THE SCIENCE BUDGET 2008/2009

FORFÁS R&D SURVEYS

Forfás

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Introduction

The Science Budget survey monitors the funding and performance of State Science & Technology (S&T) and Research & Development (R&D) under mandate through government legislation. The survey is carried out each year and aims to capture key performance metrics within the State sector. 39 government departments and agencies who are engaged in some form of S&T activity are surveyed. This report presents findings from the 2009 Science Budget survey with final outturn data for 2008 and estimates for 2009. The metrics analysed in the report include;

- overall S&T spending
- Government Budget Appropriations and Outlays on Research and Development (GBAORD),
- Government Expenditure on Research and Development (GOVERD) and
- R&D human resource indicators for the government sector.

Estimated S&T expenditure figures for 2009 on science and technology by the Irish government sector show a spend of €2.534 billion, a rise of 0.8% in current prices from the outturn figure of €2.513 billion for 2008. The period 2000-2007 has seen strong performance growth in the rate of S&T expenditure by the State sector. However, since 2008 there has been a rapid slowdown in overall growth driven by cuts in individual programmes. This can be seen in the GBAORD outturn figure for 2008 which shows a -8.06% drop in expenditure from the 2008 allocation of €1.03m. This slowdown is expected to continue in 2009 with a predicted further fall of -1.8% between the outturn figure for 2008 of €946 million and the 2009 allocation of €929 million. The largest spending category in the science budget is education and training with anticipated expenditure of €1.2 billion in 2009. The number of PhD and non PhD researchers in the State sector continued its upward trend in 2009, though there are signs that this rate of growth is slowing.

The findings from this survey complement the findings from the other R&D performance surveys conducted by Forfás. These include the, Business Expenditure R&D survey (BERD); the Higher Education R&D performed survey (HERD) and the hospital performed R&D survey. The total performance of R&D in the State is then added to create the Gross Expenditure on R&D (GERD) metric.

More detailed methodology is presented in Appendix 1. 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.

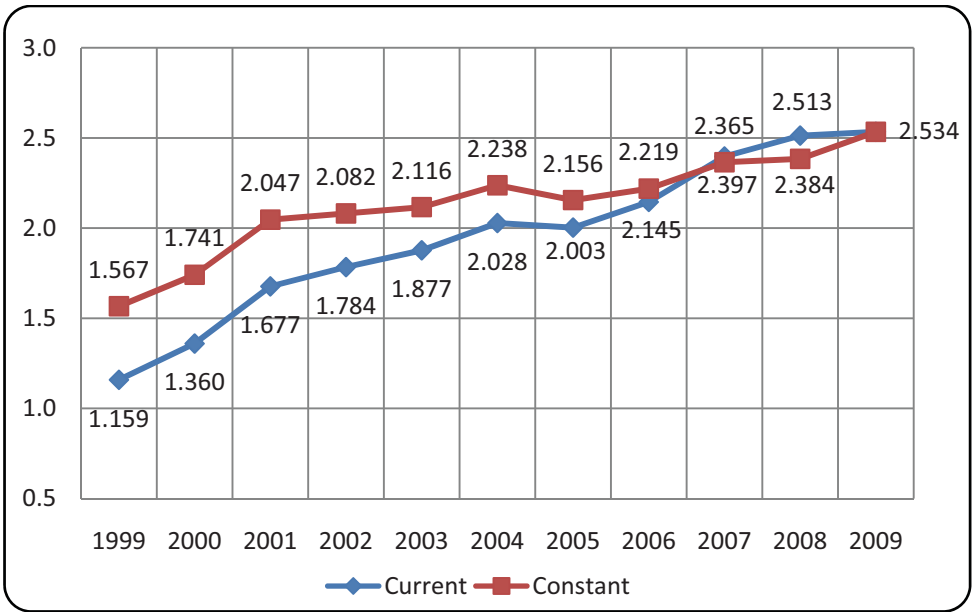
Forfás would like to thank the many respondents to this survey, who have taken the time to gather information and complete the data requests for this key area of government policy.

Science and Technology Indicators Unit – December 2009

Executive Summary

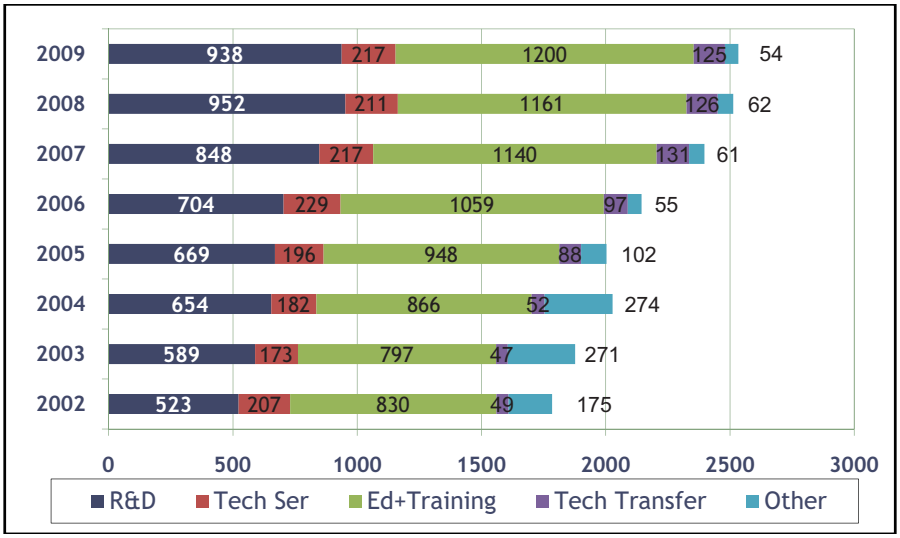
Overall science and technology spending growth in the government sector is slowing following a period of rapid growth. Many individual programme areas are now seeing cuts in expenditure. 2009 anticipated expenditure on science and technology (S&T) by the Irish government sector is expected to rise by 0.8% in current prices to €2.534 billion from an outturn figure for 2008 of €2.513 billion. With the exception of a slight drop in 2005 S&T expenditure by the State sector has continued to grow over the last ten years from a low of €1.2 billion in 1999 to the current high of €2.5 billion.

Total science and technology spending by the State sector 1999-2009 (current and constant prices €bn.)



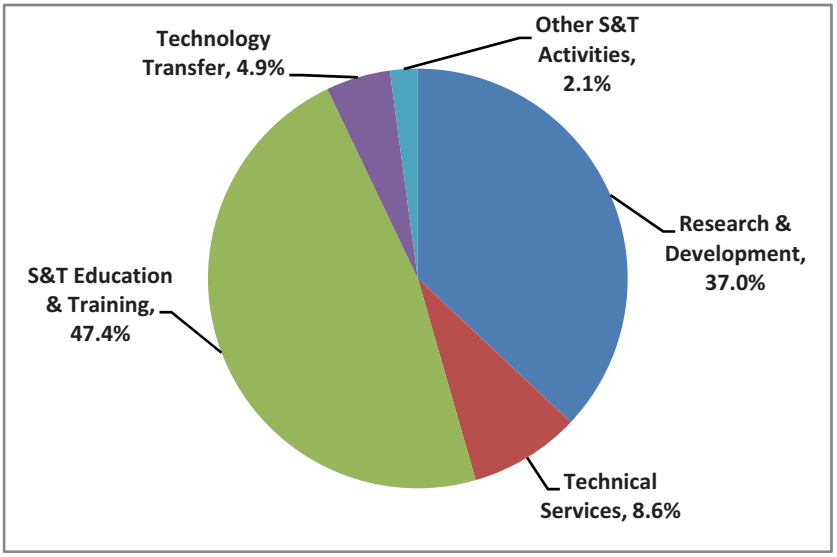
Total science and technology expenditure consists of five main categories; research and development; technical services; education and training, technology transfer and other S&T activities. In current prices it can be seen that the largest spending category in the science budget is education and training. Research and development expenditure is anticipated to drop slightly by - 1.5% in 2009 from the outturn figure of €952 million recorded in 2008. Technical services expenditure is expected to reach €217 million in 2009 a slight increase on the 2008 outturn, while the technology transfer category will be slightly down on the 2008 figure of €126 million to €125 million. Expenditure on other S&T activities is also expected to decrease in 2009.

Total science and technology spending by activity, 2002-2009 (current prices €m.)



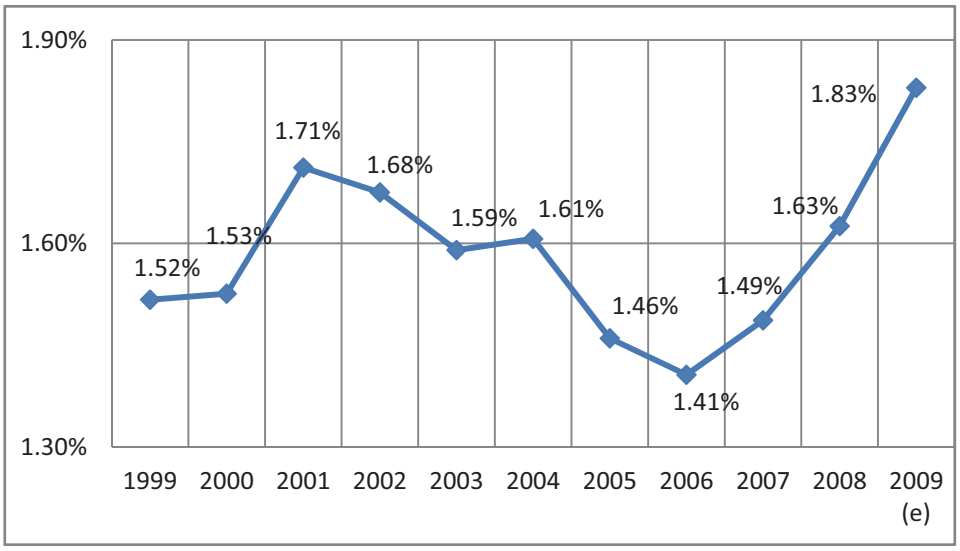
When viewed as a percentage of total spending on science and technology in the government sector, education and training should account for 47.4% of the total in 2009, with research and development taking a 37% share, technical services 8.6% and technology transfer and other S&T activities accounting for the remaining 7%. Despite its dominant share of the total S&D spend education and training's share has actually decreased as a percentage of the total since 2006 when it recorded a 49% share. By contrast research and development has increased its share of the total since 2006.

