Department for Business, Innovation and Skills

European Research and Innovation Area (ERA): UK National Action Plan

Position Statement

May 2016

European Research and Innovation Area (ERA): United Kingdom (UK) National Action Plan

Contents

Introduction

The United Kingdom (UK) supports the aims of the European Research and Innovation Area (ERA) - a unified area open to the world, in which scientific knowledge, technology and researchers circulate freely. This national ERA action plan sets out the UK's work towards the ongoing implementation of the ERA on the key actions set out in the ERA Roadmap 2015-2020. The UK was actively involved in the development of the ERA Roadmap as part the European Research and Innovation Area and Innovation Committee (ERAC) and other ERA related groups.

The purpose of the ERA roadmap was to identify a limited number of key implementation priorities which were likely to have the biggest impact on Europe's research and innovation systems. The roadmap was agreed at the Competitiveness Council in May 2015 and Member States were tasked with developing national ERA action plans to implement its' key actions by mid-2016. The timeline of the roadmap runs to the end of the current EU framework research and innovation funding programme, Horizon 2020.

The UK national ERA action plan draws on existing national strategy on research and innovation and looks ahead to new developments, like the UK National Innovation Plan, which are due to be published later this year. We have consulted with stakeholders such as the Research Councils, Innovate UK, Universities UK, the British Council, National Academies, Higher Education funders and the Devolved Administrations in order to highlight how different bodies in the UK play their part in the ongoing development of the ERA.

According to the most recent ERA progress report published in 2014 the UK already demonstrates excellence across all ERA priorities. But we are not complacent. Continuous improvement is being driven through the development of new strategies, the review of old ones and the implementation of new initiatives to deliver these strategies effectively.

Executive summary table

ERA Priority	Key action from ERA roadmap	Current status	Planned action
1. Effective national research systems	Strengthening the evaluation of research and innovation policies and seeking complementarities between, and rationalisation of, instruments at EU and national levels.	• UK national strategy for science and innovation published 2014 • Independent reviews on the research funding councils (Nurse) 2015, business-university collaboration (Dowling) 2015	• Implementing recommendations from the independent reviews: Evolving Research Councils UK into **UK Research and Innovation** (UKRI) as a formal organisation for managing cross-Council research funds, formulating a strong collective strategic position, and ensuring an efficient approach to administrative functions • Reducing the complexity of public support to business-university collaborations on innovation, fostering relationships and introducing effective brokerage, especially for smaller businesses. • **National Innovation Plan** - due to be published 2016 • Stern Review of the Research Excellence Framework (REF) - due to be published summer 2016
2a. Jointly addressing grand challenges	Improving alignments within and across the Joint Programming Process and the resulting initiatives (e.g. Joint Programming Initiatives (JPIs)) and speeding up their implementation.	• UK participating in all 10 Joint Programming Initiatives • UK jointly lead the Joint Programming Initiative (JPI) on Agriculture, Food Security and Climate Change with France and are represented on the governing board by BBSRC and Defra •	• Will use the review of the Commission expert group on Joint Programming published in 2016 and Lund Declaration to engage with UK stakeholder on JPIs • Implementation of **Global Challenges Research Fund (GCRF)** • Development of Dementia Research Institute
2b. Research infrastructures	Making optimal use of public investments in RIs by setting	• UK is involved in 18/21 ERFRI projects and a	• UK is investing in new scientific infrastructure on a record scale, delivering

	national priorities compatible with the ESFRI priorities and criteria taking full account of long term sustainability.	further 21/29 ESFRI Landmarks, former projects that have now reached implementation phase	£6.9bn of science capital • UK participation in ESFRI 2016 roadmap projects according to national priorities
3. Open labour market for researchers	Using open, transparent and merit based recruitment (OTM-R) practices with regard to research positions	• Concordat to Support the Career Development of Researchers • Publication of research jobs on Euraxess • RCUK – Statement of Expectations for Postgraduate Training	• UK Concordat Strategy Group to review the UK process for the **HR Excellence in Research Award** taking into account the European Commission's intention to strengthen the European process for the Award • **PIPERS** (Policy into Practice: EURAXESS Researcher Skills) project • RCUK work on innovative doctoral training
4. Gender equality	Translating national equality legislation into effective action to address gender imbalances in research institutions and decision making bodies and integrating the gender dimension better into R&D policies, programmes and projects	• Athena SWAN Charter • Equality Challenge Unit • Daphne Jackson Trust • BIS Diversity Steering Group	• **Research Councils UK (RCUK) Action Plan for Equality, Diversity and Inclusion** published 4/5/2016–
5a. Knowledge transfer	Fully implement knowledge transfer policies at national level in order to maximize the exploitation of scientific results. RPOs and RFOs should make knowledge transfer second nature by integrating it in their everyday work	• Catapults • UK Research Partnership Investment Fund • Intellectual property toolkit (Lambert)	• Continued support for **Catapults** • HEFCE will develop the Knowledge Exchange Framework • Updated intellectual property toolkit (Lambert) will be launched in 2016.
5b. Open access	At National level Member States and	• UK Government committed to	• Open Research Data Forum developing Concordat on

	Associated Countries should promote Gold and/or Green Open Access	Gold/Green open access	open research data • UK action plan to support open research data - due to be published in 2016
6. International cooperation	Develop and implement joint strategic approaches and actions for international STI cooperation on the basis of Member States' national priorities	• Science and Innovation Network • Newton Fund • Work of British Council in science diplomacy • Role of Erasmus +	• Engagement with UK stakeholders on the European Commission's review of Joint Programming • Extension of **Newton Fund** to 2021 and doubling of funding • Launch of the **Global Challenge Research Fund**

ERA ROADMAP PRIORITY 1- Effective national research systems

Top Action Priority

Strengthening the evaluation of research and innovation policies and seeking complementarities between, and rationalisation of, instruments at EU and national levels.

Current Situation

The UK research base is world-class and we have overtaken the US to rank 1st by field-weighted citation impact[1]; it is the most productive research base in the G7 and has a breadth of excellent research across the sciences, social sciences, arts and humanities. This gives it a unique breadth of research capability across disciplines and the discovery-applied spectrum.

To support productivity and growth we are ensuring the UK remains a world leader in science and research by maintaining the ring fenced science budget in real terms and **continuing to support the highest value research, so that total spend is over £400 million higher than today by 2019-20**.

