

Science and innovation in the UK

THE
**ROYAL
SOCIETY**



BRITISH
ACADEMY



ROYAL
ACADEMY OF
ENGINEERING



The **Academy** of
Medical Sciences

The logo of the British Council, consisting of four blue circles arranged in a 2x2 grid.
**BRITISH
COUNCIL**

Innovate UK
Technology Strategy Board

The logo of the International Unit, featuring a blue square with a white dot above it.
**international
unit**

The logo of Research Councils UK, featuring a stylized blue 'R' shape.
**RESEARCH
COUNCILS UK**

Science and Innovation in the UK

This document sets out the functions and objectives of non-Government organisations working in science and innovation in the UK, complementing the UK Government's Science and Innovation Strategy. It provides a reference for prospective partners and funders overseas, as well as the growing network of overseas posts that have research and innovation in their remit.

The organisations accounted for here are:

1. The British Council

The UK's international organisation for educational opportunities and cultural relations.

2. Innovate UK

The UK's innovation agency, stimulating and supporting business-led innovation and helping companies take concepts through to commercialisation.

3. Research Councils UK (RCUK)

The body which aims to make it simpler for Research Council sponsored researchers to collaborate with their preferred research partners around the world, by supporting enabling activities and reducing barriers.

4. The UK Higher Education International Unit (IU)

Represents all UK higher education institutions internationally.

5. The UK's National Academies

The Academy of Medical Sciences, the British Academy (social sciences and humanities), the Royal Academy of Engineering and the Royal Society – autonomous, self-governing organisations that elect Fellows based on their distinction in research across the full disciplinary spectrum.

The accompanying dedicated information sheets (Annex 1) summarise the roles of these leading UK organisations engaged in promoting international scientific and innovation cooperation alongside Government.

The role and activities of the leading UK organisations engaged in promoting international scientific and innovation cooperation

The UK has a world leading position in research and recent evidence indicates that this position is maintained and growing, even in the face of competition from new research powers such as China and Brazil. Indeed, the impact of UK research is increased by partnership with other leading research nations.

The UK also has many innovative businesses, from early stage start-ups to large multinational companies, looking to increase their competitiveness through developing international collaboration and market opportunities. Recognising this, UK organisations work through a number of routes to develop influential and productive partnerships in fundamental (discovery) research and in specific discipline and sector areas, supporting academic and industry collaboration.

Excellence in UK research is represented by a group of highly prestigious academies covering a range of disciplines from natural and medical sciences to social sciences and humanities to engineering. The UK's National Academies are autonomous, self-governing organisations that link with these organisations and have networks around the world through sister organisations, Fellowships and grant schemes. These can be drawn on to give policy relevant advice and can provide a voice for research in the international arena. Academic research is supported by delivery partners including seven discipline-oriented Research Councils coming together in the RCUK partnership. Turning research outputs and early stage ideas into commercial opportunities is the role of Innovate UK, supporting innovation oriented research, knowledge transfer and the access to skills and equipment for the benefit of UK business.

1. International Comparative Performance of the UK Research Base 2013. A report prepared by Elsevier for the UK's Department of Business, Innovation and Skills (BIS)

There are specialist UK organisations with an international remit, such as the British Council, the UK's international organisation for educational opportunities and cultural relations, and the UK Higher Education International Unit, the only sector body to represent all UK higher education institutions internationally. In addition to their role in the development of human capital, UK higher education institutions undertake the majority of publicly-funded research in the UK, often working within international research networks and attracting the best research and academic talent from around the world.

These UK organisations recognise that excellence in disciplines must be maintained and developed to provide the underpinning quality of fundamental research which has contributed to the UK's success. There is strength in this diversity, but also challenges to ensuring that opportunities are taken to work across disciplines, particularly in the face of global research questions that require multi and interdisciplinary approaches. The UK must build on its research and business strengths to deliver impact and future economic growth.