Share of science and technology spending by category as a percentage of total spending (2009)



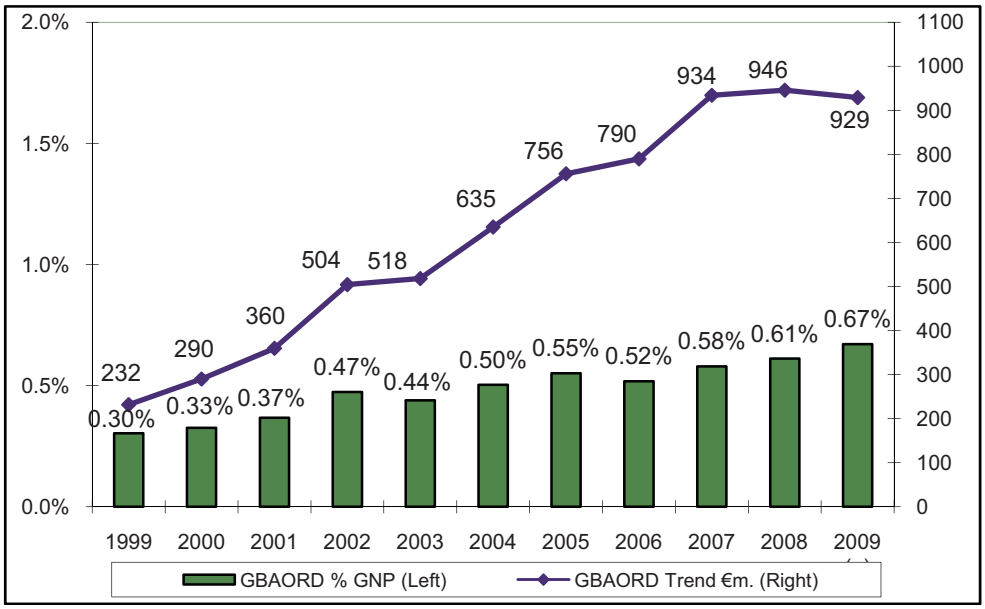
Total government expenditure on science and technology as a percentage of economic activity for the 10 years between 1999 and 2009 has shown considerable fluctuation with a low of 1.41% in 2006 and an anticipated high in 2009 of 1.83%, due to increased government spending on S&T and a corresponding decrease in the rate of economic activity in the country.

Total science and technology expenditure as a percentage of GNP, 1999-2009



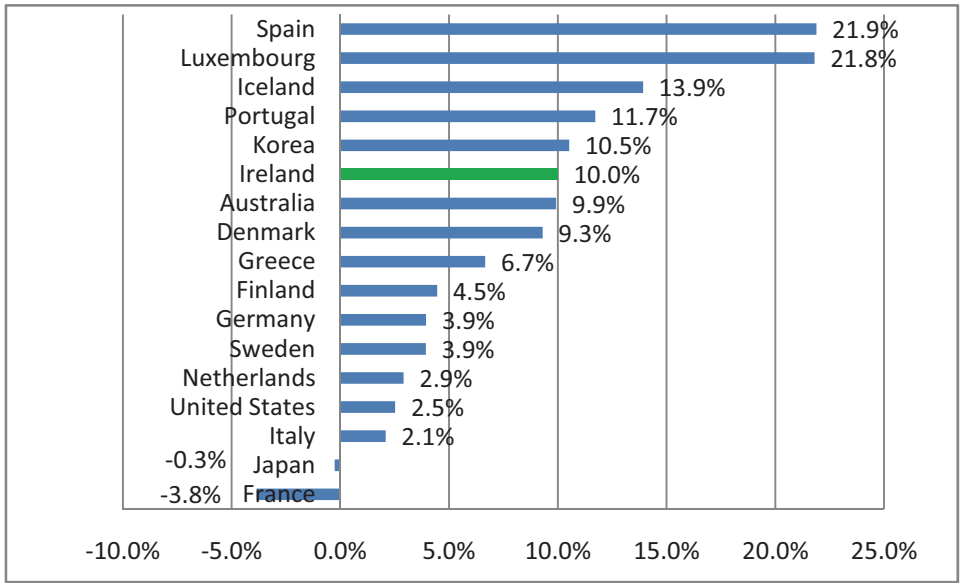
Government Budget Appropriations or Outlays on R&D (GBAORD) measures public funding of R&D. The importance placed on increasing R&D in the State sector can be seen in the upward trend in GBAORD between 1999 and 2008. However, the slowdown in the economy is evident from the -8.06% decrease in the GBAORD figures between the 2008 allocation of €1.03 billion and the 2008 outturn of €946 million. The expected 2009 allocation will decrease by a further -1.8% on the 2008 outturn. When GBAORD is viewed as a percentage of GNP it shows a slight rise from 0.61% in 2008 to 0.67% in 2009 which however can be accounted for by the slowdown in GNP in the country.

GBAORD trend (€m.) and GBAORD as a percentage of GNP (1999-2009)



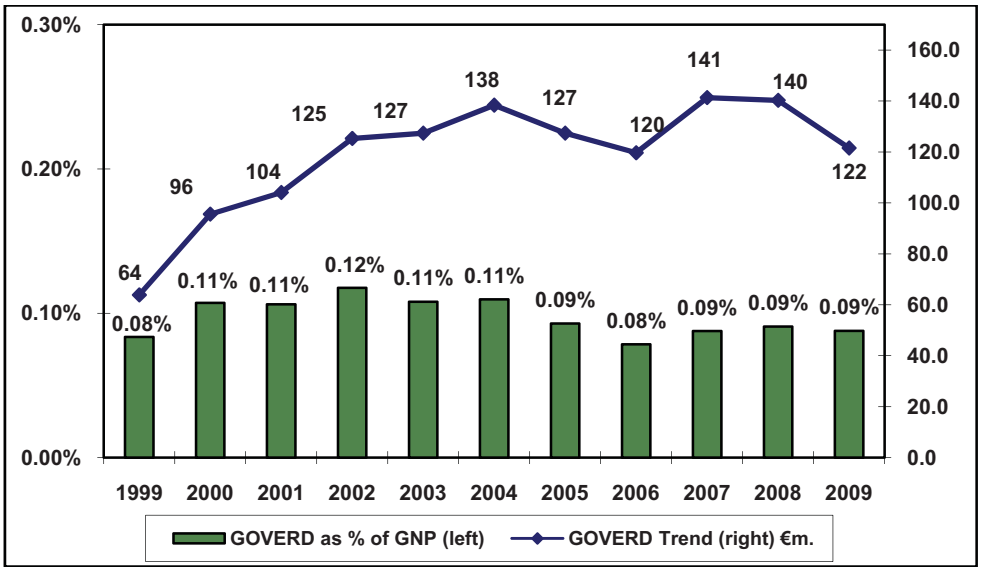
The growth rate of civil GBAORD in Ireland between 2004 and 2009, when benchmarked against that of other selected countries, places it sixth out of 17 countries. Civil GBAORD excludes R&D expenditure on defence. It is noticeable that Ireland's performance is down on its performance for the period 2003-2008 when the country had one of the strongest growth rates across the OECD.

Average annual growth rate of civil GBAORD for selected countries, (2004-2009)



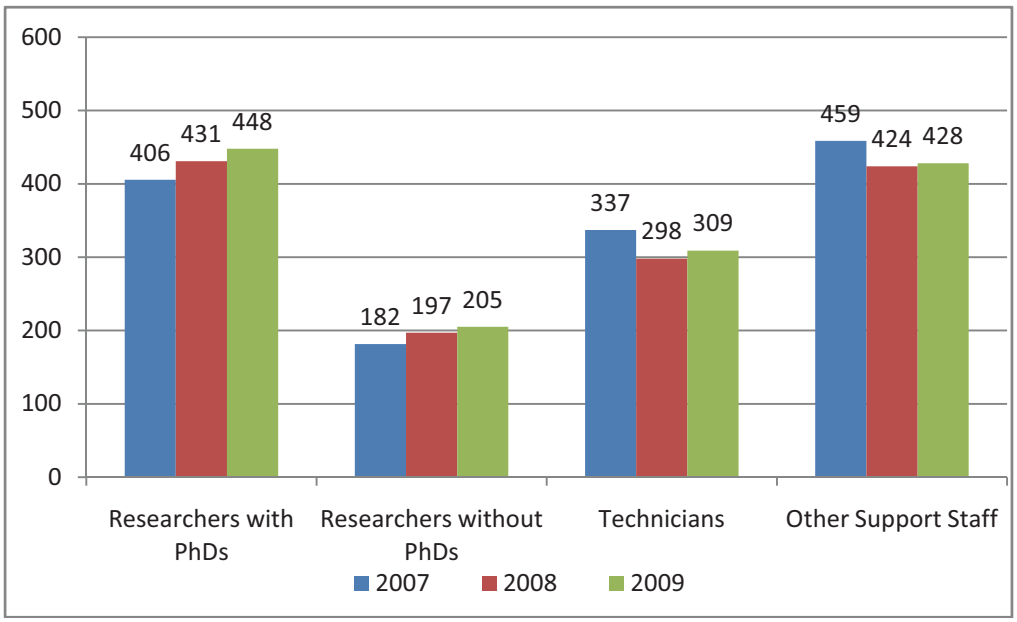
Expenditure on R&D performed in the State sector (GOVERD) is expected to decrease in 2009 to €122 million from the outturn figure of €140 million for 2008. The 2008 outturn is also considerably down on the 2008 forecast figure of €158 million. As a percentage of economic activity GOVERD will continue to remain constant at 0.09% in 2009 as was the case in 2007 and 2008.

GOVERD trend and GOVERD as a percentage of GNP (1999-2009)



The number of PhD and non PhD researchers in the State sector (448 and 205 respectively) is expected to increase by approx. 4% in 2009 from the outturn figures of 431 and 197 respectively in 2008. The numbers of technicians and other support staff engaged in R&D in the State sector are also expected to show a slight increase in 2009 but both remain below their 2007 highs of 337 and 459 respectively.