The key principles underpinning UK science and research policies are freedom to pursue fundamental research questions coupled with a focus on excellence with impact. The UK's dual support system for funding research, in which funding for projects and programmes of curiosity driven research and core funding for Higher Education Institutions (HEIs) are delivered through different funding bodies, is vital for ensuring a healthy and diverse research base.

A focus on excellence with impact is however central to both parts of the dual support system. The Research Councils have embedded the evaluation of the impact of research at the centre of their funding programmes. Institutional "quality related" funding for research delivered through the national Higher Education (HE) Funding bodies across the UK is responsive to demonstration of research excellence and impact. The outcome of the latest **Research Excellence Framework (REF)**, which evaluated the research performance of 154 UK Higher Education Institutions (HEIs), was published in December 2014[2] .

UK public research funding bodies have treated international peer review as standard practice for many years.

Following the publication of the UK science and innovation strategy called "Our Plan for Growth: Science and Innovation" in December 2014[3] the Government commissioned several

[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)

[2] http://www.ref.ac.uk/

[3] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387780/PU1719_HMT_Science_.pdf

independent reviews. These covered **business-university research collaborations** by Professor Dame Ann Dowling (published in July 2015[4]) and **research councils** by Professor Sir Paul Nurse to explore how they can support research most effectively (published in November 2015[5]).

Planned Future Action

The overarching recommendation of the Dowling review was that public support for the innovation system is too complex and acts as a barrier to collaboration, particularly with smaller businesses. The report calls for **simplification** and to hide complexity ('hide the wiring') with **improved interface and support**. The Government accepts in principle this central recommendation on simplification and it is being implemented by Innovate UK.

UK Research and Innovation (UKRI) was announced on 16 May 2016 in the government's higher education and research white paper, "Success as a Knowledge Economy". UKRI will be established as a single, strategic body that will bring together the 7 Research Councils, Innovate UK and the research funding from Higher Education Funding Council for England (HEFCE). With a combined budget of more than £6 billion, UKRI will be a major voice for UK research and innovation in the UK and globally.

The formation of UKRI will ensure the UK can lead the world in multi- and inter-disciplinary research, where some of the most exciting breakthroughs are happening. It will also provide a more strategic approach to addressing major global research and innovation challenges.

UKRI will also take on responsibility for the Research Excellence Framework (REF) working with the devolved administrations to deliver a UK-wide assessment of university research performance, and the associated university "block grant" for English universities - both currently managed by HEFCE.

The Government has commissioned **an independent review of the REF to address concerns about the burden of the process** on the HE sector. The purpose of the review is to ensure the arrangements currently in place for assessing excellence are as efficient and effective as possible, and to reduce the administrative burden. The review will also make certain that a future process identifies and supports excellent research across the UK, including dynamic changes in research quality and emerging areas of research excellence. The review is being chaired by Lord Nicholas Stern, the President of the British Academy and former World Bank Chief Economist. Lord Stern is expected to deliver his recommendations to the government in **summer 2016**, which will inform the **next REF exercise in 2021**.

[4] https://www.gov.uk/government/publications/business-university-research-collaborations-dowling-review-final-report

[5] https://www.gov.uk/government/collections/nurse-review-of-research-councils

The Government will launch a new **National Innovation Plan** to give the UK a clear framework for supporting and driving innovation. This follows on from the Productivity Plan and Competition Plan from last year in setting out an ambitious vision for where the Government wants to be by 2020 and the steps they will take to achieve this. The Innovation Plan will be for all levels of business in all parts of the UK. It will bring together ideas, levers and investment from across government to maximise the impact of support in providing the right conditions for business to innovate. The Plan will set out how innovation has the potential to drive productivity, benefit customers and improve public services.

ERA ROADMAP PRIORITY 2a -Jointly Addressing Grand Challenges

Top Action Priority

Improving alignments within and across the Joint Programming Process and the resulting initiatives (e.g. Joint Programming Initiatives (JPIs)) and speeding up their implementation.

Current Situation

The UK is a member of all 10 Joint Programming Initiatives and leads on one, the Joint Programming Initiative on Agriculture, Food Security and Climate Change (FACCE-JPI). It is an active participant other public/public research collaborations on grand challenges through ERA-Nets and Article 185 initiatives such as the European & Developing Countries Clinical Trials Partnership (EDCTP).

Joint Programming Initiative (JPI)	**Research Council/Other Government Department involved for UK**
Neurodegenerative diseases (JPND)	MRC
Agriculture, Food Security and Climate Change (FACCE)	BBSRC and Defra (UK leads this JPI)
Cultural Heritage	AHRC
Healthy Diet for a Healthy Life (HDHL)	MRC and ESRC
More Years, Better Lives – the Potential and Challenges of Demographic Change (MYBL)	ESRC
Connecting Climate Change Knowledge for Europe	NERC and Defra
Healthy and Protective Seas and Oceans	NERC, National Oceanography Centre (NOC) and Defra
The Microbial Challenge – an emerging threat to human health	MRC
Water Challenges for a Changing World	NERC, Centre for Ecology and Hydrology (CEH)
Urban Europe	ESRC

The UK Research Councils have for several years operated cross-Council themes targeting grand challenges in an interdisciplinary way. These map very closely on to the Grand Challenges identified in Horizon 2020.

The UK has also been a strong partner in European funded FP7 and Horizon 2020 Coordination and Support Actions (CSA) to explore the potential for wider multi-lateral collaboration between, for example funders of social science and humanities (NORFACE, HERA) in Europe and in the North and South Americas (Trans-Atlantic Platform for Social Science and Humanities (SSH)) in addressing global societal challenges on the basis of national priorities. The UK currently leads a CSA (EU-India Platform for SSH) to explore and

promote the potential for wider multi-lateral European SSH funder collaboration with India on the same basis.

Beyond EU funding, UK institutions are involved in other transnational funding schemes linked to addressing grand challenges e.g. the Belmont Forum on global environmental change research, the G7 initiative on oceans and Mission Innovation initiative on clean energy.

Planned Future Action

The UK will take into account the **Lund Declaration 2015** on joint programming to address global challenges which points out four key policy areas for the European research and innovation system to be more effective in addressing societal challenges; alignment, frontier research, global cooperation and impact with priority actions for each area.

The UK will use the **European Commission review of Joint Programming,** published in March 2016, as an opportunity to engage with UK stakeholders and to assess UK participation in these programmes and identify any future actions needed. It is particularly important for us to understand how the various national and transnational initiatives align. For example the recent announcement of £150 million for the **UK's first national Dementia Research Institute** and UK participation in the JPI on Neurodegenerative Diseases (JPND).

