



EU Science & Technology Funding



The EU Seventh Framework Programme for Research and Technological Development (FP7) is the world's largest research programme with a total budget of €53.2 billion.¹ Based on past performance, FP7 could be worth over €7 billion to the UK, about €1 billion a year.² The development process of the next FP, which will replace FP7 in 2014, is underway. This POSTnote explains the FP system and current developments.

Background

The Framework Programmes (FPs) emerged from ad hoc programmes in policy areas such as agriculture, energy and industry. The first five FPs were designed by the European Commission, and required little input from Member States (MSs). During FP6 (2002 – 2006) the programme was developed to support the creation of the “European Research Area”.³ The “ERA-vision” aims to create a coordinated European ‘internal market’, where researchers, technology and knowledge freely circulate.⁴ It has led to a more complex programme, requiring increased MS engagement. Each consecutive FP has seen an increase in the total budget. FP7 is the first to last 7 years (previously FPs were 4 to 5 years) and runs from 2007 to 2013.

UK Participation

In FP6 the UK received over €2.4 billion, which was 14.2% of the total budget, second to Germany (18.1%), and ahead of France (12.4%). During the first years of FP7 the UK has been awarded the highest number of contracts within Europe, and received a total of €1.35 billion (14.6%).² In terms of funds, the UK remained second to Germany. The EU FP7 application success rate is 22% (excl. ERC).⁵

Overview

- The UK is projected to receive on average €1 billion a year from the EU Seventh Framework Programme (FP7), primarily through academia.
- FP7 is the principal instrument for funding European Research, to promote excellence in research, to enhance the EU's competitiveness, and to promote research in accordance with EU policy.
- There is a general downward trend in business participation that is pronounced in the UK, partially due to the nature of the FP and the UK's industrial structure.
- The UK government is formulating a national negotiating position on the development of the next FP.
- The next FP is expected to be “Grand Challenge”-led, with a strong emphasis on coordinating European research efforts.

Structure of the Framework Programme

The main programmes of FP7 are: cooperation, ideas, people, capacities, nuclear research, and the Joint Research Centre (JRC)⁶ (Box 1).¹ The guiding principle of FP7 is co-financing or cost-sharing, where the Commission contributes a certain percentage to the overall costs, depending on the programme (*Cooperation, Ideas, People...*), project type, specific activity (collaborative research, coordination),⁷ and partners in the project (industry, SMEs or academia). FP7 project costs can vary from a few hundred thousand to tens of millions of Euros.

Academic Participation

Of the UK participants in FP7 60.8% are academics, which is the highest proportion in Europe (see Box 2).² The UK's top research universities tend to have a dedicated research support office specialising in European research funding. The degree of support ranges from information services, contract negotiation and management, to proposal writing – removing most of the bureaucratic burden from the researcher. The UK Research Office (UKRO) in Brussels is funded by the UK Research Councils, and receives subscriptions from over 140 research organisations (mostly in the UK).⁸ UKRO and the National Contact Point (NCP)

network are considered among the main sources of information by research support offices. One of the key success factors is the state of the support system at the national level – the UK’s is considered well coordinated.

Box 1: Structure of FP7^{1,5,7}

Specific programmes (€Million)	Thematic Areas (€Million)	
COOPERATION (32.413)	Health	6100
	Food, Agriculture, and Biotechnology	1935
	Information and Communication Technologies	9050
	Nanosciences, Nanotechnologies, Materials and new Production Technologies	3475
	Energy	2350
	Environment (including Climate Change)	1890
	Transport (including Aeronautics)	4160
	Socio-economic Sciences and Humanities	623
	Space	1430
	Security	1400
IDEAS (ERC - 7.510)	Starting Independent Researcher Grants	
	Advanced Investigators Grants	
PEOPLE (Marie Curie Actions - 4.750)	Initial Training of Researchers	
	Lifelong Learning and Career Development	
	Industry - Academic Partnerships / Pathways	
	The International Dimension	
	Marie Curie Award	
CAPACITIES (4.097)	Research Infrastructures	
	Research for the Benefits of SMEs	
	Regions of Knowledge	
	Research Potential	
	Science in Society	
	Coherent Development of Research Policies	
	Activities of International Cooperation	
EURATOM (2751)	Indirect Actions	Fusion Energy
		Nuclear Fission and Radiation Protection
	Direct Action	Nuclear Field (JRC)
JRC (Direct Actions - 1.751)	Prosperity in a Knowledge Intensive Society	
	Solidarity and the Responsible Management of Resources	
	Security and Freedom	
	Europe as a World Partner	

- The *Cooperation* programme is the core of FP7, with two thirds of the budget - it funds cross-border (partners in multiple MSS) research activities in ten thematic areas.
- The *Ideas* programme is implemented through the European Research Council (ERC, see Box 3).
- The *People* programme is designed to support the mobility and career development of researchers within and outside Europe (implemented through ‘Marie Curie’ fellowships and awards)
- The *Capacities* programme aims to optimise the EU’s research capability. It includes funding for infrastructure, small and medium enterprises (SMEs) and regions.
- The *Nuclear Research* programme (Euratom) has two parts: the first part includes fusion energy, nuclear fission and nuclear waste; the second covers the nuclear research carried out by the JRC. The remaining budget of the JRC is spent on non-nuclear activities.

