RESEARCH & DEVELOPMENT FUNDING AND PERFORMANCE IN THE STATE SECTOR

2009-2010

Forfás

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Introduction

This survey monitors public funding and performance of Research & Development (R&D) and aims to capture key performance metrics within the State sector. 35 government departments and agencies who are engaged in some form of R&D activity in 2009-2010 were surveyed. This report presents findings for R&D funding for the final outturn data for 2009 together with estimates for 2010.

This survey data is required for inclusion in the following reports:

- Commission Regulation (EC) No 753/2004. This Regulation covers the production and development of Community statistics on science and technology. Data is required by Eurostat on government expenditure and on the numbers employed in research.
- Strategy for Science, Technology & Innovation. Indicators collected are included in the SSTI Indicators report which is intended to present the most up to date assessment of performance and to identify issues arising and policy requirements.
- OECD 'International data collection on resources devoted to research and development'

The metrics analysed in the report include:

Chapter 1: Government Budget Appropriations and Outlays on Research and Development (GBAORD)

- funding for R&D programmes in the higher education sector;
- funding for business sector R&D; and
- funding for government sector performed R&D.

Chapter 2: Government Expenditure on Research and Development (GOVERD)

- The funding for Government Expenditure on R&D (GOVERD) comes from public, private and other sources but does not include R&D performed in the higher education sector. This information is gathered in a separate survey conducted by Forfás; the Higher Education Research and Development (HERD) survey.

Chapter 3: R&D human resource indicators for the government sector

- The survey records the amount of time spent by staff working in the public sector on R&D activities or Full-Time Equivalent (FTE). In addition information is provided on the overall totals, gender, qualifications and occupations of these R&D staff. The research personnel are divided into PhD and non-PhD researchers, technicians and other support staff.

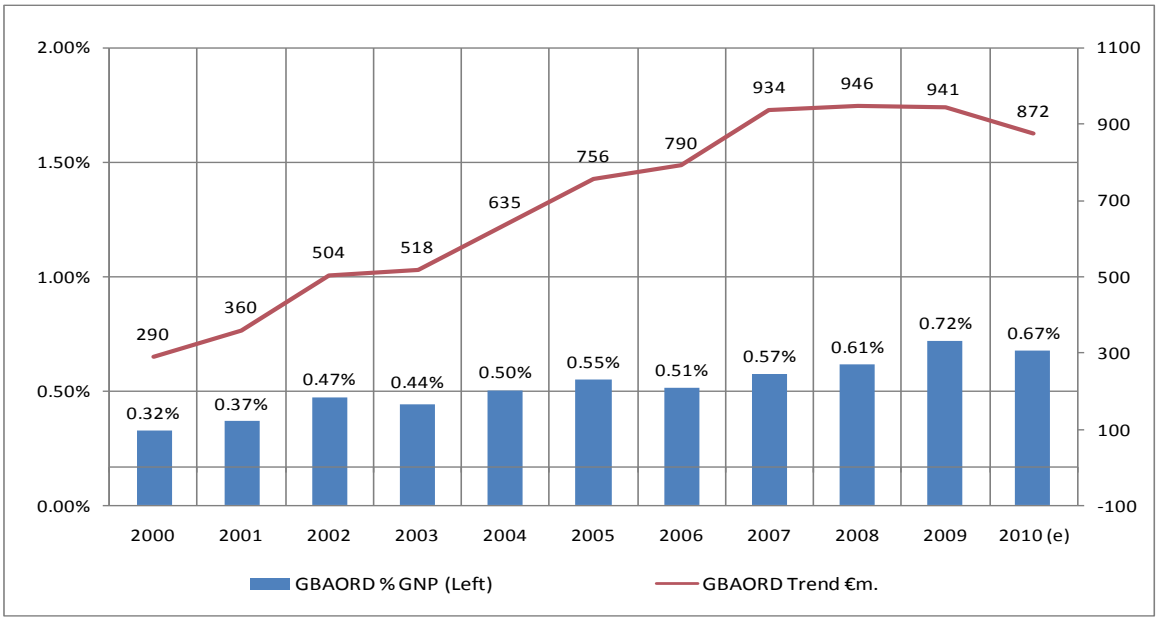
The survey is carried out using the definitions, rules and guidelines set out in the OECD Frascati Manual. This allows for a common dataset to be collected across all OECD and EU countries, which facilitates better international comparisons and benchmarking. Data on GBAORD, GOVERD and human resources is also prepared under European statistical legislation. All international comparison figures relate to the most recent data available for each country.

In previous years this report also included data on broader science and technology expenditure and services. These questions were not included in this survey to reduce the statistical burden on respondents, to allow for a redesign of the R&D element of the questionnaire, as a result of resource constraints and as there have been no requests for these statistics for some years. Ceasing the collection of this broader data will require a legislative amendment and this is under consideration. The next Science Budget (2010-2011) questionnaire will include questions on S&T expenditure along with the R&D funding questions that are contained in this report.

Executive Summary

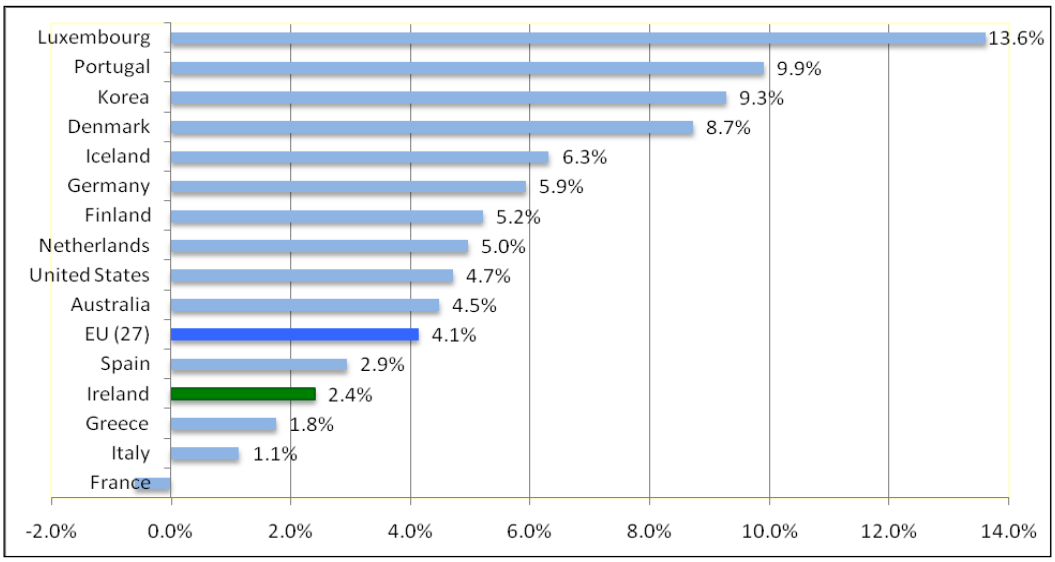
Government Budget Appropriations or Outlays on R&D (GBAORD) measures public funding of R&D. The importance placed on increasing R&D in the State sector can be seen in the upward trend in GBAORD between 2000 and 2008. However, the slowdown in the economy is evident from the 7.9 percent decrease in the GBAORD figures between the 2009 outturn figure of €941 million and the 2010 allocation of €872 million. When GBAORD is viewed as a percentage of GNP, a slight rise in the GBAORD intensity rate is found from 0.61 percent in 2008 to 0.67 percent in 2010; this can be accounted for by falling Irish GNP.

GBAORD trend (€m) and GBAORD as a percentage of GNP (2000-2010)



The HEA accounts for 33.1% of total publicly funded R&D, followed by SFI (17.2%) and Enterprise Ireland and IDA Ireland (17.4% collectively). Sectoral areas follow, with Teagasc (5.6%) and the HRB (5.1%) accounting for the largest shares of publicly funded R&D. By discipline, higher education accounts for the majority of funding (52.4%) followed by industrial production and technology (20.2%) and agriculture (10.6%).

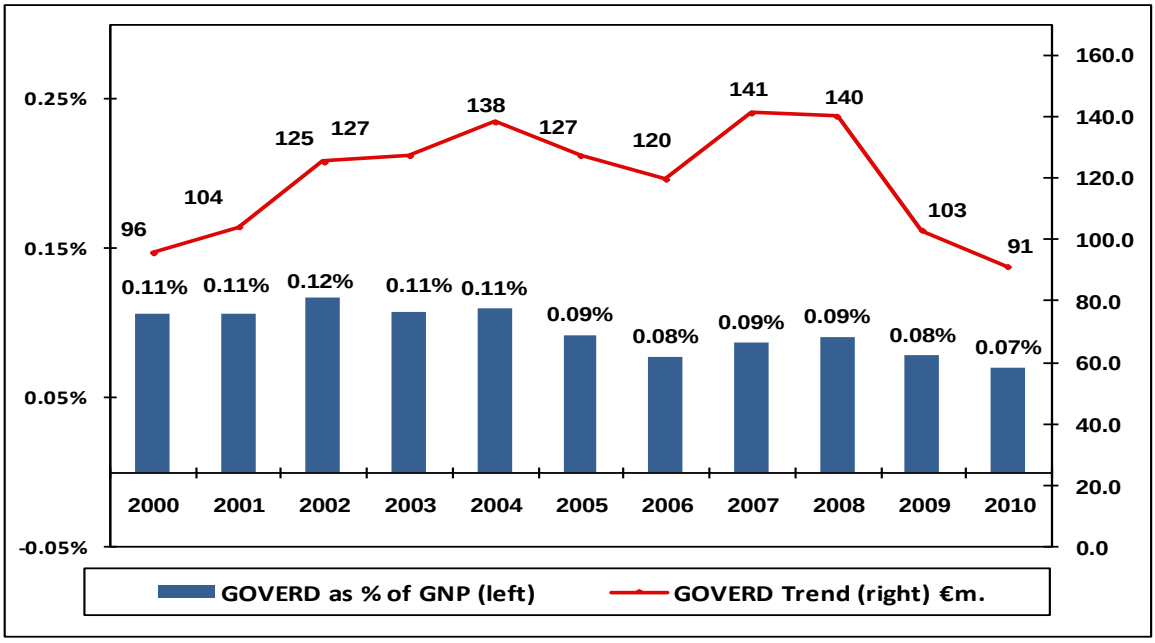
Average annual growth rate of civil GBAORD for selected countries, (2005-2010)



State funding for R&D in Ireland grew strongly during 2001 to 2008 but has declined since. As a consequence, the growth rate of civil GBAORD in Ireland between 2005 and 2010, when benchmarked against that of other selected countries, shows a low level of growth as the economy has contracted over the last five years. Civil GBAORD excludes R&D expenditure on defence.

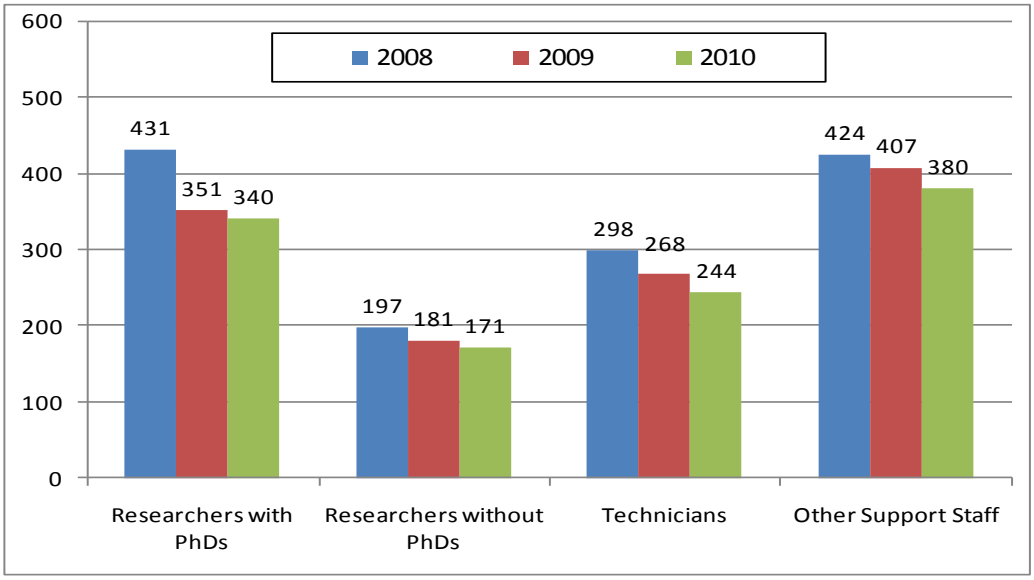
In terms of expenditure on R&D performed in the State sector itself (GOVERD) is estimated to have decreased in 2010 to €91 million from the outturn figure of €103 million for 2009. The 2009 outturn is also considerably down on the previous expenditure in 2008 of €140 million. As a percentage of economic activity GOVERD is expected to reduce by 0.01 percent in 2010 to 0.07 percent. In terms of types of research undertaken 88 percent is applied, 8 percent experimental development and 4 percent is classified as basic research.

GOVERD trend and GOVERD as a percentage of GNP (2000-2010)



The number of PhD and non PhD researchers in the State sector in 2010 (340 and 171 respectively) is a reduction on 2009 from the outturn figures of 351 and 181 respectively in 2009. The numbers of technicians and other support staff in the State sector are also expected to show a decrease in 2010.

Total research and development personnel by occupation (headcount terms, 2008-2010)



Chapter 1: State funding of research and development

In this chapter Government spending on R&D is charted and benchmarked against international competitors.

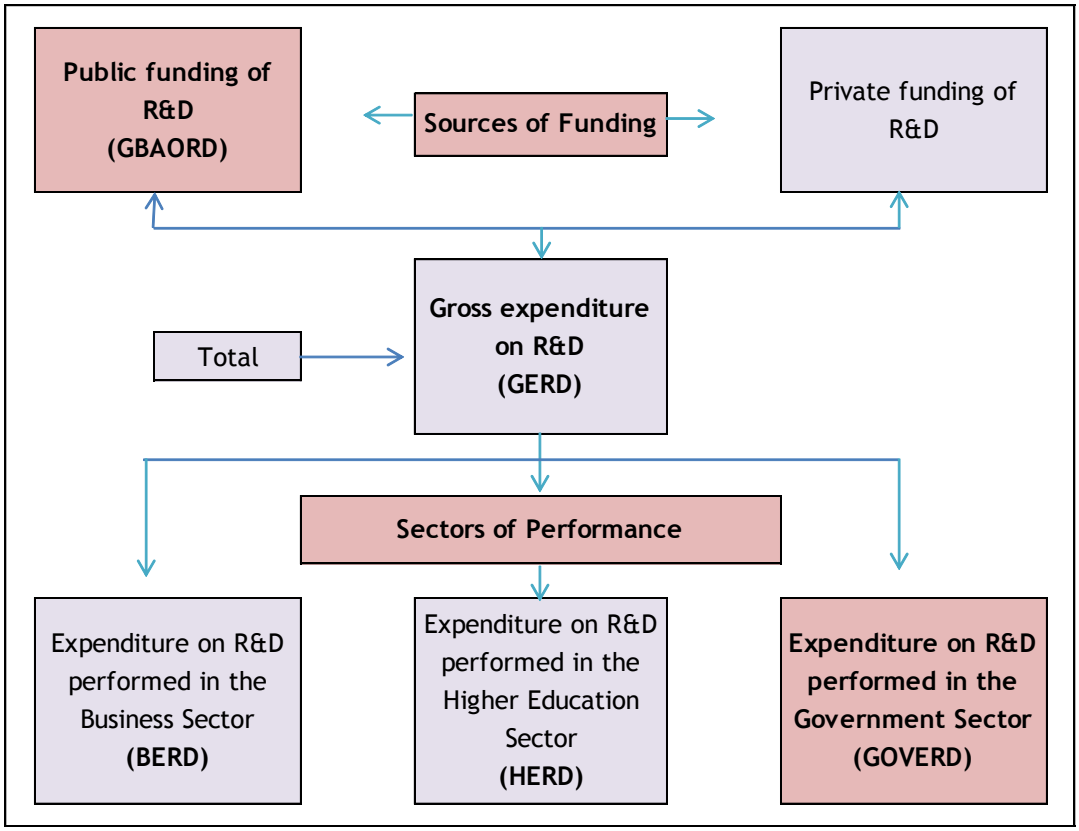
1.1 Types of Research and Development indicators

R&D, as defined by the OECD "comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications".[1] This report focuses on R&D and yields the following international data measures:

- GBAORD – Government Budget Appropriations or Outlays on R&D – Spending (this chapter)
- GOVERD – Measure of R&D performed in the Government sector (Chapter 2)

Figure 1 below shows where this funding sits within the overall picture of Gross Expenditure on R&D (GERD) in Ireland.

Figure 1: R&D funding and performance system



[1] OECD (2002), Frascati Manual: Proposed Standard Practice for Surveys on Research and Experimental Development, OECD, Paris, www.oecd.org/sti/frascatimanual

1.2 Government budget spending on research and development

State spending supports for R&D activities come from direct exchequer funding or to a lesser extent from EU sourced funding. Other non-public funding sources for state R&D activities can come from other sources including Irish and foreign business, non-profitable organisations, philanthropists and other donations from individuals. The internationally recognised indicator for benchmarking State sourced funding performance of R&D is GBAORD – Government Budget Appropriations and Outlays on R&D.

GBAORD includes:

- funding for R&D programmes in the higher education sector, administered by the Department of Education and Skills, the Higher Education Authority (HEA), Science Foundation Ireland (SFI) and others;
- funding for business sector R&D, administered via State agencies including IDA Ireland, Enterprise Ireland and others; and
- funding for government sector performed R&D, for example, Teagasc, The Marine Institute, non-teaching hospitals and others.

