

Building global engagement in research – Sources of funding for enabling international research collaborations

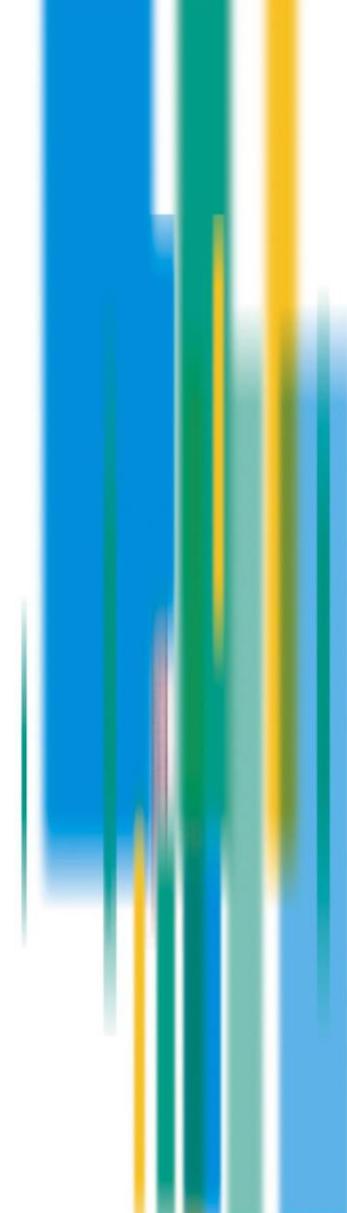
Jane Nicholson, Head of International Policy, EPSRC



EPSRC

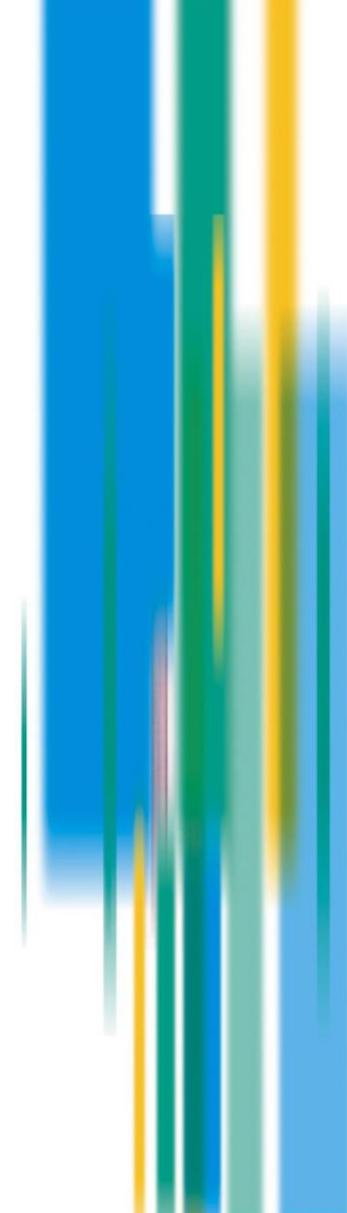
Engineering and Physical Sciences
Research Council

Engineering Professors Conference 16 April 2013



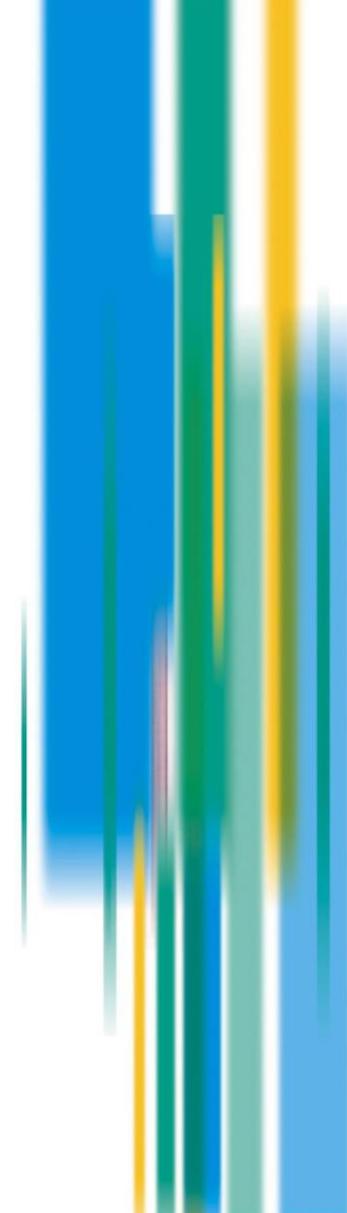
Introduction

- Why we need to consider collaborations ?
- RCUK International Strategy and EPSRC approach
- Sources of Support
 - EPSRC
 - Europe
 - Others
- Summary