Total research and development personnel by occupation (headcount terms, 2007-2009)



Chapter 1: Science and Technology Budget

This chapter examines the total expenditure allocated across the State sector for Science & Technology activities in 2009. The science budget survey divides spending into five main categories:

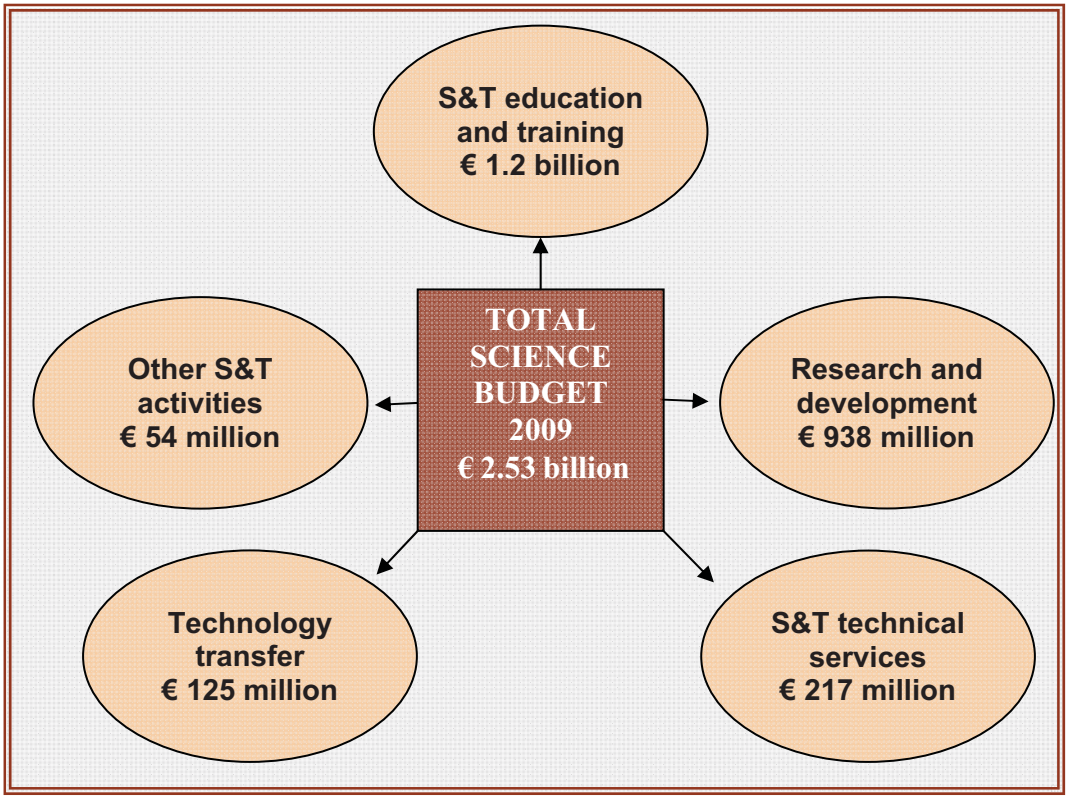
- Research & development
- Technical services,
- Education and training,
- Technology transfer
- Other S&T activities

Appendix 3 provides more detail on the definitions used in the questionnaires which are sent to respondents. Spending data was collected from government offices, agencies and departments engaged in S&T activities, in respect of the final expenditure they incurred in 2008 and their expected spend for 2009.

1.1 Total Science Budget

The total S&T estimated expenditure for 2009 is expected to reach €2.53 billion. Compared to the final S&T spending for 2008, expenditure is forecast to increase by 1.4% in 2009. It should be noted though that in 2008 the final S&T spending outturn was 5.4% below that expected in the initial expenditure allocations given by respondents to the previous survey. In 2009 the largest category of estimated spending across S&T areas continued to be S&T Education and Training - €1.2 billion. The next largest categories were Research and Development - €938 million, Technical Services - €217 million, Technology Transfer - €125 million, and finally Other S&T activities totalling €54 million.

Figure 1: Total Science Budget 2009



1.2 Trends in State science and technology expenditure

Figure 2 below shows a recent history of spending on S&T activities by the State. Data is displayed in current prices and also in constant 2009 prices, which deflates current S&T spending by consumer price inflation. S&T spending in current terms increased from just over €2 billion in 2005 to €2.51 billion in 2008. However, in this period the rapid rise in prices resulted in a smaller increase in real terms being recorded. In 2009 current spending on S&T areas posted only a small gain to €2.53 billion and many individual programmes saw funding cuts. However, a rapid decline in prices in this period, reflecting the strong shock to the overall economy, resulted in a stronger rise in S&T spending in real and constant terms. Figure 3 shows the annual changes in S&T spending in the State sector in current and constant prices over the last ten year period.

Figure 2: Total science and technology spending by the State sector, (1999-2009 current and constant prices €bn.)

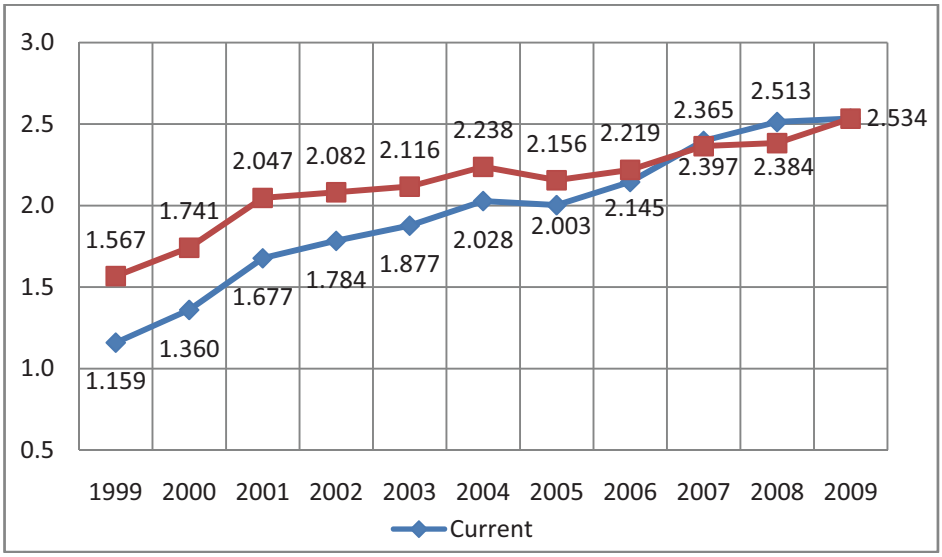
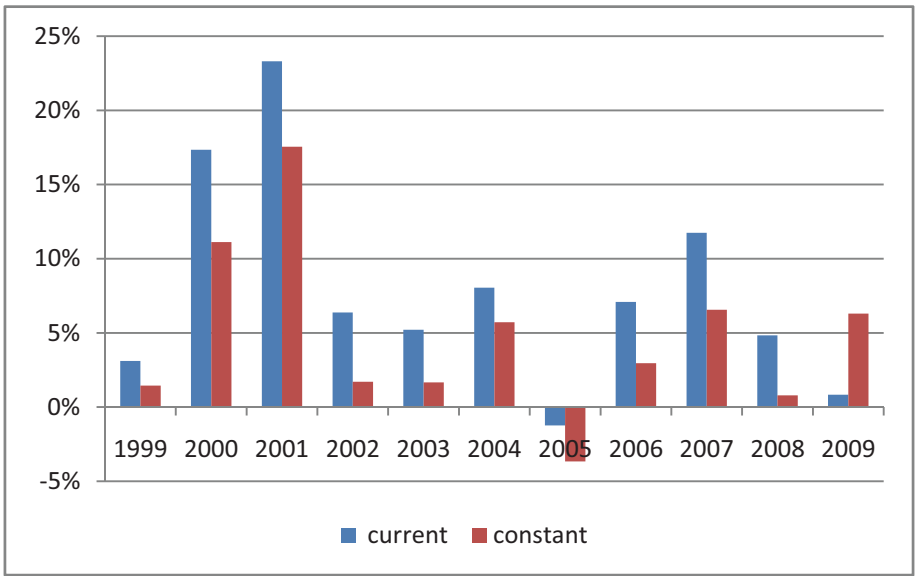


Figure 3: Annual % change in total S&T spending by the State sector (1999-2009 current and constant prices)



1.3 Trends in categories of State science and technology expenditure

Looking at the different components of State S&T spending, reveals a flattening across most activities with the exception of S&T Education and Training which increased and R&D spending which fell. Between 2008 and 2009 State funded R&D spending is expected to decline to €938 million from the €952 million outturn in 2008. Expenditure on S&T education and training is expected to climb by 3.4% to €1.2 billion in 2009 and to continue to be the largest component of the total S&T budget. Spending on technical services is expected to be €217 million in 2009, with expenditure of €125 million and €54 million on technology transfer and other S&T activities respectively.

Figure 4: Total science and technology spending by activity, (2002-2009) - €m. current prices

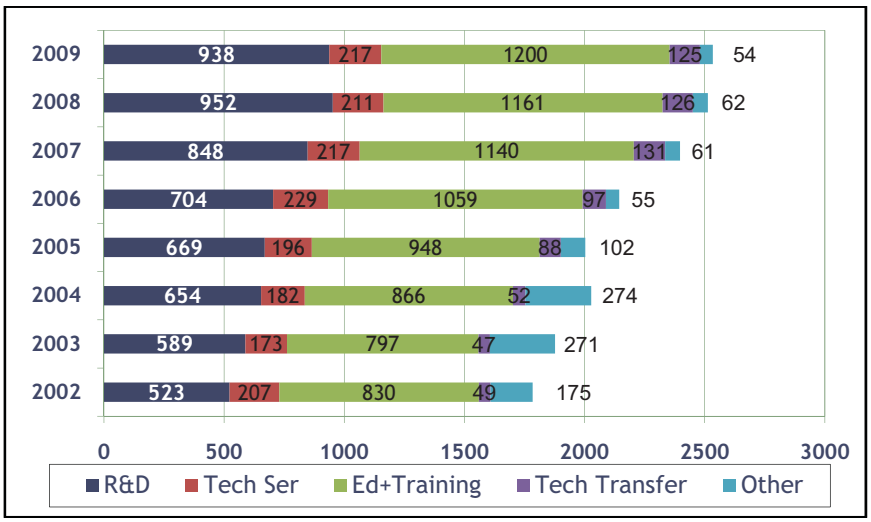
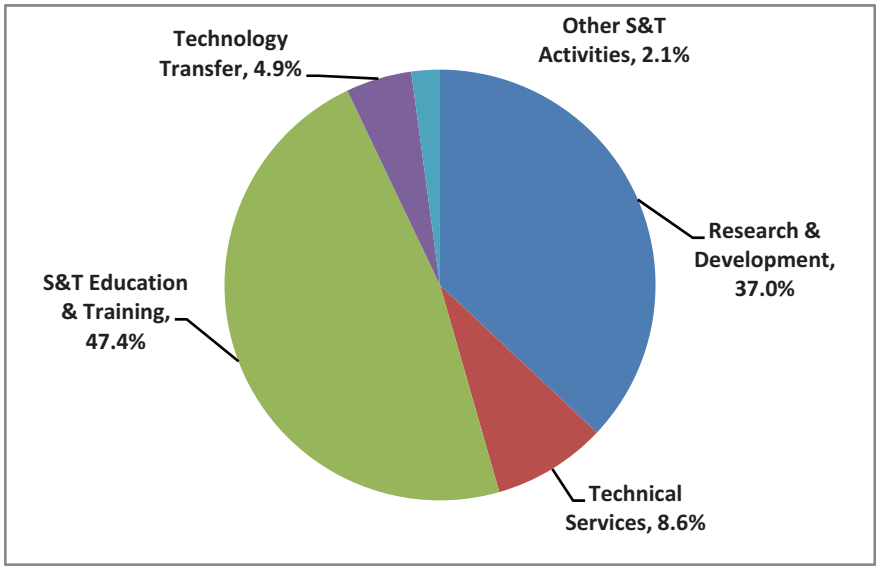