Figure 2: GBAORD trend in current prices, €m. (2000-2010)

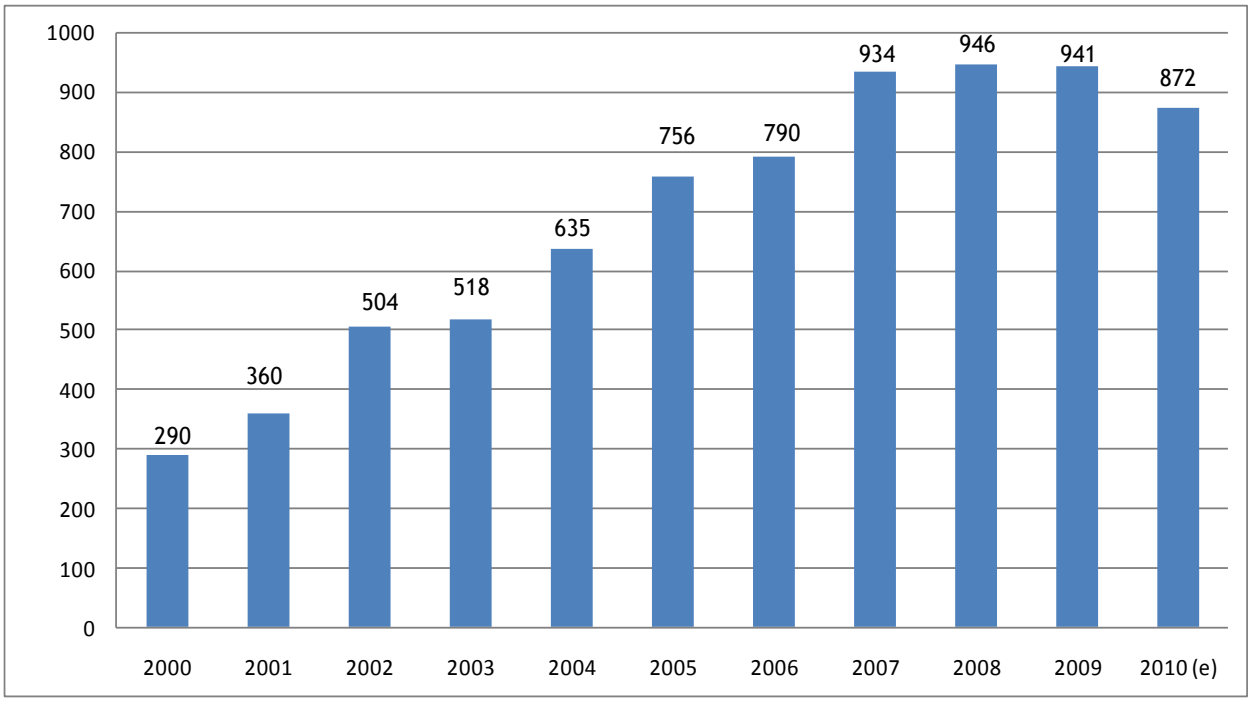


Figure 2 above shows the government allocation to R&D activities performed across all sectors of the economy from 2000-2010. As can be seen, rapid gains were made in State R&D spending over the last decade. While there is a decline in allocated expenditure in the last two years the level of R&D funding from the State remains significant at €872 million.

Although there has been a drop in State funding sources from the EU over the last three years, this has been overshadowed by a more rapid slowdown in direct exchequer sourced funding for R&D activities.

1.3 Detailed government department spending on research and development

Table 1 provides a breakdown of estimated public R&D funding by the main administrating government departments and agencies. The largest agency funding R&D projects in 2010 is expected to be the HEA which has allocated an estimated €288.7 million to R&D activities (or 33 percent of the total State spending on R&D). This spending includes expenditure on R&D programmes including direct funding via the Programme for Research in Third-Level Institutions (PRTLI) and also indirect funding via the HEA block grant to supported institutions.

The next largest funder of R&D activities was SFI allocating an estimated €150 million to R&D in 2010 via research grants and other research supporting programmes.

Table 1: Government departments and agencies funding R&D activities (2010 estimates)

Funding Department/Agency	2010 €m	% of Total
Higher Education Authority	288.7	33.1
Science Foundation Ireland	150.0	17.2
IDA Ireland	82.0	9.4
Enterprise Ireland	69.6	8.0
Teagasc	48.5	5.6
Health Research Board	44.4	5.1
Dept. of Agriculture, Fisheries and Food	29.0	3.2
Sustainable Energy Authority of Ireland	28.3	3.2
Irish Research Council for Science Engineering and Technology	24.0	2.7
Dept. of Enterprise Trade & Innovation	15.9	1.8
Dept. of Communications, Energy & Natural Resources	15.7	1.8
Environmental Protection Agency	13.0	1.5
Irish Research Council for Humanities and Social Science	11.8	1.3
Marine Institute	9.0	1.0
Others	44.6	5.1
Total	€872m	100

The State currently invests in a wide range of R&D programmes which are outlined in more detail in Appendix 6. A summary of these programmes includes:

€289 million - The Higher Education Authority's research programme is designed to enhance the research capabilities, capacity and infrastructure of Ireland's higher education institutions. These investments have been divided into a portfolio of programmes across disciplines spanning humanities and social sciences, the biosciences and technology and innovation sectors. During 2010, the HEA's PRTLI budget was transferred to the Department of Enterprise, Trade and Innovation.

€150 million - **Science Foundation Ireland** was established in 2000 to support globally competitive scientific research. SFI funds a variety of academic researchers and research teams which aim to promote research excellence in biotechnology, information communication technology (ICT), sustainable energy and energy efficient technologies. The allocation of finance is decided by SFI on the basis of scientific merit.

€82 million - IDA Ireland has national responsibility for securing new investment from overseas in manufacturing and international services, and for encouraging the existing foreign enterprises to expand their business. An R&D capability assistance grant is available to support the establishment of new R&D functions. Research Technological Development and Innovation (RTDI) grant assistance, is directed at established companies who are planning to undertake their first R&D project, and those companies who intend to expand existing ones.

€70 million – **Enterprise Ireland (EI)** is the national organisation responsible for bringing together innovation, business development and internationalisation for Irish industry. They aim to facilitate collaborative links between enterprise and the research community that will lead to the practical application of research in business. As such, EI offers a variety of supports and funding to companies that wish to engage in R&D. In addition to these R&D supports, EI also provides related funding of €23m through its Commercialisation Fund which is not included in this survey for classification reasons.

€48.5 million- Teagasc is the Irish institute responsible for research in agricultural production, the environment and the rural economy. The annual research portfolio comprises some 300 research projects, carried out by 500 scientific and technical staff in research centres throughout Ireland. Current research projects range from "animal bioscience research" to research aimed at enhancing the quality of life in rural Ireland.

€45 million - The Health Research Board (HRB) The research funding aspect of the HRB provides support for projects, programmes and fellowships in health research through an open competition process, along with an element of peer review. Funding covers all areas of health research from biomedical, translational, clinical and practised based research through to population health and research concerning the health services.

€29 million – The Department of Agriculture, Fisheries and Food provides a wide range of services directly and also through specialist state agencies operating under its aegis. The Department operates a number of testing centres and laboratories in the areas of, veterinary diagnostics and research; meat control; seed testing; plant variety testing; cattle performance testing; pesticide control and dairy products control. Research and development expenditure in 2010 was concentrated in the areas of crop improvement, veterinary and meat laboratory R&D activities; food and agricultural production research and improvement of livestock genetic resources in plants and animals.

€28 million - Sustainable Energy Authority of Ireland is Ireland's national energy authority and is responsible for administering the Renewable Energy Research, Development & Demonstration (RERDD) Programme. The Authority also promotes and assists environmentally and economically sustainable production, supply and use of energy by operating grant aid programmes, providing policy support, and delivering information support aimed at increasing public awareness.

€24 million - The Irish Research Council for Science, Engineering and Technology, (IRCSET) funds R&D in science, engineering and technology in third level institutes. It seeks to position Ireland as an international centre of excellence and achievement in research. It does this through a series of programmes of assistance, postgraduate research awards and the PhD fellowship scheme.

€16 million – Department of Communications, Energy and Natural Resources has responsibility for the Telecommunications, Broadcasting and Energy sectors. It regulates, protects and develops the Natural Resources of Ireland. The Department administers the Griffith Geoscience Research Awards the objectives of which are to develop overall research capacity particularly in priority areas of geosciences research. It also conducts research through its petroleum affairs, exploration and mining and energy planning divisions. The role of Geological Survey Ireland is the provision of information and advice on all aspects of geology.

€16 million – Department of Enterprise, Trade & Innovation has a wide economic development and job creation remit. Within the Department, the Office of Science, Technology and Innovation (OSTI) is focussed on delivering this goal through the development, promotion and co-ordination of national science, technology and innovation policy, and by progressing the Strategy for Science, Technology and Innovation. In support of these aims, the Department manages Ireland's membership of the: European Space Agency - a principal objective of this membership is to promote opportunity for high technology industry in Ireland and the : European Molecular Biology Laboratory - an Inter-Governmental Research Organisation whose mission is the development of molecular biology throughout Europe. Membership of EMBL complements Ireland's significant investment in the biotechnology area by presenting opportunities for research training, networking and enhanced international collaboration.

€13 million - Environmental Protection Agency supports R&D activities in a range of environmental areas. This work is carried out by researchers in third level institutions, state agencies, government departments, local and regional authorities, the private sector and individuals. The EPA research programme for the period 2007-2013 is entitled Science, Technology, Research and Innovation for the Environment (STRIVE). The purpose of the programme is to protect and improve the natural environment by addressing key environmental management issues through the provision of world-class scientific knowledge generated through a vibrant, competitive programme of research developed supported and co-ordinated by EPA.

€12 million – The Irish Research Council for Humanities and Social Science (IRCHSS) funds cutting-edge research in the humanities, social sciences, business and law with the objective of creating new knowledge and expertise beneficial to Ireland's economic, social and cultural development. IRCHSS Government of Ireland Post-Graduate Scholarships and Government of Ireland Post-Doctoral Fellowships fund research at pre- and post-doctoral levels. Three schemes offer research opportunities for members of the academic staff of recognised third-level institutions to undertake stated projects (Government of Ireland Senior Research Scholarships; Government of Ireland Research Fellowships; Government of Ireland Senior Research Fellowships). Finally, Government of Ireland Research Projects Grants funds world class innovative research undertaken on an extended or group project basis.

1.4 Programmes classified by area of research

The total expected GBAORD for 2010 can be classified into a number of funded economic areas (see Table 2 below). Over 50 percent of total GBAORD funding for 2010 has been allocated for performance in higher education. This €486 million includes funding for various agencies such as Science Foundation Ireland, the Higher Education Authority's PRTLI (Programme for Research on Third-Level Institutes) and other research funding bodies operating in the higher education sector.

Table 2: GBAORD classifications for Ireland 2010

	2010 €m
R&D financed from other sources than General University Funds	241.9
R&D financed from General University Funds (GUF)	214.7
Industrial production and technology	176.3
Agriculture	92.5
Health	44.4
Energy	40.1
Education	29.7
Environment	16.6
Political and social systems, structures and processes	10.2
Transport, telecommunication and other infrastructures	5.0
Exploration and exploitation of the earth	0.6
Total	872.0

Industrial production and technology, which accounted for 20.2 percent of total GBOARD (and is expected to reach €176 million) in 2010 is an important category of R&D funding. Agriculture at €92 million accounted for just under 11 percent of total government spending on R&D programmes.

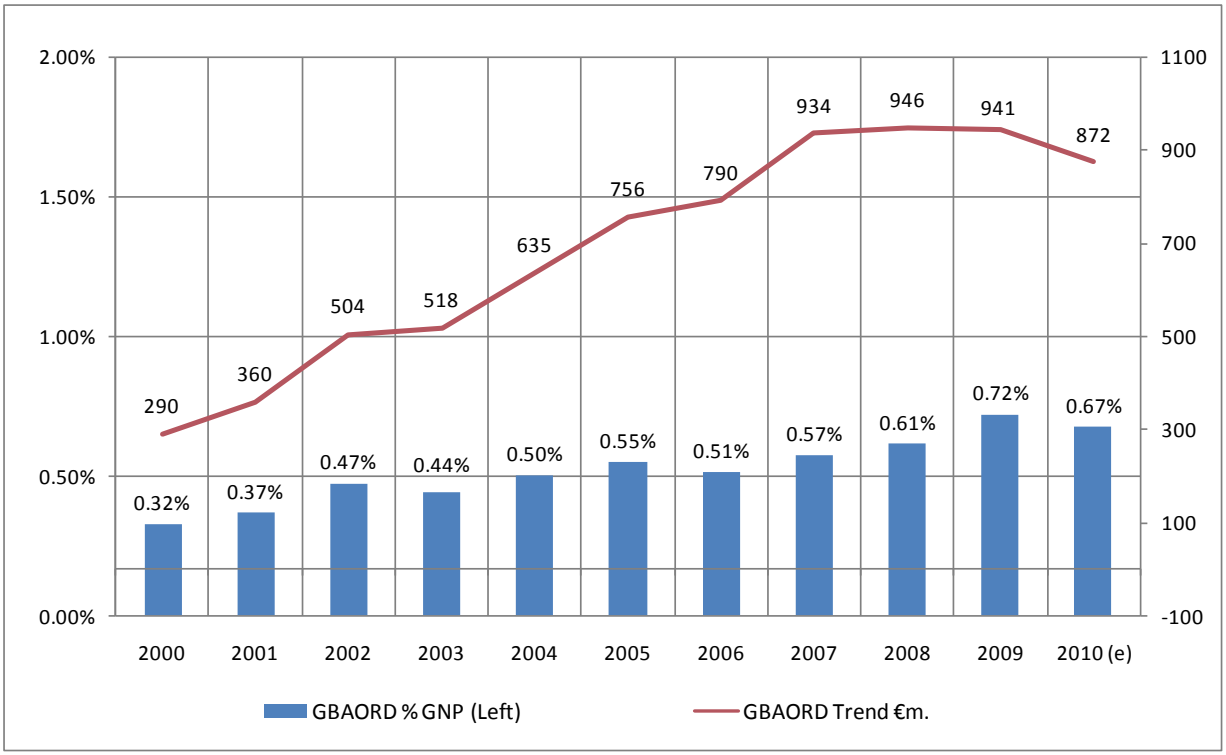
Health and Energy account for approximately 5 percent of total spend each while the Environment at €16.6 million represents approximately 2 percent of budget. The remaining GBAORD is divided between political and social systems, transport, telecommunication and exploration and exploitation of the earth.

1.5 GBAORD as a percentage of GNP and international comparisons

In order to compare state funding of R&D across international competitors, the OECD recommend using the GBAORD indicator with data derived using the guidelines stated in the Frascati Manual. GBAORD includes funding for R&D from direct exchequer sources and also via EU funding. It also includes funding for R&D in the humanities and social sciences.

In Figure 3, the GBAORD trend line shows that between 2000 and 2007 there was a rapid increase in state R&D spending from €290 million to €946 million by 2008. There has been a downward trend in the last two years with the 2010 GBAORD figure down by €74 million on the 2008 figure.

Figure 3: GBAORD trend (€m) and GBAORD as a percentage of GNP (2000-2010)



The GBAORD intensity ratio [State R&D funding for R&D activities as a percent of economic activity divided by Gross National Product (GNP)] has risen steadily over the last decade. The period 2000 to 2002 saw the GBAORD intensity ratio climb from a low of 0.32 percent to 0.47 percent of GNP driven by rapid increases in R&D, funded by a strong economic growth scenario. Following a pause in state R&D funding growth in 2003 and 2006, the period 2003 to 2009 saw the GBAORD intensity rate rise as strong R&D spending gains outpaced nominal economic growth.

In 2009, GBAORD intensity climbed strongly to 0.72 percent of GNP although some of this rise was driven by the 4.1 percent contraction in economic activity in that year. Initial estimates for 2010 show total State departments, offices and agencies' spend on R&D activities declined to 0.67 percent of GNP.

Table 3: Civil GBAORD as a percentage of economic activity (GDP/GNP) [2]

Alongside this overall funding, we can also examine the civil GBAORD figures. Civil GBAORD is a better metric used for international comparisons as it does not include the defence portion of the R&D budget. Countries such as the US, France and the UK spent a relatively large proportion of their GBAORD budget on defence R&D. When data is adjusted for these R&D programmes to only include civil GBAORD programmes, the following data for 2000 and 2010 can be observed.

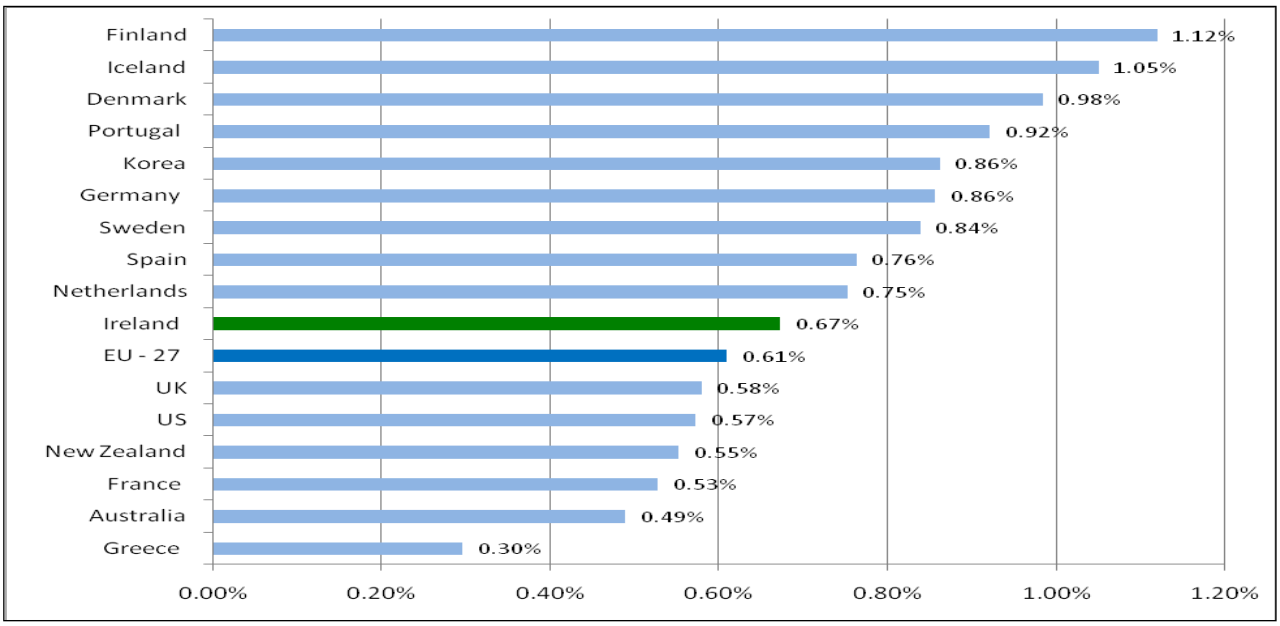
Country	2000	2009/2010 *
Finland	0.97%	1.12%
Iceland	0.94%	1.05%
Denmark	0.76%	0.98%
Portugal	0.56%	0.92%
Korea	0.49%	0.86%
Germany	0.73%	0.86%
Sweden	0.65%	0.84%
Spain	0.45%	0.76%
Netherlands	0.76%	0.75%
Ireland	**0.32%**	**0.67%**
EU – 27 countries	0.62%	0.61%
UK	0.43%	0.58%
United States	0.41%	0.57%
France	0.75%	0.53%
Australia	0.49%	0.49%
Greece	0.31%	0.30%

- *Latest data for most countries is 2010 with the exception of Iceland, Spain, Portugal, Sweden, UK and United States (2009), France (2008) and Greece (2007). Given the slowdown in economic activity in 2010 ratios for some countries could rise further.*

Over the last ten years most OECD countries have seen an improvement in civil GBAORD performance relative to economic activity. Four countries in the table above stand out as having made rapid progress in their State R&D funding programmes – Spain, Portugal, Korea and Ireland. The ratio of civil GBAORD to economic activity in Spain increased from 0.45 percent of GDP in 2000 to 0.76 percent of GDP in 2008. In Korea the ratio rose from 0.49 percent to 0.86 percent of GDP between 2000 and 2010 and Portugal moved from 0.56 percent to 0.92 percent by 2009. In Ireland the civil GBAORD intensity ratio climbed from 0.31 percent of GNP in 2000 to stand at 0.67 percent of GNP in 2010.