Another demonstration of the UK's commitment to tackling global challenges was the announcement of a **£1.5bn Global Challenge Research Fund** in November 2015.. This will ensure that the UK's world class research base takes a leading role in addressing the problems faced by developing countries and is part of a new Overseas Development Aid (ODA) strategy for the UK.

ERA ROADMAP PRIORITY 2b - Make optimal use of public investments in Research Infrastructures - RI's

Top Action Priority

Making optimal use of public investments in RIs by setting national priorities compatible with the ESFRI priorities and criteria taking full account of long term sustainability.

Current Situation

The UK balances a programme of building and operating world-class national research infrastructures with participation and cooperation in the development of its European counterparts where we have strong science requirements that can only be met through joint investments.

The UK has a strong record in national research infrastructures of international significance. The ISIS neutron and muon facility at the Rutherford Appleton Laboratory supports scientific research at the atomic scale in the physical and life sciences. Many researchers who use neutrons or muons at ISIS also require x-rays as well to provide complementary information, available at the co-located Diamond facility. The Hinxton biomedical and life sciences campus near Cambridge hosts the Wellcome Trust Sanger Institute and the European Molecular Biology Laboratory's European Bioinformatics Institute (EMBL-EBI). Jodrell Bank hosts the e-MERLIN/VLBI National Facility, the UK's facility for high resolution radio astronomy observations, and the headquarters of the Square Kilometre Array Organisation. The Natural History Museum holds 80 million specimens from the world's most important natural history collection. Our researchers can access national facilities such as research ships, aircraft, data analytics platforms and supercomputers. Importantly, all these national facilities are actively engaged in European networks to strengthen the collective performance of their sector in the ERA.

The UK also participates in and co-funds the development and operation of world class infrastructures sited elsewhere in Europe such as the European Spallation Source[6], CERN and the Large Hadron Collider. It is deeply involved in the development of new facilities such as the European Extreme Light Infrastructure[7] and has a leading role in ESFRI[8] (the European Strategic Forum for Research Infrastructures) since its inception. ESFRI is a strategic instrument to develop the scientific integration of Europe and to strengthen its international outreach.

- In December 2014 the UK government announced that the UK would invest up to £30M (about 38 M€) to become a full member of the European XFEL. The UK will become the 12th member of the European XFEL project, joining Denmark, France,

[6] https://europeanspallationsource.se/
[7] European Light Infrastructure https://eli-laser.eu/
[8] http://www.esfri.eu/

Germany, Hungary, Italy, Poland, Russia, Slovakia, Spain, Sweden, and Switzerland. STFC is now working with the European XFEL project and the other partners to negotiate UK membership.

- Funding of £100M (€120M) from government in 2014 for the Square Kilometre Array (SKA) project for which the headquarters of the SKA Organisation are hosted at Jodrell Bank, near Manchester. Science and Technology Facilities Council (STFC) also invested £19M over the next four years in the SKA project.

Planned Future Action

At a national level the UK is investing in new scientific infrastructure on a record scale, delivering £6.9bn of science capital. In addition, the Government will also invest £75m to unlock a £300m investment to transform the University of Cambridge's Cavendish Laboratories to serve as a national asset to benefit research across the UK.

The UK is involved in a number of actions in the **2016 ESFRI roadmap**[9] including those where we are host or coordinating country, such as ELIXIR, ISBE, INSTRUCT, SKA and ESS ERIC. In total the UK is involved in 18/21 ERFRI projects and a further 21/29 ESFRI Landmarks, former projects that have now reached implementation phase. This includes European Spallation Source (ESS), XFEL and E-ELT. All actions deliver high quality outputs for UK researchers and provide the opportunity for UK leadership on key elements. UK participation in ESFRI projects reflects our national priorities for Research Infrastructures.

The ESFRI actions are evaluated and selected based on scientific excellence, pan-European dimension and the maturity of governance, financial plans and legal status, with the goal of maximizing the likelihood of fast implementation. Out of twenty eligible proposals in 2016, ESFRI has selected six new projects in four research sectors addressing large telescopes, climate monitoring arrays, particle accelerators and biobanks as well as two major upgrades of infrastructures in high-energy particle physics and in analytical science.

[9] http://www.esfri.eu/roadmap-2016

ERA ROADMAP PRIORITY 3 - Open Labour Market for Researchers

Top Action Priority **Using open, transparent and merit based recruitment (OTM-R) practices with regard to research positions**

Current Situation

The UK research base is one of the most open in the world both in terms of the recruitment of researchers and indeed in scientific co-publications (48% of UK scientific articles in 2012 had one or more non- UK co-authors and 72% of active researchers internationally mobile). These aspects are mutually reinforcing as demonstrated by the 2013 Report on the International Competitiveness of the UK Research Base[10] , which underlined that the "dynamic flux of talent from within and beyond the UK means that the human capital element of the UK research base is constantly refreshing." An update to this report is to be published later in 2016.

UK institutions have autonomy in setting their own recruitment policies for researchers within the context of European rights to freedom of movement, national immigration law (where relevant for non-EU citizens) and other relevant legislation. In consequence UK HEI's currently recruit staff and researchers on a world-wide basis.

The UK has been in the forefront in establishing mechanisms to embed a culture of openness in the research sector as well as ensuring that researchers are supported in developing their careers and acquiring skills to enhance their employability. Central to this agenda is the **Concordat to Support the Career Development of Researchers** (https://www.vitae.ac.uk/policy/vitae-concordat-vitae-2011.pdf). This is an agreement between funders and employers of research staff to improve the employment and support for researchers and research careers in UK higher education which sets out clear standards that research staff can expect from the institution that employs them, as well as their responsibilities as researchers. It aligns closely with European Charter for Researchers and Code of Conduct for the Recruitment of Researchers.