Figure 5: Share of science and technology spending by category as a percentage of total (2009)

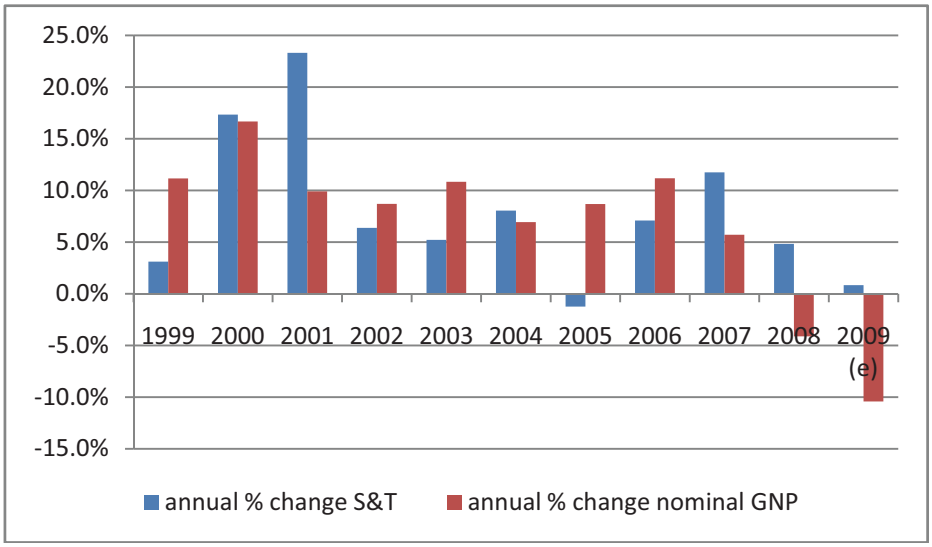


Detailed data on State spending by S&T category at institution and programme level between 2008 and 2009 is presented in Appendix 7.

1.4 Science and technology intensity (spending relative to economic activity)

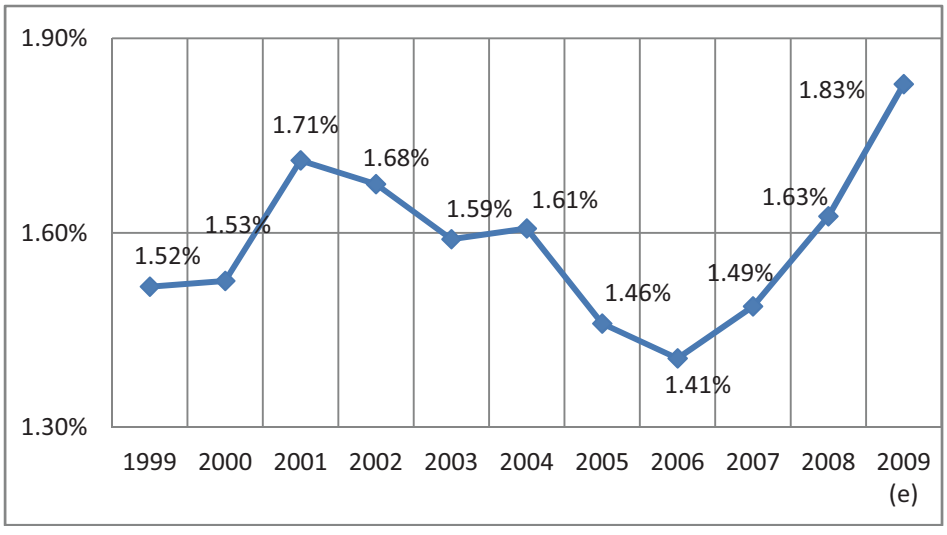
As can be seen in Figure 6 below, since 2007 there has been a deceleration in State S&T annual spending growth from 11.8% annual growth to just 1.8% in 2009. This slowdown occurred in tandem with a more rapid slowdown in economic growth in that period, with an expected 10% decline in economic activity as measured by nominal Gross National Product (GNP) between 2008 and 2009. GNP is a more relevant measure for calculating economic activity in Ireland as it excludes the large profit repatriations from multi-national firms and other net foreign income flows that are included in the Gross Domestic Product (GDP) metric.

Figure 6: Annual growth rates of science and technology spending and nominal GNP, (1999-2009)



Total expenditure on State S&T measured as a percentage of the Gross National Product (GNP) is shown in Figure 7. As S&T spending growth falls behind growth in nominal GNP then S&T spending intensity falls (2004-2006 period). In contrast when S&T expenditure growth quickens past the measured change in GNP, then S&T spending intensity increases (2007-2009). S&T spending intensity rose to 1.63% in 2008 and is estimated to climb further in 2009 to 1.83% of GNP mostly as a result of the rapid slowdown in economic activity.

Figure 7: Total science and technology expenditure as a percentage of GNP, (1999-2009)



Chapter 2: Focus on State funding of research and development

Chapter 2 focuses on one of the most important aspects of the total government Science Budget spending programme – Research & Development (R&D). The government has acknowledged its commitment to the development of a knowledge and smart economy, through the creation of the Strategy for Science Technology and Innovation. This chapter also benchmarks the Irish performance against its international competitors.

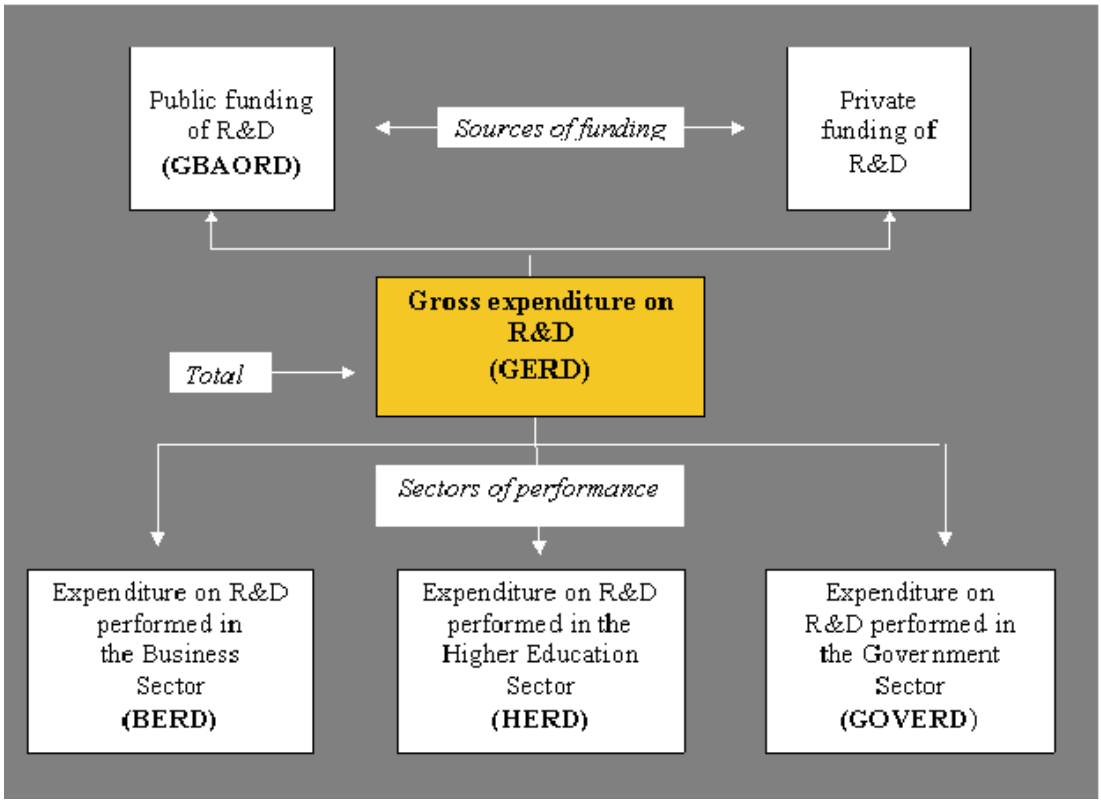
2.1 Types of research and development indicators

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] The Science Budget focuses particularly 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 3)

Figure 8: R&D funding and performance system



1 Frascati Manual, 2002, OECD

2.2 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. GBAORD includes;

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

Figure 9: GBAORD trend in current prices, €m. (1999-2009)

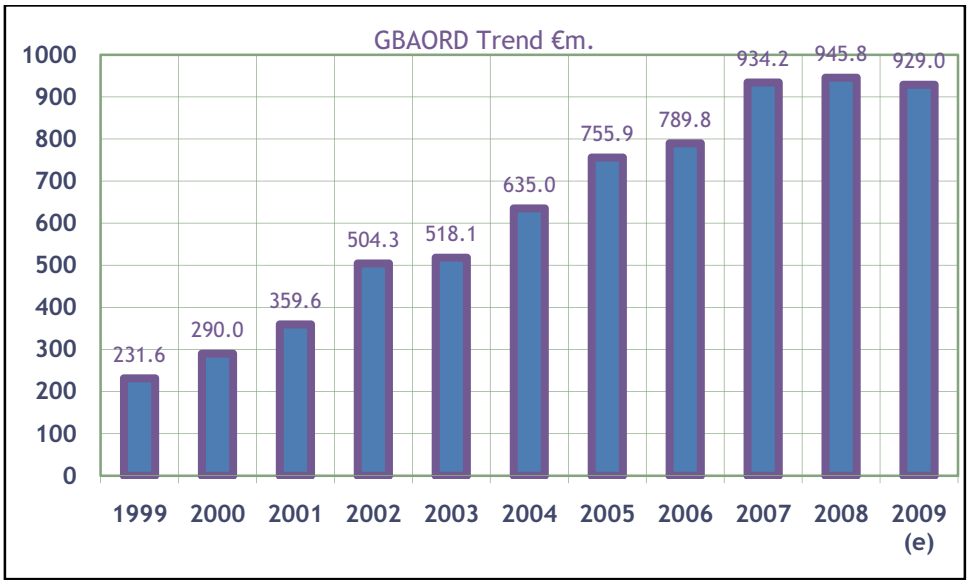


Figure 9 above shows the government allocation to R&D activities performed across all sectors of the economy from 1999-2009. As can be seen, rapid gains were made in State R&D spending over the last decade, although in 2008 and 2009 there was a rapid deceleration in R&D funding from the State. Annual GBAORD expenditure growth slowed from 18.3% between 2006 and 2007 to 1.2% gains between 2007 and 2008.

The GBAORD outturn figure for 2008 shows a -8.06% drop in expenditure from the 2008 allocation of €1.03m. The 2009 allocation will see this slowdown continue with a further decrease in GBAORD of -1.8% from the 2008 outturn figure. 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.