[2] OECD – Main Science & Technology Indicators, 2010, Vol. 2

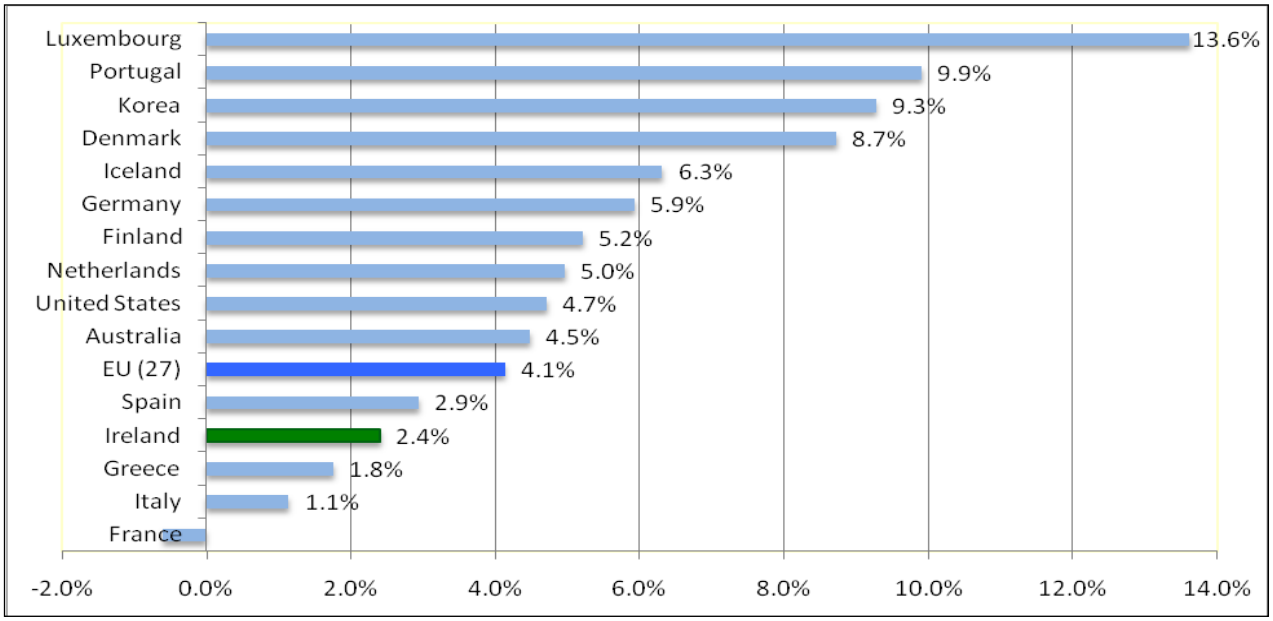
Figure 4: International comparison of civil GBAORD as a percentage of GDP/GNP (2010*)[3]



** or latest date data is available*

Finland, with civil GBAORD spending of 1.12 percent of GDP, is one of the strongest performing OECD countries, followed by Iceland at 1.05 percent of GDP. The latest available EU (27 countries) average civil GBAORD intensity is estimated to be around 0.61 percent of GDP.

Figure 5: Average annual growth rate of civil GBAORD for selected countries, (2005-2010)



This graph shows the annual average growth rate of civil GBAORD since 2005 and indicates that Ireland's growth rate at 2.4 percent is lower than the EU (27 countries) average of 4.1 percent over the same period.

[3] OECD – Main Science & Technology Indicators, 2010, Vol. 2

Chapter 2: Performance of Research and Development in the public sector

Research and development performed by relevant government departments and their agencies is measured using the GOVERD metric. The funding for Government Expenditure on R&D (GOVERD) comes from public, private and other sources but does not include R&D performed in the higher education sector. This information is gathered in a separate survey conducted by Forfás titled, the Higher Education Research and Development (HERD) survey. When GOVERD is combined with the HERD and BERD (Business Expenditure on R&D) data, the R&D performance of the country as a whole can be calculated. As can be seen later in this chapter, the main performer of GOVERD continues to be Teagasc.

2.1 Total expenditure on research and development performed in the government sector

The expectation for expenditure on research and development performed in the government sector for 2010 is that it will drop from the 2009 performance of €103 million to €91 million which represents a decrease of 13 percent.

The 10-year trend in Figure 6 below shows that GOVERD levels are now around the same as in 2000. Expenditure on R&D performed in the State sector has fallen from a high in 2007 on €141 million to an allocation of €91 million in 2010.

GOVERD as a percentage of GNP over the ten-year period from 2000 to 2010 is also illustrated in Figure 6. This graph shows that, as a percentage of GNP, the level of GOVERD has dropped from 0.11 percent in 2000 to 0.07 percent in 2010.

Figure 6: GOVERD as a percentage of GNP and GOVERD trend, (2000-2010)

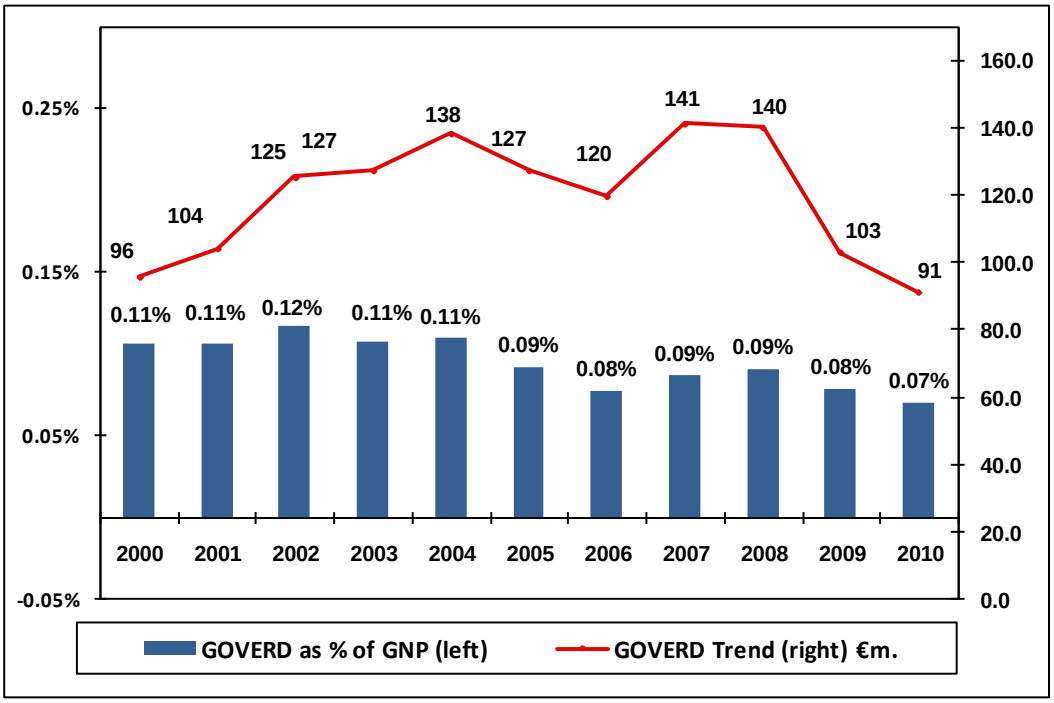


Figure 7: Major State research and development performers, percent of total (2010)

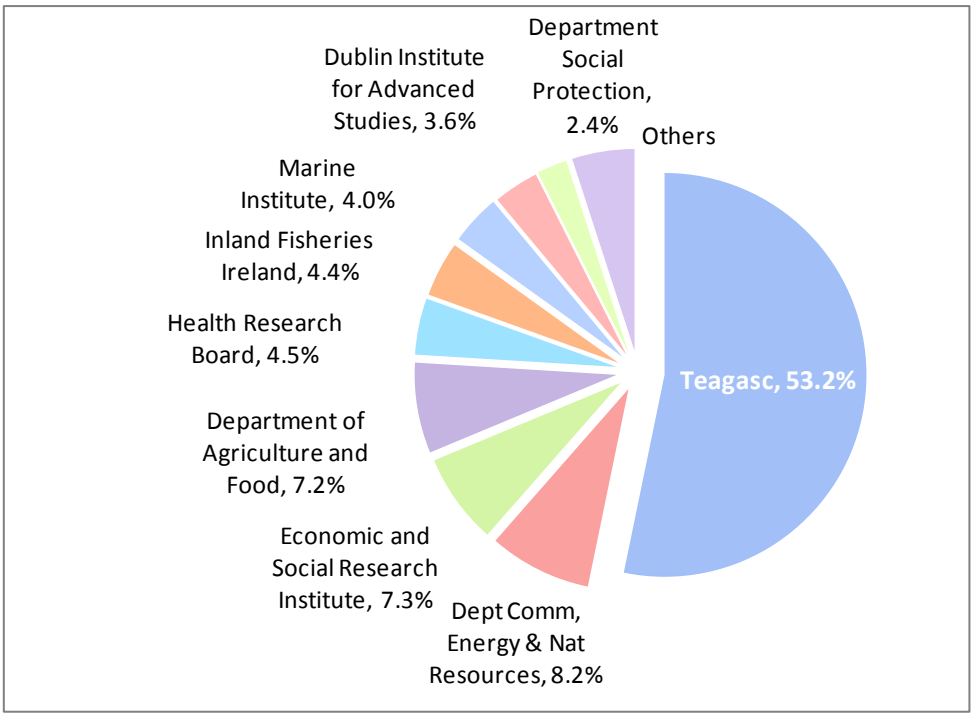


Figure 7 illustrates the major contributors to in-house R&D in the State sector in 2010. Teagasc, the Irish agriculture and food development authority, continued to be the largest performer of R&D in 2010, with expenditure of €48.5 million or over 53 percent of total GOVERD. However, the 2010 expenditure shows a decrease of 13 percent on the 2009 outturn figure of €56 million due to resource adjustments. Teagasc supports science-based innovation in the agri-food and broader bio-economy sectors.

Other major contributors include the Department of Communications, Energy and Natural Resources with expenditure of €7.4 million and of €6.6 million by the Economic and Social Research Institute and the Department Agriculture, Fisheries and Food. The contribution to GOVERD from the Marine Institute of €3.3 million, the national agency responsible for marine research, technology development and innovation (RTDI), has decreased due mainly to a re-classification of some programmes.

More detailed information on research spending in the government sector by institution and nature of programme is available in Appendix 5.

Table 4: GOVERD as a percentage of GDP, selected countries (2005 and 2010 or latest available data)[4]

Country	2005	2010*
Germany	0.35	0.41
Korea	0.33	0.41
Slovenia	0.35	0.39
France	0.37	0.36
Finland	0.33	0.36
Czech Republic	0.28	0.33
United States	0.31	0.30
Japan	0.28	0.29
Norway	0.24	0.29
Luxembourg	0.19	0.29
Spain	0.19	0.28
China	0.29	0.28
Total OECD	0.26	0.26
EU-27	0.24	0.26
United Kingdom	0.18	0.17
Portugal	0.11	0.12
Turkey	0.07	0.11
Denmark	0.16	0.09
Ireland/GNP	0.09	0.08

In Table 4 GOVERD as a percentage of GNP[5] in Ireland is compared with GOVERD as a percentage of GDP in a selection of countries for 2005 and 2010 or the latest date for which data is available. Ireland has the lowest intensity rate with 0.08 percent in 2010. There is a concentration in Ireland on increasing the R&D performance in the higher education part of the overall research system - the figures for Higher Education Research & Development (HERD) are not included in this survey. Another reason for Ireland's low ratio is the size of the Irish public sector compared to other countries. A number of countries show a decrease in the ratio for 2010 when compared to 2005. These include, France, United States, China, United Kingdom

[4] OECD, Main Science and Technology Indicators Database, February 2011

[5] GNP is used as a more accurate denominator for Ireland to reflect the large multinational base in Ireland which repatriates profits to their respective home countries. It could therefore be argued that the GDP figure would not reflect real (i.e. retained) national income in Ireland

and Denmark. Increases can be seen in Germany, Korea, Slovenia, Finland, Japan, Czech Republic, Norway, Luxembourg, Spain, Portugal, Turkey and the EU 27.

2.2 Types of Research

The type of research being performed in the various government departments and agencies is also measured in this survey. The OECD Frascati Manual defines the three categories of research as follows:

- **Basic Research** – experimental or theoretical work undertaken primarily to acquire new knowledge, without any particular application or use in view;

- **Applied Research -** original investigation undertaken in order to acquire new knowledge, primarily directed towards a specific practical aim or objective; and

- **Experimental Development** - systematic work, drawing on existing knowledge gained from research and practical experience that is directed at producing new materials, products and devices, to installing new processes, systems and services, or to improving substantially those already produced or installed.

Table 5: GOVERD by type of research (2010)

Type of Research	2010 €m.	% of total
Applied Research	**80.0**	**88**
Experimental Development	**7.7**	**8**
Basic Research	**3.4**	**4**
Total	**91.1**	**100**

88 percent of allocated funds for research to be undertaken by Irish government departments and agencies is in applied research, with expenditure in 2010 amounting to €80m.

Experimental development accounted for 8 percent of all expenditure at €7.7m, while €3.4m was allocated for basic research.

2.3 Fields of science

The fields of science classifications are defined by the OECD Frascati Manual in agreement with European nations. As a result of changes in the classification of fields of science in 2006 some amendments in the distribution among programmes resulted in a break in the time-series compared to years prior to 2006 which used the old definitions.

Table 6: Field of science classified by type of research, (2010) €m.

Field of Science	Basic	Applied	Experimental	Total
Agriculture, forestry and fisheries	0.0	56.3	2.3	58.3
Economics, business & education sciences	0.0	8.9	0.0	8.9
Veterinary science	0.0	1.3	4.1	5.4
Computer and information sciences	0.0	4.2	0.0	4.2
Health Sciences	0.2	4.0	0.0	4.2
Environmental engineering	0.0	2.7	0.6	3.3
Physical sciences	3.3	0.0	0.0	3.3
Other social sciences	0.0	2.2	0.0	2.2
Earth and related environmental science	0.0	0.3	0.6	0.9
Civil engineering	0.0	0.4	0.0	0.4
Totals	3.5	80.0	7.6	91.1

The majority of funds spent on research performed in the public sector is spent on applied research, this amounted to an allocation of €80m out of a total spend of €91m in 2010

Applied research in agricultural sciences continues to be the field of science in which most expenditure takes place. In 2010, €56.3 million was spent on applied science in this area with another €2.3 million spent on experimental development.

The major performer of R&D in the government sector is Teagasc which along with the Department of Agriculture, Fisheries and Food are engaged in the field of agricultural sciences. Other agencies working in this field are Bord Iascaigh Mhara, the Inland Fisheries Board and the Marine Institute.

A breakdown of the major state research and development performers is given on P.18

Chapter 3: Human resources dedicated to publicly performed research and development

Personnel engaged in R&D activities performed in institutions within the government sector are examined in this chapter. The data was collected from survey returns from 35 government department and agencies and relates only to personnel working in research and development in the government sector. It does not include R&D personnel in the higher education or business sectors.

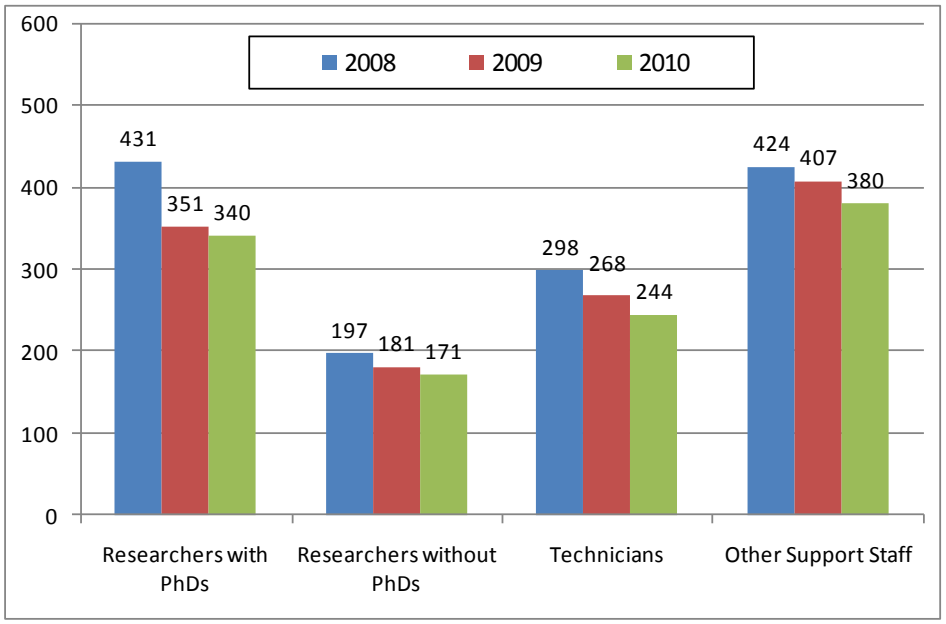
The survey seeks to ascertain the amount of time spent by staff on R&D activities or in Full-Time Equivalent (FTE) terms in addition to gathering information on the overall totals, gender, qualifications and occupations of R&D staff. The research personnel are divided into PhD and non-PhD researchers, technicians and other support staff. A researcher spending 70 percent of their time on research activities equals one researcher in headcount terms, and 0.7 researchers in FTE terms. Gathering information on the time spent by government sector researchers and research support staff, specifically on R&D work, allows for more robust benchmarking with comparable data from other countries.