“There is no national science just as there is no national multiplication table”

Anton Chekhov



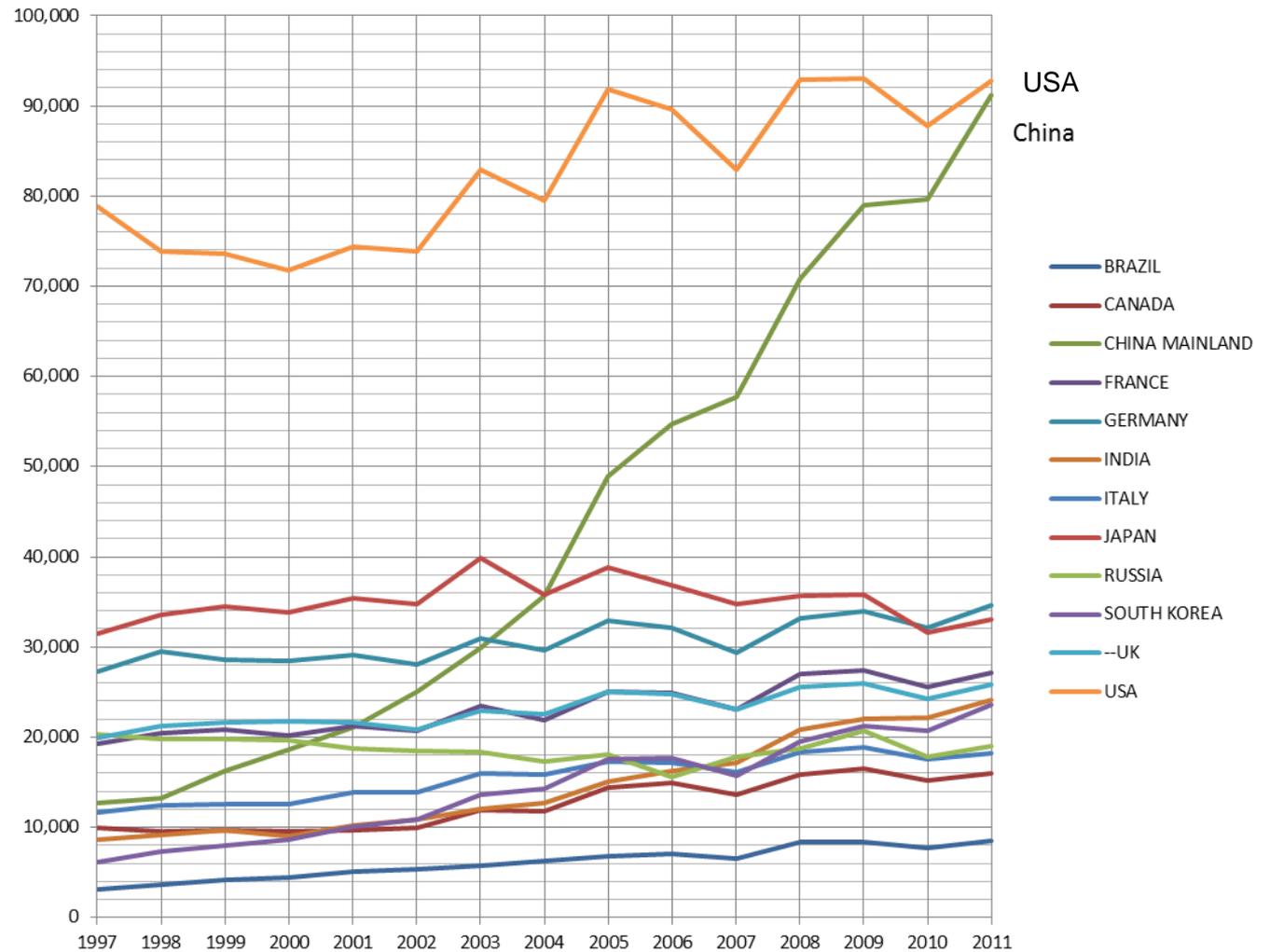
UK research base remains
productive and efficient, continuing
to rank as second only in the world
to the USA on leading scientific
indicators