These agencies and organisations have at their disposal a range of mechanisms to ensure that current and future generations of UK researchers and businesses are well placed to partner with counterparts overseas. They will continue to support the development of these partnerships to bring benefit to the UK and partner country economies and societies.

Non-Government UK institutions support the following activities

a) Early Career and initial links

- accessing talent and research excellence in other parts of the world;
- enhancing the experience of researchers by enabling them to engage with partners overseas; especially early career so as to lay the foundation for career-long collaborations;
- building the capacity of researchers through training and mobility programmes in fundamental and thematic research.

b) Collaborative calls, pilots and preparation

- increasing the impact of research, as collaboration with international partners brings significant gains in citation impact and access to downstream opportunities;
- widening the scope of research by linking researchers with different skills and expertise;
- leveraging other investments in research;
- enabling participation in large-scale research that requires international collaboration to share the cost of expensive facilities and manage large volumes of data;
- gaining access to unique data, as some phenomena are unique to a single location and many research questions span multiple sites.

c) Supporting scientific culture and research environments

- helping UK businesses to internationalise through supporting the development of partnerships and collaborations to access knowledge and complementary strengths;
- addressing global issues; there are many major research challenges, such as climate change, sustainable energy, health and security, which require international solutions;
- supporting development goals by using UK expertise to support development-focussed research, or to build research capacity in developing economies;
- building stronger relationships between the UK and countries overseas through shared research and economic interests and goals which offer a neutral platform for engagement and promote a deeper understanding of other countries and cultures;
- promoting a regulatory environment which facilitates the performance and commercialisation of research; and
- promoting the UK as a research and innovation destination by facilitating understanding of the UK's research and innovation landscape and the quality of research, institutions, facilities and people which make the UK an attractive international partner for researchers and industry.

These non-Government organisations work closely together, and with Government, both through formal mechanisms such as the Global Science and Innovation Forum, chaired by the Government Chief Scientific Adviser, but also more informally through strong professional relationships. Ensuring that Government and stakeholder organisations work effectively in partnership is crucial for the successful delivery of both Government and stakeholder objectives. In this context, efforts are being made to improve this joint working. Structures are in place to ensure that minimum overlap and maximum added value is achieved through the various activities pursued by these stakeholders. Considerable effort is made to ensure that the expertise of each stakeholder organisation is brought to bear on the research and research policy challenges of the future.

Making best use of this network, and ensuring that it understands its role in relationship to UK agencies and organisations, is essential if the UK is to maintain its position as a leading nation in a fast moving research landscape. *Figure 1* illustrates where the different UK institutions and agencies have competence.

The Newton Fund: building science and innovation capacity in developing countries

The Newton Fund warrants special mention as an example of where non-Government organisations are working together for the benefit of UK science and innovation partnerships overseas. All of the organisations featured in this document are delivery partners for the Fund, which is an important part of the UK's official development assistance programme. Its aim is to develop science and innovation partnerships that promote the economic development and welfare of 15 developing countries. The Fund comprises £375 million for the next five years (2014-2018), £75 million each year. It is anticipated that this UK funding will leverage extra funding from partner countries, private foundations, multi-lateral organisations and corporate partners.