3.1 Research and development personnel

Based on estimates, it is anticipated that there will be a 6 percent decrease in 2010 in the overall number of research personnel employed in the government sector over the 2009 outcome of 1,207 (Figure 8). The number of PhD researchers has fallen by 3 percent, researchers without a PhD by 5 percent, and technicians are expected to decrease by approximately 9 percent in 2010 over 2009. There has also been a reduction in the number of research support staff of approximately 7 percent in 2010.

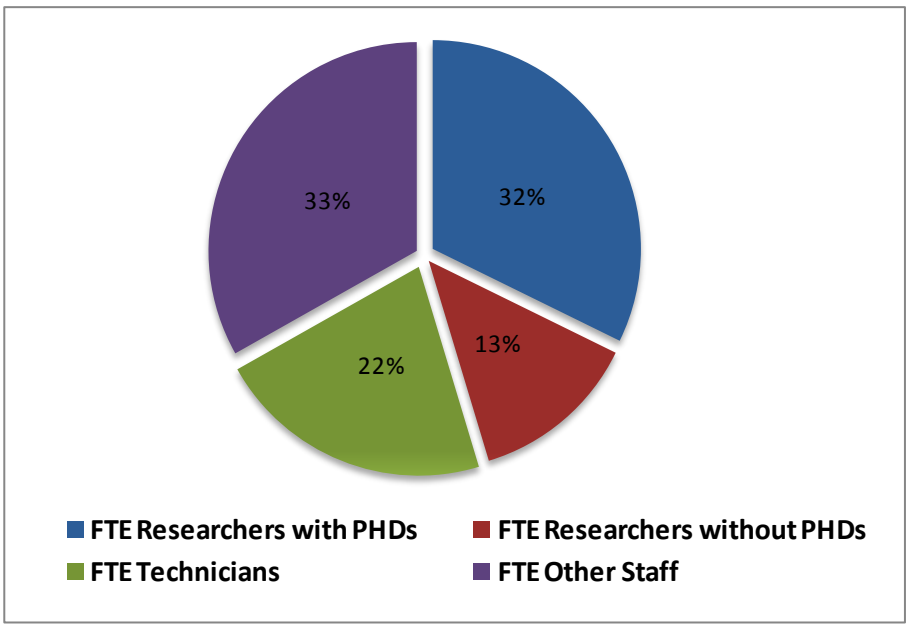
In 'full-time equivalent' terms, there were 447 FTE researchers in 2010, supported by 539 FTE technicians and other support staff.

Figure 8: Total research and development personnel by occupation (headcount terms, 2008-2010)



As illustrated in Figure 9 below 32 percent of FTE researchers hold a PhD qualification, while 13 percent of FTE researchers hold degrees below PhD level. Twenty-two percent of government research personnel were employed at technician level, with the remaining 33 percent of the FTE total working in other support roles for government researchers.

Figure 9: Total R&D personnel by occupation in FTEs, (2010)

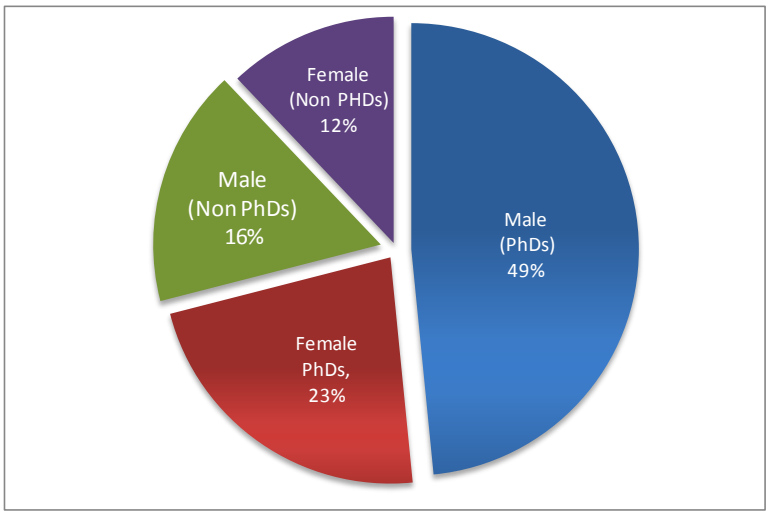


3.2 Gender and qualifications of State sector research staff

Figure 10 shows a breakdown of government researcher grades (excludes technicians and support staff), as a percentage of the total, by gender and type of qualification, for 2010, in full-time equivalent terms.

Male PhD researchers continue to dominate the numbers employed at research level in the government sector representing 49 percent of the total. Female PhDs represent 23 percent of government researchers with another 12 percent of researchers below PhD level. Male researchers below PhD level each account for 16 percent of the total.

Figure 10: FTE Researchers by gender and qualification, (2010)



3.3 Research and development staff by fields of science

Of the total 510 PhD and non-PhD researchers employed in the government sector in 2010, 328 were male and 182 were female and the following table sets out their fields of science.

When analysed by the OECD standard fields of science, the following statistics emerge for 2010. The majority of the government researchers work in the agricultural, forestry and fisheries field. 51.6 percent of male researchers and 34.7 percent of female researchers are engaged in research and development work in this area.

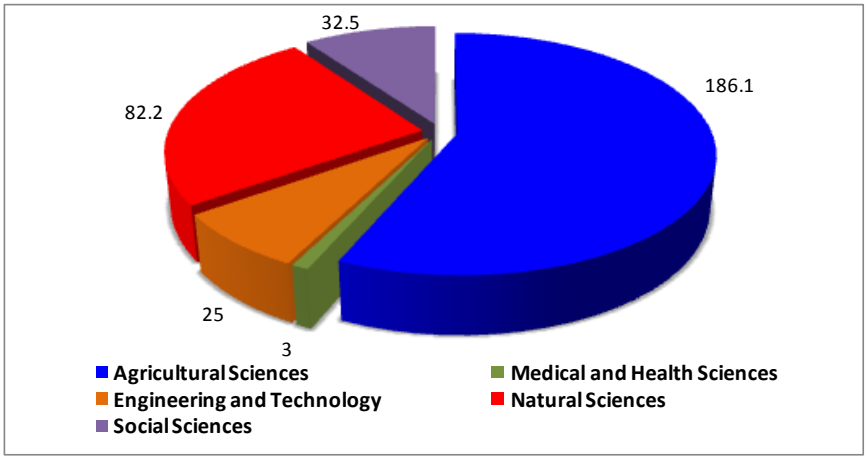
Table 7: Total male/female and as percentage of total by field of science, (2010)

Fields of Science	Male Researchers	Male researchers as % of all male researchers	Female Researchers	Female researchers as % of all female researchers
Agriculture, forestry and fisheries	169	51.6	63	34.7
Civil engineering	4	1.2	2	1.1
Earth and related environmental sciences	32	9.8	24	13.2
Economics and Business	30	9.1	27	14.8
Environmental Engineering	21	6.4	13	7.1
Health sciences	3	0.9	33	18.1
Other social sciences	2	0.6	2	1.1
Physical sciences	50	15.2	18	9.9
Veterinary science	17	5.2	0	0.0
Total	328	100	182	100

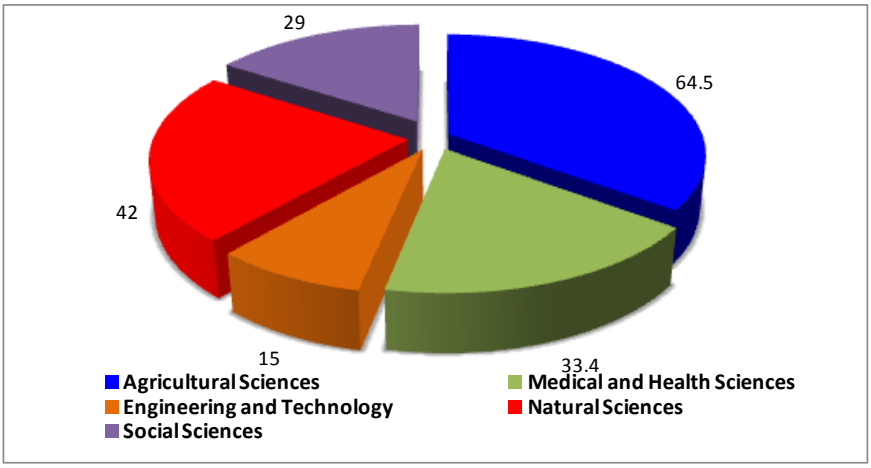
Figure 11 shows a gender breakdown within the different fields of science. Female researchers make up 92 percent of total medical and health researchers, while male researchers account for 63 percent of researchers in engineering and technology fields. Male researchers also dominate all other fields of science accounting for 66 percent in natural sciences, 74 percent of research in the agricultural science, and 53 percent in social science. Outside of the medical and health fields, the highest participation by female researchers is in social sciences with females accounting for 47 percent of the total. Note that these percentages are based on small population samples (e.g. 40 engineering & technology researchers, 36 medical & health sciences researchers, etc).

Figure 11: Researchers classified by gender and field of science, (2010)

Male Researchers



Female Researchers



Appendix 1

Methodology

The information given in this document relates to information supplied by 35 institutions in receipt of monies from the exchequer for the performance or support of research and development. In general, institutions and information relating to them are listed separately. In a few cases an institution is listed with its parent department or organisation but identified separately.

Expenditure data for specific programmes refer to the 2009 outturn costs of programmes and to the expected costs in 2010. The outturn costs are mainly funded by matching grant-in-aid or voted monies. Where programmes are funded in other ways, these monies are noted separately. In these instances, the expenditure (cost) data shown includes both exchequer and other income contributions.

Expenditures are based on unaudited figures, except in a few cases where they are identical with a vote by the Oireachtas. For convenience, general overheads, where shown, are distributed in proportion to programme expenditures. Programmes are attributed to the institution most directly involved - that is to those actually operating them, but not necessarily funding them. An example of the latter is the Department of Enterprise, Trade and Innovation which funds but does not operate or manage programmes.

Apportionment problems arise in the third-level sector, mainly from the monies distributed by the Higher Education Authority and the Department of Education and Skills to the institutes of technology. In the case of the HEA, the extent and cost of the R&D work undertaken in colleges and funded out of the HEA's general block grant is determined indirectly from surveys of academic staff in colleges. These surveys are carried out by Forfás on a multi-annual basis and the corresponding cost data are, of necessity, based on historical estimates. The HEA funding of academic departments was isolated from administration and support services within colleges.

Appendix 2

Government departments and agencies included in the 2010 Science Budget

This survey records expenditure on research and development in the government sector. This sector includes government departments, associated government agencies and government office. Table 8 below lists the 35 government departments, agencies and offices included in the 2009/2010 Science Budget.

Table 8: Government departments/agencies and offices funding R&D activities, 2009-10

Government Departments	Associated Agencies
Dept. of Agriculture, Fisheries and Food	Bord Iascaigh Mhara, COFORD, Marine Institute, Teagasc
Dept. of Communications, Energy and Natural Resources	Inland Fisheries Ireland, Sustainable Energy Authority of Ireland
Dept. of Community, Rural and Gaeltacht Affairs	Údarás na Gaeltachta
Dept. of Education and Skills	Dublin Institute for Advanced Studies, Higher Education Authority, Irish Research Council for Humanities & Social Sciences, Irish Research Council for Science, Engineering & Technology
Dept. of Enterprise, Trade and Innovation	Enterprise Ireland, FÁS, Forfás, IDA Ireland, Inter*Trade*Ireland, Science Foundation Ireland, Shannon Development
Dept. of the Environment, Heritage and Local Government	Environmental Protection Agency, Met Éireann, Radiological Protection Institute of Ireland
Dept. of Finance	Economic and Social Research Institute
Dept. of Health and Children	Health Research Board
Dept. of Social Protection	
Dept. of the Taoiseach	National Economic and Social Council
Dept. of Transport	National Roads Authority
Offices: Central Bank & Financial Services Authority/Office of Public Works	

Appendix 3

Definitions of R&D activities

Research and Development:

- Research: Original, experimental or theoretical investigations undertaken to acquire new knowledge, with or without a particular application or use in view.

- Development: Systematic work drawing on existing knowledge gained from research and/or practical experience, that are directed to producing new products, processes, systems, services, varieties and breeds and to improving substantially already existing ones. Data collection conducted solely or primarily as part of the research and development (R&D) process included under "research" or "development" as appropriate.

Other Definitions:

- Public funds = Exchequer + EU funds

- GBAORD = Government Budget Appropriations or Outlays on R&D
  (Public funds) + (Funds for the Social Sciences and Humanities (HEA)

- GOVERD = Government Expenditure on R&D

Appendix 4

Acronyms

AAGR	Average Annual Growth Rate
BERD	Business Expenditure on R&D
COFORD	National Council for Forest Research and Development
CSF	Community Support Framework
DIAS	Dublin Institute for Advanced Studies
EPA	Environmental Protection Agency
ESRI	Economic and Social Research Institute
FÁS	Foras Áiseanna Saothair – National Training and Employment Authority
FTE	Full-Time Equivalent
GBAORD	Government Budget Appropriations and Outlays on R&D
GERD	Gross Expenditure on R&D
GOVERD	Government Expenditure on R&D
GUF	General University Funds
HEA	Higher Education Authority
HERD	Higher Education Expenditure on R&D
HRB	Health Research Board
IRCHSS	Irish Research Council for the Humanities and Social Sciences
IRCSET	Irish Research Council for Science, Engineering and Technology
NESC	National Economic and Social Council
NRA	National Roads Authority
OPW	Office of Public Works
OST	Office of Science and Technology - Department of Enterprise, Trade and Innovation
PGM&DB	Postgraduate Medical and Dental Board
RPII	Radiological Protection Institute of Ireland
SEAI	Sustainable Energy Authority of Ireland
SFI	Science Foundation Ireland

Appendix 5: Government Departments and Agencies' Programmes

Table of Contents

Department of Agriculture, Fisheries and Food

The Department of Agriculture, Fisheries and Food (DAFF) is a multi-functional organisation which provides a wide range of services directly and through specialist state agencies operating under its aegis. Its mission is to lead the sustainable development of a competitive, innovative, consumer focused agriculture, food, fishery and forestry sector and contribute to a vibrant rural and coastal economy and society.

State-sponsored bodies which come under the statutory responsibility of the Minister for Agriculture, Fisheries and Food include Teagasc (The Agriculture and Food Development Authority), the Marine Institute and An Bord Bia. However, the figures below refer only to the R&D spend by DAFF itself.

Research and Development Programmes	€'000 2009	€'000 2010
Improvement of Crops Improving the quality of crops and crop products through the use of the highest quality varieties and seeds. The main activities leading to achievement of this objective include the operation of two stations/farms at Fermoy in Co. Cork and Backweston in Co. Dublin, where plant varieties are evaluated, the operation of a potato laboratory at Raphoe in Co. Donegal and the carrying out of trials in farmers' fields throughout the country.	1,057	1,200
R&D-Related Veterinary Laboratory Activities Operation of a central veterinary research laboratory at Backweston, Celbridge, Co. Kildare, regional veterinary research laboratories at Cork, Limerick, Sligo, Athlone and a testing laboratory in Waterford.	4,910	5,400
Institutional Food Research - Competitive Funding Programme In its implementation of the Food Institutional Research Measure of the RTDI component of the Productive Sector OP under the National Development Plan 2000 - 2006 and 2007 - 2013, the Department is involved in the management of competitive tendering by food research institutions for grant aid to support food research in priority areas. It monitors the progress of successful projects, payment of grant aid and evaluation of the programme.	15,260	14,200
Agricultural Production Research- Competitive Funding Programme This is the "Research Stimulus Fund" measure of the Productive Sector OP of the NDP 2000-2006 and NDP 2007-2013 which encourages co-operative research in agricultural production. This involves management of competitive tendering by research institutions for grant aid to support agricultural research projects in priority areas, monitoring of progress of successful projects, payments of grant aid and evaluation of the programme.	5,502	6,622
Improvement of Livestock Improving the quality of livestock and livestock products through adoption of better breeding and selection practices carried out in Irish Cattle Breeding Federation (ICBF). The main activities leading to achievement of these objectives are operation of on-farm and central testing stations; recording schemes; collaboration with and support for research in animal breeding at research institutions and at the Irish Equine Centre, Co. Kildare which undertakes R&D activities relating to equines.	1,116	1,030

Genetic Resources in Plants and Animals The Department of Agriculture, Fisheries and Food's grant aid scheme for the conservation of genetic resources for food and agriculture has been in place since 1996. The Scheme has an annual call for projects aimed at supporting the conservation and sustainable use of genetic resources for food and agriculture. Projects are evaluated by an advisory committee, representing broad national stakeholder interests.	**248**	**350**
International Equine Institute Based in University of Limerick the Institute receives a grant payment from DAFF	**292**	**293**

Bord Iascaigh Mhara

Bord Iascaigh Mhara (BIM) is the Irish State agency with responsibility for developing the Irish Sea Fishing and Aquaculture industries. BIM was established under the Sea Fisheries Act 1952. BIM's mission is "to promote the sustainable development of the Irish seafood industry at sea and ashore and support its diversification in the coastal regions so as to enhance its contribution to employment, income and welfare both regionally and nationally.

There are three complementary, integrated programmes, which form the core of BIM's support to the sea fisheries sector. The measures underlying these programmes are mainly provided for in the National Development Plan 2007-2013

BIM provides a range of services including advisory, financial, technical, business development and training supports to all sectors of the Irish seafood industry. BIM's clients comprise fishermen, fish farmers, processors and all those engaged in marketing Irish seafood.

