different disciplines, sectors and nations in high quality partnerships.

The Newton Institutional Links Programme is part of the wider Newton Fund Research and Innovation Collaboration Programme which aims to build UK-Partner country research and innovation partnerships centred on shared research and innovation challenges which have direct relevance to the partner country's social welfare and economic development. The Institutional Links Programme is designed to complement the Newton Researcher Links Programme to establish links beyond the level of the individual researcher, giving opportunities for more sustainable research collaboration.

The programme will provide small-scale seed funding to:

- Initiate new research and innovation partnerships between groups, departments and institutions in partner countries and the UK
- Develop existing partnerships at group, departmental and institutional level
- Establish local hubs for UK-partner country activity in a particular research area, enabling engagement from the wider research community

Grants will be flexible and responsive to in-country needs, allowing partners to establish collaborations on specific areas that are linked to country priorities and development needs and to bring in relevant industry partners (including SMEs).

This will mean that partner country research groups, departments and institutions gain experience in collaborating internationally and get access to facilities, knowledge and expertise which will enhance the quality of their research and enable them to translate research into benefit for the partner country.

The programme will cover a range of activities (see annex overleaf) which can be combined flexibly to support the particular needs of the partner country.

The programme will be managed by the British Council, with support from Research Councils UK and the Technology Strategy Board. Grants will be allocated through an open call across the Newton Fund countries (with the exception of India and China) and are expected to range from £100,000 to £300,000 over two years (to be discussed with in-country co-funders). Priority areas and /or specific innovation challenges will be set at a country level, through discussion with national stakeholders, to ensure optimal fit to the local context and development needs. Proposals will be selected on the basis of quality, fit to development needs, capacity building potential and likelihood of sustainability.

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Annex – Detail on potential Newton Institutional Links Programme

- Country partners will provide cofunding to match the Newton Fund contribution (these funds can be managed by the British Council, or distributed directly by the partner funder)
- Priority areas or specific innovation challenge areas will be decided in discussion with national partners, and will be focussed on topics or themes which have a direct relevance to the social welfare and economic development of the partner country
- The programme will likely be coordinated centrally in the UK, but the guidelines and national selection process will be flexible and developed together with national co-funding partners, in order to respond to different country contexts and priorities
- Institutional Links grants could cover the exchange of researchers, students, and industry staff (including from SMEs) between partners and the costs of organising meetings, seminars and other activity which supports research and innovation collaboration and capacity building
- Institutional Links may be established as UK-partner country centres of excellence in a particular research area (e.g. UK-partner country Centre for Renewable Energy), acting as a resource hub for the wider research community in-country and a focal point for other activities (e.g. seminars, technical training workshops).
- In some countries (depending on need), budget requests for Institutional Links could include support for purchase of equipment and consumables and the training of technical staff, thereby laying the foundations for a longer term impact on the research landscape.

Research and Innovation Collaboration Programme

Research and Innovation Bridges

The Newton Research and Innovation Collaboration Programme is a partnership approach between the Technology Strategy Board, RCUK, British Council and HE International Unit, which will work individually with key Newton Fund countries to develop capacity and help to solve major challenges faced by society. It is composed of a range of opportunities at different scales, allowing for tailored offers across all Newton Fund partner countries, including specific initiatives but also allowing for development of approaches which can be aligned and add value to larger scale research programmes.

The world faces many challenges, including extreme weather conditions, food and energy security and meeting the social and economic needs of a growing and often ageing population. Addressing these challenges requires an integrated research and innovation approach, bringing together communities from different disciplines, sectors and nations in high quality partnerships. Working jointly and building on mutual understanding we will aim to operate from the level of helping to prepare research communities and systems in partner countries to develop capacity to consider and address these challenges, to working with partners to co-design, execute and apply research outcomes so that research and innovation play a key role in helping to provide solutions.

The overall aim is to build UK-Partner country research and innovation partnerships centred on a shared research and innovation challenge which has a direct relevance to the partner country's social welfare and economic development.

The programme has two main elements - Newton Institutional Links and Research and Innovation Bridges, the latter being the focus of this document.

Research and Innovation Bridges

The aim of Research and Innovation Bridges is to build partnerships between business and academia in the Newton Fund countries and the UK to help address major societal challenges. The Research and Innovation Bridges will;

- accelerate the deployment of research knowledge to address the societal and economic challenges in the Newton Fund countries,
- deepen and strengthen current research and innovation links
- enable the acquisition of new researcher skills
- encourage economic development through improving the exchange of research and innovation expertise between the research base to and from businesses, practitioners, policy makers and other users

The societal challenge areas of focus would depend on the interests and priorities of organisations on both sides. They could include –

- Sustainable Cities and Urbanisation
- Public Health and Well Being including affordable healthcare
- Energy Water and Food
- Sustainable and low carbon manufacturing

Meeting the economic development and social challenges faced by partner countries of the coming decades will increasingly require broader innovation. The projects supported

need to demonstrate how they address issues such as poverty and how they help to build a strong and sustainable relationship between researchers from academia and business on both sides.