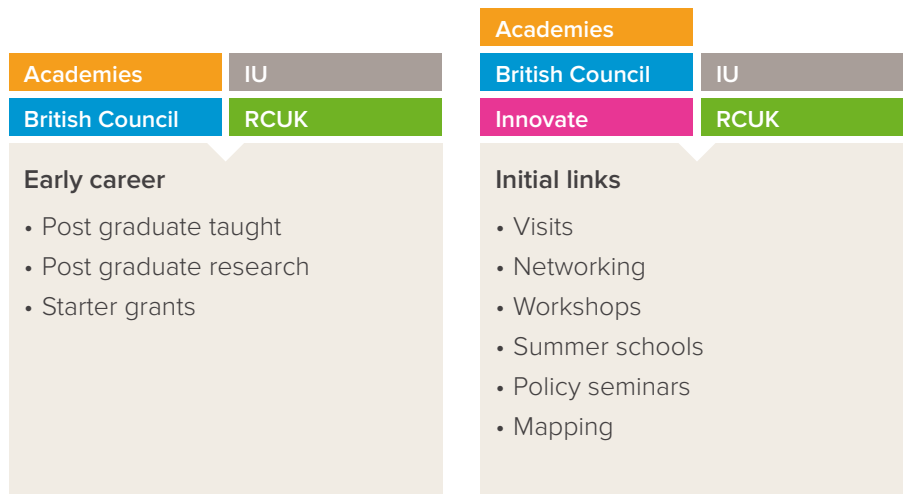
The fund covers three broad categories of activity:

- people: improving science and innovation expertise (known as 'capacity building'), student and researcher fellowships, mobility schemes and joint centres;
- programmes: research collaborations on development topics;
- translation: innovation partnerships and challenge funds to develop innovative solutions on development topics.

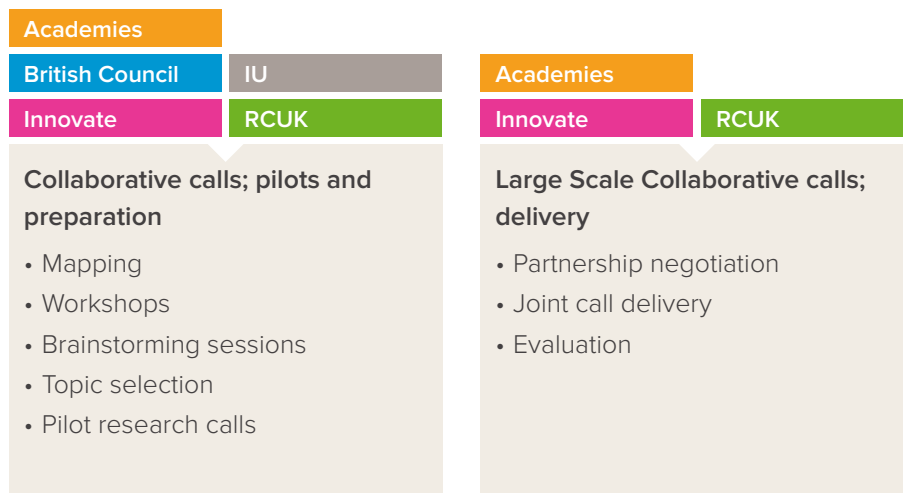
The 15 partner countries for the Fund are: Brazil, Chile, China, Columbia, Egypt, India, Indonesia, Kazakhstan, Malaysia, Mexico, Philippines, South Africa, Thailand, Turkey and Vietnam. Not all non-Government organisations will work in all of these countries.