Responsibility for implementing the Concordat rests with individual research institutions as well as the researchers themselves. The effectiveness of UK action in this field is demonstrated by the large number of UK institutions which have the EU's "HR Excellence in Research Award" (95 out of 254 across Europe as at November 2015)

The British Council manages the UK element of the **Euraxess** web portal on behalf of the Department for Business, Innovation and Skills and maintains a network of 30 Local Contact Points (LCPs) with an even spread across Higher Education Institutions in the four regions of the UK. Wider network opportunities and the central Euraxess job portal are promoted via

[10] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/263729/bis-13-1297-international-comparative-performance-of-the-UK-research-base-2013.pdf

the monthly Euraxess UK newsletter and by targeting wider fora, including UK job fairs. Currently, more than 10 percent of all job opportunities advertised on the central Euraxess website are at UK institutions, making the UK the single largest contributor to the job portal among European countries. The UK benefits from a wider pool of potential researcher recruits from across the EU. In a reciprocal way UK researchers benefit from access to adverts for research jobs across Europe which are advertised on the Euraxess jobs portal and from the help and support available from Euraxess centres across the EU if they take up work abroad.

he UK-based Vitae programme is now part of the Euraxess network and, building on their strong track record in the UK and internationally in strategic and practical interventions to strengthen researcher human capital, contributes to the enhancement of career and professional development services for UK researchers

Planned Future Action

The **UK Concordat Strategy Group**[11] consisting of research funders and university bodies, annually sets strategic priorities and reviews progress in implementing the principles of the Concordat. Specifically, they will review the UK process for the **HR Excellence in Research Award** taking into account the European Commission's intention to strengthen the European process for the Award. This will include considering the diversity of staff in academia who are engaged in research and how they are supported within the Concordat principles. The Concordat Strategy Group will also ensure that the Concordat remains current and reflects the changing nature of the research endeavour including more open data, open research and innovation, and a more inclusive research environment for all.

The UK also attaches great importance to **developing and strengthening inter-sectoral mobility**, reflecting both the value of knowledge exchange through the movement of people between sectors and the reality that many researchers will not in practice work in the academic/research institute sector throughout their careers. In this context the British Council is leading the **PIPERS (Policy into Practice: EURAXESS Researcher Skills) project** which is run across Member States and seeks to strengthen the capacity of the Euraxess network to support researchers in developing their careers.
(http://www.impacte.eu/pipers-project)

The UK will continue to use surveys such as PRES (Postgraduate Research Experience Survey), CROS (Careers in Research Online Survey) and PIRLS (Principal Investigators and Research Leaders) to monitor progress in implementation of the Concordat and the professional development of researchers. Since 2009 the questions in CROS have been closely linked to the Concordat to Support the Career Development of Researchers. Changes in CROS results will continue to be used within individual institutions and in aggregate for

[11] Representing the signatories and supporters of the Concordat to Support the Career Development of Researchers https://www.vitae.ac.uk/policy/concordat-to-support-the-career-development-of-researchers

the UK to offer evidence of progress in respect of the Concordat principles. CROS/PIRLS Steering Group will continue to refine and deploy the survey to assist institutions to strive to improve their provision for research staff, enhance their provision through sharing practice and identify evidence of their progress in implementation of the Concordat principles.

ERA ROADMAP PRIORITY 4 -Gender Equality and Gender Mainstreaming in Research

Top Action Priority

Translating national equality legislation into effective action to address gender imbalances in research institutions and decision making bodies and integrating the gender dimension better into R&D policies, programmes and projects.

Current Situation

The UK considers gender equalityas an important dimension of the ERA and we are already doing a lot in the UK to address gender inequality as part of diversity in general. Wider diversity issues include age, ethnicity, disability and sexual orientation.

The EU needs a diverse talent pool it can draw upon, which is as large as possible, so there are enough people, regardless of their gender, race, age, religion, sexual orientation or disability, with the right Science, Engineering, Technology and Maths (STEM) skills to allow us to compete on a global scale now and in the future.

The UK government is using some national programmes to pilot news ways of reaching out to groups currently under-represented in the UK STEM workforce. Many of the UK Government's Science, Technology, Engineering and Maths (STEM) partners are making a direct contribution to improving the representation of women in these fields. In the UK we have STEM Ambassadors – these are a network of volunteers from science, engineering and technical companies or academia, working with schools across the UK, and 40% of STEM ambassadors are women.

Athena SWAN Charter	Recognises good employment practice for women working in science, engineering and technology in higher education and research
Royal Society and the **Royal Academy of Engineering**	Jointly lead a programme to tackle the long-standing issue of diversity in science, technology, engineering and maths
Equality Challenge Unit	Works to further and support equality and diversity for staff and students in higher education across the UK and in colleges in Scotland
Daphne Jackson Trust	Charity which provides fellowships to STEM professionals wishing to return to research after a break of 2 or more years. Fellowships can be based in a university or research institute anywhere in the UK

Planned Future Action

The Government has set up a Diversity Steering Group to advise Ministers and officials on how best to improve diversity in the research and innovation sector. The Group is chaired by the Minister for Universities and Science in the Department for Business, Innovation and Skills (BIS). This group provides strategic support on developing and implementing initiatives to improve the diversity of public appointments in research and innovation partner organisations, improving the diversity of the research workforce, and promoting equality in service delivery (including research grants) of research and innovation partner organisations.

The Research Councils also have a collective ambition to be recognised as a leader in equality and diversity in the research community, working with partners throughout the sector. Since 2013 the Research Councils have set out their expectations for equality and diversity in a statement of expectations for those in receipt of their funding to embed diversity at all levels of the organisation.

The **Research Councils have been working with the BIS Diversity Steering Group to develop an RCUK Action Plan which represents their collective aspiration on Equality, Diversity and Inclusion.** This will be launched in **May 2016**. It will also be complemented by individual Research Council plans which will set out more specific actions as appropriate.

ERA ROADMAP PRIORITY 5a - Optimal Circulation and Transfer of Scientific Knowledge – Knowledge transfer

Top Action Priority

Fully implement knowledge transfer policies at national level in order to maximize the exploitation of scientific results. RPOs and RFOs should make knowledge transfer second nature by integrating it in their everyday work.

Current Situation

The UK has a long record of activity in this area; our Higher Education Institutions (HEIs) and public research institutes are already working closely with industry in a variety of forums (through direct links and through science parks, incubators, **Catapult centres**). Direct links between universities and business have grown rapidly since the end of the 2008 recession, with 6.9% increase from large business and 6.5% from SMEs – at highest growth levels ever. The UK funding system is already very oriented towards evaluating the impact of research using the Research Excellence Framework (REF).

The Commission's European Knowledge Transfer Report 2013[12] put the UK at number 2 in the EU in terms of adoption of their recommendations on good practice in Knowledge Transfer (KT). The UK was one country singled out as having comprehensive KT policies. The UK has put particular emphasis on strategy and management with a focus on KT capacities and skills development. The Commission also noted the importance of more knowledge sharing in KT skills and capacities, and also taking account of globalisation in KT. Increased knowledge sharing will be addressed through the Knowledge Exchange performance framework which Government has tasked Higher Education Funding Council for England (HEFCE) with developing, which will cover both good practice and benchmarking as means to share and improve KT policy, strategy, management, skills and capabilities.