International Comparative Performance of the UK research base
2011

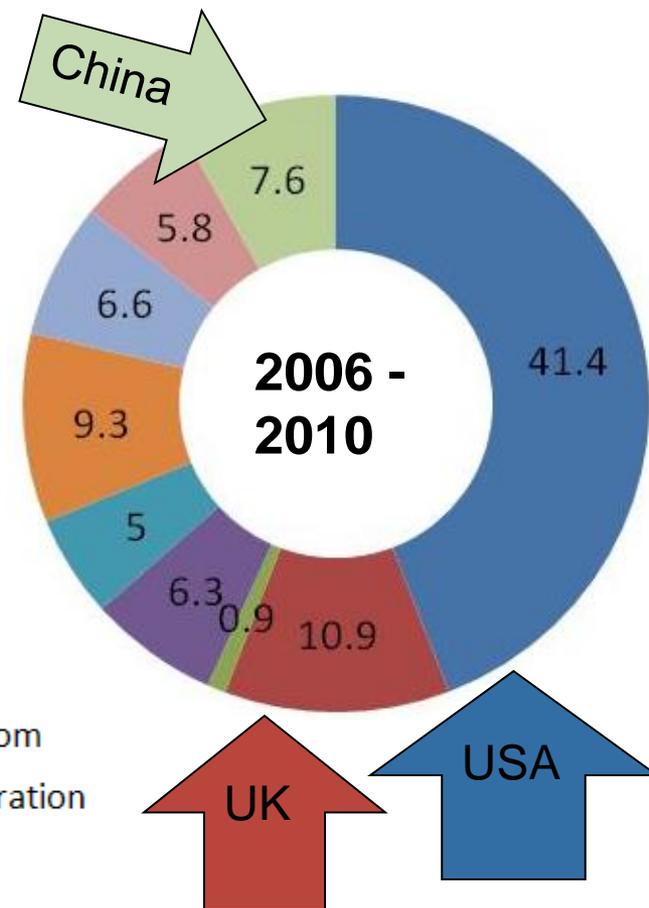
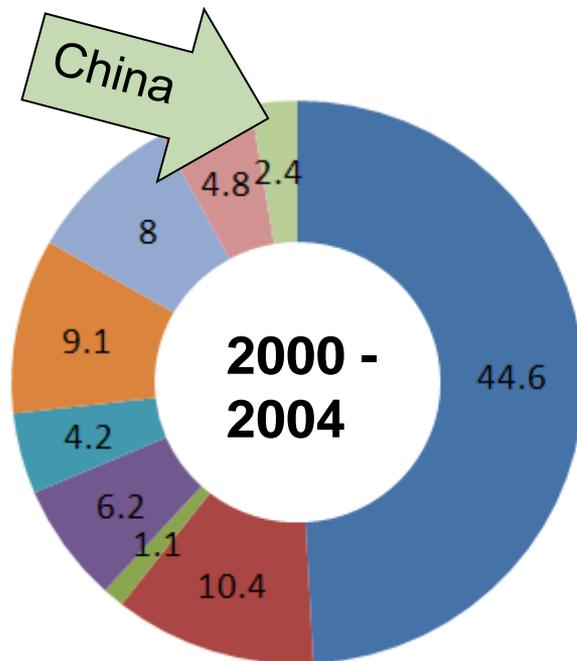
EPSRC

Engineering and Physical Sciences
Research Council

The Scientific Landscape : Number of publication by Country in Health, Life , Engineering and Physical Sciences by year (1997 to 2011)