FIGURE 1

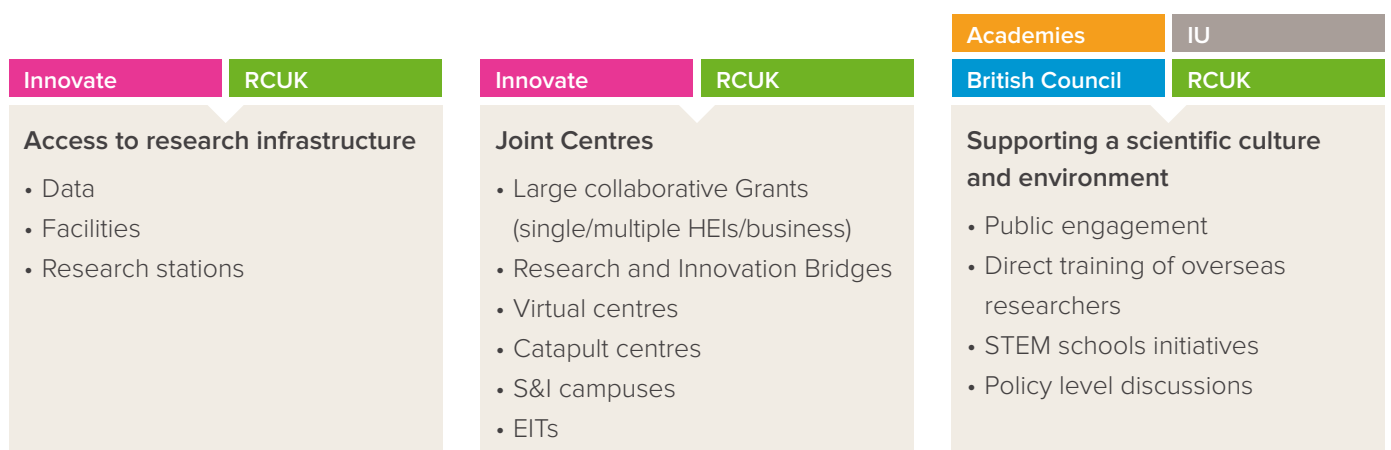
a) Early Career and initial links



b) Collaborative calls, pilots and preparation



c) Supporting scientific culture and research environments





British Council

The British Council is the UK's international organisation for educational opportunities and cultural relations. One of its charitable purposes is to: encourage cultural, scientific, technological and other educational cooperation between the United Kingdom and other countries. The British Council's work, across more than 100 countries globally, is focussed through three core areas: the Arts; English and Exams; and Education and Society. Science activity is delivered mainly as part of the education portfolio, and science themes are also woven into work in English and the Arts. This enables science to be integrated into a wide variety of international activities and presents opportunities for science to be part of international cultural activity and science diplomacy. It brings a focus on the societal, as well as economic impact of research collaboration.

British Council science work supports the international science strategy in the following areas by:

a) Early Career and Initial Links

- promoting and supporting the exchange and mobility of researchers between the UK and the rest of the world, through various researcher-focussed initiatives, including Researcher Links and other activity under the Newton Fund. As the national agency for the European Commission's Erasmus + programme the British Council is also responsible for supporting and promoting the international exchange of students, staff, and young people both within Europe and further afield;
- building capacity, in researchers from the UK and overseas, for international research collaboration; for example through communication and intercultural skills training;
- providing information for internationally mobile researchers, both those who wish to come to the UK, and UK researchers wishing to go abroad. This is delivered mainly through the Department for Business, Innovation and Skills (BIS) and European Commission (EC) funded EuraxessUK website (www.euraxess.org.uk), which provides information on the UK research landscape, practical information for researchers on issues such as tax and social security, and a searchable database of international funding opportunities.

b) Collaborative Calls, pilots and preparation

- Commissioning and conducting research and analysis of the international science, innovation and HE landscape,

both alone and in partnership, and communicating findings to the UK and international stakeholders to support partnership building and the identification of new opportunities. Examples include the 'Shape of Things to Come' series, looking at trends and patterns in international student mobility and research collaboration, as well as country or region-specific analysis;

- Stimulating and supporting international partnerships at the individual, group and institutional levels, in order to build long term sustainable collaborations for mutual benefit, for example, the UK-Israel BIRAX Regenerative Medicine Initiative (britishcouncil.org.il/en/programmes/science/birax) and the institutional links strand under the Newman Fund.

c) Supporting a scientific culture and optimal research environments

- convening and facilitating policy dialogues between leading UK and international stakeholders around issues linked to research and innovation; for example through the Global Education Dialogues series;
- supporting inward delegations and outward missions of policymakers and research stakeholders, in order to build a better understanding between the UK and key partner countries and position the UK as a partner of choice for the future;
- promoting UK expertise in the area of STEM (Science, Technology, Engineering and Maths) education, helping UK providers to work internationally, and exchanging best practice with other countries around the world;
- demonstrating the vibrancy and creativity of UK research and innovation, and connecting young people around the world through public engagement in science activity, such as lectures, café scientifique, science festivals, and FameLab International (in partnership with Cheltenham Science Festival and international partners such as CERN).