The HEFCE administers the **UK Research Partnership Investment Fund** (http://www.hefce.ac.uk/rsrch/ukrpif/) which has so far invested £500m in 34 large scale/strategic research partnerships between universities and businesses and charities, to which business/charity partners have provided more than £1.3 billion additional co-investment. A further £400million will be available to 2020-21.

Planned Future Action

The Government's **Productivity Plan**[13] published in July 2015 set out the ambition that UK Universities will continue to increase their collaborations with industry to drive research

[12] https://ec.europa.eu/research/innovation-union/pdf/knowledge_transfer_2010-2012_report.pdf
[13] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/443898/Productivity_Plan_web.pdf

commercialisation and knowledge exchange, and **increase the income they earn from working with business and others to £5 billion per annum by 2025**.

Government set out its priorities for knowledge exchange (KE) in the HEFCE grant letter/science budget document – HEFCE will continue to allocate £160M for HEIF based on long-term KE strategies which address outcomes of KE. HEFCE is developing the **Knowledge Exchange Framework**[14]and has established a group, chaired by the Vice-Chancellor of Keele University to examine good practice in tech transfer.

Funding for **a new Catapult Centre** was announced in January 2016. The new Compound Semiconductor Applications Catapult will be based in Wales and receive £10 million a year of government support up to 2020-21.

The toolkit on **intellectual property (IP)**, known as the Lambert toolkit[15], was developed in the UK to help universities and business get to grips with issues relating to the ownership and exploitation of any IP rights generated in collaborative research projects. It has provided a set of model contracts, a decision guide and extensive educational resources aimed at helping universities and businesses conduct effective negotiations in public-private sector collaborative research. An evaluation of the toolkit in 2013 demonstrated that it has had a positive influence on collaborative research partnerships but identified areas for improvement. Following this evaluation the Intellectual Property Office (IPO) drew together a group of experts from academia and industry to improve the toolkit, focussing primarily on the creation of new model agreements and modernising existing agreements to reflect changes in legal practices. The **updated intellectual property toolkit will be launched in 2016**.

ERA ROADMAP PRIORITY 5b - Optimal Circulation and Transfer of Scientific Knowledge – Open Access

Top Action Priority

At National level Member States and Associated Countries should promote Gold and/or Green Open Access in line with the Commission's 2012 Recommendation on access to and preservation of scientific information (covering both scientific publications and research data). In particular, they should ensure the further implementation of open access to scientific publications by the most appropriate means in their own research environment.

Current Situation

The percentage of publications in Open Access form is steadily increasing in the UK.

[14] http://www.hefce.ac.uk/kess/goodpractice/
[15] https://www.gov.uk/guidance/lambert-toolkit

The government remains fully committed to open access to research publications in line with the recommendations of the 2012 Finch Group Report[16]. More recently, in February 2016, the Minister for Universities and Science responded to independent advice from Prof. Adam Tickell, the chair of the Universities UK Open Access Coordination Group, on open access. The response confirmed the current direction of travel towards open access.

The UK prefers gold open access (where papers are made available freely from the point of publication), though green open access (where papers are released freely after an embargo period) is a valid option. Whilst our ultimate objective remains gold open access, we will continue to work, nationally with partner organisations and other research funders on the implementation of open access to achieve a sustainable and affordable model. There is now a formal requirement that all outputs that stem from Research Councils and HE funding bodies funded research needs to be made available in either gold or green access, which should lead to an increase in UK research available in open access. Progress is being monitored through a Universities UK Open Access Coordination Group.

We also intend to work closely with partners in Europe and beyond on this agenda.

Planned Future Action

The UK is a world leader in Open Access to Research data. The Open Research Data Forum is currently finalising a **Concordat on open research data** that will set out the common principles to guide and inform data owners and providers to promote a cultural shift. **A national infrastructure roadmap and UK action plan to support open research data** will be developed during **2016**. The UK funding bodies will be considering how to reward open data as part of future REF assessments subject to the evaluation of the REF 2014 and the outcome of the Stern review on REF.

[16] The recommendations feature in the government response to the review: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32493/12-975-letter-government-response-to-finch-report-research-publications.pdf

ERA ROADMAP PRIORITY 6 - International cooperation

Top Action Priority

Develop and implement joint strategic approaches and actions for international STI cooperation on the basis of Member States' national priorities.

Current Situation

The UK's aspiration is to be partner of choice for collaboration in the research and innovation fields. The UK research base is already very open for collaborations across the world (48% of UK scientific articles in 2012 have one or more non- UK co-authors and 72% of active researchers are internationally mobile).

Collaborations with Europe are central to this aspiration, as the UK's high levels of participation in Horizon 2020 and its predecessors demonstrate. Over 80% of the UK's internationally co-authored papers are written with partners from other EU countries. Collaboration through Horizon 2020 can also be a way of facilitating links with non-European partners. The UK has for several years worked strategically with Netherlands, Germany, and France through the Bonn Group of social science research funders, to promote innovative collaborative research through non-thematic 'Open Research Area' funding calls.

The UK has also in recent years taken steps to **strengthen bilateral links with key third country partners** beyond Europe, such as India and China, using our **Science and Innovation Network (SIN)**[17] based in embassies in strategic locations throughout the world. SIN is jointly funded by the Department for Business, Innovation and Skills (BIS) and the Foreign and Commonwealth Office (FCO).

The UK Government is committed to spend 0.7% of GNP on International Development and has made a strategic decision to use Science as a key delivery mechanism of Official Development Assistance (ODA). Ant important recent development in pursuit of **International Development** is the establishment of the **Newton Fund,** launched in 2014 by the UK's Department of Business, Innovation and Skills (BIS) as the first truly significant UK bilateral international science and innovation fund. Through this the UK will use its strength in research and innovation to promote the economic development and social welfare in 16 partner countries. These bilateral relationships with 'third country' partners will also enable us to build strong sustainable and systemic relationships with these countries that will support the continued excellence of the UK research base but also offers them an entry point to Europe acting as a stimulus for wider engagement beyond the Fund.

The UK is very active in **science diplomacy**, seeking to build collaborations in what are sometimes politically sensitive areas where more "conventional" diplomatic links are

[17] https://www.gov.uk/government/world/organisations/uk-science-and-innovation-network

difficult (e.g. collaboration between UK and North Korean scientists to understand Mount Paektu, a volcano responsible for one of the most intense eruptions recorded in human history, which is showing signs of life). The **British Council** fosters scientific cultural relations between Europe and third countries by enabling scientists to work together for longer-term collaborations even under challenging circumstances.