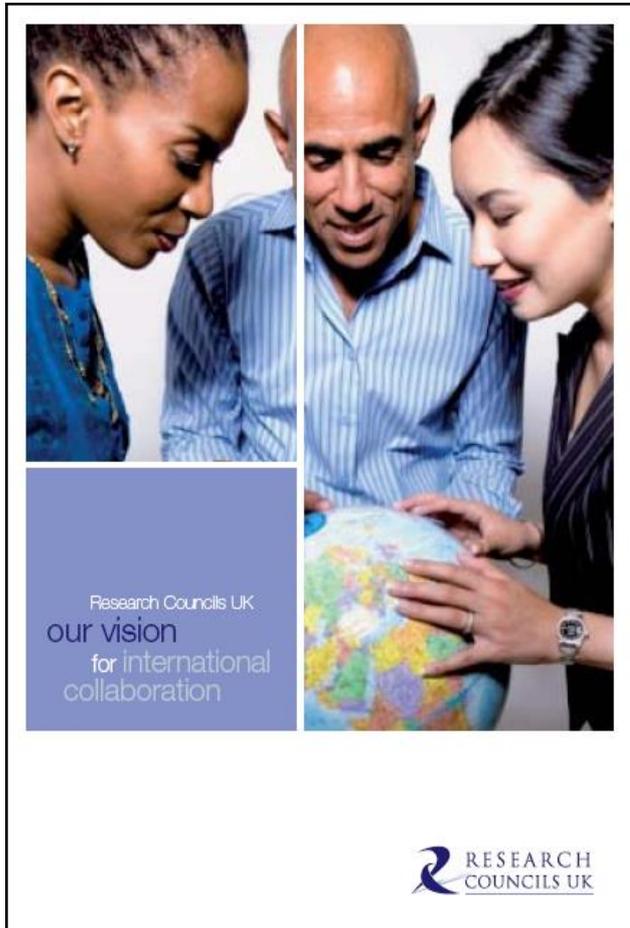


The Scientific Landscape : Citations



- United States
- United Kingdom
- Russian Federation
- France
- Italy
- Germany
- Japan
- Canada
- China

RCUK International Strategy



Increase RCUK influence in international strategy and policy development - *Influence*

Promote and facilitate excellent research collaboration - *Excellence*

Enhance the value and impact of research through international collaboration - *Impact*

Show RCUK commitment to key global responsibilities - *Responsibility*

EPSRC

Engineering and Physical Sciences
Research Council



Promoting Research Excellence

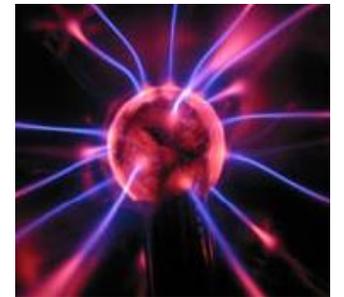
RCUK aims to make it simpler for UK researchers to collaborate with their preferred research partners around the world by:

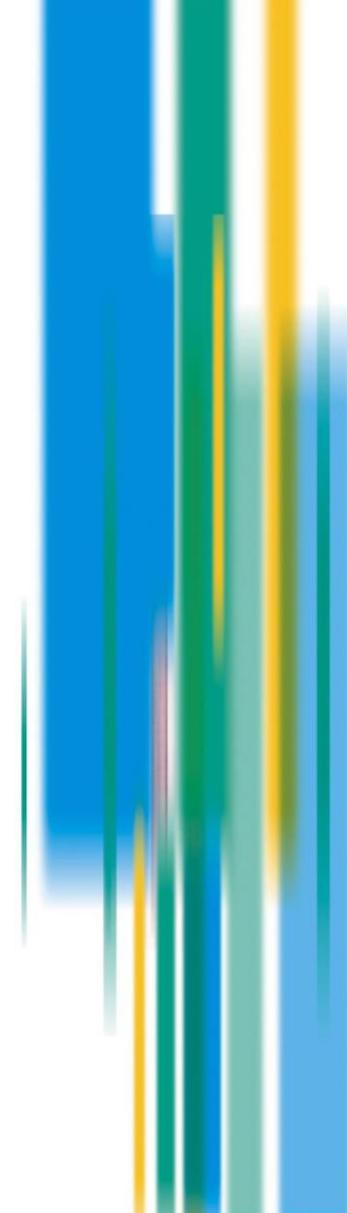
Encouraging and facilitating partnerships

Simplifying collaborative processes

Opening up access to facilities and data

In doing so we promote the UK as a place to undertake research and encourage researchers to spend time overseas





Nature of International collaborations

- ❑ Researcher to Researcher/ University to University encouraged world wide
- ❑ Between funders - mostly bilateral (thematic) topics identified and scoped with partners, looking to build 'best with best'
- ❑ Through multilateral facilities and programmes
- ❑ Excellence is key, regardless of where/how we are working

Within framework of RCUK strategy, EPSRC's approach to supporting International Collaboration

- ❑ EPSRC's target is that every EPSRC sponsored researcher (from PhD on wards) should be able to collaborate with an overseas researcher(s) where this adds value to the research or training EPSRC is sponsoring with them. Collaboration should look to partner “best with best”.
- ❑ Currently ~ 23% of our grant portfolio names one or more international collaborators.