2.3 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 offices. The largest agency, funding R&D projects in 2009, is expected to be the Higher Education Authority, which have allocated an estimated €345.7 million to R&D activities (or 37.2% 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 will be Science Foundation Ireland, allocating an estimated €165 million to R&D in 2009 via research grants and other research supporting programmes.

Table 1: Government departments and agencies funding R&D activities (2009 estimates)

Funding Department/Agency	2009 €m.	% of total
Higher Education Authority	345.7	37.2%
Science Foundation Ireland	165.4	17.8%
Enterprise Ireland	70.3	7.6%
Teagasc	60.1	6.5%
IDA Ireland	60.0	6.5%
Health Research Board	44.5	4.8%
Dept. of Agriculture, Fisheries and Food	26.6	2.9%
Sustainable Energy Ireland	25.9	2.8%
Irish Research Council for Science Engineering and Technology	25.1	2.7%
Marine Institute	15.4	1.7%
Irish Research Council for Humanities and Social Science	14.4	1.6%
Environmental Protection Agency	13.6	1.5%
Dept. of Communications, Energy & Natural Resources	10.5	1.1%
Others	51.5	5.5%
Total	929.0	100%

The State currently invests in a wide range of R&D programmes which are outlined in more detail in Appendix 7. A summary of these programmes includes:

€346 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.

€165 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.

€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.

€60 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.

€60 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.

€45 million - The Health Research Board. 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.

€27 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 2009 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.

€26 million - Sustainable Energy 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.

€25 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.

€15 million – The Marine Institute is responsible for undertaking, co-ordinating and assisting marine research and development. Through its parent department (Department of Agriculture, Fisheries and Food), the Marine Institute distributes research funding aimed at developing research capabilities in a number of areas of marine research. Examples of such research areas include shipping and maritime transport, sea food processing, aquaculture, fisheries resources, seaweed and off shore oil and gas.

€14 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. The Research Council operates a suite of interlinked Research Schemes. The IRCHSS *Government of Ireland Post-Graduate Scholarships* and *Government of Ireland Post-Doctoral Fellowships* fund research at pre- and post-doctoral levels. The Research Council operates three schemes which 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*). A scheme operated by the Research Council known as *Government of Ireland Research Projects Grants* funds world class innovative research undertaken on an extended or group project basis.

€14 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.

€11 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, especially as they relate to mineral resources and the environment.

2.4 Programmes classified by area of research

The total expected GBAORD for 2009 can be classified into a number of funded economic areas (see Table 2 below). Over 50% of total GBAORD funding for 2009 has been allocated for performance in higher education. This €929 million includes funding from various agencies such as SFI, HEA PRTLI (Programme for Research on Third Level Institutes), EI and other research funding bodies operating in the higher education sector. This figure also includes an estimate of the proportion of the 2009 HEA block grant devoted to research. This research proportion of the HEA block grant is calculated using a time use methodology.

Table 2: GBAORD classifications for Ireland 2009

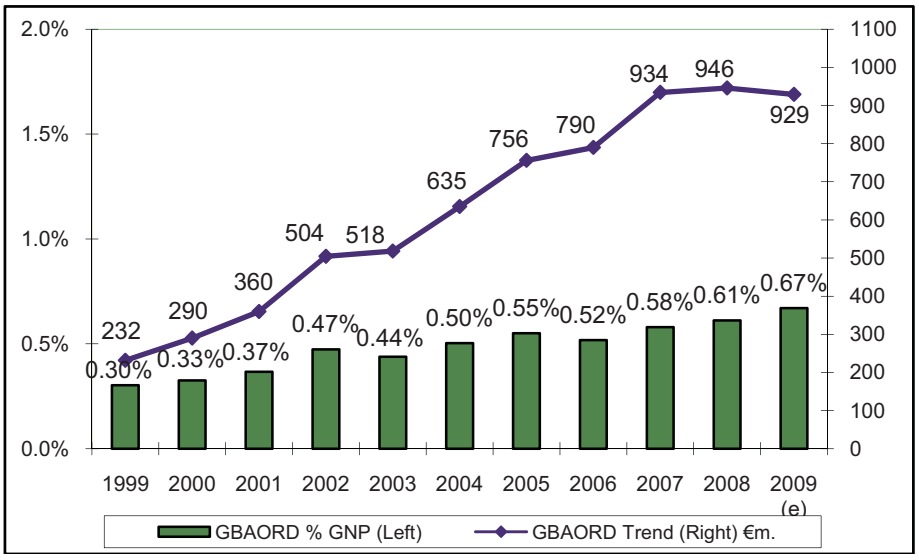
R&D related to Natural Sciences - financed from GUF	231.0
R&D related to Natural Sciences - financed from other sources than GUF	220.6
Industrial production and technology	134.8
Education	119.1
Agriculture	105.6
Health	49.2
Energy	36.4
Environment	14.2
Political and social systems, structures and processes	12.0
Transport, telecommunication and other infrastructures	5.1
Exploration and exploitation of the earth	1.1
Total	929.0

Industrial production and technology, which will account for 14.5% of total GBOARD (and is expected to reach €135 million) in 2009 is an important category of R&D funding. Agriculture at €101 million will account for 11% of total government spending on R&D programmes. It is followed closely by Health (5.2% of total) and Energy (3.8%). The remaining 4% of GBAORD is divided between environment, political and social systems, transport, telecommunication, education and exploration and exploitation of the earth.

2.5 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. Figure 10 shows that between 1999 and 2008 there was a rapid increase in state R&D spending from €232 million to €946 million in 2008. However, the 2009 GBAORD figure is down by -8.06% on the 2008 allocation of €1.03 billion. This slowdown can also be seen in the -1.8% drop between the 2008 outturn figure of €946 million compared to the expected 2009 figure of €929 million.

Figure 10: GBAORD trend (€m.) and GBAORD as a percentage of GNP (1999-2009)



The GBAORD intensity ratio [State R&D funding for R&D activities as a % of economic activity – Gross National Product (GNP)] has risen steadily over the last decade. The period 1999 to 2002 saw the GBAORD intensity ratio climb from a low of 0.30% to 0.47% of GNP driven by rapid increases in R&D, funding a strong economic growth scenario. Following a pause in state R&D funding growth in 2003, the period 2004 to 2007 (with the exception of 2006) saw the GBAORD intensity rate rise as strong R&D spending gains outpaced nominal economic growth. Within this period, GBAORD as a % of GNP rose to 0.58% in 2007 from 0.44% of GNP in 2003.

In 2008 GBAORD intensity climbed strongly to 0.61% of GNP although some of this rise was driven by the 4.1% contraction in economic activity in that year, alongside the slowing increase of 7.2% in GBAORD spending. Initial estimates for 2009 show total State departments, offices and agencies' spend on R&D activities will decrease by -1.77%. GBAORD intensity is expected to climb strongly to 0.67% of GNP in 2009 given the further likely 10.4% decline in GNP throughout the year.

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 will spend a 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 1999 and 2009 can be observed.

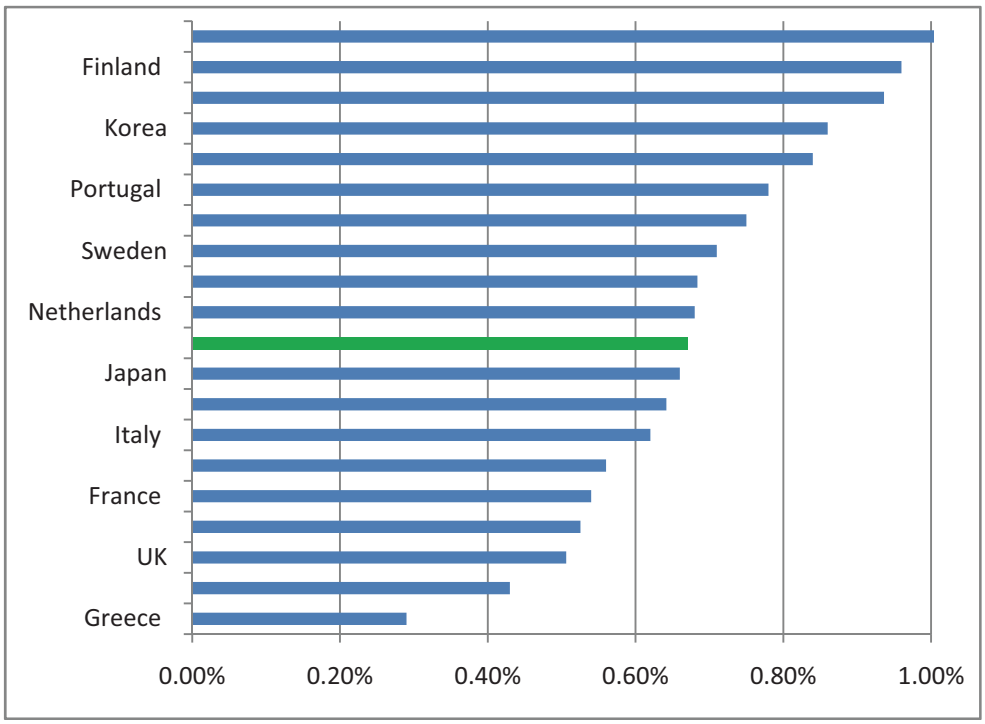
Table 3: Civil GBAORD as a percentage of economic activity (GDP/GNP)

Country	1999	2008/2009
Iceland	0.97%	1.06%
Finland	1.03%	0.96%
Spain	0.41%	0.94%
Korea	0.48%	0.86%
Denmark	0.79%	0.84%
Portugal	0.55%	0.78%
Germany	0.74%	0.75%
Sweden	0.66%	0.71%
Austria	0.64%	0.68%
Netherlands	0.76%	0.68%
Ireland	0.30%	0.67%
Japan	0.60%	0.66%
Norway	0.69%	0.64%
Italy	0.53%	0.62%
New Zealand	0.50%	0.56%
France	0.73%	0.54%
Australia	0.51%	0.53%
UK	0.42%	0.51%
United States	0.39%	0.43%
Greece	0.27%	0.29%

* *Latest data for most countries is 2008 with the exception of Iceland, Finland, Korea, Australia and Ireland (2009), Greece and Spain (2007) and UK (2006). Given the slowdown in economic activity in 2009 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. Three countries in the table above stand out as having made rapid progress and catch up in their State R&D funding programmes – Spain, Korea and Ireland. The ratio of Civil GBAORD to economic activity in Spain increased from 0.41% of GDP in 1999 to 0.94% of GDP in 2007. In Korea the ratio rose from 0.48% to 0.86% of GDP between 1999 and 2009. In Ireland the civil GABORD intensity ratio climbed from 0.30% of GNP in 1999 to stand at 0.67% of GNP in 2009.