The European Research Council (ERC) grants and the Marie Curie fellowships are popular among UK universities, and seen as extremely prestigious. Success rates of the individual Marie Curie initiatives vary enormously (from 9% to almost 85%) but the EU average rate is 29%,⁵ the UK has received €155 million, which is 22.3% of the total EU financial contribution to the *People* programme².

Industry Participation

It is difficult to compare the participation of the business sector over different FPs due to changes in the way sectors are categorised. Historically, the FP has seen a downward

trend in business participation that is pronounced in the UK.⁵ The *Ideas* programmes has, by its very nature, no private sector involvement, while European Technology Platforms and Joint Technology Initiatives are industry-led (see Box 4). These two elements balance out to some extent, obscuring increased business engagement in FP7.

Box 2: FP7 Participation by organisation type (%)²

Countries	Higher or Secondary Education	Research Organisations	Private Commercial	Public Body	Other
UK	60.8	11.3	22.5	3.8	1.6
Germany	34.0	28.9	32.7	3.3	1.2
France	17.1	42.1	33.6	4.6	2.6
All Countries	38.5	25.8	26.5	6.5	2.7

Framework Suitability

The nature of the FP makes it more suitable for academia than industry. The programmes are based on cooperation at the pre-competitive level, whereas industry tends to engage only on areas of common benefit. Administrative complexity, long ‘time to grant’, frequent late payments, long contract periods and extensive audit processes tend to deter industry involvement. The bureaucracy is felt to have increased during FP7, in particular through extensive application of (ex-post) audits. The Commission has taken initiatives to simplify FP7, but it is too early to see concrete results. The framework is particularly unsuitable for fast-moving, high technology companies, and has been criticised as inflexible and detrimental to SMEs. There are differing opinions on the degree to which business participation is decreasing, but the framework structure is seen as an obstacle to business engagement.

Box 3: The European Research Council (ERC)^{8,9}

Box Paragraph text The ERC implements the FP7 *Ideas* Programme. The ERC is the first European research institute established to support investigator-driven frontier research across all research fields. Projects are selected from a pool of proposals submitted by individual researchers on subjects of their choice; project should be high risk/high gain and can be interdisciplinary. They are evaluated by international peer-review panels, excellence being the only criterion. In line with the European Research Area (ERA) priorities, ERC grants are portable, allowing researchers to change institution and take their grant with them. The ERC has two major funding streams; **ERC Starting Independent Researcher** grants, aimed at researchers in the early stages of their careers, and **ERC Advanced Independent Researcher** grants for already established top researchers.

UK institutions received 43 ERC Starting Grants (18% of total) and 58 ERC Advanced Grants (25% of total) from the 2009 call. The success rate for UK institutions was considerably higher than the EU average, for both grants. Grant success is highly correlated to the percentage of GDP a country spends on R&D. Secondary factors are the availability of national funding, attractiveness of the host country to researchers, and the quality of proposals. With an increased budget, the ERC could diversify its funding streams and strengthen its ability to attract scientists from outside Europe.

Small and Medium Enterprises (SMEs)

FP7 (and previously FP6) has a controversial target that allocates 15% of the cooperation budget to SMEs, to compensate for the FP favouring large companies and

academia.⁵ Political pressure has led to situations where SMEs are engaged by larger consortia merely to comply with the target. SMEs are a mix of businesses, making broad targeting counterproductive. Many are locally based, low-tech and nationally-acting businesses that may benefit little from EU-level participation. The UK's Technology Strategy Board (TSB) can inform SMEs about SME-specific actions such as Eurostar (A169), Eureka, and national programmes, which may be more suitable than collaborative framework projects.