UK HEIs are very active round the world in **establishing overseas campuses**, which are now increasingly becoming active in the research area, strengthening links between their "host" countries and the UK science base. In addition, most if not all UK HEIs have their own institutional internationalisation strategies; these may seek to build upon links created by the UK's attraction as a place to (the UK attracts the 2nd largest number of international students after the USA and roughly one in six students come from overseas, of these nearly 70 per cent are from outside the EU).

The UK is an important player in **Erasmus+**, and the programme's UK National Agency – a 7-year partnership until 2020 between the British Council and Ecorys UK – provides a key link with other EU Member States and third countries, including in the higher education and research sector through partnership funding and mobility opportunities for students and staff. In the current funding cycle, there are 20 Erasmus+-funded strategic partnerships in the Higher Education field led by the UK and involving at least two other Member States and the programme supports mobility of around 16,000 students and up to 2,000 staff to Member States per annum.

Research Councils UK has lead agency agreements with the US National Science Foundation, with FAPESP (the Research Council for the State of São Paulo in Brazil) and with Fonds National de la Recherche in Luxembourg which demonstrates the commitment to removing some of the barriers facing international research collaboration.

Planned future action

The Newton Fund launched in 2014 originally consisted of £75 million each year for 5 years. In the 2015 UK Spending Review it was agreed to extend and expand the Fund. The **Newton Fund was extended from 2019 to 2021 and expanded by doubling the £75 million investment to £150 million by 2021, leading to a £735 million UK investment to 2021**, with partner countries providing matched resources within the Fund.

Following on from the success of the Newton Fund in December 2015 the UK Government announced the establishment of the **Global Challenge Research Fund** (£1.5B), the **Prosperity Fund** to promote the economic reform and development needed for growth in partner countries (£1.3B) and the **Ross Fund** to help combat serious diseases in developing countries (£1B).

Annex A -Monitoring and Evaluation

Where we have a future date for launch of national strategies or initiatives these will be reviewed after that event. There are a number of reviews and reports referenced in this action plan that are due to be published later this year (2016) so this plan will need to be updated with key recommendations and milestone dates when they are available.

The UK will have regard to the core high level indicators, one for each priority, for monitoring progress agreed by ERAC. Our base line is the most recent ERA Progress report from 2014 and we will monitor progress against future ERA Progress Reports which are published every 2 years.

ERAC high level indicators for ERA Roadmap 2015-2020

ERA Priority	ERAC High Level Indicator	Baseline - ERA Progress report 2014	
		UK	EU average
Priority 1: Effective national research systems	Revised version of the Research Excellence Indicator, a composite indicator published annually in the Innovation Union Progress report by the European Commission.	N/A	N/A
Priority 2a: Jointly Addressing Grand Challenges	National GBAORD allocated to Europe-wide, bilateral or multilateral transnational public R&D programmes.	4.9% (2012)	no comparator given
Priority 2b: Make optimal use of public investments in Research Infrastructures (RI's)	Availability of national roadmaps with identified ESFRI projects and corresponding investment needs.	Yes	N/A
Priority 3: Open Labour Market for Researchers	Open recruitment: Researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector per year.	54.8 (2013)	43.7 (2013)
Priority 4: Gender Equality and Gender Mainstreaming in Research	Proportion of women A grade in Higher Education Sector (HES). (Grade A: the single highest grade/post at which research is normally conducted)	17% (2010 - latest available figure)	20% (2010 - latest available figure)
Priority 5a: Scientific knowledge transfer	Percentage product or process innovative firms collaborating with higher education institutions or with public research institutions for their innovation activities.	4.9%	6.8%
Priority 5b: Promoting Open Access to scientific publications	Proportion of Open Access papers (Gold and Green OA only) per country.	99.8% (2013) (Share of responding funders supporting open access to publications)	51% (2013) (Share of responding funders supporting open access to publications)
Priority 6: International cooperation	International scientific co-publications per thousand researchers (FTE) in the public sector.	1021 (2012) (International scientific co-publications per million population, Europe)	343 (2012) (International scientific co-publications per million population, Europe)

Annex B- Good practice examples

ERA ROADMAP PRIORITY 1- Effective national research systems

Research Excellence Framework (REF) 2014

The REF is the arrangement for periodic assessment the quality of research produced by UK Higher Education Institutions (HEIs). REF2014 was undertaken by the four UK higher education funding bodies; the outcomes are used in three ways:

- The funding bodies use the assessment outcomes to inform the selective allocation of their research funding to HEIs, with effect from 2015-16.
- The assessment provides accountability for public investment in research and produces evidence of the benefits in this investment.
- The assessment outcomes provide benchmarking information and establish reputational yardsticks.

In REF 2014, for the first time, the impact of research beyond academia was assessed along with the academic excellence of research and the vitality of the research environment. Universities submitted short case studies of impacts arising between 2008 and 2013. One case study was submitted for every 10 members of staff included in a university's submission. The REF assessment of impact provided a wealth of evidence of the wide-ranging and significant impact resulting from UK research.

For the purposes of REF 2014, impact was defined as "an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia".

The case studies were assessed, along with research outputs, by expert panels who reported impressive, high-quality impacts, covering diverse scales of activity and influence involving all research disciplines – from the life sciences to arts and humanities – and from many diverse UK universities with submission of all sizes. On average across all submissions, 44 per cent of impacts were judged outstanding, with a further 40 per cent judged to demonstrate very considerable impact.

ERA ROADMAP PRIORITY 2a - Jointly Addressing Grand Challenges

Jointly addressing grand challenges in Scotland and Wales

Scotland

In Scotland research pooling and sharing of resources in response to major challenges is well established. Over the last decade, the Scottish Government via the Scottish Funding Council has invested £156 million in **Research Pools**, an innovative approach to research collaboration that has levered excellence and collaboration between universities, both on a domestic and international scale. Alongside the Research Pools, the Scottish Government through the Scottish Funding Council is investing £124 million (2013-2019) in a network of **Innovation Centres**. These Centres are collaborations between universities, businesses and others to enhance innovation in and across Scotland's key economic sectors. There are currently 8 Innovation Centres and these are: Stratified Medicine, Sensors and Imaging Systems, Digital Health Institute, Industrial Biotech, Aquaculture, Construction Scotland, Big Data and Oil and Gas

The 8 Innovation Centres in Scotland have also put additional funding into a new grand Challenge round cancer and cancer care.