Approaches to supporting collaboration

Two approaches to enabling international collaboration:

- Researcher identified possible through all EPSRC grant and fellowship schemes
- EPSRC led through a small number of proactive calls run jointly with overseas funding agencies

Researcher Identified

- Support for UK participation in a international collaboration can be requested in any grant proposal or fellowship application to EPSRC
- Grant applications to EPSRC need to have principal /co investigators who are employed by UK University and resident in UK
- Overseas research collaborators can be named on collaborator section of application form – but costs to cover e.g. salary of overseas collaborator are not eligible from EPSRC

Research identified cont.....

Activities for which support can be requested include :

- travel for UK to partner labs,
- extended visits of UK based research staff to overseas group,
- hosting costs for overseas visitors in UK,
- consumables cost incurred by UK researchers while working in overseas lab ,
- cost of transporting equipment used in joint experiments
- cost of access to facilities – (if not free at point of access or already UK sponsored)
- cost of extended visits as part of a fellowship
- use of DTG funds to support EPSRC funded students in visits to overseas labs

EPSRC Proactive Collaboration Building

- Focused on building partnerships with China, India, USA, Japan and Europe
- Main approach used is through calls for proposals managed jointly with partner agency - where possible aim for one stage peer review

Recent Examples

- G8 call in Sustainable Materials for Manufacturing
- Smart grids and electric vehicles with China in 2012/13
- Manufacturing research with India

Upcoming

- Water Engineering with NSF – supplementary funding available for UK and US teams – call on EPSRC web
- Grid level storage for intermittency – workshop with China in April 2013 – call anticipated after that

European Commission Funding - What is Horizon 2020?

Commission proposal published on 30 November 2011 for an €80 billion research and innovation funding programme (2014-20)

The follow on programme to FP7

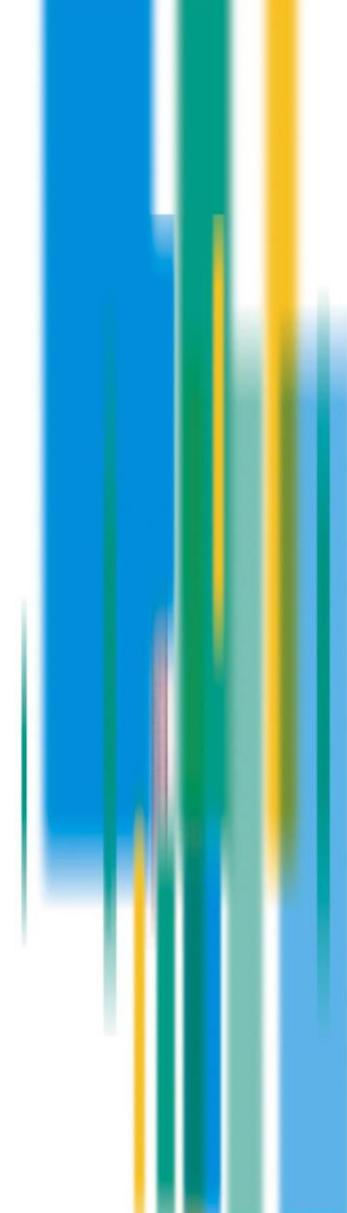
Forms part of the proposals for the next EU budget, complementing proposals for Structural Funds, education (Erasmus for All), etc.

EC Horizon 2020 website:

http://ec.europa.eu/research/horizon2020/index_en.cfm?pg=home

EC Horizon 2020 proposal:

http://ec.europa.eu/research/horizon2020/index_en.cfm?pg=h2020-documents



What's new?