Research and Development Programmes	**€'000 2009**	**€'000 2010**
Marine Technical The objectives of the Marine Technical Section are to progress development of responsible fishing practices addressing environmental and sustainability issues through technical innovation and technology transfer. The section carries out sustainability-orientated projects, aimed at promoting the use of more selective gear types and protection of key fisheries together with identifying ways to reduce operating costs through diversification into alternative, fuel-efficient fishing methods.	**331**	**162**
Resource Development The primary focus of the Resource Development Section work programme will see the further development of mechanisms by which the industry can compete in the marketplace through increased quality. At the core of this strategy is the development of quality schemes for the catching sector that are suitable for integration into the QSP programme. This will enable Irish fishermen to compete at the highest levels of quality and traceability now demanded by the consumer.	**151**	**57**
Inshore Fisheries The primary function of the inshore fisheries Section is the implementation of the framework for the management of the major inshore stocks announced by the Minister in 2004. The work involves establishing species advisory groups and drawing up management plans for important inshore fisheries. Monitoring of stocks in support of	**219**	**140**

management and the further development of applied research programmes are funded through the NDP in support of the framework.		
Supporting Measures The Supporting Measures Programme of the National Development Plan provides, through 8 targeted schemes, grant aid of €25 million over the lifetime of the National Development Plan. To date some €26.9 million has been awarded to a total of 147 projects.	**919**	**0**
MEPS - Marine Environment Protection The Marine Environment Protection Measure has been developed in accordance with Article No. 37 and 38 of Council Regulation (EC) No 1198/2006 of 27 July. The Measure facilitates projects to address issues of environmental concern, particularly those intended to protect and develop the marine environment.	**00**	**600**
Planning and Development	**13**	**10**

National Council for Forest Research and Development (COFORD)

COFORD is the National Council for Forest Research and Development. COFORD manages the forest research programme of the Department of Agriculture Fisheries and Food under the National Development Plan, 2007-2013. COFORD's objectives are:

- to support the economic, environmental and social goals of forest policy through funded research and development activities, service provision and information and technology transfer;
- to identify research and development needs and priorities for the forestry sector; and
- to develop national forest research capacity and competence.

Research and Development Programmes	**€'000 2009**	**€'000 2010**
COFORD's programme of funded research under the National Development Plan 2007-2013 comprises 13 thematic areas: 1. Forest reproductive material 2. Silviculture 3. Forest planning and management 4. Forest economics and policy 5. Forest health and protection 6. Forest harvesting and transport 7. Wood products 8. Wood energy 9. Non wood products 10. Forests & climate change mitigation adaptation 11. Biodiversity in native woodlands and plantations 12. Forests and water 13. Forest recreation and public health COFORD provides the following services to the forestry sector and the general public incorporating the outcomes from the funded research programmes: ▪ wood product specification advice	**4,300**	**3,242***

▪ wood energy advice ▪ advice on climate change		

* excludes €0.357 million allocated to Forestry Development and Promotion

Marine Institute

The Marine Institute has the general functions "to undertake, to co-ordinate, to promote and to assist in marine research and development and to provide such services related to marine research and development that in the opinion of the Institute will promote economic development, create employment and protect the marine environment" (Marine Institute Act, 1991). The key services delivered by the Marine Institute include:

- Research – The Marine Institute's activities, in relation to marine research, fall into three main areas:
  - Research Performer: The Marine Institute undertakes research (both applied and experimental development) through its operational programmes and also through leading and participating in many national and international research projects.
  - Research Funder: The Marine Institute administers the *Marine Research Sub-Programme of the National Development Plan 2007-2013*.
  - Research Promoter, Coordinator and Catalyst: As the lead implementing agency for *Sea Change - A Marine Knowledge, Research & Innovation Strategy for Ireland 2007-2013*, the Institute co-ordinates and promotes marine research, bringing together industry, higher education institutions and government bodies to support the development of Ireland's knowledge economy.
- Monitoring, data collection and other technical services: The Institute carries out Statutory and non-statutory monitoring and data collection to underpin the development of the marine sector and the sustainability of the marine environment.
- Provision and formulation of scientific, technical and strategic policy advice:
- Sectoral Development: The Marine Institute provides a number of services related to the development of Ireland's vast marine resource.

The Marine Institute has developed world-class marine research infrastructure including: HQ & Laboratory Complex (54 labs) in Oranmore, Co. Galway; an Aquaculture & Catchment Management Research Facility in Newport, Co Mayo; two multi-purpose National Research Vessels, a remotely operated vehicle (ROV); an Ocean Energy Test & demonstration site in Galway Bay; and a range of specialist scientific equipment and data management facilities.

Research and Development Programmes	**€'000 2009**	**€'000 2010**
Marine Institute R&D Programmes (incl. EU Funded Projects) The Marine Institute is a significant research performer - competing for and securing funds from both national and international (EU FP and INTERREG) funding sources. This research supports the provision of government services, including the provision of policy advice; underpins the competitiveness and market accessibility to Irish seafood production (fisheries and aquaculture) through a range of scientific research assessment and monitoring programmes spanning fisheries resources, marine environment monitoring and marine food safely. In addition to the Institute's direct participation in externally funded research projects, the Institute also participates in marine research via in-kind contribution e.g. through the provision of research	**3,866**	**3,670**

facilities/infrastructure for projects that are complementary to the Institute's core activities.		
EU FP7 Project Payments to Other Partners	**249**	**0**
NDP 2007-2013: Marine Research Sub-Programme and NDP 2000-2006 Marine RTDI Measure The Marine Institute administers on a competitive basis the national marine research funding programme: Marine Research Sub-Programme of the 2007-2013 National Development Plan and Marine RTDI Measure of the 2000-2006 NDP. Research funding is awarded on a competitive basis for 'applied' marine-related R&D in line with the objectives set out in *Sea Change*. The Institute administers and manages the following categories of funding: ▪ Project-Based Awards: Strategic Research Projects, Applied Research Projects, Demonstration Projects and Desk/Feasibility Studies; ▪ Researcher Awards: Strategic Research Appointments, Research Capacity/Competency Building, Post-Doctoral Fellowships and PhD Scholarships; ▪ Industry-Led Research Awards: Company Awards and Collaborative Awards; ▪ Infrastructure Awards: Infrastructure Acquisition & Access to Infrastructure	**7,796**	**5,413**

Teagasc

Teagasc (the Agriculture and Food Development Authority) is the national body providing advisory, research, education and training services to the agriculture and food industry. It was established under the Agriculture (Research, Training and Advice) Act, 1988. The organisation's mission is: "*To support science-based innovation in the agri-food sector and broader bio-economy that will underpin profitability, competitiveness and sustainability*".

The Teagasc Change Management 2009 -2013 plan addresses both the ongoing need for change identified in *Teagasc 2030* and the need for significant resource rationalization arising from the current budgetary challenge. In pursuing this mission, Teagasc focuses on:

- Developing the information and new technology required to underpin competitiveness and innovation in sustainable agricultural production and the food processing sector.
- Analysing and projecting the impact of policies for the agri-food sector.
- Developing and maintaining a strong human resource capacity across the agri-food sector.
- Providing a sound scientific basis for decision-makers in protecting the integrity of the food chain, protecting the rural environment and addressing the concerns of the consumer.
- Developing a capacity in molecular biology with a view to increasing its application in the agri-food industry.

Research and Development Programmes	**€'000 2009**	**€'000 2010**
Sustainable agriculture and rural development The Teagasc agriculture and rural research programme will continue to serve the broad range of farm enterprises as well as national stakeholders with an applied research programme. Recent investment in developing centres of excellence will equip those	**56,000**	**48,500**

involved in the business of agriculture and food with the knowledge to improve efficiency, competitiveness and responsiveness to the market and to develop policies that respect the physical environment, promote biodiversity and guarantee the maintenance of a healthy population and health-giving countryside. **Food Programme** The Food Programme is directed towards developing the base of expertise and information in generic technologies to assist the Irish food industry to achieve consistent quality and guaranteed safety, allied to product and process innovations. The programme covers the full spectrum of the innovatory process, ranging from market studies through strategic research to technology development services and training programmes. Some of the main areas targeted include food safety, cheese diversification and efficiency, meat quality, dairy and powder technology, and cheese cultures. In addition, there is an increased emphasis on the effect of food on human health with a view to generating products with scientifically proven health benefits – so called Functional Foods – and includes research programmes on obesity, infant and elderly nutrition, bioactive mining and gut health.		

Department of Communications, Energy & Natural Resources

The Mission statement of the department is "to promote the sustainable development, management and regulation of the communications, energy, marine and natural resources sectors in support of national economic and social policy objectives".

Research and Development Programmes	**€'000 2009**	**€'000 2010**
Exploration Mining Division The purpose of the division is to stimulate the discovery of economic mineral deposits and to maximise the contribution of the mining sector to the national economy, with due regard to its environmental and social impact.	**43**	**0**
Geological Survey Ireland As the national geological agency, GSI plays a key role in the development of the geosciences sector which contributes significantly to the economic development and quality of life of our nation. GSI provides a range of high-quality services which support the other players of the geosciences sector as well as a wide spectrum of other activities, including infrastructure, environment, mineral resources, water supplies, heritage and education.	**157**	**120**
INFOMAR (Integrated Mapping for the Sustainable Development of Ireland's Marine resource). INFOMAR, is the national marine mapping programme being undertaken jointly with the Marine Institute. Designed to create integrated knowledge of the physical, chemical and biological resources of our extensive seabed, INFOMAR worked in 2009 to help delineate new candidate marine Special Areas of Conservation in the deepwater offshore in collaboration with the National Parks and Wildlife Service. The RV Celtic Voyager completed surveys in Dingle Bay and along the coastlines of Wexford and North Dublin in support of maritime safety and biological heritage objections. The RV Keary, a cost-efficient inshore survey vessel, was commissioned during 2009	**363**	**290**

and commenced surveying in Dublin Bay. It undertook collaborative surveys in the Irish Sea in conjunction with energy and biological heritage interests. INFOMAR became a partner in two EU-supported projects, GEOSEAS (FP7) and EMODNET (DG Mare), which will deliver efficient datasets. 2009 marked ten years of eventful seabed mapping and this milestone was recognised at the Seabed 10 conference in October which reviewed the progress and impact of this work. The INFOMAR Programme held an applied Research Call in 2009 which supported 14 projects, mostly one year post grad studies, a total commitment of over €350,000		
Griffith Geoscience Research Awards The objective of the awards, which are managed by the Geological Survey of Ireland (GSI), is to develop overall research capacity particularly in priority areas of geosciences research as outlined in the National Geoscience Programme, 2007-2013 (available at www.gsi.ie). The awards among other things support the establishment of an all-island geosciences graduate school and seek to stimulate interest by primary and secondary school students in Geology/Geoscience through the production and distribution of geosciences outreach products.	**341**	**3,284**
Geoscience Initiatives The Geoscience Initiatives is a series of co-ordinated actions managed by GSI and principally aimed at local authorities to support infrastructural development planning and environmental protection under the NDP.	**786**	**0**
Energy Planning This covers a range of Energy RTDDI, administration, capital initiatives and programmes and policy support and advice.	**131**	**542**
National Digital Research Centre (NDRC) NDRC (National Digital Research Centre) is an independent enterprise dedicated to accelerating research from idea to income with support from the Department of Communications, Energy and Natural Resources. Their collaborative approach with technology and business innovators drives greater collective success while cultivating bolder attitudes towards invention and investment.	**1,995**	**4,153**
Exemplar Test-bed Lab DCENR is entering into a collaborative research undertaking to develop the Exemplar Smart Communications Test-bed Lab. This is the world's first example of a next generation network based on a truly dynamic optical infrastructure. It is based on a new technology called Optical Packet Switch and Transport (OPST) which enables the infrastructure to respond dynamically to unpredictable traffic patterns. OPST can guarantee the performance level of a multi-service network with respect to bandwidths, delay and jitter of packet flows across the network. The contract for the first stage of the Exemplar Network Test bed lab was signed on April 22nd, 2010. The first stage opened in July 2010 with a target for the industry R&D projects to start in September 2010. In addition to the early industry participants several Irish, UK and Spanish University projects are in planning.	**0**	**5,000**

Inland Fisheries Ireland

Inland Fisheries Ireland (IFI) was formed on July 1, 2010 following the amalgamation of the Central Fisheries Board and the seven former Regional Fisheries Boards into a single agency. Inland Fisheries Ireland is responsible for the protection, management and conservation of the inland fisheries resource across the country. Ireland has over 70,000 kilometres of rivers and streams and 144,000 hectares of lakes all of which fall under the jurisdiction of IFI. The agency is also responsible for sea angling in Ireland.

IFI operate a general policy for the protection and improvement of inland fisheries, the surveying of sea angling resources and the protection of molluscs. Their activities include surveys, development, management protection and conservation of fisheries; research and experimental work, and management of fish farms and hatcheries.

Research and Development Programmes	€'000 2009	€'000 2010
Programme Monitoring Ongoing activity includes assessing the biological potential of freshwater lakes and rivers for fishery development; many of these databases are used to design riverine rehabilitation programmes. Surveys of estuaries and inshore marine areas to locate habitats of popular marine sport fish and surveys of stocks of such fish; evaluating the progress of current development programmes in terms of fish numbers, etc. checking on conditions of fishing waters i.e. measuring trophic/nutrient status and pollution hazards which might threaten the State's investments in fisheries; water sampling and analysis for pollution control and prosecutions. Current work being carried out by the Research and Development Division includes the fish monitoring component as part of the EU Water Framework Directive. The National Fish Stock Assessment Programme continues with work species of fish stocks that are of socio economic importance to the country such as salmon, eels, coarse fish and marine sports fish species. The National Fisheries Environment and Biodiversity Programme incorporates research in a holistic way to support conservation of our natural aquatic ecology. Currently studies are undertaken on invasive species and integrated constructed wetlands, providing a chemical and nutrient analysis programme, designing enhancement programmes for drained river systems and monitoring their effectiveness along with management of the board's fish farms.	**3,999**	**4,435**

Sustainable Energy Authority of Ireland (SEAI)

Sustainable Energy Authority of Ireland was established under the Sustainable Energy Act 2002, has a mission to play a leading role in transforming Ireland into a society based on sustainable energy structures, technologies and practices

This encompasses environmentally and economically sustainable production, supply and use of energy, in support of government policy across all sectors of the economy. Its remit relates mainly to improving energy efficiency, advancing the development and competitive deployment of low carbon sources of energy and combined heat and power, and reducing the environmental impact of energy production and use, particularly in respect of greenhouse gas emissions.

The Authority is charged with implementing significant aspects of the Energy White Paper and Energy Research, as provided for in the National Development Plan 2007-2013. SEAI is financed by Ireland's EU Structural Funds Programme and co-funded by the Irish Government and the European Union and manages programmes aimed at:

- supporting Government decision-making through advocacy, analysis and evidence

- driving demand reduction and providing advice to all users of energy
- driving the decarbonisation of energy supply
- raising standards in sustainable energy products and services
- building markets based on quality, confidence and proven performance
- fostering innovation and entrepreneurship
- improving the coherence of Irish energy research and development

Research and Development	€'000 2009	€'000 2010
Sustainable Energy Ireland's research, development and demonstration (RD&D) programme is designed to assist the development of a least-cost path to CO2 reduction and sustainable energy in Ireland. It has programmes active in the areas of built environment, industry, renewables, and transport. SEAI's Renewable Energy RD&D Programme was established to support the acceleration of uptake of renewable energy solutions and new renewable technologies. The Renewable Heat (ReHeat) Deployment Programme is aimed at stimulating the installation of new renewable energy plants supplying space, water and process heating in the commercial, industrial, services, public sectors as well as ESCO (Energy Supply Company) installations by means of grant assistance. The CHP Deployment Programme provides grant support to assist the deployment of small-scale (<1MWe) fossil fired CHP and biomass (anaerobic digestion (AD) and wood residue) CHP systems. The Ocean Energy Programme was established to advance the deployment of ocean energy technologies in Ireland by increasing the capacity for research and development both with academic institutions and commercial entities developing devices in Ireland. SEAI's Sustainable Transport Programme demonstrates the technical and economic feasibility of sustainable technologies in Ireland by supporting a number of RD&D studies into the integration of renewable energy technologies into transport systems. SEAI's Microgeneration programme assesses the technical, financial and regulatory issues surrounding the deployment of small and micro generation technologies in Ireland. The House of Tomorrow Programme offers a range of supports to developers towards the construction or refurbishment of a broad portfolio of residential units which demonstrate superior approaches to the design and implementation of energy services and technologies in homes. SEAI under the Smart Metering Programme is leading the behavioural dimension of the national smart metering trial. The Public Sector Energy Efficiency Programme provides a two strand approach to delivering public sector energy efficiency target of 33 percent savings by 2020 The Sustainable Energy Zone (SEZ) Programme aims to stimulate a paradigm shift in energy efficiency and the use of renewable energy within communities. The Energy in Business/Industry programme supports all business sectors' efforts to improve energy efficiency and competitiveness through services that promote structured energy management.	**21,702**	**28,320**

Dept. of Community, Rural and Gaeltacht Affairs

The Department of Community, Rural and Gaeltacht Affairs was established by Government in 2002 and held responsibility for a wide range of policies and programmes in respect of community and rural development, drugs, volunteering, the Gaeltacht, Irish language and the islands. With effect from 1 May 2010 and 1 June 2010, the new Department of Community, Equality and the Gaeltacht combines these functions with new responsibilities for social inclusion policy and family policy (from the former Department of Social and Family Affairs) and for equality, disability, integration and human rights (from the former Department of Justice, Equality and Law Reform).

Údarás na Gaeltachta

Údarás na Gaeltachta was established under the Údarás na Gaeltachta Act, 1979 and came into operation on 1st January 1980 to replace Gaeltarra Éireann which was dissolved by the same act. The objectives of an t-Údarás are as follows:

- to encourage the preservation and extension of the Irish language in the Gaeltacht;
- to attract suitable native and foreign manufacturing projects to the Gaeltacht;
- to establish, develop and manage productive employment enterprises in the Gaeltacht; and
- to participate in industries as an equity partner and to provide services to assist new industries becoming established.

Údarás encourages investment in the Gaeltacht through a range of incentives for new enterprises and through support and assistance for existing businesses.

The organisation supports businesses in developing new markets, technologies, products and strategic alliances through research and development. Gaeltacht companies span a range of commercial sectors, including tourism, fish processing and aquaculture, renewable energy, food, life sciences, ICT, niche manufacturing, audio visual and digital media, arts and crafts.

Research and Development	€'000 2009	€'000 2010
Research is funded by enterprises along with grants of up to 60 percent subject to a maximum of €126,973 for any one project. Eligible costs include R&D salaries, directly related additional overheads, the cost of capital assets to the extent and for the period of their use in the research project, costs of contractual research, technical knowledge and patents bought or licensed from outside sources, other operating expenses including costs of materials, supplies, travel and subsistence and other similar costs directly related to the research activity.	**5,753**	**4,000**

Department of Education and Skills

The Department's Gross allocation for 2010 as included in the 2010 Further Revised Estimate for Public Services is €9,295m. Included in this allocation is €1,280m which will be made available to Universities and Institutes of Technology. This includes current and capital funding for Research and Development.