The Research and Innovation Bridges programme will have two main elements providing flexibility to meet the needs of the different partner countries, whilst still having a co-ordinated approach -

i. Pump-priming activity

In countries or research areas where partnerships are small scale (PI to PI) or non-existent, but where the capacity to develop excellent partnerships exists, funds may be requested to scope the opportunity for larger scale institutional links. Pump priming activities would be expected to include a minimum of 2 institutions on each side in this early scoping, and show good potential for alignment of the strategic ambition of these organisations, in areas of relevance to the Newton Fund. This could include seminars and workshops, small scale pilot research and innovation activities within this approach, exploration of the added value of the institutional partnership and scoping of the potential for larger scale activity, including links to industry.

ii. Full scale Bridge

A range of activities including, seminars and workshops to build partnerships and collaborations, joint academic centres building links to business; small scale collaborative projects to test out ideas, and larger-scale research and innovation projects aiming to tackle major societal challenges.

We expect collaborative projects to range in size from up to £100k for small scale collaborative projects lasting up to 18 months to larger collaborative research and innovation projects up to £2m and lasting between 18 and 36 months.

Full scale Research and Innovation Bridges have been conceived primarily for use in countries or between partners where there is capacity for excellent research and translation activities to address the ambitions of the Newton Fund. The Full scale Research and Innovation Bridges programme will build on previous Science Bridges programmes and will therefore be operated initially with academics and businesses from the UK in bilateral partnerships with China, India and Brazil to help solve challenges where there is a strong need in those countries. A framework structure can be scaled and extrapolated to other Newton Fund countries according to their readiness and interest to engage and the level of funding available.

Projects under the Research and Innovation Bridges umbrella will as far as possible follow a consistent model with a main focus on joint projects between partner country and UK applicants. Project partners will include academics and research and technology organisations and businesses and projects can be business-led or researcher-led.

All activity will be managed on a competitive basis with joint proposals developed by UK and partner organisations for submission to a jointly agreed review system with a jointly constituted and chaired panel and reviewers nominated by the UK and the partner country.

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Global innovation capacity building

A programme for government and innovation agencies

Designed and delivered by leading innovation experts, this programme is designed to equip staff from government and innovation agencies with the knowledge to more effectively lead innovation policy and programme development in their home countries.

The programme will be open for all the Newton Fund countries and as well as the direct benefits to the participating organisations, those attending will also become part of a network of future innovation leaders.

Based primarily in the UK, the programme will draw on effective practice in professional leadership development. The proposed model is a 12 month programme for a cohort of around 25 people from across the Newton Fund countries comprising:

a) a two week residential programme in the UK combining training, collaborative project work, leadership development and site visits. Content would cover innovation policy and programme delivery; how innovation happens in firms; and leadership and organising for innovation. While the weekdays would be mainly classroom based with some visits, the weekend would involve a collaborative project to design a new innovation support intervention, which would be presented to a panel of UK experts;

b) three monthly virtual meetings led by different country partners;

c) a final 12 month review of the challenges set for the year.

The programme will be delivered by leading innovation research organisations and practitioners, both from the private sector and academia, together with guest lecturers. The programme content and approach will be devised in collaboration with a range of UK stakeholders including the Newton Fund delivery partners. Themes will include policy and programme design, innovation financing models, systems thinking, technology futures, start-up support, social innovation, evidence and experimentation, new models of technology transfer, new business models for innovation, etc. The programme will be designed to be a mix of theory and practical demonstration.

As well as the core programme, it would be possible based on demand from Newton Fund countries, to develop modules or specific programmes focusing on some of the major societal challenges such as dealing with climate change, an ageing population or developing future cities. So as well as building the capacity to develop innovation systems, there is also a good understanding of developing innovative support in areas which are challenges for the partner countries.

The programme would most benefit people working within national agencies equivalent to the Technology Strategy Board and also national and city governments or other public sector innovation teams.

Match funding could be achieved either by an innovation capacity building fund in each country which individuals apply to and are selected based on a set of pre-defined criteria. An alternative would be for the host countries to pay the costs of flights and accommodation in the UK for people attending the programme.

Helping countries with innovation capacity-building as part of the Newton Fund presents a unique opportunity to bring together people from the Newton Fund countries to be part of the world's first talent development programme for public sector/innovation agency staff working to support innovation around the globe.