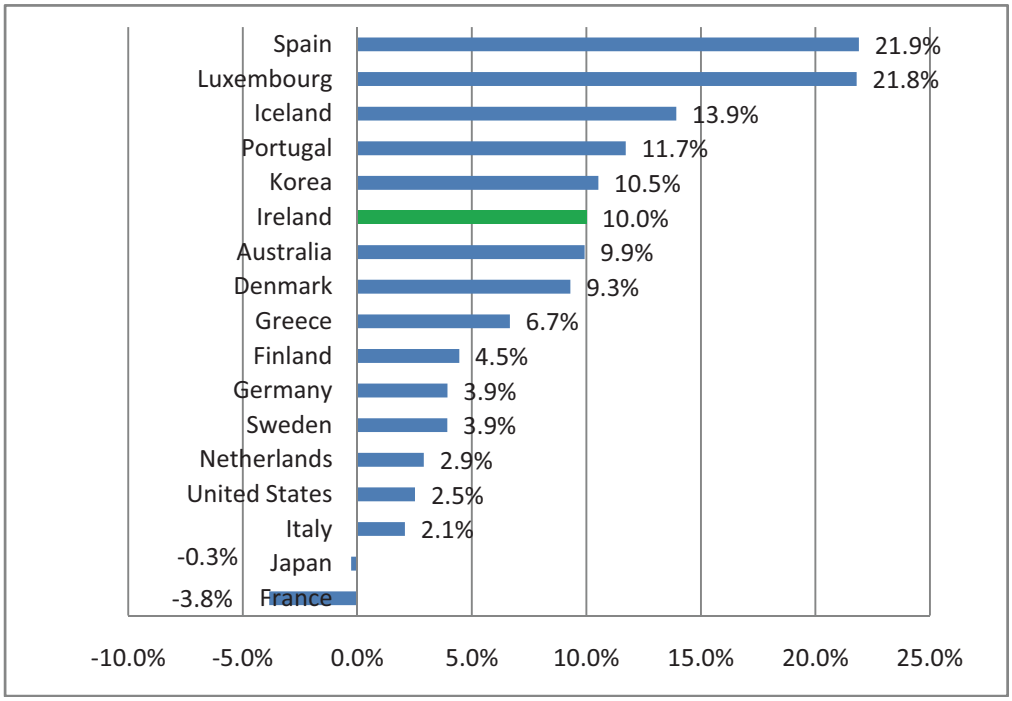
Figure 11: International comparison of civil GBAORD as a percentage of GDP/GNP (2008*)



** or latest available data*

Iceland with civil GBAORD spending of 1.06% of GDP is one of the strongest performing OECD countries, followed by Finland at 0.96% of GDP. The OECD average civil GBAORD intensity is estimated to be around 0.55% of GDP in 2009 (missing data for some countries result in estimates being used).

Figure 12: Average annual growth rate of civil GBAORD for selected countries, (2003-2008)



Chapter 3: 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; 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 performers of GOVERD continue to be Teagasc and the Marine Institute.

3.1 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 2009 is that it will drop from the 2008 performance of €140 million to €122 million a 13% drop which will leave it just above the 2006 expenditure figure of €120 million. In turn the 2008 outcome is also slightly down on the all time high recorded in 2007 of €141 million. The 10 year trend in Figure 13 below shows an increase in GOVERD from 1999 to a high in 2004 of €138 million. This was followed by a drop in the following two years to €120 in 2006 which in turn was followed by a considerable rise in 2007 to the all time high of €141m. In real terms expenditure on R&D performed in the State sector fell by 5% between 2007 and 2008 and is expected to fall further by 9% between 2008 and 2009.

GOVERD as a percentage of GNP over the ten year period from 1999 to 2009 is also illustrated in Figure 13. Despite a drop in 2006 to 0.08% GOVERD as a percentage of GNP remained steady in 2007 and 2008 at 0.09% and it is expected that this level will be maintained in 2009.

Figure 13: GOVERD as a percentage of GNP and GOVERD trend, (1999-2009)

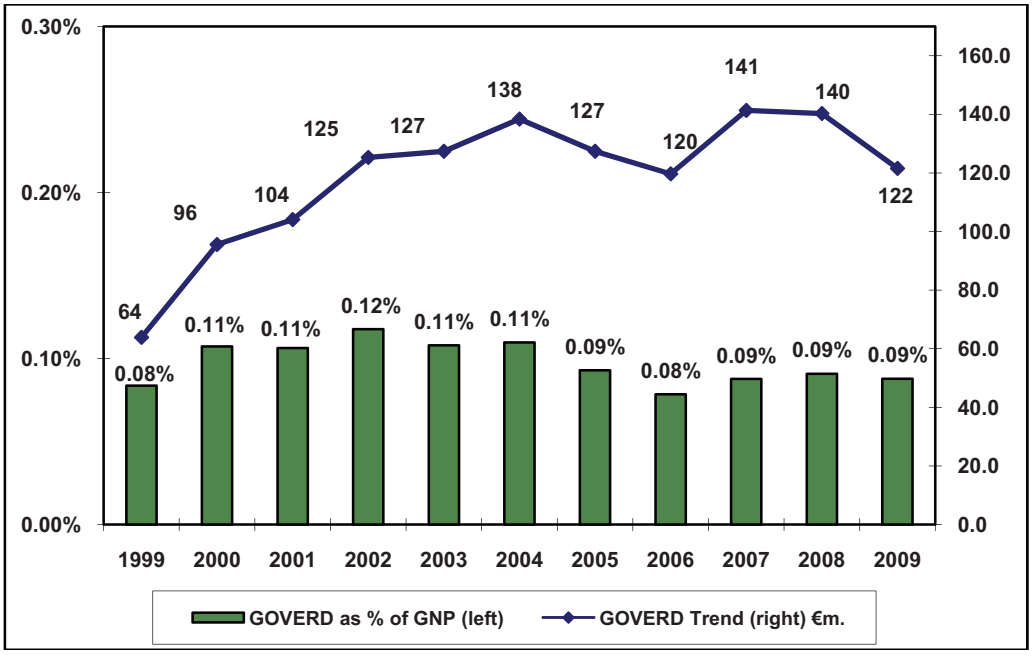


Figure 14: Major State research and development performers, % of total (2009)

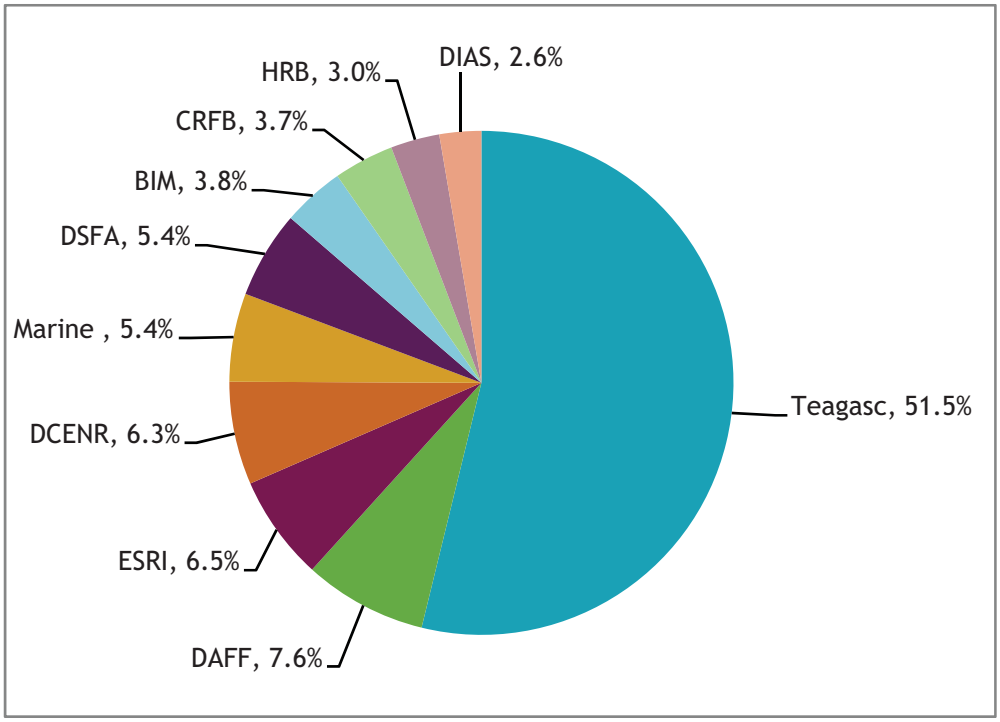


Figure 14 illustrates the major contributors to in-house R&D in the State sector in 2009. As can be seen Teagasc, the Irish agriculture and food development authority, will continue to be the largest performer of R&D in 2009, with expenditure of €62.6 million or over 50% of total GOVERD. However, the 2009 expenditure will show a decrease of 14% on the 2008 outturn figure of €73 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 Agriculture, Fisheries and Food with expenditure of €9.2 million, the Economic and Social Research Institute, €7.8 million and the Department of Communications, Energy and Natural Resources with €7.7 million. The contribution to GOVERD from the Marine Institute, 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 7.

Table 4: GOVERD as a percentage of GDP, selected countries (2004 and 2009 or latest available data)

Country	2004	2009*
Korea	0.34	0.40
Slovenia	0.28	0.36
Germany	0.34	0.35
France	0.37	0.34
Finland	0.33	0.30
China	0.28	0.29
Czech Republic	0.26	0.29
United States	0.31	0.29
Japan	0.30	0.27
Norway	0.25	0.25
Total OECD	0.27	0.25
EU-27	0.24	0.24
Luxembourg	0.18	0.22
Spain	0.17	0.22
Denmark	0.17	0.18
United Kingdom	0.18	0.17
Portugal	0.12	0.11
Ireland/GNP	0.11	0.09
Turkey	0.04	0.08

** or latest date data is available.*

In Table 4 GOVERD as a percentage of GNP in Ireland is compared with GOVERD as a percentage of GDP in a selection of countries for 2004 and 2009, or the latest date for which data is available. Only Turkey has a lower intensity rate than Ireland with 0.04% in 2004 and 0.08% in 2009 as opposed to Ireland's ratios of 0.11% in 2004 and 0.09% in 2009. The concentration in Ireland on increasing the R&D performance in the higher education part of the overall research system, the figures for which are not included in the current survey, is one of the reasons for Ireland's low ratio as is the size of the Irish public sector compared to other countries. A number of countries show a decrease in the ratio for 2009 when compared to 2004. These include, France, Finland, United States, Japan, United Kingdom and Portugal as well as the total OECD figure. Increases can be seen in Korea, Germany, China, Czech Republic, Luxembourg, Spain and Denmark. The EU 27 has remained static as has Norway.

3.2 Types of Research

The type of research being performed in the various government departments and agencies is also measured in the Science Budget 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
- **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 (2009)

Type of Research	2009 €m.	% of total
Applied	97.3	80%
Experimental	12.6	10%
Basic	11.7	10%
Total	121.6	100%

As has been the case for the last number of years, 80% of the research undertaken by Irish government departments and agencies is in applied research with expenditure in 2009 amounting to €97 million. €13 million was spent on experimental research and €12 million on basic research.