- A single programme bringing together three separate programmes/initiatives
 - Framework Programme 7 (FP7)
 - Competitiveness and Innovation Programme (CIP)
 - European Institute of Innovation and Technology (EIT)
- Coupling research to innovation – from research to retail, all forms of innovation
- Focus on societal challenges facing EU society, e.g., health, clean energy and transport
- Simplified access, for all companies, universities, institutes in all EU countries and beyond

Estimated Horizon 2020 Timetable

February 2011

Communication on Common Strategic Framework for Research and Innovation

Feb - April 2011

Stakeholder consultation

30 November 2011

Adoption of Commission Proposal for Horizon 2020

2012 - 2013

Legislative Procedure ('co-decision'): European Parliament positions

Q3 2013

Conciliation and adoption of Horizon 2020

1 January 2014

Start of Horizon 2020

EPSRC

Engineering and Physical Sciences
Research Council

Key Components of Horizon 2020 Proposal

Excellent Science Base

- European Research Council (ERC)
- Future and Emerging Technologies (FET)
- Marie Curie Actions
- Research Infrastructures

Industrial Leadership and Competitive Frameworks

- Leadership in enabling and industrial technologies:
 - ICT; Nanotechnologies; Advanced Materials; Biotechnology; Advanced Manufacturing and Processing; and Space
- Access to risk finance
- Innovation in Small and Medium-Sized Enterprises (SMEs)

Tackling Societal Challenges

- Health, demographics changes and well being
- Food security, sustainable agriculture marine and maritime research and the bio-economy
- Secure, clean and efficient energy
- Smart, green and integrated transport
- Climate action and resource efficiency including raw materials
- Inclusive, innovative and secure societies

Horizon 2020 – three priorities

Excellent Science	€27,818m
Industrial Leadership	€20,280m
Societal Challenges	€35,888m

NB: All budget figures are given throughout in 'current 2011 prices' as on p85 of the draft Horizon 2020 proposal.



Priority 1: Excellent Science - rationale

- World class science is the foundation of tomorrow's technologies, jobs and wellbeing
- Europe needs to develop, attract and retain research talent
- Researchers need access to the best infrastructures

Priority 1: Excellent Science

Total Budget for Programme (2014-20, €m)	27,818
European Research Council: 'Frontier research by the best individual teams'	15,008
Future and Emerging Technologies: 'Collaborative research to open new fields of innovation'	3,505
Marie Curie actions: 'Opportunities for training and career development'	6,503
Research infrastructures (inc. e-infrastructures): 'Ensuring access to world-class facilities'	2,802

Excellent Science – ERC

Continuity with FP7. Will continue to:

- operate autonomously led by a Scientific Council
- operate on a 'bottom-up' basis
- have 'research excellence' as sole criterion
- fund 'individual teams'
- provide funding for starting researchers to make transition to independence
- support new ways of working with potential to create breakthrough results

New for Horizon 2020:

- Reinforced budget (77% increase)
- Scope for continuation of 4 current schemes and flexibility to 'develop the mix of support measures to respond to emerging needs'
- Improved governance

Excellent Science – FET

- Expanded from ICT and Energy to be used as cross-cutting instrument
- Supports frontier research: alternative ideas, concepts or paradigms of risky or non-conventional nature
- Supported under three strands:
 - FET Open: fostering novel ideas
 - FET Pro-Active: nurturing emerging themes and communities
 - FET Flagships: tackling grand interdisciplinary science and technology challenges

Priority 2: Industrial Leadership- rationale

- Strategic investments in key technologies (e.g. advanced manufacturing, micro-electronics) underpin innovation across existing and emerging sectors
- Europe needs to attract more private investment in research and innovation
- Europe needs more innovative SMEs to create growth and jobs

Priority 2: Industrial Leadership

Total Budget for Programme (2014-20, €m)	20,280
Leadership in enabling and industrial technologies: (ICT, nanotechnologies, material, biotechnology, manufacturing, space)	15,580
Access to Risk Finance: 'Leveraging private finance and venture capital for research and innovation'	4,000
Innovation in SMEs: 'Fostering all forms of innovation in all types of SMEs'	700

Industrial Leadership – Key Enabling Technologies

Collaborative research and innovation projects

Strong focus on industrial involvement and applied research

Key Enabling Technologies encompasses:

- Information & Communication Technologies (ICT)
- Nanotechnologies
- Advanced Materials
- Biotechnology
- Advanced Manufacturing and Processing
- Space