In all of these areas the British Council works closely with a variety of partners, including the Science and Innovation Network, Foreign and Commonwealth Office (FCO), BIS, UK Trade and Investment (UKTI), RCUK, national academies, and International Unit, as well as a wide variety of national partners in the countries where it operates.

For further information on the British Council:
general.enquiries@britishcouncil.org

Innovate UK

Innovate UK is the UK's innovation agency. It accelerates UK economic growth by stimulating and supporting business-led innovation. It works with business; academia and Government, helping companies take concepts through to commercialisation.

Innovate UK have a budget in the region of £450m per annum, the majority of which is matched by business representing a significant investment in UK innovation. Since being established in 2007 it has directly supported over 5000 businesses and worked with virtually every University in the UK with an overall investment of over £3.5 billion. Innovate UK develops strategy in priority areas and provides funding support in the form of grants to finance R&D projects; access to knowledge through innovation vouchers, Knowledge Transfer Partnerships, Knowledge Transfer Network and _connect online platform; and access to skills and equipment through the network of Catapult centres.

Innovate UK's current strategy, 'Concept to Commercialisation', focuses on five areas:

1. Accelerating the journey between concept and commercialisation – helping move ideas from an early stage through to commercialisation as quickly and efficiently as possible.
2. Connecting the innovation landscape – building strategic relationships with other innovation players, creating a more effective environment to foster innovation.
3. Turning Government action into business opportunity – identifying how policy, standards, regulation and procurement can stimulate innovation.
4. Investing in priority areas based on potential – focusing on priority areas where there are UK strengths and large market opportunities most likely to generate UK economic growth.
5. Continuously improving our capability – developing our people and processes to be fast, flexible, and focused on business needs and delivering value for money.

European and International Strategy

Innovate UK's European and international strategy builds on its priorities and the support it provides for UK focused activity and helps businesses access funding, knowledge and build collaborations and partnerships with organisations outside of the UK to take advantage of global opportunities. The European and international strategy has three main strands:

- Maximising business benefit from Horizon 2020 by providing support to increase the participation in European Commission programmes.
- Collaborating with priority countries and innovation hotspots. Developing deeper relations with priority countries (India, China, Brazil and the USA) where there is the potential across a broad spread of our priority thematic areas; and, focusing on innovation hotspots globally where there is a concentration or cluster of activity in a specific priority thematic area where it makes sense to develop joint activities as there is clear benefit for UK business.
- Learning from EU and international best practice and benchmarking to understand the latest developments in supporting research, development and innovation, to improve how Innovate UK support UK business.

Everything Innovate UK do is driven by the desire to help UK business bring new ideas and technologies to market. The overriding criteria for taking action in the EU and international strategy are that there must be a clear benefit for UK business.

For further information on Innovate UK:
support@innovateuk.gov.uk

Research Councils UK

RCUK aims to make it simpler for Research Council sponsored researchers to collaborate with their preferred research partners around the world, by supporting enabling activities and reducing barriers. RCUK works flexibly to negotiate and administer funding mechanisms to fit the variety of interactions necessary to build partnerships, from first contact to large collaborative programmes. Creative approaches are taken, developing mechanisms according to the type of activity and the needs of the partners involved. These operate at a number of levels ranging from initial research links to large scale international research collaborations.

a) Early career and initial links

- Early career; RCUK are the largest block grant funders of postgraduate training and provide support for over 15,000 PhD students at any one time in a wide range of disciplines and themes. These include training grants developed in partnership with industry in areas of perceived skills need.
- Initial links; dedicated funding may be provided to stimulate initial links with partners overseas. These may be individual awards available to existing grant holders, workshop and networking calls to provide bottom up or targeted opportunities to network research communities or funding applied for as part of a larger grant proposal.