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Global innovation capacity building
Developing entrepreneurial knowledge and capability

Designed and delivered by leading innovation experts, this programme aims equip science and innovation based entrepreneurs and small and medium sized enterprises (SMEs) from across the Newton Fund countries with the entrepreneurial and business knowledge that will increase their chances of maximising the commercial exploitation of their ideas thereby contributing to wider economic growth.

The programme will be open for all the Newton Fund countries.

Entrepreneurs and SMEs make an important contribution to economic growth. The proportion of entrepreneurs with growth intentions in the population is a more significant predictor of economic growth than general start-up rates or self-employment rates. Entrepreneurs and businesses with the right knowledge and expertise also play an important role in supporting the adoption and diffusion of innovation, acknowledged by research as a key driver of growth.

To help develop the economies of the Newton Fund countries, it is important to help develop the entrepreneurial knowledge and expetise needed to more effectively grow the business population. Effective use of external expertise, information, advice and guidance can have a major impact on improving business knowledge and expertise and, through this, improve business outcomes.

The 12 month long programme, delivered by leading innovation experts from the public and private sectors, will provide assistance for a cohort of around 50 science and innovation based entrepreneurs, start-ups and small businesses, including potential entrepreneurs and will include residential activity in the UK as well online events and potential in country activity. The programme will include building the business and making it scalable as well as helping with how to find future investment.

In addition to the core programme, the intention would be to pair up the entrepreneurs and SMEs from the Newton Fund countries with similar individuals and businesses in the UK so they can share experiences and gain practical knowledge.

The programme will also create a network of alumni of like minded individuals with the potential to collaborate with each other and with businesses and organisations they meet in the UK as part of the programme.

The UK has a lot of expertise in both academia and the private sector in supporting innovative entrepreneurs and SMEs. The delivery of the programme will be contracted out on a competitive basis drawing on the expertise of the winning bidders to develop and deliver the programme taking into consideration the needs of the partner countries.

Match funding could be achieved by an innovation capacity building fund in each country which individual entrepreneurs could apply to direct based on a set of pre-defined selection criteria. An alternative would be for the host countries to pay the costs of flights and accommodation in the UK for people attending the programme.

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Annex A Climate Science for Service Partnership: China

The evidence is unequivocal: our climate is changing. Understanding that the climate is changing, and that weather and climate are critical factors in the livelihoods and development of all businesses and individuals, our challenge now is to translate cutting-edge climate science into *Climate Services.* This will help us to work to reduce the exposure of those communities that are particularly vulnerable, where climate-resilient development is essential for tackling the barriers to social welfare and economic growth.

One of the areas for which this is particularly important is Asia, where the multiple stresses caused by rapid urbanisation, industrialisation and economic development over recent years are likely to be compounded by climate change. Here climate services are needed to *'enable society to better manage the risks and opportunities arising from climate variability and change, especially for those who are most vulnerable to such risks'*, as identified by the Global Framework for Climate Services. In response to this challenge the Met Office are working with the China Meteorological Administration (CMA) as a Newton Fund Delivery Partner to establish a 'Climate Science for Service Partnership' (CSSP) with China.

Through the CSSP China we are developing a strongly bi-lateral partnership focused on research and innovation between the Met Office, the CMA and other key institutes within China and the UK which will establish a firm foundation of cutting-edge science. This will form the basis upon which climate services can be developed that support climate-resilient economic development and social welfare, and enable the UK to develop strong, sustainable and systemic relationships with partner institutions.

The focus of the science themes will be developed bi-laterally to align with existing priority areas such as the 'China Framework for Climate Services', with the overarching aim that both the UK and China gain significant benefit from the partnership.

The three primary outcomes of the CSSP china will be:

1. A **strong strategic partnership** between UK and Chinese climate scientists;
2. Accelerated and enhanced **collaborative science R&D programmes**;
3. **Climate services** for China and Asia, developed in partnership, based on the climate science research & development (R&D) programme.

By working in partnership to develop targeted climate science for services we aim to show the impact of science and help communities, businesses and government navigate the risk and opportunities of a changing climate. This is an aspirational project built on a strong foundation: we are world leaders in climate science, and across the research community we have experience in applying climate science to deliver tangible benefits, supporting economic productivity, climate-resilient growth, developing resilience, preparedness and risk reduction.

We plan to grow partnerships within China and across the UK that leverage this leadership, not only for the benefit of science, but to work with partners in China to build the science for services needed to combat the challenges associated with a variable and changing climate and reduce the exposure of those most vulnerable to its impacts.

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