Current funding is available to all Universities and Institutes of Technology to support the development of their research capabilities, to support outstandingly talented individual researchers, and to encourage co-operation within institutions and between institutions. This funding is allocated by the Higher Education Authority (HEA) for research in humanities, social sciences, and science and technology.

The Programme for Research in Third Level Institutions (PRTLI) is the principal means for channelling State support to increase and enhance research capacity within the higher education sector. PRTLI enables higher education institutions develop the necessary infrastructure and facilities to formulate and implement research strategies that will give them critical mass and world level capacity in key areas of research.

Under the NDP/Community Support Framework for 2007-2013, EU funding will be delivered through one Human Capital Investment Operational Programme and two Regional Operational Programmes, one each for the Border/Midlands Western and Southern & Eastern part-funded by the European Regional Development Fund. The Regional Operational Programmes are managed by the Regional Assemblies.

The education related elements of the regional operational programmes support R&D activities in the higher education sector and support the objectives of the Strategy for Science, Innovation and Technology as follows:-

- Provide high quality and strategically relevant research and capacity in higher education institutions in the region.
- Enhance the collaboration and networking across the higher education institutions so as to optimise return on investment.
- Strengthen the training of researchers.
- Strengthen the culture of intellectual property capture and management among research performers at a laboratory level within regional higher education institutions.

Expenditure and programmes for the Higher Education Authority, the Dublin Institute for Advanced Studies, Irish Research Council Science for Science, Engineering and Technology (IRCSET) and the Irish Research Council Science for Humanities and Social Sciences (IRCHSS) are listed separately.

Research and Development Programmes	**€'000 2009**	**€'000 2010**
Direct Research & Development committee support The Department's Research & Development Committee is currently supporting 13 research projects, carried out mainly by researchers in Colleges of Education or University Education Departments. These projects cover a range of topics, including : ▪ Accreditation of in-career education for teachers ▪ Development of junior certificate science investigations by guided inquiry ▪ Oral language development in designated disadvantaged schools in Ireland ▪ Identifying teacher professional development needs for teaching the data analysis component of primary level mathematics ▪ Addressing the challenges of inclusion in Irish schools ▪ Opportunities to develop curricular and cross-curricular competencies in initial	**213**	**286**

teacher education ▪ Theory and classroom practices in multiple comprehension strategy instruction ▪ Valuing Visibility		
EU projects supporting R&D Support is being provided for certain projects jointly with the EU. In 2010 activities will include the Lifelong Learning Programme (LLP) comprising the following actions : ▪ Leonardo da Vinci – the vocational education and training action of the LLP of young people in the context of the EU action programme in education ▪ Comenius - the school education action of the LLP ▪ Grundtvig - the adult education action of the LLP ▪ Erasmus - the higher education action of the LLP	**1,302**	**1,300**
European University Contributions to the budget of the Institute (Italy) and support of Irish students to pursue research projects. The Institute's Centre for Advanced Studies is the research arm of the Institute and offers Jean Monnet Fellowships for post-doctoral research. A Transatlantic Programme of the European University Institute was established in September 2000, enabling the EUI to organise policy-orientated and basic research on transatlantic relations and transatlantic governance.	**293**	**298**
St. Patrick's College Support for research activities in the field of education in St. Patrick's College, Drumcondra.	**1,310**	**1,187**
UNESCO Irish contribution to UNESCO, the International Institute for Education Planning, and the International Centre for Registration of Serials	**530**	**530**

Dublin Institute for Advanced Studies

The Dublin Institute for Advanced Studies is a statutory corporation established in 1940 under the Institute for Advanced Studies Act, 1940. The Institute has three constituent schools – the School of Celtic Studies, the School of Theoretical Physics and the School of Cosmic Physics. Each school has an independent governing board. The Institute, through the constituent schools, pursues fundamental research and trains students in advanced methods of original research.

Research and Development Programmes	**€'000 2009**	**€'000 2010**
The School of Theoretical Physics The School pursues research in the general areas of theoretical physics and mathematics. Particular areas of expertise are: theoretical particle physics, quantum field theory, quantum gravity, quantum mechanics, quantum information theory, quantum and classical statistical mechanics, disordered systems, geometry and topology, non-commutative geometry and infinite-dimensional algebras, lie groups and algebras, C*-algebras, functional analysis, and probability.	**910**	**799**

The School of Cosmic Physics The School of Cosmic Physics has two research sections, one in Geophysics and one in Astronomy/Astrophysics. The Geophysics section studies the physical and geological structure of the Earth as well as its evolution in time. Major areas of research include seismology, electromagnetism and the Earth's gravity field. The section maintains the Irish Seismic Network, currently being expanded and modernised, as well as the Irish National Data Centre of the Comprehensive Test Ban Treaty Organisation. The Section is the lead institution in an All-Ireland academic initiative to form a coordinated Irish Geoscience Graduate Programme to provide structured geoscience training as part of an MSc or PhD programme. The Section is also one of the founding members of Ireland's participation in the European Plate Observing System, EPOS, EPOS is an initiative in response to the EU policy for a coordinated approach to support and develop research infrastructures. EPOS is a proposal submitted for the update of the European roadmap for research infrastructure coordinated by the European Strategic Forum on Research Infrastructures (ESFRI) in the framework of the Seventh EU Research Framework Plan (FP7). In the Astronomy/Astrophysics section the main areas of research are high-energy astrophysics, astroparticle physics, star formation and computational astrophysics. The section has been actively involved, in conjunction with ICHEC, NUIG and other university partners, in building up the national computational Infrastructure. The e-INIS project, funded under PRTLI-4 aims to develop an integrated national e-infrastructure, building on the three existing service providers, HEAnet as the National Research and Education Network Service, ICHEC, the Irish Centre for High-End Computing as the national HPC service and Grid-Ireland as the National Grid Infrastructure provider. DIAS continued its involvement in the Mid Infrared Instrument (MIRI) Project, one of the four main instruments on board the James Webb Space Telescope. The focus in 2009 shifted from hardware to software and two software engineers have been taken on to work on the project. The Institute is a partner in the design study and preparatory phase of the KM3NeT project, one of those endorsed by the European Strategic Forum for Research Infrastructures (ESFRI), which aims to build a major neutrino telescope in the deep Mediterranean sea. It is also involved in the emerging project CTA to build a next generation Cherenkov Telescope which has been included by ESFRI in its December 2008 update of the roadmap. In 2009 the section joined the Japanese-led X-ray astronomy project Astro-H. Building on these various projects the section has decided to establish a Centre for Astro Particle Physics and Astrophysics (CAPPA) and to organise an international graduate school in 2011. The section has concluded framework agreements on cooperation with the Physics Departments of TCD and UCD and is in the process of concluding a similar agreement with DCU.	**3,197**	**2,513**

Higher Education Authority

The Higher Education Authority (HEA) which is under the aegis of the Minister for Education and Skills, is a corporate body with perpetual succession, established in May 1972 under the provisions of the Higher Education Authority Act, 1971. The HEA has the following general functions:

- furthering the development of higher education

- assisting in the co-ordination of State investment in higher education and preparing proposals for such investment
- promoting the attainment of equality of opportunity in higher education
- promoting the democratisation of the structure of higher education

The HEA is financed by a grant-in-aid from the Department of Education and Skills out of a total vote for third level and further education. Besides the exchequer grant (via the HEA), universities, institutes of technology and other institutions receive non-exchequer monies, i.e. non-exchequer fees, research grants and other income.

Research and Development Programmes	€'000 2009	€'000 2010
The Programme for Research in Third Level Institutions The Programme for Research in Third Level Institutions (PRTLI) supports building strategic institutional research capacity, enabling the establishment of research centres and facilities, and joint research programmes and national initiatives. The programme is also taking the lead in the establishment of Structured PhD Programmes as the standard mechanism for education of PhDs, producing PhDs with the skill sets to work both in the public and private sectors. The HEA manages this component of PRTLI in partnership with the Irish Research Councils. PRTLI is concerned with building a sustainable, long-term and broadly-based research capability in third level institutions and encourages the institutions to develop institutional research strategies to achieve this. The aim is to help to accelerate the development of critical mass in their existing strengths and to develop new areas consistent with their institutional strategies and plans for research. PRTLI also seeks to develop stronger inter-institutional collaboration and to promote close linkage between research and the quality of teaching and learning at all levels in the institution.	**90,561**	**48,996**
The Technological Sector Research Fund (TSR) TSR supports underpinning capacity development in the institutes of technology, the latter institutions having only more recently begun to conduct research in line with regional objectives. The TSR is comprised of three strands: Strand 1, Postgraduate R&D Skills Programme; Strand 2, Enterprise Platform Programme and Strand 3, Core Research Strengths Enhancement Programme.	**6,977**	**6,000**
HEAnet HEAnet is Ireland's National Education and Research Network, providing high quality Internet Services to over 150,000 students and staff in Irish Universities, IoT's and other educational and research organisations. Established in 1983 by the seven universities with the support of the HEA to promote the interchange of information electronically within third level education, it now plays a critical role in establishing Ireland as a global centre of excellence in internet activity. HEAnet provides a high-speed national network with direct connectivity for its community to other networks in Ireland, Europe, the USA and the rest of the world.	**6,300**	**7,500**
E-journals This research facility which began in 2004 with SFI funding for research publications in biotechnology and information communications technology is now being extended to include the humanities and social sciences. From 2010, the HEA will assume full funding responsibility of IReL. Researchers, staff and students in the seven Irish Universities now have online access to full-text articles from more than 25,000 quality,	**4,000**	**5,000**

peer-reviewed research publications across a range of disciplines.		
Research Facilities Enhancement Scheme The Research Facilities Enhancement Scheme (RFES) aims to enable higher-education institutions to refurbish, convert, or upgrade their facilities to the standard requisite for undertaking high-quality research, and, to the same end, to enable institutions to purchase equipment.	**3,197**	**470**
Institutes of Technology This refers to the annual funding provided by the State via the HEA for the purposes of funding the recurrent activities of Institutes of Technology (IoTs). This core grant is allocated as a block grant to cover core teaching and research activities within institutions - the internal allocation of funds as between teaching and research are at present a matter for each institution. A new funding model similar to the funding model used for the University sector is currently been developed for the IOTs.	**24,179**	**23,067**
Strategic Innovation Fund The Strategic Innovation Fund (SIF) is a multi-annual fund directed towards support for innovation in higher education institutions. It supports new approaches to enhancing quality and effectiveness within higher education and research, incorporating the more effective use of existing resources (including capital resources) as well as providing new funding.	**26,988**	**18,000**
Recurrent (Core) Funding This refers to the annual funding provided by the State via the HEA for the purposes of funding the recurrent activities of higher education institutions (HEIs). This core grant is allocated as a block grant to cover core teaching and research activities within institutions - the internal allocation of funds as between teaching and research are at present a matter for each institution. The allocation of the core grant is determined on a formula basis. The allocation will be based on a standard per capita amount in respect of weighted EU student numbers in four broad subject price groups. Student numbers in the four groups are weighted to reflect the relative cost of the subject groups. A further weighting is given for research students.	**243,181**	**222,022**

Irish Research Council for the Humanities and Social Sciences

The Research Council for the Humanities and Social Sciences (IRCHSS) was established in 2000 response to the need to develop Ireland's research capacity and skills base in a rapidly-changing global environment where knowledge is key to economic and social growth.

With the support of the National Development Plan the IRCHSS promotes cutting-edge research in the humanities, social sciences, business and law with the objective of creating new knowledge and expertise beneficial to Ireland's economic, social and cultural development. The research council operates a suite of inter-linked research schemes from postgraduate scholarships through to project funding for principal investigators.

The research council supports the participation of Irish researchers in the European Research Area (ERA) through a range of international programmes. The council manages and participates in a number of international programmes. The council also promotes international research funding opportunities, in

particular through the role of the National Contact Point for the Humanities and Social Sciences with in Framework Programme 7 (FP7).

Research and Development Programmes	€'000 2009	€'000 2010
Research Grants in the Humanities & Social Sciences	14,400	11,700

Irish Research Council for Science, Engineering and Technology

The Irish Research Council for Science, Engineering and Technology was established in June 2001. Its aim is to promote excellence in research across science, engineering and technology. The Council's operations are funded by the State through the National Development Plan.

Research and Development Programmes	€'000 2009	€'000 2010
The Embark Initiative positions Ireland decisively as an international centre of excellence and achievement in research by encouraging students and researchers to pursue a full-time career in their chosen research area. Providing funding to full-time researchers at the early stages of their careers will ensure that research is a viable and beneficial career option and that ideas, potential and creativity, crucial to Ireland's future success, are not lost. Not only will it increase research capacity, but it will also enhance teaching with relevant and current research experience. IRCSET is involved in a number of EUROCORES projects through the European Science Foundation. IRCSET is also participating in a number of further initiatives under this funding mechanism. IRCSET's involvement in the ERAnet Chemistry programme implements joint bottom-up European Programmes in chemistry. The network comprises of the national research funding organisations from 14 EU member countries and Switzerland, with 7 other EU countries as associate members. The programme aims to establish an EU Research Area in curiosity-driven chemical research without noticeable national, formal and research subject boundaries. **The postgraduate research scholarship scheme** IRCSET's Embark Postgraduate Research Scholarship Scheme is designed for either Masters or Doctorate level researchers in the sciences, engineering or technology. This multi-annual research funding programme is aimed at knowledge creation for the future benefit of society and the economy. It is also aimed at retaining highly talented researchers and attracting new researchers to carry out their work in Ireland. **The postdoctoral fellowship scheme** IRCSET offers Fellowships to exceptional candidates who wish to pursue a defined programme of work after the PhD award in target "host" laboratories. This work is under the direction of the Fellow but with the assistance of a nominated mentor at the host location. **INSPIRE: IRCSET-Marie Curie International Mobility Fellowships in Science Engineering and Technology** In 2008, for the first time, IRCSET offered these prestigious IRCSET-Marie Curie co-funded awards. Candidates must be within 5 "academic years" from the award of PhD or equivalent. They must propose pursuing their work for 24 months at a research	26,981	24,000

laboratory in any country of their choice worldwide, followed by a 12 month reintegration period at an Irish research laboratory. The awards will be offered again in the 2010 Call.

EMPOWER: Government of Ireland Postdoctoral Fellowships in Science, Engineering and Technology.

IRCSET will continue to offer their sought-after fellowships based at an Irish host laboratory. The candidates must be within 3 "academic years" from the award of PhD and propose pursuing their work for 24 months at an Irish research laboratory. Fellows can also carry out their research in conjunction with an industry partner, as part of the Enterprise Partnership Scheme.

The Enterprise Partnership Scheme

In addition to its other awards, IRCSET has also established partnerships with private enterprise to co-fund a large number of postgraduate scholarships and postdoctoral fellowships. The co-funded nature of these scholarships has enabled IRCSET to support many more researchers in Irish research bodies. The Enterprise Partnership Scheme affords young researchers the opportunity to learn valuable transferable skills and to learn from industry experts. It also allows companies an affordable means of becoming involved with leading Irish academics as well as having a role in the formation of young researchers and potential future.

Department of Enterprise, Trade and Innovation

Office of Science, Technology and Innovation (OSTI)

The Department of Enterprise, Trade and Innovation has a wide economic development and job creation remit. A key Department goal, identified under the Science, Technology and Innovation pillar, is: To improve competitiveness by significantly enhancing Ireland's capacity to generate, protect and use new knowledge for economic and social gain.

Within the Department, the Office of Science, Technology and Innovation (OSTI) is focussed on delivering this goal through the development, promotion and co-ordination of national science, technology and innovation policy, and by progressing the Strategy for Science, Technology and Innovation, in particular through its enterprise development agencies. It also plays a role in co-ordinating the delivery of wider science, technology and innovation policy across a number of Government Departments and Agencies.

The Department's enterprise development agencies are assigned significant powers, functions and responsibilities under legislation for the management and promotion of scientific research and development. The agencies involved are: Enterprise Ireland (EI), Science Foundation Ireland (SFI), IDA Ireland, Forfás, Shannon Development and The Patents Office.

The OSTI is responsible for:

- advising the Minister on general STI activities and directing and coordinating programmes for the R&D programmes of the agencies.
- Providing basic research funding allocated to Science Foundation Ireland
- Providing applied research and commercialisation funding for Enterprise Ireland
- Providing an annual support for core enterprise focussed activities within the Tyndall National Institute, Cork.

- Supporting and monitoring the integrated awareness programme, Discover Science and Engineering (DSE), with the aim of increasing the numbers of students taking science as a career and promoting in interest in science generally.
- Develops and co-ordinates Ireland's input in regard to EU research policies and programmes.

	€'000 2009	€'000 2010
European Space Agency (ESA) A principal objective of Ireland membership of the ESA is to promote opportunity for high technology industry in Ireland. The greater part of Ireland's contribution is returned as industrial contracts involving collaboration between enterprises in the Member States.	**14,500**	**14,500**
European Molecular Biology Conference (EMBC) Since 2000, Irish researchers have been successful in obtaining 10 long-term fellowship awards, as well as 11 short-term fellowships and one young investigator's award, further promoting Ireland's standing within the European scientific community.	**177**	**181**
EUREKA Eureka is a European research initiative designed to ensure that the technological gap with other countries is narrowed. It promotes joint research between firms in different countries.	**36**	**36**
European Molecular Biology Laboratory (EMBL) EMBL is an Inter-Governmental Research Organisation whose mission is the development of molecular biology throughout Europe. Membership of EMBL complements Ireland's significant investment in the biotechnology area by presenting opportunities for research training, networking and enhanced international collaboration.	**1,029**	**1,062**

Enterprise Ireland

Research and Development Programmes	€'000 2009	€'000 2010
R&D Fund Enterprise Ireland provides assistance for significant investment in R&D initiatives which arise as part of a company's strategic development. The R&D Fund is designed to provide support for research, development and technological innovation relevant at all stages of company development, and will enable companies to progress from undertaking an initial research project to high level innovation and R&D activity.	**54,056**	**53,220**
Applied Research Enhancements Enterprise Ireland provides funding for the establishment of applied research centres in Institutes of Technology, aimed at building sufficient scale to allow them to make an impact on industry in their locality through collaboration.	**9,098**	**3,552**
Industry Led Networks These are aimed at providing support for research in areas defined by networks of companies in specific industry sectors. The work is overseen by an industry board and		

Enterprise Ireland works to create real collaboration between companies and the researchers to ensure the transfer of technology.	**1,964**	**1,741**
Basic Research Grants Funding represents Enterprise Ireland's expiring commitments (now managed by Science Foundation Ireland and Irish Research Council for Science Engineering and Technology).	**12**	**0**
Innovation Partnerships These are aimed at harnessing the strengths of the third level sector to work in partnership with companies on specific R&D projects.	**6,909**	**7,698**
Commercialisation Fund This area supports academic researchers to take the outputs of research with commercial potential and bring it to a point where it can be transferred into industry. There are 3 phases, giving a structured and coherent approach to support. These include inter alia, Proof of Concept, Technology Development and Commercialisation Plus.	**24,420**	**23,007**

FÁS

The functions of FÁS, the National Training and Employment Authority are:

- providing training and retraining programmes for employment (whether directly provided by FÁS, or contracted out to external agencies);
- the provision of employment schemes; providing community groups with training and developmental supports in their enterprise and employment creation activities;
- providing employment and placement services, both to employers and the unemployed;
- assisting Irish people to obtain employment in other EU states (primarily through its SEDOC service);
- providing advice and counselling for those of our citizens who wish to emigrate; and
- FÁS also provides advice and guidance on and training opportunities for immigrants, whether asylum seekers or economic migrants.