b) Collaborative calls

- Collaborative calls: pilots and preparation; Preparing the ground for collaborative calls requires careful understanding of the research landscape on both sides. More in depth mapping and workshop activities with clear aims and outcomes will inform the development of calls and help to network the communities and understand demand. Again this is an area where RCUK works with others according to interest and expertise.
- Collaborative calls: negotiation, delivery and evaluation; Research Councils have a major responsibility to fund substantial research programmes, including in international collaboration. As such they are uniquely placed to negotiate and deliver these programmes via well-established and efficient procedures, using dedicated electronic systems. In some cases e.g. when working in Europe, additional funding from outside of the Research Councils may be available to support the strategic preparation of collaborative activities.

c) Supporting scientific culture and research environment

- Joint centres; With more than 70% of funding going to 35 institutions in the UK, there are some very substantially funded groups and institutions. These are building scale and ambition, including through innovation orientated activity and efforts are underway to support partnering of these substantial investments with counterparts overseas.
- Infrastructure development and access; Research Councils are responsible for commissioning and maintaining national and international research facilities, and for ensuring access for researchers to the best infrastructure. Sharing and bartering of infrastructure globally is a core part of the research funding landscape.
- Embedding international; Researchers can apply for a substantial amount of funding through normal grant and fellowship streams to support mobility, gaining access to environments, facilities and laboratories worldwide. This is particularly common with traditional research nations, in particular in the US and Europe, and increasingly agreements are being brokered with trusted partners to allow collaborations to develop bottom up via simple streamlined and robust peer review processes.

Research Policy

- Teams in Research Councils and RCUK overseas posts commission studies and work with stakeholders to map strengths and capability to understand how to focus future interest or to help build capacity. This is often done in partnership with others e.g. SIN and the National Academies.
- RCUK provides expert advice to national and international stakeholders on research funding policy.
- RCUK contributes to knowledge exchange through European and global working groups developing best practice in a range of topics. These includes issues such as open access to data and publications, gender and diversity, research integrity, evaluation and monitoring, peer review and research for international development.
- RCUK provides an interface and first point of contact for partners overseas, including UK overseas posts, looking to connect at the level of funding organisations. This active engagement includes participating in science and research focussed dialogues and delegations.
- RCUK brokers agreements at a funding organisation level and actively contributes to the development of high level bilateral science and technology agreements, to effectively promote the UK and ensure that the UK research base, society and economy benefits from these relationships.

Through this wide range of activity UK ambitions for engagement in science and research, including with emerging and developing nations, is supported.

For further information on RCUK:

international@rcuk.ac.uk

UK HE International Unit

The UK Higher Education International Unit (IU) represents all UK higher education institutions internationally. It is charged with initiating and delivering projects and activities to support and develop the breadth and depth of the UK HE sector's international activities, including science and innovation. Working closely with Governmental and non-Governmental partners in the UK and overseas, the IU works to gather information on present and future opportunities for UK higher education; supports bilateral and multilateral policy dialogues; and negotiates high-level agreements on behalf of the sector. The IU also administers large scale scholarship programmes, like Science Without Borders UK and the UK-Indonesia DIKTI programme, which further the UK's science and innovation objectives through strengthening bilateral relationships and educating the researchers of tomorrow.