Wales

A number of research collaborations are currently being supported within Wales, and Wales also partners in several UK-wide initiatives to benefit research. The Welsh Government/HEFCW **Sêr Cymru ('Research Stars')** programme aims to build capacity in areas of research excellence in Wales, in line with the objectives of Science for Wales, the Welsh Government's strategic agenda for science and innovation in Wales. The investment (£50 million for research in Wales over five years (2013 to 2018)) focuses on three Grand Challenge areas: life sciences and health; low carbon, energy and environment; and advanced engineering and materials. The programme is funding:

- Four Sêr Cymru Research Chairs and their research teams
- A National Research Network (NRN) in each of the three Grand Challenge areas.

A new development in Wales will see the EU's Horizon 2020 programme working in synergy with EU structural and investment funds (ESIF) to deliver a single programme to grow Welsh research capacity still further. The first element focuses on developing the next generation of talented researchers - Marie Skłodowska-Curie Actions COFUND scheme, where £17m will bring up to 90 new research fellows from outside the UK to work with the best researchers in Wales. A second phase will invest almost £40m to support up to 70 research fellowships.

Wales has adopted the smart specialisation methodology to develop **'Innovation Wales'**, which, alongside Science for Wales, recognises our strengths and defines future research

and innovation priorities. The Welsh Government's SMART Innovation programme is supported by almost £10m from European Regional Development Funds (ERDF). It will provide pan-Wales support for innovation and commercialisation in the form of specialist advice for SMEs and large companies. Innovation specialists will link closely with universities and develop collaborative projects with businesses and related academic departments. It links very closely with the Welsh Government's SMART Cymru and SMART Expertise operations which are also funded by ESIF.

ERA ROADMAP PRIORITY 2b - Make optimal use of public investments in Research Infrastructures - RI's

UK Research Partnership Investment Fund

The UK Research Partnership Investment Fund (UKRPIF), which is administered by HEFCE on behalf of the Government, is designed to stimulate investment in large-scale higher education research facilities in areas of research excellence. To date, HEFCE has allocated more than £500 million of public investment to major infrastructure projects, and universities have secured over £1.4 billion in further funding through investment from businesses or charities. A fifth round of the competition was launched in December 2015.

UK Research Partnership Investment Fund was announced at Budget 2012. The Higher Education Funding Council for England (HEFCE) is responsible for managing the Fund, working in collaboration with the other HE funding bodies. UK universities can bid for between £10 million and £35 million per project from the Fund for large long-term capital projects/partnerships, but must demonstrate at least double that amount in external private co-investment, and projects must also build on a strong record of research excellence. £501m has been allocated over 2012-2017 to 34 projects, levering over £1.42bn of private co-investment from business and charities – together with other contributions, this is delivering almost £2 billion investment in University R&D collaborations with businesses and charities. These will help to support key UK industry sectors including life sciences and healthcare, telecommunications, construction, manufacturing & engineering, aerospace, automotive, and energy. In December 2015, HEFCE announced the 5th call for proposals – for up to £200m from 2018-20, from the £400m extension out to 2021 announced at the March 2015 Budget. It also announced various enhancements - where all the original assessment criteria are met, assessment will also take account of wider factors which recognise the potential of research to contribute to growth, including locally, build local collaboration and increase research diversity; and in addition in order to address key "scientific and societal grand challenges", universities will be able to bid for up to £50m from the Fund.

Square Kilometre Array

The SKA Organisation is a consortium of European member states and third countries working together to build the Square Kilometre Array, a radio telescope so large that part will be built in Southern Africa and part in Australia. This Telescope is so important to the Astronomy community that it has been on the **ESFRI Roadmap** since 2006 and is now listed as a "Landmark" project. The Telescope is a major driver for the development for new technologies particularly with regard to computing due to its vast data handling and processing requirements which puts it at the leading edge of "Big Data". The countries involved include the UK, Holland, Italy, Sweden, India, China, Canada, Australia and South Africa. South Africa actually heads a consortium of 9 African countries whilst several other countries have expressed their interest in becoming formally involved. All the African countries are eligible to receive Official Development Assistance and the UK is funding two such projects from its Newton Fund.

ERA ROADMAP PRIORITY 3 - Open Labour Market for Researchers

Vitae – The role of stakeholder organisations in realising the potential of researchers

Vitae is dedicated to realising the potential of researchers through transforming their professional and career development, thus helping to meet society's need for high-level skills and innovation.

Vitae is an international programme led and managed by Careers Research and Advisory Centre (CRAC), a not-for-profit registered charity dedicated to active career learning and development and based in Cambridge, UK since 1968. Vitae has significant expertise in enhancing the skills and career impact of researchers locally, within a global context. Much of its work has been funded by the UK Research Councils and has played a key role in the UK drive for high-level skills, innovation and world-class researchers.

Vitae's aims are to:

- build human capital by influencing the development and implementation of effective policy relating to researcher development
- enhance higher education provision to train and develop researchers
- empower researchers to make an impact in their careers
- evidence the impact of professional and career development support for researchers

What Vitae does

Vitae brings together all those with a stake in realising the potential of researchers. With UK and international partners Vitae champions the needs of researchers, develops policy and practice to effect real and lasting change and demonstrates the impact of researchers on

economies and society. **Vitae manages the UK process for the HR Excellence in Research Award and supports the UK Concordat Strategy Group**, whose members include the BIS, Research Councils UK, major research funders and Universities UK. In 2015 Vitae became the first **EURAXESS Career Development Centre**, a virtual service centre for everything related to career development for researchers.

ERA ROADMAP PRIORITY 4 - Gender Equality and Gender Mainstreaming in Research

The Athena SWAN Charter

The Equality Challenge Unit's (ECU) (http://www.ecu.ac.uk/) Athena SWAN Charter recognises commitment to advancing women's careers in science, technology, engineering, maths and medicine (STEMM) employment in academia. The Charter has been working with higher education institutions (HEIs) in the UK since 2005 and with research councils since 2013. There are now 137 member institutions holding more than 536 awards between them. Institutions and departments are required to demonstrate a solid foundation for eliminating gender bias and a commitment to developing an inclusive culture. They must engage in a process of self-assessment to identify the institution's key issues regarding gender equality in quantitative and qualitative terms. They must create a plan for action that builds on this assessment and which embeds the principles of the Charter in the organisational structure. An independent evaluation of the Charter by Loughborough University (http://www.ecu.ac.uk/publications/evaluating-athena-swan/) found that the Athena SWAN process is a driver for improving gender diversity in UK institutions. The evaluation also found evidence that the Charter brings about sustainable change.