Research and Development Programmes	**€'000 2009**	**€'000 2010**
The Planning and Research Department assists in the development of FÁS through providing planning and research inputs at corporate level. Its main areas of work include strategic planning; labour market and skills research evaluation/customer surveys. It also provides a central Library and Technical Information Service for FÁS. The Skills and Labour Market Research Unit within the department maintains a National Skills Database and provides regular reports for the Expert Group on Future Skills Needs.	**910**	**900**

Forfás

Forfás is Ireland's national policy advisory body for enterprise and science. Forfás' policy functions are to:

- Provide independent and rigorous research, advice and support in the areas of enterprise and science policy;
- Ensure the coherence of policies across the development agencies supporting enterprise;
- Evaluate enterprise policy interventions; and
- Provide research and administrative support to independent advisory groups.

Research and Development Programmes	€'000 2009	€'000 2010
Science, Technology and Human Capital Division The mission of Forfás in science and technology is to enhance Ireland's performance in science, technology and innovation and thereby contribute to economic and social development. ▪ Delivering timely and well-founded policy analysis and advice on science, technology and innovation issues to national policy-makers. ▪ Undertaking evaluations of existing S&T policies and programmes, in order to improve their performance and relevance to economic development. ▪ Providing data, indicators and a flow of other information on science, technology and innovation to policy-makers, decision-takers and interested groups in the public and private sectors. ▪ Providing secretariat and research support for the Advisory Council for Science, Technology and Innovation (ACSTI). ▪ Advising and providing support to the Office of Science Technology and Innovation on international science and technology programmes and issues. ▪ Discover Science & Engineering Programme - its overall objectives are to increase the numbers of students studying the physical sciences, promote a positive attitude to careers in science, engineering and technology and to foster a greater understanding of science and its value to Irish society.	**170**	**111**
Chief Scientific Adviser The main responsibilities of the Chief Scientific Adviser (CSA) are: ▪ To provide high level advice on scientific issues of concern to government across the spectrum of disciplines ▪ To play a key role in monitoring, evaluation, and delivery of the government's Strategy for Science, Technology and Innovation (SSTI 2006-2013) The CSA reports, via the Interdepartmental Committee (IDC) on Science, Technology and Innovation, to the Cabinet Committee on Science, Technology and Innovation.	**331**	**273**

IDA Ireland

IDA Ireland has national responsibility for securing new investment from overseas in manufacturing and international services and for encouraging existing foreign enterprises to expand their businesses. With a staff of 264 people and headquarters in Dublin, IDA Ireland has 16 overseas offices as well as a regional manager and staff in each region in Ireland.

IDA Ireland is committed to supporting its clients to establish and grow R&D activities in Ireland. The objective is to ensure that its client companies are focused on activities for which Ireland is a cost-effective location and thus help to secure their competitiveness and strategic importance within the overall company. To achieve this, IDA Ireland introduced a new Research, Development & Innovation (RD&I) Support programme during 2007 to replace the existing RTDI and R&D Capability grant schemes.

There are no administrative costs associated with science and technology activities as no separate staff are assigned to administer research and development grants.

Research and Development Programmes	€'000 2009	€'000 2010
The IDA Research, Development & Innovation (RD&I) Support programme is designed to support companies at all stages of RD&I and enable them to move from start-up R&D, through developing capacity and adding competence, to a fully integrated RD&I function. Support levels are tied to an assessment of strategic objectives, in conjunction with commercial and technical assessments. Support for other activities that would enable a company to undertake the RD&I project is also available which could include support for feasibility studies and/or training. In total, over 62 companies undertook to invest in RD&I activities in their Irish operations during 2009 and IDA Ireland committed almost €88 million in grant assistance to these projects.	**61,309**	**82,000**

Inter*Trade*Ireland

Inter*Trade*Ireland is the only organisation which has been given responsibility by both Governments to boost North/South economic co-operation to the mutual benefit of Northern Ireland and Ireland.

By encouraging better use of collective resources Inter*Trade*Ireland helps to expedite trade and business growth across the island, create an environment to make it easier to do business and increase the competitiveness of individual companies and the two economies in the global marketplace.

These activities include a number of Science, Technology & Innovation programmes which help create partnerships between businesses developing new products, processes and services and the third-level institutions and other commercial partners that have the knowledge and expertise required for success.

Research and Development Programmes	€'000 2009	€'000 2010
INNOVA ▪ supports cross-border R&D collaboration between companies, with the support of public research organisations where required. ▪ assists companies to create new products, processes or services or significantly improve existing ones.	**738**	**1,786**

Science Foundation Ireland

Science Foundation Ireland, the national foundation for excellence in scientific research, was established under the Industrial Development (Science Foundation Ireland) Act 2003 to establish Ireland as a centre of research excellence in strategic areas relevant to economic development, particularly the areas of biotechnology (BioT) and information and communications technologies (ICT). In 2008 SFI's remit was

extended to include Sustainable Energy and Energy-efficient Technologies. To accomplish its mission, SFI makes grants based upon the merit review of proposals from distinguished researchers.

In addition, SFI supports, through the Research Frontiers Programme (RFP), the very best research by academic researchers and research teams who are most likely to generate new knowledge, leading edge technologies and competitive enterprises in a broad range of disciplines in science, mathematics and engineering. Competition for this funding is driven by the scientific merit of the proposals. SFI also advances co-operative efforts among education, government and industry that support its fields of emphasis and promotes Ireland's ensuing achievements around the world.

Research and Development Programmes	€'000 2009	€'000 2010
SFI Principal Investigator (PI) Programme ▪ supports those fields of science and engineering that underpin biotechnology, information and communications technology, and sustainable energy and energy-efficient technologies. SFI Principal Investigator Career Advancement Award (PICA) ▪ supports outstanding researchers returning to active research after a prolonged absence. SFI/DELL Scholarship 2008 – Young Women in Engineering ▪ aims to attract and encourage more high-achieving young women into third-level education in engineering disciplines. SFI North-South Research Partnership Supplement ▪ this award facilitates collaborations between SFI funded researchers and researchers in Higher Education Institutions (HEIs) in Northern Ireland. US-Ireland R&D Partnership Programme ▪ will help link scientists and engineers in partnerships across academia and industry to address crucial research questions. SFI Research Professor Recruitment Awards ▪ these awards aim to attract to Ireland outstanding researchers, with particularly distinguished international reputations. SFI Industry Research Partnership Supplements ▪ facilitates collaborations between SFI funded researchers and industry. SFI International Research Partnership Supplements (IRP) ▪ facilitates collaborations between SFI funded researchers and international scientists. SFI Workshops and Conferences Grants ▪ This programme aims to support international meetings held in Ireland for intensive inquiry and collaboration on topics of timely scientific importance. Tyndall National Access Programme ▪ The Tyndall National Institute will provide access for researchers to state-of-the-art research facilities and equipment. Nanosci-E+: Transnational Call for Collaborative Proposals in Nanoscience ▪ This is a body created specifically for the implementation of collaborative	**171,301**	**150,000**

proposals in nanoscience.

SFI Strategic Research Cluster Programme

- SRCs will help link scientists and engineers in partnerships across academia and industry to address crucial research questions.

SFI UREKA Supplements

- SFI UREKA Supplement Awards support active undergraduate research participation in the summer months in the laboratories of SFI funded researchers for a period of 10-12 weeks

SFI UREKA Site International Exchange Programme

- formalises exchange programmes between a currently funded UREKA Site and a similar international programme (e.g. REU Sites in the US), having a complementary research focus.

SFI Research Frontiers Programme

- aims to support the very best research in abroad range of disciplines in Science, Mathematics and Engineering.

SFI E.T.S. Walton Visitor Awards

- support leading international scientists who wish to undertake research in Ireland for up to 12 months.

SFI UREKA Sites

- these awards support active undergraduate research participation for a period of 10-12 weeks in the summer in the laboratories of clustered researchers from Irish 3rd level institutions.

SFI President of Ireland Young Researcher Award (PIYRA)

- recognise outstanding engineers and scientists who, early in their careers (no more than five years since PhD), have already demonstrated or shown exceptional potential for leadership at the frontiers of knowledge.

SFI Equipment Supplement

- The aim of the SFI Equipment Supplement is to provide additional resources to improve the quality of research output of current research programmes; permit more rapid commercialisation of a piece of research, or improve the infrastructure available to groups of SFI researchers and their research colleagues.

SFI Engineering Professorship and Lectureship Programme

- Proposals to this Programme are invited from all fields of engineering.

SFI Stokes Professorship and Lectureship Awards

- The SFI Stokes Professorship and Lectureship Programme aims to support the research strategy of schools and departments by funding Lectureship and Professorship positions in situations where a permanent post is not currently vacant.

SFI Mathematics Initiative

- This initiative is intended to encourage mathematical research that has a potential impact on enterprise, industry, science, engineering and

mathematical education. SFI Starting Investigator Research Grant (SIRG) ▪ SIRG provides an opportunity for excellent early-career-stage investigators to carry out independent research in the fields of science and engineering that underpin biotechnology, information and communications technology, and sustainable energy and energy-efficient technologies. SFI Centres for Science, Engineering, and Technology: Campus-Industry Partnerships (CSET) ▪ CSETs help link scientists and engineers in partnerships across academia and industry to address crucial research questions, foster the development of new and existing Irish-based technology companies, attract industry that could make an important contribution to Ireland and its economy, and expand educational and career opportunities in Ireland in science and engineering. European Research Council (ERC) ▪ SFI acts as Ireland's National Delegate and National Contact Point for Sciences & Engineering to the European Research Council (ERC).		

Shannon Development

The Shannon Free Airport Development Company Act 1959 and several amendment Acts govern the activities of Shannon Development and provide for State equity (from the Minister for Finance), and grants, for specific functions from the Ministers for Enterprise, Trade and Innovation and for Tourism, Culture and Sport in relation to Limerick, Clare, North Tipperary, South-West Offaly and North Kerry. Shannon Development acts under the aegis of the Ministers for Enterprise, Trade and Innovation and Tourism, Culture and Sport. The Company's key role is to lead and drive the broader regional economic development of the Shannon Region across all areas of economic activity working in partnership with the people of the Shannon Region, government, other public bodies and the private sector.

Shannon Development's key goals are:

- To focus on the economic development of the Shannon Region.
- To give priority to addressing the needs of the less developed areas of the Shannon Region.
- To help build a viable counter-pole to the more developed eastern region in accordance with the objectives of the National Spatial Strategy.
- To play a key role in the development of the potential of Shannon International Airport.
- To exercise a strong regional tourism remit as the Tourism Authority for the Shannon Region.

Research and Development Programmes	€'000 2009	€'000 2010
Product and Process R&D Grants ranging from 25 percent – 45 percent of eligible expenditure are available to firms in the Mid-West region carrying out research and development projects.	**1,397**	**4,789**

Dept. Environment, Heritage & Local Government

The Department is responsible for policy and programme formulation in relation to the environment, heritage, planning and housing; the development and financing of public infrastructure; the local government system; and for a number of regulatory functions.

Most of the Department's spending is channelled through local authorities and as such local authorities are the main providers of public infrastructure and the provision of services locally. The Department's mission is "to promote sustainable development and improve the quality of life through protection of the environment and heritage, infrastructure provision, balanced regional development and good local government".

	€'000 2009	€'000 2010
Conservation of Fuel and Energy - Dwellings		
Assessing Acceptable Construction Details to support the Technical Guidance Documents (TGD) - Conservation of Fuel and Energy – Dwellings (2010)	**11**	**105**

Environmental Protection Agency

The Environmental Protection Agency (EPA) is an independent public body established in July 1993 under the Environmental Protection Agency Act, 1992. Its sponsor in Government is the Department of the Environment, Heritage and Local Government. The EPA is a statutory body responsible for protecting the environment in Ireland. They regulate and police activities that might otherwise cause pollution. They ensure there is solid information on environmental trends so that necessary actions are taken. The EPA's priorities are protecting the Irish environment and ensuring that development is sustainable. Since 1994, the EPA research programme has supported R&D activities in a range of environmental areas. This work was carried out by researchers in third level institutions, state agencies, government departments, local and regional authorities, the private sector and by individuals.

Research and innovation play a pivotal role in environmental protection by providing information on & assessments of the current state of the environment, building environmental projections & trends, and developing new tools for environmental management. The Environmental Protection Agency (EPA) Science, Technology, Research and Innovation for the Environment (STRIVE) Programme has been planned specifically to support environmental research activity in areas closely aligned to policy needs. Since 2000, the EPA has supported over 600 research projects ranging in size from individual scholarships to large interdisciplinary collaborative projects. Collectively, these projects are strongly targeted at three critical areas:

1. **Informing policy development and implementation**: generating new knowledge to underpin national responses to environmental challenges and drivers including Climate Change, Water Quality and Waste Management;
2. **Green innovation**: assisting national efforts in developing the smart economy by sharing and embedding the EPA's environmental expertise with groups leading innovation in this area; and
3. **Research capacity**: developing Ireland's research and development (R&D) capabilities to support future environmental policy development and green-enterprise activities.

The EPA manages environmental research funding on behalf of the Department of the Environment, Heritage and Local Government (DEHLG) with a view to developing the skill base and knowledge necessary for effective environmental protection. The funding provided supports an extensive programme of environmental research – including policy-focused research and technical development projects. This approach is complemented by a parallel aim to develop research capability from a historically low base.

Funding is provided through a series of open calls, with proposals evaluated by peer review prior to selection and grant award. At all stages in the process, from scoping call documents through to management of the research projects, there is a strong emphasis on alignment with STRIVE programme aims, including informing environmental policy.

Highlights from 2009

- The launch of the EPA STRIVE report, Innovation for a Green Economy, by the Minister for the Environment, Heritage and Local Government, which was presented to the OECD Global Forum on Environment on Eco-Innovation in November.
- The AgBiota conference presented key findings of this five-year project, which has made a significant contribution towards Ireland's obligations under the Convention of Biological Diversity (CBD), and subsequent agreement by European Union member states to halt the decline in of biodiversity by 2010.
- 48 new projects were awarded funding by EPA - corresponding to a budget commitment of almost €8 million.
- EPA financial support facilitated seven seminars hosted by Irish researchers, and attended by over 700 stakeholders. In addition, EPA provided sponsorship to the Environ-09 national research colloquium and the International Society for Environmental Epidemiology international conference.
- The launch of the EPA's online Catalogue of Environmental Research Expertise in Ireland, which has been accessed by over 4,000 researchers throughout Europe.

	€'000 2009	€'000 2010
Strive and ERTSI Programmes	**9,936**	**9,903**
Climate Change Research Programme	**5,074**	**3,097**

Met Éireann

Met Éireann, the Irish Meteorological Service, established in 1936, is a division of the Department of the Environment, Heritage & Local Government. The service is engaged in the following activities:

- Collection, analysis and publication of meteorological, geophysical and geochemical data;
- Supply of weather forecasts, statistical information and scientific advice to agricultural, industrial and public utility undertakings, radio, television and the web, maritime interests and members of the public;
- Supply of similar information to government departments, semi-State bodies, and the defence forces;
- Provision of meteorological facilities in Ireland in support of civil aviation and the supply of advice on meteorological aspects of civil aviation matters generally;
- Development work in applied meteorology;
- Climate Change research; and
- Co-operation with the meteorological services of other countries and the representation of Ireland at meetings concerned with international co-operation in meteorology.

Research and Development Programmes	€'000 2009	€'000 2010
Research is carried out in various fields of meteorology and climatology. The primary thrust of the research effort is towards the development of computer models for weather analysis and prediction and participation in an international research collaboration called HIRLAM (High Resolution Limited Area Modelling), together with Norway, Sweden, Finland, Denmark, Spain, the Netherlands and Iceland. The HIRLAM forecasting model is now in routine use and upgraded regularly. Following on from the work of C4I (concluded end of 2007), Met Éireann continued to contribute to the work in the area of Climate Change by contributing to the STRIVE and EC Earth Projects in 2009 and this will continue in 2010 Work on homogenisation methods of climate series and development and implementation of improved gridding methodologies for climate data will also continue. Development work is also ongoing in the area of NWP post-processing and also in the area of Forecaster Workstation and Automatic Weather Observations.	337	467

Radiological Protection Institute of Ireland (RPII)

The Radiological Protection Institute of Ireland was established on 1st April 1992 in accordance with the provisions of the Radiological Protection Act, 1991. Its main functions are:

- to advise the government and to provide information to the public on matters relating to radiological safety;
- to regulate the use, transportation and disposal of radioactive materials;
- to prepare safety codes and regulations for the safe use of ionising radiation;
- to measure levels of radioactivity in the environment and assess their significance;
- to assist in the development of a national plan for an emergency arising from a nuclear accident; and
- to provide a dosimeter service and to promote knowledge, proficiency and research in nuclear science and technology.

Research and Development Programmes	€'000 2009	€'000 2010
Monitoring of environmental radiation This programme monitors contamination of the aquatic and terrestrial environment by radioactivity from man-made sources. It also carries out other related research.	412	349
Radon studies and information service The monitoring of indoor radon levels in homes, schools and workplaces and related research to determine the extent of elevated radon levels in buildings is the main element of the programme. Information and advice to government and other agencies on all matters relating to ionising radiation are provided by the Information Service.	223	231

Department of Finance

Economic and Social Research Institute (ESRI)

The Irish Economic and Social Research Institute (ESRI) is a not-for-profit organisation which was founded in 1960 as the Economic Research Institute. In 1966 the Institute assumed responsibility for social research

and extended its title to the Economic and Social Research Institute. The ESRI is a company limited by guarantee with no share capital.