Box 4: Additional FP7-related Instruments⁷

- **European Technology Platforms (ETP)** are industry-led networks (along with researchers and stakeholders) in areas of strategic importance (for example, biofuels). They define and implement a Strategic Research Agenda. ETPs are not FP7 instruments as such, but are consulted on the annual Work Programmes (see Box 5) and thereby help orient FP7.
- **Joint Technology Initiatives** were designed to implement the Strategic Research Agendas of a limited number of ETPs for which other FP7 instruments were inadequate. There are currently five: Fuel Cells and Hydrogen, Aeronautics and Air Transport, Innovative Medicines Initiatives, Nanoelectronics Technology 2020, and Embedded Computing Systems.
- **The Risk Sharing Finance Facility** is a new instrument funded jointly by the Commission and the European Investment Bank (EIB) to facilitate the financing of research and innovation projects through loans and guarantees from the EIB. The first projects were in renewable energy.
- **Article 169 (A169s) initiatives** are aimed at the coordination of national programmes that the Commission actively participates in and funds. There are currently three A169s: Ambient Assisted Living (AAL), EMRP (Metrology); Eurostars (Research Performing SMEs and their partners) (Note: Article 185 – A185 – under the Lisbon Treaty)

Increasing UK Business engagement

For the EU in general, and the UK specifically, there has been a trend for businesses to outsource their research activities to academia. This has contributed to the lack of business engagement in obtaining EU research funding and to academia's success. Collaboration between industry and academia is still not as common in the UK as in some other MSs. Another factor has been the changing nature of UK industry. Since 1977, UK manufacturing has declined (from 27.3% of economic output in 1977, to 12.6% in 2007) while there has been a rise both in the service sector and the high-tech manufacturing industry.^{10,11} However, the framework is not aimed at the service sector, and high-tech industry research is preferentially done in-house.

While some countries provide financial aid to industry to fund the bidding process, in the UK this aid is provided by some regions only. Furthermore, the availability of national funding for research from the TSB may lead to companies bidding for domestic rather than EU funds. The TSB recognises the need for better coordination of industry support and has been working toward this goal. Support systems for European and national funding will be combined

so that appropriate funding can be identified more easily. The TSB is working with UK industry to increase industry engagement in EU programmes and to improve the quality of UK proposals.

Coordination of EU Research

The fragmentation of European research leads to unnecessary duplication. The increased complexity and cost of research, and associated infrastructure, limits what individual MS can accomplish on their own. Under FP6, the voluntary ERA-NET scheme was developed with the aim of strengthening the coordination of MSs national and regional research programmes from the bottom up. It provides a framework that enables joint calls for trans-national coordinated research programmes (in certain cases additional funding is provided by the Commission, ERA-NET plus).⁷ They can only be used for small projects (several €millions) and are not sufficient to tackle major societal problems effectively. Only 10 -15% of national funds are currently coordinated at a European level (including FP7).

Major societal challenges may be addressed through Joint Programming Initiatives (JPIs). These are voluntary initiatives, allowing MSs to develop and implement common strategic research agendas. JPIs may include collaborations between existing national programmes, or require the development of new trans-national ones. JPIs do not, as a matter of course, involve Commission funding; its role is to facilitate and support.¹² In FP8 the Commission's remit may expand to include funding JPIs and play an increased administrative role. The UK would like JPIs to stay flexible and open while Spain, for instance, would prefer a tighter regulatory structure. There are concerns that JPIs will evolve into exclusive clubs for rich MSs, although this could be prevented by increased access to Commission funding. A pilot programme on neurodegenerative diseases, in particular Alzheimers, is under development by 20 MSs.

European 'Added Value'/Benefits

Euro-scepticism, unwillingness to spend resources in Europe, and lack of visibility of the funding framework at the political level inhibit the UK's participation. Europe is often not considered as a valid alternative to national funding, even though FPs have become an important part of the UK's science funding landscape.¹¹ European projects deepen collaborations between industry and academic partners, creating a beneficial network of contacts. In the business sector, the framework is seen as a structured way to work with international partners, especially in areas of common good or where project costs are too large for a single company. The coordination of resources has the added benefit that there is the potential to exploit the results from the entire partnership (collateral benefits).

Development of the Next FP

Article 182 of the Lisbon Treaty places the Commission under a legal obligation to design and propose a new FP (to be referred to as 'FP8', though a different name may be decided upon, possibly to reflect the EU 2020 strategy). The

Commission is expected to publish a discussion document outlining the structure of FP8 in 2011 (spring at the earliest), which, together with the *ex ante* impact assessment of FP8, will form the basis for the formal proposal later in 2011 or early in 2012. The adoption of FP8 is a co-decision between the European Parliament and the European Council. The official start of FP8 is in 2014, so the first calls for funding applications are likely to be issued at the end of 2013.³

Box 5: Commission Structure

Box Paragraph text The internal politics of the Commission will play an important part in determining the final shape of FP8. The Directorates-General (DGs) relevant to EU science funding, can be divided broadly into three groups:³

- **Research DGs** (DG Research, DG Energy, DG Mobility and Transport, DG Enterprise and Industry, DG Information Society and Media, DG Education and Culture, JRC);
- **Policy DGs** (for example, DG Environment).
- **Horizontal DGs** (for example DG Budget)

Each research DG is responsible for designing and implementing 'its' part of the FP (Cooperation). The FP is implemented through (b)annual Work Programmes that outline the research topics, budget and timetable for the call for proposals. DG Research and the Research Executive Agencies (REAs) manage the remaining part of the FP, with the former coordinating the process.¹³ Development of a new FP is the responsibility of the research DGs, with DG Research as the lead. The policy DGs are consulted and can have a strong influence on the process. Unaligned priorities in the DGs can delay the development of a new FP and limit the extent of policy shifts.