Given this unique mission, the UK HE International Unit is well-placed to support the UK Government's Science and Innovation Strategy in the following areas by:

a) Early Career and initial links

- Acting as the link between UK universities and Government bodies (BIS, FCO, SIN, UKTI) in the formulation of international science and innovation policy priorities which benefit and reflect the diverse strengths of the UK higher education sector;
- Acting as the first point of contact for partners overseas, including the UK Government and British Council offices, looking to connect with the UK higher education sector;
- Communicating high value opportunities to the higher education sector through the IU's unique channel to high-level representatives from all UK higher education institutions.

b) Collaborative calls, pilots and preparation

- Participating in outward and inward delegations, convening workshops and seminars designed to promote research collaboration through information-sharing and networking opportunities;
- Negotiating and administering high-profile programmes which include opportunities for collaborative research and innovation, capacity building and researcher mobility;
- Building the capacity of the UK higher education sector to collaborate internationally through an active research programme, expert community of practice networks and targeted events.

c) Supporting scientific culture and research environment

- Co-negotiating high-level bilateral agreements which include science and innovation between Governments and/or between higher education sectors;
- Promoting the UK's research and innovation excellence internationally and through engagement with policy-makers in priority countries and at the level of the European Union.

For further information on the UK HE International Unit:
info@international.ac.uk

The National Academies

The UK's National Academies – the Academy of Medical Sciences, the British Academy (social sciences and humanities), the Royal Academy of Engineering and the Royal Society (natural sciences) – are autonomous, self-governing organisations that elect Fellows based on their distinction in research across the full disciplinary spectrum. They offer a unique combination of expertise, excellence and independence through their respective fellowships, funding schemes, bilateral relations, membership of global and regional networks of academies and other international organisations. These enable the academies to contribute authoritatively to the UK Government's international research and innovation priorities.

The academies' access to researchers and – indirectly – to policymakers throughout the world helps:

1. ensure that UK research and researchers are supported in collaborating with the very best in the world;
2. support and promote the advancement of research internationally;
3. promote the benefits of research to society worldwide and its value in providing objective evidence;
4. offer impartial advice that can be used by the most influential decision-makers to develop public policy.

The UK academies work closely together when there are shared objectives and complementary interests and expertise. They also engage with other UK and international partners on a similar basis including research funders, academies and research institutions overseas, and a range of Government departments, posts and agencies.

The Academies support:

a) Early Career and Initial Links

- enhancing the mobility of researchers through their respective fellowship and international exchange schemes and other mechanisms e.g. Frontiers programmes, Newton International Fellowships; as Competent Bodies for Tier 1 Exceptional Talent visa route in the UK.

b) Collaborative calls, pilots and preparation, and major collaborative calls

- gathering information on research and innovation developments elsewhere and horizon scanning for new and emerging areas using their networks;

- conducting studies and facilitating dialogues on international policy issues of importance to the UK – for example, the international social, ethical and policy issues surrounding new technologies or research areas to assist other UK stakeholders to frame and moderate their international engagement;
- convening workshops and seminars of world-leading experts and/or emerging talent from around the world with international partners to stimulate new ideas/perspectives, address scientific challenges, seed collaboration and help other stakeholders in the UK research and innovation system to capitalise on opportunities for longer term collaboration.

c) Supporting a scientific culture and optimal research environments

- engaging multilaterally e.g. with the UN, European Union and other international bodies, to raise research and policy issues of concern to the UK, and help to ensure an open global environment for collaboration and exchange;
- supporting development-focussed research, or to build research and innovation capacity in and on emerging and developing economies using UK expertise;
- celebrating and showcasing UK excellence and leadership in research and innovation through their respective Fellowships and international partnership schemes;
- promoting the role of science in international relations (“science diplomacy”) to further national interests and excellence in global science.

For further information on the UK's National Academies:

- The Academy of Medical Sciences
international@acmedsci.ac.uk
- The British Academy
overseas@britac.ac.uk
- The Royal Academy of Engineering
international@raeng.org.uk
- The Royal Society
international@royalsociety.org

Summary of Organisation Contacts

1. British Council

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2. Innovate UK

support@innovateuk.gov.uk

3. Research Councils UK

international@rcuk.ac.uk

4. UK HE International Unit (IU)

info@international.ac.uk

5. The National Academies

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overseas@britac.ac.uk
- The Royal Academy of Engineering
international@raeng.org.uk
- The Royal Society
international@royalsociety.org