3.3 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, (2009) €m.

Field of Science	Basic	Applied	Experimental	Total
Agricultural Sciences	7.6	63.8	9.0	80.5
Natural Sciences	3.6	10.2	1.4	15.1
Social Sciences	0.5	12.4	0.7	13.6
Engineering and Technology	0.0	7.0	1.5	8.5
Medical and Health Sciences	0.0	3.8	0.0	3.8
Totals	11.7	97.2	12.6	121.5

Applied research in agricultural sciences continues to be the field of science in which most expenditure takes place. In 2009, €63.8 million was spent on applied science in this area with €9 million and €7.6 million respectively spent on experimental and basic research. The natural and social sciences are the next fields of science with the greatest spend in 2009 with total expenditure of €15.1 million and €13.6 million respectively. As seen in Figure 14 the two major performers of R&D in the government sector are Teagasc and the Dept. of Agriculture, Fisheries and Food both of whom would be engaged in the field of agricultural sciences as would agencies such as the Marine Institute, Bord Iascaigh Mhara and the Central and Regional Fisheries Board. Research in the natural sciences field would include research by the Dublin Institute for Advances Studies; the Department of Communications, Energy and Natural Resources; the Department of the Environment, Heritage and Local Government etc.

Of the remaining fields of science, engineering and technology account for 7% of total research and medical and health sciences for 4%. The National Roads Authority and the Office of Public Works account for most of the expenditure in the engineering and technology field while the Health Research Board; the Food Safety Authority and the Department of Health and Children account for the medical and health sciences expenditure.

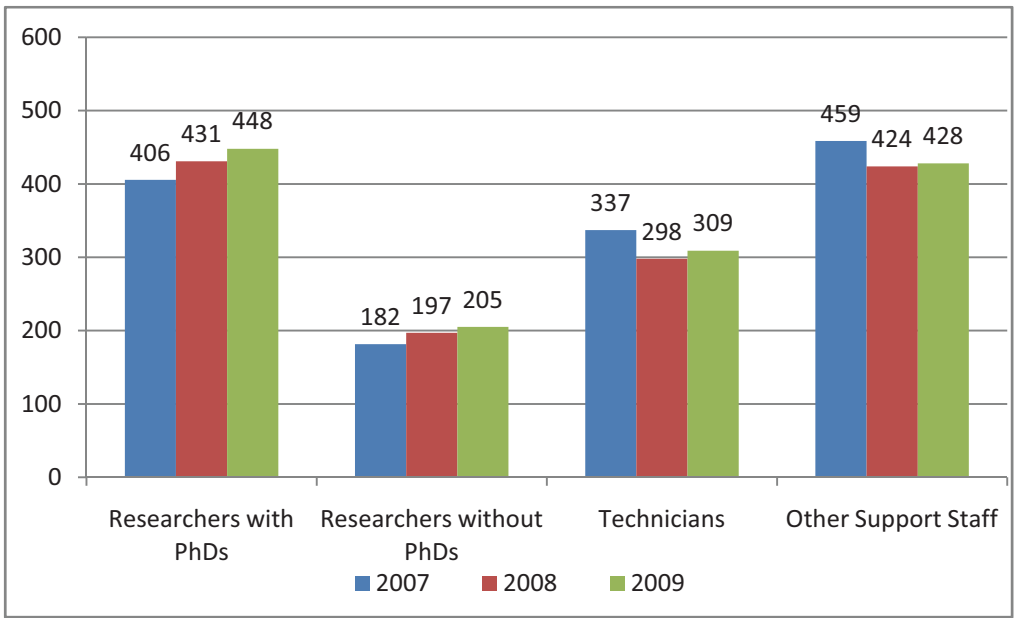
Chapter 4: Human resources dedicated to publicly-performed research and development

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 39 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 Full-Time Equivalent (FTE) 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% of their time on research activities equals one researcher in headcount terms, and 0.7 researchers in full-time equivalent 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.

4.1 Research and development personnel

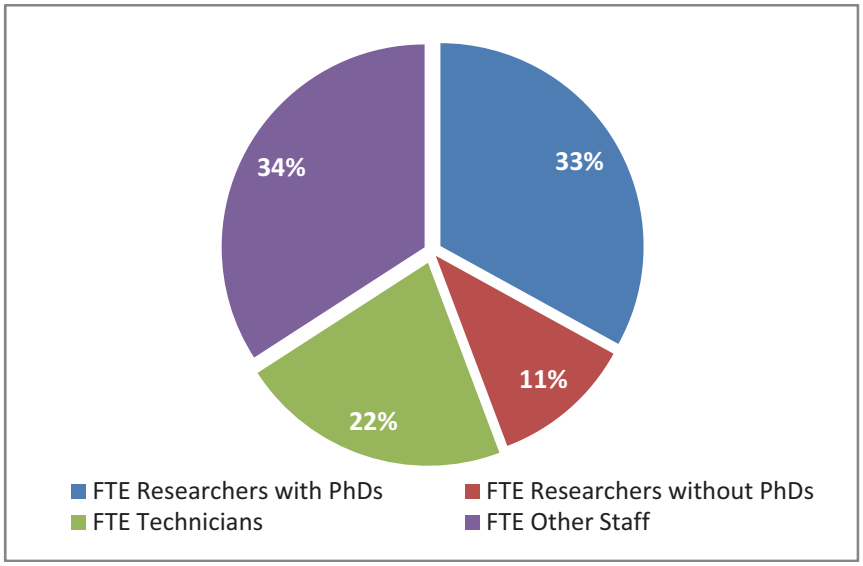
It is anticipated that there will be a 3% increase in 2009 in the overall number of research personnel employed in the government sector over the 2008 outcome of 1,350 (Figure 15). The number of PhD researchers, researchers without a PhD and technicians are all expected to rise by approximately 4% in 2009 over 2008, recording totals of 488, 205 and 309 respectively. Research support staff will also see a slight increase in 2009 over the 2008 outturn figure which in turn shows a 8% decline on the 2007 high of 459 staff. In full time equivalent terms there were 550 FTE researchers in 2009, supported by 692 FTE technicians and other support staff.

Figure 15: Total research and development personnel by occupation (headcount terms, 2007-2009)



As illustrated in Figure 16 below 34% of FTE researchers hold a PhD qualification while 33% of FTE researchers hold degrees below PhD level. 22% of government research personnel were employed at technician level, with the remaining 11% of the FTE total working in other support roles for government researchers.

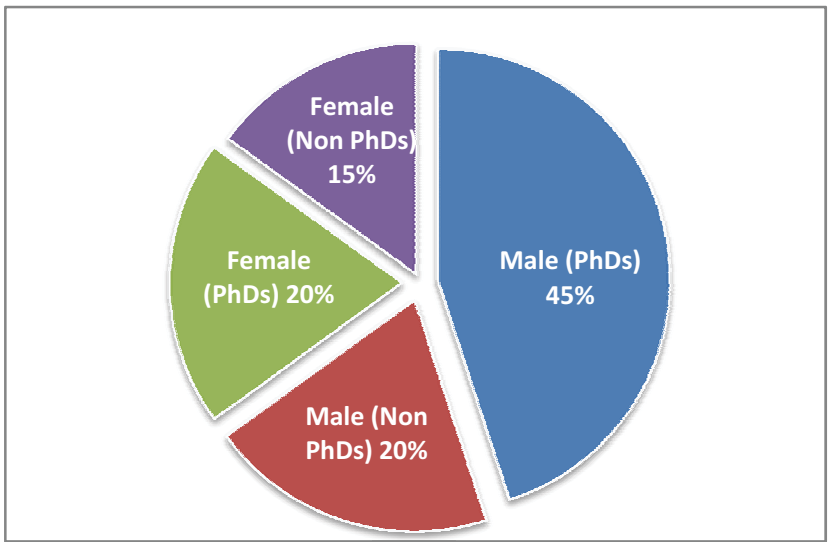
Figure 16: Total R&D personnel by occupation in FTEs, (2009)



4.2 Gender and qualifications of State sector research staff

Figure 17 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 2009, in full-time equivalent terms. Male PhD researchers continue to dominate the numbers employed at research level in the government sector representing 45% of the total. Female PhDs and male researchers below PhD level each account for 20% of the total with the remaining 15% occupied by female researchers without a PhD. The percentage of total occupied by female researchers is expected to increase to 43% in 2009 from 40% in 2008.

Figure 17: FTE Researchers by gender and qualification, (2009)



4.3 Research and development staff by fields of science

Of the total 550 FTE PhD and non-PhD researchers employed in the government sector, 315 were male and 235 were female. When analysed by the OECD standard fields of science the following statistics emerge for 2009; 44.5% of male researchers and 38.2% of female researchers are engaged in research and development work in the agricultural biotechnology field. The physical sciences account for 14.3% of male researchers' work while 20.9% of female researchers work in health sciences.

Table 7: Total male/female (FTE) and as percentage of total by field of science, (2009)

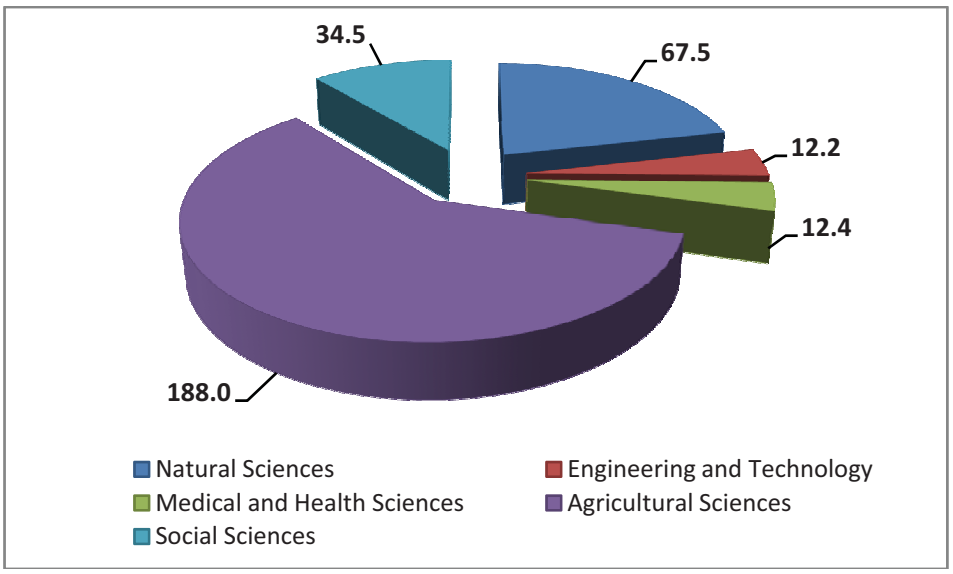
Fields of Science	Male Researchers (FTE)	Male researchers as % of total	Female Researchers (FTE)	Female researchers as % of total
Physical sciences	45	14.3%	12	5.1%
Earth and related environmental sciences	23	7.2%	12	5.2%
Biological sciences	0	0.0%	4	1.7%
Civil engineering	2	0.5%	0	0.0%
Electrical, electronic and information engineering	10	3.3%	5	1.9%
Health sciences	12	3.9%	49	20.9%
Agriculture, forestry and fisheries	39	12.4%	29	12.4%
Animal and dairy science	9	2.9%	0	0.0%
Veterinary science[2]	0	0.0%	1	0.4%
Agricultural biotechnology	140	44.5%	90	38.2%
Economics and business	33	10.3%	31	13.2%
Sociology	2	0.6%	2	0.8%
Total	315	100%	235	100%

Figure 18 below shows a gender breakdown within the different fields of science. Female researchers make up 80% of total medical and health researchers, while male researchers account for 73% of researchers in engineering and technology fields. Male researchers also dominate all other fields of science accounting for 70% in natural sciences; 61% of research in the agricultural science and 51% in social science. Outside of the medical and health fields, the highest participation by female researchers is in social sciences with females accounting for 49% of the total.