Priority 3: Societal challenges - rationale

- Concerns of citizens and society/EU policy objectives
- Breakthrough solutions come from multi-disciplinary collaborations, including social-sciences and humanities
- Addressing challenges requires full research innovation cycle, from research to market:
 - focus on innovation-related activities (e.g. piloting, demonstration, demand side policies – public procurement, standards...)
- Focus on policy priorities without predetermining technologies or types of solutions to be developed
 - emphasis could be on projects that solve specified challenges, NOT prescribing the specific topics, research fields, disciplines, technologies or sectors to be addressed

Priority 3: Societal Challenges

Total Budget for Programme (2014-20, €m)	35,888
Health, demographic change and wellbeing	9,077
Food security, sustainable agriculture, marine and maritime research & the bioeconomy	4,694
Secure, clean and efficient energy	6,537
Smart, green and integrated transport	7,690
Climate action, resource efficiency and raw materials	3,573
Inclusive, innovative and secure societies	4,317

Societal challenges – Cross-cutting issues

- Focus on policy priorities without predetermining technologies or types of solutions to be developed
- Bringing together resources and knowledge across fields, technologies and disciplines
- Activities to cover cycle from research to market; focus on innovation-related activities (e.g. piloting, demonstration, demand side policies – public procurement, standards, etc.
- Social Sciences and Humanities – integral part of the activities to address all challenges.

International co-operation in Horizon 2020

- Instruments:
 - Targeted actions on basis of common interest and mutual benefit
 - Horizontal activities to promote strategy development of international co-operation ('Inclusive, innovative & secure societies')
- Who is likely to receive funding?
 - Industrialised and emerging economies: x
 - Enlargement and neighbourhood countries: ✓
 - Developing countries: ✓

Other Funding Opportunities for UK based researchers

- Royal Academy of Engineering – funding for visits/ exchanges through its International Research Support Schemes
<http://raeng.org.uk/international/schemes.htm>
- Some overseas funders have schemes to support visits or fellowships often targeted at post doc/PhD level
 - e.g. JSPS Postdoctoral Fellowship for Foreign Researchers (short term)– closing date 3 June 2013
www.jsps.org

Summary

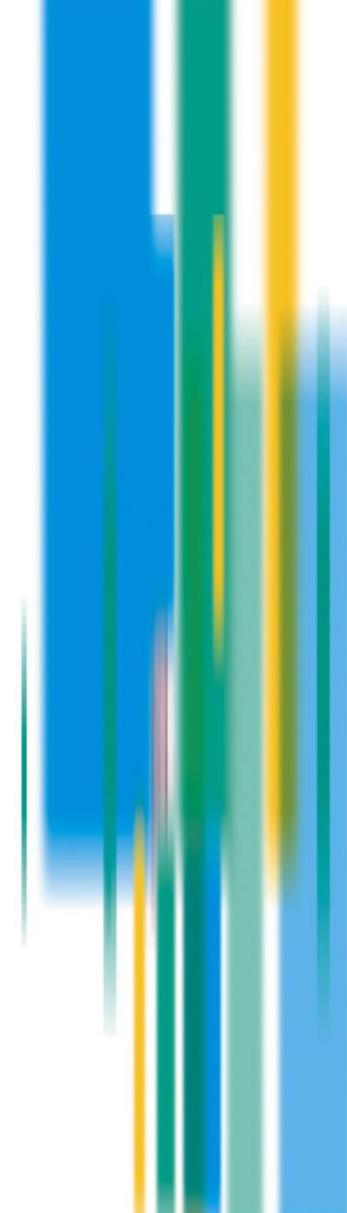
- ❑ With the globalisation of research , being active in international collaboration will become increasingly important to address future major research challenges

- ❑ These are many opportunities to support international collaborations in research :
 - Some focused on UK side of collaborations e.g. include in EPSRC grant or fellowships

 - Some look to support whole research team e.g. EPSRC calls run jointly with other agencies, Horizon 2020

 - Support available for people at a range of career stages to go on exchanges/visits both inward and outward available from e.g. RAEng International Schemes