The Charter has expanded a pilot scheme in Ireland funded by the Higher Education Authority in Ireland. ECU is using the knowledge learnt from Athena SWAN to inform the FP7 funded **GENDER-NET** project (http://www.gender-net.eu/), the first ERA-NET dedicated to the promotion of gender equality.al and departmental awards.

In May 2015 the Charter was expanded to recognise work undertaken in arts, humanities, social sciences, business and law and in professional and support roles, and for transgender staff and students. The charter now recognises work undertaken to address gender equality more broadly, and not just barriers to progression that affect women.

ERA ROADMAP PRIORITY 5- Optimal Circulation and Transfer of Scientific Knowledge

National Centre for Universities and Business

The National Centre for Universities and Business (NCUB) was launched in April 2013 in response to the recommendation to establish a focal point of university-business collaboration, set out in Sir Tim Wilson's review of university-business collaboration. The NCUB brings universities and business together to promote and support collaboration, develop evidence on collaboration, and as a repository of evidence and best practice. It brings together leading UK academic institutions, non-academic organisations interested in making the most of the UK's excellent research and innovation capabilities, and all the public funders of science and research across the UK. Through the NCUB website (www.ncub.co.uk), and flagship reports such as the State of the Relationship report, it showcases and gathers evidence on the best of university-business collaboration across the UK. Through their Task Forces, they bring together leading business and university leaders to understand and tackle issues affecting both the development of research and innovation opportunities as well as the attraction and development of the right talent into the sector. With Innovate UK and the support of HEFCE, NCUB has developed the "Smart Specialisation Hub" to help national/local innovation alignment – which was launched in January 2016. NCUB is developing an online brokerage platform to help link business with researchers, university capability and expertise, for launch in 2016.

Examples from Scotland and Northern Ireland

In Scotland **"Interface Scotland"** (http://www.interface-online.org.uk/) is a central hub for connecting business across all sectors to the knowledge, expertise, services and facilities available from Scottish Universities and Research Institutes for industry and commercial organisations.

In Northern Ireland, the Department for Employment and Learning supports the **'Connected'** programme (www.connected.ni.org) - an initiative involving both universities and the six further education colleges, enabling them to come together to provide a highly effective "one-stop-shop" for companies wishing to access the technology and knowledge capital within the local research base.

ERA ROADMAP PRIORITY 6 - International cooperation

The British Council

The British Council is the UK's international organisation for cultural relations and educational opportunities. The British Council fosters scientific cultural relations between Europe and third countries by enabling scientists to work together for longer-term collaborations even under challenging circumstances. They are present in in six continents and over 100 countries. Recent examples include three **UK-Iran Researcher Links** workshops on cities, water management, and global health which are hoped to be a starting point for deeper engagement with Iran around research. Another example in the MENA region is the seed funding provided under the Middle East Water Research Call for trilateral collaborations between researchers in the **UK, Israel and third countries** in the region, a programme developed with the **UK Science and Innovation Network** and the UK-Israel Science Council. This followed on from the very successful establishment of the £10 million Britain-Israel Research and Academic Exchange Partnership (BIRAX) on regenerative medicine, which is run in partnership with the British Embassy Tel Aviv and 24 not-for-profit organisations in the UK and Israel (including leading medical research organisations such as the British Heart Foundation, JDRF and Parkinson's UK) to support collaborative research between 35 UK institutions and all of Israel's research universities. Another current example is the Researcher Links workshop programme run by the British Council in partnership with the Russian Foundation for Basic Research to support **scientific exchange between UK and Russian academics,** with a focus on early career researchers.

Intellectual Property Office

The UK Intellectual Property Office is has worked with Korea and India to develop Lambert style agreements on Intellectual Property for **UK-Korea** and **UK-India** collaborative research projects. Similar work with China is due to conclude shortly with the launch of a **UK-China** toolkit.

The Open Research Area

The Open Research Area (ORA) originated as an agreement between **ANR (France), DFG (Germany), ESRC (UK) and NWO (Netherlands)** to strengthen **international co-operation in the social sciences** through a common call for proposals to fund the highest quality joint research projects. The ORA can be seen as fulfilling the Europe Commission's desire to see improved coordination and collaboration between teams of researchers from different countries, supported by funding organisations in member states. Now in its fourth round, the ORA has established a joint funding scheme for integrated research projects in the social sciences that include researchers from two or more of the four participating countries, in most multi-lateral combinations. Partner organisations work with a co-ordinated peer review process and a single common and binding selection process. Funding is distributed

amongst the partners according to the place of work of the researchers. The ORA is similar to the European Research Council funding opportunities in that awards are made on the basis of excellent, innovative and investigator-initiated research projects. Funded ORA projects are between two and three years in length.

New Opportunities for Research Funding Agency Co-operation in Europe (NORFACE)

New Opportunities for Research Funding Agency Co-operation in Europe (NORFACE) is a collaborative partnership of **18 national research funding agencies in Europe** and beyond. NORFACE is making a major contribution to the **realisation of the ERA in the social sciences** by offering unique opportunities for participating funding agencies by developing common research funding instruments, thus creating opportunities for facilitating and building new networks of research collaboration in the social sciences. Since 2004, NORFACE has received core funding through the European Commission's **ERA-NET** scheme and has delivered three transnational research programmes: 'Re-emergence of Religion as a Social Force in Europe'; 'Migration in Europe: Social, economic, cultural and policy dynamics'; and 'Welfare State Futures'. The latest programme, 'Dynamics in Inequality Across the Life-course' (DIAL) is currently under peer review with decisions to be announced in June 2017.

Examples from Scotland

The Scottish Government, Scottish Funding Council, British Council Scotland, Scottish Development International, and the Royal Society of Edinburgh have developed an active partnership approach to international collaboration through the **Connected Scotland initiative.** This involves identifying priority countries for collaborative engagement based on Scotland wide priorities and collective assets. To date, initiatives have involved using Scotland's Research Pools to engage with **Hong Kong, Brazil** and a cross sector mission to **Indonesia**. In the case of Hong Kong this has resulted in a jointly funded post graduate scholarship scheme in the areas of Energy and Life Sciences. **China, Malaysia and India** are the next group of priority countries for Connected Scotland.