A crucial, but independent, process in the development of FP8 will be the EU budget negotiations. With the current economic and political climate an increase in the total EU budget appears unlikely. An increase of the FP8 budget would need to arise from changes in the EU budget priorities, for instance, shifting the emphasis from agriculture (Common Agriculture Policy 'CAP') to competitiveness (R&D). The UK is likely to play a key role in the budget negotiations as it is seen to have less strategic interest in the CAP compared with other MSs. The Commission's budget proposal for 2014 – 2020 is expected spring 2011.

Expectations for FP8

Structure of FP8

Official Commission preparations are not expected to start until spring 2011. A 'Grand Challenge' (GC) approach to FP8 is getting increased support. The rationale is that major societal challenges (e.g. global warming, energy and food security, ageing society, etc.) can be solved only through large-scale cooperation that will require political and public support.¹⁴ Difficulties could arise about the agreement of the priorities and definitions of the GCs. The Council has asked the Scientific and Technical Research Committee (CREST) to advise on ways to identify Grand Challenges. Both the industrial and academic sectors seem confident that a GC approach would suit their 'needs'. An issue that is still to be resolved is the extent of innovation's role in FP8, seen as a possible way of engaging business; during FP7 there is a parallel Competitiveness and Innovation Programme with a budget of €3621 million.¹

Lessons Learned from Previous Frameworks

Experience from previous FPs raise a number of issues for FP8 that require further consideration:

- the trend towards outsourcing is expected to continue in FP8. The aim of outsourcing – contracting out the implementation of part of the programme (ERC, REA) – is to simplify and speed up the application process.
- whether to return to a centralised running of the FP. The decentralisation of FP7 (see box 5) has led to considerable problems for participants due to differences in the (legal) interpretation of the rules by different DGs (and even within DGs).
- how to improve the transparency of the design, consultation, and internal Commission procedures.
- achieving a more systematic approach to assessing impact. Designing good FP impact indicators has proven difficult; 'the number of publications and patent generated' is most commonly used, but has limitations.

UK Negotiating Position

MSs now have a short time in which to formulate their national priorities for FP8 and influence its design. Once the Commission's discussion document has been published it is difficult to make major changes to the programme. The UK preparation timetable has been tailored to fit the presumed Commission timetable. Informal stakeholder consultations have been going on since summer 2009. The public consultation will commence in the third quarter of 2010. At the end of 2010, the UK will submit its formal negotiating position to the Commission.

A commonly voiced criticism is that the UK government started its preparation for FP7 too late and failed to formulate a coordinated national position. FP8 preparations have started on time and in a more coordinated fashion. The consultation at the beginning of an FP needs to be followed by constructive input into the annual Work Programmes (WP) through the Programme Committees' members.¹³ As was mentioned by the House of Commons Science & Technology Committee,¹⁵ it has been questioned whether the UK is sufficiently active at the WP stage, both in the number of UK members on relevant EU committees and in nationally coordinating them.

Endnotes

- ¹ <http://ec.europa.eu>
- ² European Commission data 2009, courtesy of ISIU, BIS
- ³ *Priority-Setting in the EU Research Framework Programmes*, Andrée, 2009
- ⁴ *The European Research Area: New Perspectives*, COM (2007) 161
- ⁵ http://ec.europa.eu/research/evaluations/index_en.cfm?pg=home
- ⁶ www.jrc.ec.europa.eu/
- ⁷ <http://cordis.europa.eu/>
- ⁸ <http://www.ukro.ac.uk/>
- ⁹ <http://erc.europa.eu/>
- ¹⁰ *Manufacturing*, SN/EP/1942, House of Commons Library, 2009
- ¹¹ *The Scientific Century: securing our future prosperity*, Royal Society, 2009
- ¹² *Towards Joint Programming in Research*, EC, COM (2008) 468
- ¹³ *A rough guide to FP7 Work Programmes*, D. Andrée, VINNOVA, March 2008
- ¹⁴ *Challenging Europe's Research: Rationales for the European Research Area (ERA)*, Report of the ERA Expert Group, EC, (EUR 23326), 2008
- ¹⁵ House of Commons Science and Technology Committee, 'The work of the UK Research Councils', HC 102-I, 2/12/2009