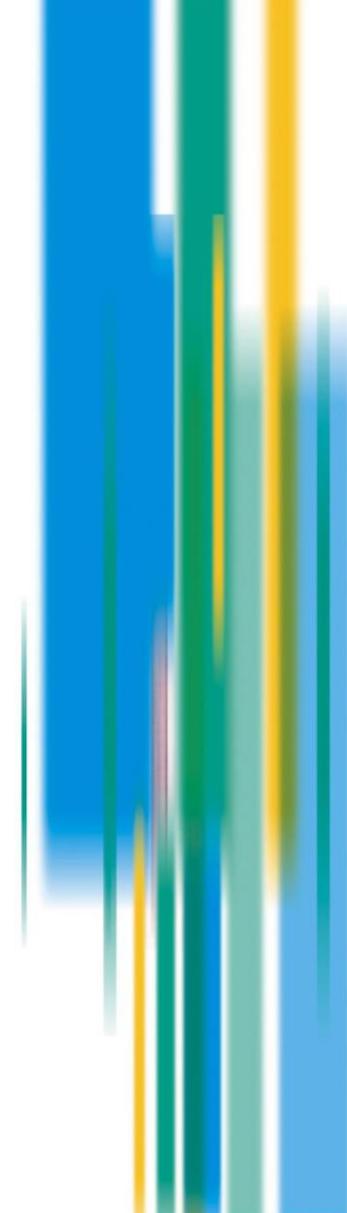
To enable the building of appropriate global engagement in the UK research portfolio.



Thank you for your attention.

EPSRC

Engineering and Physical Sciences
Research Council



Extra Slides

EPSRC

Engineering and Physical Sciences
Research Council

Industrial Leadership – Key Enabling Technologies

ICT:

Will be embedded across all areas (i.e., excellence, societal challenges, industrial leadership)

Also six dedicated activity lines under KET:

New generation of components and systems

Next generation computing

The future of the internet

Content technologies & info. Management

Advanced interfaces and robots

Micro- and nanoelectronics and photonics

Industrial Leadership – Key Enabling Technologies

Nanotechnologies:

Similar to FP7 with a greater focus on the societal dimensions of nanotechnologies

Funding under five headings:

- Developing next generation nanomaterials, nanodevices, & nanosystems
- Ensuring the safe development & application of nanotechnologies
- Developing the societal dimension of nanotechnology
- Efficient synthesis & manufacturing of nanomaterials, components and systems
- Developing capacity-enhancing techniques, measuring methods and equipment

Industrial Leadership – Key Enabling Technologies

Advanced Materials:

Objective to achieve innovation “in all industrial sectors, particularly for high value markets”

Includes:

Cross-cutting & enabling materials technologies

Materials development and transformation

Management of material components

Materials for a sustainable industry

Materials for creative industries

Metrology, characterisation, standardisation and quality control;

Optimisation on the use of materials

Industrial Leadership – Key Enabling Technologies

Biotechnology:

Funded under three areas:

Boosting cutting-edge biotechnologies as future innovation drivers

Biotechnology-based industrial processes;

Innovative and competitive platform technologies

Advanced Manufacturing and Processing

Technologies for factories of the future

Technologies enabling energy-efficient buildings

Sustainable and low-carbon technologies in energy intensive process industries

New, sustainable business models

Societal Challenges – Key Objectives

Challenge	Total Budget 2014-2020 € M	Objectives
Health	9,077	Improve lifelong health and wellbeing
Food security	4,694	Secure sufficient supplies of safe and high quality food and other bio-based products
Energy	6,537	Transition to a reliable, sustainable and competitive energy system
Transport	7,690	Resource-efficient, environmentally friendly, safe, seamless, and performing transport system for the benefit of all citizens, the economy and society.
Climate and resources	3,573	Resource efficient and climate change resilient economy and a sustainable supply of raw materials
Societies	4,317	Foster inclusive, innovative and secure European societies

Simplification

EC Simplification Communication, 29 April 2010

- Short-term (FP7) solutions – no legislative changes
- Longer-term (Horizon 2020) solutions – new legislation

Horizon 2020 proposals include:

- Increased use of lump sum funding
- Shift to more trust-based system
- Payment linked to outputs rather than detailed financial checks
- Increased use of prizes
- Standardisation of tools/procedures/audit approach
- One reimbursement rate across the whole programme
- Acceptance of own accounting practices
- No requirement to generate/report interest