The ESRI's mission is to produce high-quality research that contributes to understanding economic and social change and that informs public policymaking and civil society in Ireland and throughout the European Union. The Institute is governed by a Council, currently twelve in number, elected from the general body of its membership.

Current research is in the areas of macroeconomics, international economics, technology, innovation and productivity, equality, health, social inclusion, education, labour market, migration, social cohesion, taxation, welfare and pensions, competition and regulation, energy, environment, transport and infrastructure. Institute research staff undertake commissioned studies, surveys and data analysis on behalf of a wide range of Irish and international organisations. The Institute also manages the Hospital In-patient Enquiry (HIPE) and the National Perinatal Reporting System (NPRS) for the Department of Health and Children.

Research and Development Programmes	€'000 2009	€'000 2010
During 2009 the Institute undertook research projects in macroeconomics, international economics, technology, innovation and productivity, equality, health, social inclusion, education, labour market, migration, social cohesion, taxation, welfare and pensions, competition and regulation, energy, environment, transport and infrastructure.	**7,315**	**6,620**

Department of Health and Children

The Department of Health and Children was established under the Ministers and Secretaries Act (Amendment), 1946. The mission of the Department of Health and Children is "in partnership with the providers of health care, and in co-operation with other government departments, statutory and non-statutory bodies, to protect, promote and restore the health and well-being of people by ensuring that health and personal social services are planned, managed and delivered to achieve measurable health and social gain and provide the optimum return on resources invested".

The role of the Department of Health and Children is to support the Minister and the democratic process by:

- Formulating policy underpinned by an evidence-based approach and providing direction on national health priorities ensuring that quality and value for money are enhanced through the implementation of an evidence-based approach underpinned by monitoring and evaluation.
- Protecting the interests of patients and consumers and supporting practitioners and professionals to practice to the highest standards by providing a prudent and appropriate regulatory framework.
- Providing effective stewardship over health resources by demanding accountability for achieving outcomes including financial, managerial and clinical accountability, and by providing the frameworks, including enhanced service planning at national level, to improve the overall governance of the health system.
- Fulfilling our obligations in relation to EU, WHO, Council of Europe and other international bodies and the continued implementation of the co-operation agenda decided by the North-South ministerial council.

RESEARCH & DEVELOPMENT	€'000 2009	€'000 2010
National Cancer Registry Board The National Cancer Registry Board was established in June 1991, under the Health (Corporate Bodies) Act, 1961. Its functions are inter alia, to research and analyse information relating to the incidence and prevalence of cancer and related tumours in Ireland and to promote and facilitate the use of data collected in approved research projects and in the planning and management of services.	**3,086**	**3,099**

Health Research Board

The Health Research Board (HRB) is the lead agency in Ireland supporting and funding health research. It provides funding, maintains health information systems and conducts research linked to national health priorities. The HRB's mission is to improve people's health, patient care and health service delivery by:

- leading and supporting excellent research by outstanding people within a coherent health research system;
- generating knowledge and promoting its application in policy and practice;

and, in doing so, play a key role in health system innovation and economic development.

The HRB's Strategic Business Plan 2010-2014 outlines the strategic goals:

- Driving the development of excellent clinical research, including applied biomedical research, within a coherent health research system.
- Building capacity to conduct high-quality population health sciences research and health services research.
- Working with key partners to develop and manage high-quality national health information systems.
- Generating and synthesising evidence, and promoting the application of knowledge to support decision-making by policy makers and relevant practitioners.

RESEARCH & DEVELOPMENT	€'000 2009	€'000 2010
Research Strategy and Funding - Awards & Commissioned Studies ▪ Clinical & Applied Biomedical ▪ Health Services & Population Health ▪ Combined Clinical/Health Services/Population Health	**40,201**	**40,537**
Research Strategy and Funding ▪ Research Management Unit ▪ Research Infrastructure and Special Initiatives Unit	**1,417**	**0**
▪ **Clinical & Applied Biomedical & Research** – responsibility for developing the infrastructure, career support and programmes for biomedical and clinical research in Ireland. Also responsible for funding programmes supporting health research in Ireland and for managing special initiatives. The Unit is responsible for co-ordinating the work of the Cancer Consortium, the Irish Clinical Research Infrastructure Network (ICRIN), and the development of other large-scale infrastructure initiatives such as clinical research centres and networks. The HRB also offers a number of programmes in translational research.	**536**	**563**
▪ **Health Services & Population Health Research** has responsibility for building		

capacity to conduct world-class health services and population health research in Ireland. This involves providing support for healthcare professionals to engage in research across their career pathways and in growing the number of individuals and teams trained in the applied research methods required to conduct this type of research. The unit works closely with the Health Services Executive and other health and social care agencies to fund centres and networks aligned with policy and practice priorities in our healthcare system	**0**	**667**
Health Information and Evidence ▪ National Health Information Systems ▪ Evidence Generation & Knowledge Brokering	**3,436**	**1,610** **1,275**

Department of Social Protection

The main functions of the Department are to formulate appropriate social protection policies and to administer and manage the delivery of statutory and non-statutory social protection schemes/services.

The mission of the Department is "to promote a caring society through ensuring access to income support and other services, enabling active participation, promoting social inclusion and supporting families".

	€'000 2009	€'000 2010
Planning (Policy) Unit – monitoring and evaluation The main objectives here are: the systematic review and evaluation of social welfare policies, programmes and schemes; the monitoring of economic and demographic developments and their impact on social welfare; the formulation of new social policy developments and their budgeting; liaising with government departments and other agencies on social policy matters; the compilation/ development of statistical bases for internal management and for publication.	**2,390**	**2,203**
Citizens Information Board The Citizens Information Board is the national support agency responsible for supporting the provision of information, advice and advocacy on social services. The Board provides citizen's information for the general public, support for information providers and social policy and research information.	**956**	**946**
EU Community Action Programme for Employment and Social Solidarity (PROGRESS) 2007 - 2013 (exchequer contribution)* The seven-year PROGRESS programme, agreed by EU Member States in October 2006, has as its key goal to financially support the implementation of the objectives of the European Union in the employment and social affairs area. It brings together a number of strands of activity which were formerly funded under separate Community Action Programmes (Social inclusion & social protection; Employment; Anti-discrimination; Equality between men and women; and Working conditions). * This programme transferred to the Department of Community, Rural and Gaeltacht Affairs in 2010.	**21**	**0**

Department of the Taoiseach

The National Economic and Social Council

The National Economic and Social Council was established by government in November 1973. Its members include representatives from employer associations, trade unions, agricultural groups and the community and voluntary organisations, plus a number of independent members nominated by government.

The function of the Council is to analyse and report to the Taoiseach on strategic issues relating to the efficient development of the economy and the achievement of social justice and the development of a strategic framework for the conduct of relations and the negotiation of agreements between the government and the social partners. Council reports are submitted to the government, laid before each house of the Oireachtas and published.

The NESC is financed by grant-in-aid from the Department of the Taoiseach and by income from the sale of publications. It employs a total of 17 staff. Consultants are frequently employed to assist in the preparation of specific research reports. The NESC conducts studies on a wide range of relevant topics in the areas of economic and social policy.

Areas researched include: review of industrial policy; farm incomes; social planning; housing requirements and population change; health and energy policy; economic and social policy assessment; manpower policy welfare policy and social protection.

Research and Development Programmes	**€'000 2009**	**€'000 2010**
During 2009, NESC modified its work programme in order to analyse and discuss the economic crisis which began in late 2008: ▪ Ireland's Five-Part Crisis: An Integrated National Response; ▪ Well-being Matters: A Social Report for Ireland; and ▪ Next Steps in Addressing Ireland's Five-Part Crisis: Combining Retrenchment with Reform. In consequence of this change in its work programme, the NESC did not spend the entire 2009 allocated budget. Work accounted for in 2010 Work Programme budget includes; ▪ European Union ▪ Innovation and Enterprise ▪ Standards and Accountability ▪ Activation ▪ Legacy projects from NESF and NCPP	**6**	**160**

Department of Transport

National Roads Authority

The National Roads Authority was established with effect from 1 January, 1994, under the provisions of the Roads Act, 1993.

The Authority's primary function, under section 17 of the 1993 Act is to secure the provision of a safe and efficient network of national roads. For this purpose it has overall responsibility for the planning and supervision of construction and maintenance works on these roads.

The research activities cover two broad functions:

- to undertake or arrange for research and development on road construction, maintenance, safety and transport matters of particular importance in Ireland, and
- to serve as a centre which can disseminate the findings of research in Ireland and other countries.

The Authority's former research functions in the area of road safety have been assigned to the Road Safety Authority.

Research undertaken or commissioned by the National Roads Authority provides the Authority, the Department of Transport, local authorities and their consultants and contractors with information, technical assistance and guidance related to all aspects of road construction, traffic, and transportation which enable them to formulate policy and plan, design, construct, maintain and operate the road system in the most cost effective and environmentally sustainable manner and to best practice standards.

Research and Development Programmes	€'000 2009	€'000 2010
Safety Engineering and Network Operations Research is carried out on ways of building and operating roads that improve the safety and security of road users. The research focuses on sustainable practice that protects the environment and minimises disruption and nuisance.	**583**	**803**
Road Pavement and Maintenance Assessment Research is undertaken on the development of procedures for the construction and maintenance of road pavements, bridges and other roadside assets, taking account of issues such as reliability, value for money and the effects of climate change.	**575**	**794**

Central Bank and Financial Services Authority of Ireland

The Central Bank of Ireland, which came into being in 1943, was re-structured and re-named as the Central Bank and Financial Services Authority of Ireland (CBFSAI) on 1 May 2003. This body carries out all of the activities formerly carried out by the Central Bank of Ireland and additional regulatory and consumer protection functions for the financial services sector. The CBFSAI has two component entities:

- The Central Bank, which has responsibility for monetary policy functions, financial stability, economic analysis, currency and payment systems, investment of foreign and domestic assets. The provision of central services
- Irish Financial Services Regulatory Authority (Financial Regulator), which is an autonomous entity within the CBFSAI and has responsibility for financial sector regulation and consumer protection. The Central Bank became part of the Economic and Monetary Union (EMU) in Europe in 1999 along with ten (now twelve) other national central banks. These twelve national central banks together with the European Central Bank (ECB) form the Eurosystem.

Research and Development Programmes	€'000 2009	€'000 2010
The bank continued to monitor, analyse and project short-term developments in the Irish and Euro-area economies during 2009. It also conducted research into longer-term structural issues. The bank co-operated with other Eurosystem national central banks and the ECB in these areas through its participation in ESCB committees and working groups. This work assisted the governor of the bank and other members of the ECB governing council in formulating policy during 2009. The bank also assessed	**871**	**1,011**

macroeconomic conditions and considered policy issues in a domestic context, with a view to supporting policies aimed at maintaining low inflation and sustaining long-term growth in the Irish economy. Main areas of economic research include: economic intelligence and forecasting, inflation and competitiveness, monetary issues, econometric modelling, public finances, structural issues, housing market, productivity and growth.		

Office of Public Works

The main focal points of OPW activity are Flood Risk Management, National Procurement Service and Estate Portfolio Management comprising Property Services and Heritage Services. A number of services provided by the Office are shared and agency services to central Government Departments and Offices.OPW employs specialist and professional staff in all aspects of architecture, engineering, valuation, quantity surveying and related disciplines. In-house resources are supplemented as required by contracting of services from private sector companies.

Over 90 percent of construction, maintenance and conservation work is contracted from the private sector. Total staff employed at the end of 2010 was 1830. The Office managed expenditure of €433m in 2010 on the OPW Vote in addition to a significant level of works carried out on an agency and repayment basis.

In the course of their work, OPW's professional staff carries out research and development of new building methodologies (including the area of sustainability practice), hydraulic and hydrological research and development and specialist conservation and restoration techniques.

Research and Development Programmes	€'000 2009	€'000 2010
Flood Relief Projects	**5,100**	**2,749**
Capital expenditure on buildings where S&T research occurs	**2,408**	**197**

Appendix 6 – Questionnaire

Expenditure ALLOCATED to Research & Development in 2010

In-House R&D programme name	Detailed current expenditure (€'000)	Detailed capital expenditure (€'000)	Total Expenditure (€'000)	Type of in-house Research Activity % (see note below)			Sources of Funding (as recorded under Total Expenditure in column D)									
							Irish Government Funding		EU public funding (€'000)		Irish industry (€'000)		Foreign industry (€'000)		Private individuals (€'000)	
				Basic	Applied	Experimental Development	Current expend.	Capital expend.	Current expend.	Capital expend.	Current expend.	Capital expend.	Current expend.	Capital expend.	Current expend.	Capital expend.
1			0	%	%	%										
2			0	%	%	%										
Total	0	0	0				0	0	0	0	0	0	0	0	0	0

Definition: Types of in-house Research Activity

Basic : Experimental or theoretical work undertaken primarily to acquire new knowledge, without any particular application or use in view.

Applied : Original investigation undertaken in order to acquire new knowledge, primarily directed towards a specific practical aim or objective.

Experimental Development : Systematic work, drawing on existing knowledge gained from research and practical experience, that is directed to producing new materials, products and devices, to installing new processes, systems and services, or to improving substantially those already produced or installed.

Section 2: Research and Development - Funded by your organisation but Performed Elsewhere (not in-house) (€'000)

R&D Programme Name	Detailed current expenditure (€'000)	Detailed capital expenditure (€'000)	Total (€'000)	Name of organisation where R&D is performed	Sources of Funding									
					Irish Government Funding		EU public funding (€'000)		Irish industry (€'000)		Foreign industry (€'000)		Private individuals (€'000)	
					Current expend.	Capital expend.	Current expend.	Capital expend.	Current expend.	Capital expend.	Current expend.	Capital expend.	Current expend.	Capital expend.
1			0											
2			0											
Total	0	0	0		0	0	0	0	0	0	0	0	0	0

Section 3: In-House Personnel Devoted to Research & Development Within your Organisation (Headcount & % Research Time Use)

Please note that this section refers only to personnel involved in R&D performed within your organisation as recorded in Section 1. Any other personnal need not be recorded here.

R&D Programme Name (Please record the staff working by Programme as recorded in Sections 1)	Researchers						Technicians			Other Staff			Total		
	With PhD			Without PhD											
	Headcount		Time Use (%)	Headcount		Time Use (%)	Headcount		Time Use (%)	Headcount		Time Use (%)	Headcount		Time Use (%)
	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
1													0	0	0
2													0	0	0
3													0	0	0
4													0	0	0
5													0	0	0
Total	0	0	0	0	0	0	**0**	**0**	0	**0**	**0**	0	0	0	0

Definition: Time Use (%)

The following activities are deemed as "**research activities**" for the purpose of this survey	The following activities are **not** deemed as "**research activities**" for the purpose of this survey
√	X
Personal research or team research	Teaching
Writing research proposals or research reports	General administration
Supervision of PhD students	Supervision of non-PhD students
Other research based activities including administration and planning	Other non-research based activities or external activities

Appendix 7 - Recent Forfás Publications

Developing a Green Enterprise Forfás	July 2011
National Skills Bulletin 2011 Expert Group on Future Skills Needs	July 2011
Forfás Annual Report 2010 Forfás	June 2011
Costs of Doing Business in Ireland 2011 National Competitiveness Council	June 2011
Annual Employment Survey 2010 Forfás	May 2011
Response from Ireland to the European Commission Green Paper: Framework for Research and Innovation Funding Advisory Science Council, Forfás, DJEI	May 2011
The Expert Group on Future Skills Needs Statement of Activity 2010 EGFSN	May 2011
Business Expenditure on R&D 2009/2010 Forfás, CSO	April 2011
Developing Recognition of Prior Learning Expert Group on Future Skills Needs	April 2011
Vacancy Overview 2010 Expert Group on Future Skills Needs	March 2011
Statement on Competitiveness Priorities National Competitiveness Council	March 2011
Analysis of Ireland's Innovation Performance Forfás	March 2011
Progress Report on the implementation of the recommendations of the report of the High Level Group on Green Enterprise Forfás, DETI	March 2011
Staying the Course Advisory Council for Science, Technology and Innovation	January 2011
Research strengths in Ireland: a bibliometric study of the public research base - Extension Report: Public Research Organisations Forfás, HEA	December 2010
The Higher Education R&D Survey 2008 Forfás	December 2010

Profile of Public Research Activity in Ireland, 1998-2006 Forfás, HEA	December 2010
Research and Development Activity of Irish Based Enterprise Forfás, HEA	December 2010
Research and Development Activity of Irish Based Enterprise - Vol 2: Data Forfás, HEA	December 2010
Ireland's Priorities in FP8 Forfás	December 2010
Annual Competitiveness Report 2010 Volume 2: Ireland's Competitiveness Challenge National Competitiveness Council	November 2010
Future Skills Needs of Enterprise within the Green Economy in Ireland Expert Group on Future Skills Needs	November 2010
An Enterprise Perspective on the Universal Social Contribution Forfás	November 2010
Review of Labour Cost Competitiveness Forfás	November 2010
Annual Business Survey of Economic Impact 2009 Forfás	November 2010
Enterprise Statistics at a Glance 2010 Forfás	November 2010
Categorisation of State Expenditure on R&D Forfás	November 2010
Future Skills Requirements of the Biopharma-Pharmachem Sector Expert Group on Future Skills Needs	November 2010
Waste Management in Ireland, Benchmarking Analysis and Policy Priorities - Update 2010 Forfás	October 2010
Making it Happen - Growing Enterprise for Ireland Forfás	October 2010

Appendix 8 - Forfás Board Members

Eoin O'Driscoll
Chairman, Forfás
Chairman, Southwestern

Martin Shanahan
Chief Executive, Forfás

Simon Barry
Chief Economist ROI, Ulster Bank Capital Markets

Bob Brannock
President, European Operations, Genworth Financial

Timothy Dullea
Former Chief Executive Officer,
Tipperary Co-op

Sean Gorman
Secretary General, Department of Enterprise, Jobs and Innovation

Miriam Magner Flynn
Managing Director, Career Decisions

William O'Brien
Chief Executive, Wm O'Brien Plant Hire Ltd

Barry O'Leary
Chief Executive Officer, IDA Ireland

Paul O'Toole
Director General, FÁS

Frank Ryan
Chief Executive Officer, Enterprise Ireland

Dr Don Thornhill
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Michael O'Leary
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