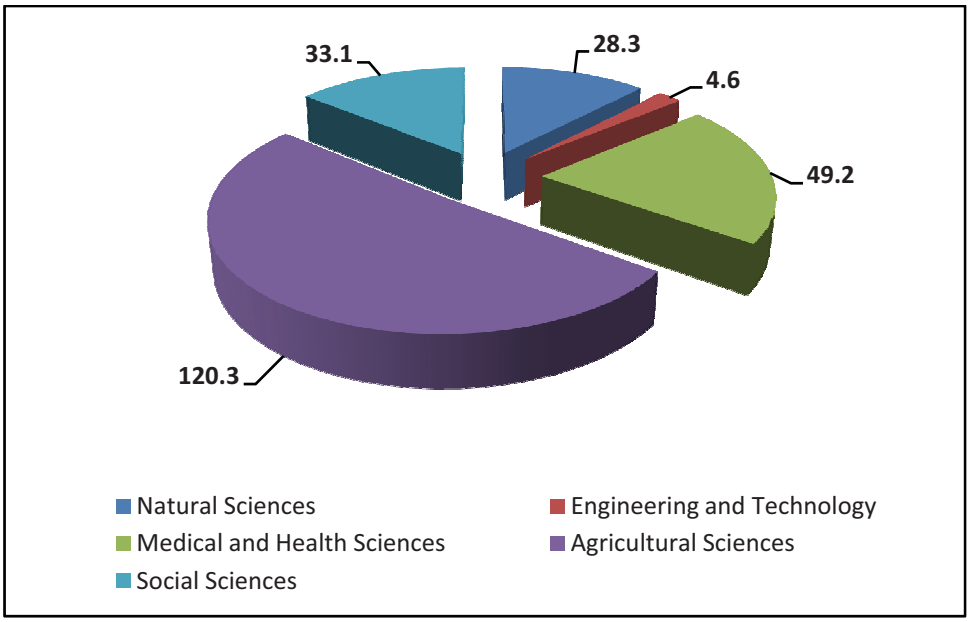
2 Excludes researchers employed in hospitals

Figure 18: Researchers classified by gender and field of science FTE, (2009)

Male Researchers



Female Researchers



Appendix 1

Methodology

The information given in this document relates to information supplied by 39 institutions in receipt of monies from the exchequer for the performance or support of scientific, technological and related activities. 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. Where practicable the programmes of the various institutions have been separated and categorised in accordance with international practice into relevant scientific activities i.e.:

- Research and development (R&D);
- Science and technology (S&T) technical services;
- S&T training, education and information;
- S&T technology transfer; and
- Other S&T activities.

Expenditure data for specific programmes refer to the 2008 outturn costs of programmes and to the expected costs in 2009. 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 Employment which funds, but does not operate or manage programmes. Only their own administrative costs are attributed to the funding institutions in such cases.

Apportionment problems arise in the third level sector, mainly from the monies distributed by the Higher Education Authority and the Department of Education and Science to the institutes of technology. In the case of the HEA, total funds are first apportioned between S&T faculties and non-S&T faculties in the colleges (expenditure on non-S&T faculties is not included in this document). 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 2009 Science Budget

The Science Budget records expenditure on science and technology in the government sector. This sector includes government departments, associated government agencies and government office. Table 1 below lists the 39 government departments, agencies and offices included in the 2008/2009 Science Budget.

Table 1: Government departments/agencies and offices funding S&T activities, 2009

Government Departments	Associated Agencies
Dept. of Agriculture, Fisheries and Food	Bord Iascaigh Mhara COFORD Marine Institute Teagasc
Dept. of Communications, Energy and Natural Resources	Central and Regional Fisheries Boards Sustainable Energy Ireland
Dept. of Community, Rural and Gaeltacht Affairs	Údarás na Gaeltachta
Dept. of Education and Science	Dublin Institute for Advanced Studies Higher Education Authority Irish Research Council for Humanities and Social Sciences Irish Research Council for Science, Engineering and Technology
Dept. of Enterprise, Trade and Employment	Enterprise Ireland FÁS Forfás IDA Ireland InterTradeIreland 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	Food Safety Authority Health Research Board
Dept. of Social and Family Affairs	
Dept. of the Taoiseach	National Economic and Social Council
Dept. of Transport	National Roads Authority
Offices: Central Bank/Central Statistics Office/Office of Public Works/Ordnance Survey Ireland State Laboratory	

Appendix 3

Definitions of R&D and S&T activities

For the purpose of this survey science and technology activities comprise the five categories below:

1. **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.
2. **Technical services:**
   - Specialised support services of a scientific or technical nature generally provided by centralised laboratories or facilities and can be of a routine or non-routine nature. Essentially they comprise the technical back-up, analytical, diagnostic and data collection/processing services.
3. **Training, education and information:**
   - Training and education: Education and training of third level or equivalent students in science and technology disciplines
   - Information: Provision of information via formalised scientific and technical information and documentation (STID) services includes all expenditure (manpower and materials) involved in acquiring, controlling or transmitting information to users with the involvement of staff whose primary function is in formalised STID services e.g. provision of S&T information, advice, liaison, specialist advice, information analysis, libraries, publications and documentation services, translations, technical seminars and conferences. Provision of information via non-formalised STID services includes expenditure on providing know how and expertise by members of staff who, while not specifically engaged in formalised STID services, provide specialist advice, liaison, consultancy or other general information services.
4. **Technology transfer:**
   - Activities which are directed solely or primarily towards the transfer and adoption of new technology, generally in enterprises. The horizontal transfer of technology, primarily from abroad, but also from colleges to enterprises is included here.
5. **Other S&T activities:**
   - Activities which cannot be conveniently grouped under the above headings can be included here e.g. grants to international organisations, policy planning units etc.

Other Definitions:

1.	Public funds	=	Exchequer + EU funds
2.	GBAORD	=	Government Budget Appropriations or Outlays on R&D
			(Public funds) + (funds for the Social Sciences and Humanities (HEA)

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
CSO	Central Statistics Office
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
FSAI	Food Safety Authority Ireland
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
HEA	Higher Education Authority
HERD	Higher Education Expenditure on R&D
HC	Head Count
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
OSI	Ordnance Survey Ireland
OST	Office of Science and Technology - Department of Enterprise, Trade and Employment
PGM&DB	Postgraduate Medical and Dental Board
RPII	Radiological Protection Institute of Ireland
SEI	Sustainable Energy Ireland
SFI	Science Foundation Ireland

Appendix 5

International tables

Table 2: International comparison of GOVERD as a percentage of GDP, 2004 and 2009*

Country	2004	Rank	2009	Rank
Chinese Taipei	0.57	1	0.48	1
Korea	0.34	3	0.40	2
Slovenia	0.28	9	0.36	3
Germany	0.34	3	0.35	4
France	0.37	2	0.34	5
Russian Federation	0.29	8	0.33	6
Singapore	0.24	17	0.32	7
Finland	0.33	5	0.30	8
Czech Republic	0.26	12	0.29	9
United States	0.31	6	0.29	9
China	0.28	9	0.29	9
Japan	0.30	7	0.27	12
Norway	0.25	16	0.25	13
Total OECD	0.27	11	0.25	13
EU-15	0.24	17	0.25	13
EU-27	0.24	17	0.24	16
EU-25	0.24	17	0.24	16
Israel	0.26	12	0.24	16
Hungary	0.26	12	0.23	19
Italy	0.20	22	0.23	19
Luxembourg	0.18	23	0.22	21
Netherlands	0.26	12	0.22	21
Spain	0.17	26	0.22	21
Poland	0.22	21	0.20	24
Argentina	0.17	26	0.20	24
Denmark	0.17	26	0.18	26
Romania	0.13	31	0.18	26
Canada	0.18	23	0.17	28
Sweden	0.11	34	0.17	28
United Kingdom	0.18	23	0.17	28
Belgium	0.14	30	0.16	31
Slovak Republic	0.16	29	0.16	31
Austria	0.12	32	0.13	33
Greece	0.11	34	0.12	34
Portugal	0.12	32	0.11	35
Ireland/GNP	**0.11**	**34**	**0.09**	**36**
Turkey	0.04	37	0.08	37

Source: OECD, Main Science and Technology Indicators, May 2009.

* Or latest available data

Table 3: Government sector: Female researchers as a percentage of total researchers (headcount) 2008 (or latest year available)

Country	2008*	Rank
Portugal	44.4%	1
Slovak Republic	42.3%	2
Poland	39.9%	3
Spain	36.7%	4
Turkey	36.7%	4
Greece	36.4%	6
Hungary	33.5%	7
Norway	33.4%	8
Italy	33.3%	9
Ireland	32.1%	10
Finland	31.5%	11
Denmark	29.7%	12
Czech Republic	28.3%	13
France	27.7%	14
Austria	25.3%	15
Germany	21.4%	16
Korea	14.9%	17
Japan	13.0%	18

Source: OECD, Main Science and Technology Indicators, May 2009.

*Or latest available data

Appendix 6 – Questionnaire

Expenditure ALLOCATED to Science & Technology and Research & Development in 2009

Agency Name:

Section 1: Research & Development and Science & Technology - Total In-House Expenditure (incl. government and non-government funding) (€'000)

	Total In-House Expenditure										Total Current Expenditure (€'000)		Total Capital Expenditure (€'000)		Gross Expenditure (Current + Capital) (€'000)	
	Research & Development (insert details in section 2 below) (€'000)		Technical Services (€'000)		Training, Education & Information (€'000)		Technology Transfer (€'000)		Other S&T Activities (€'000)							
	Definition		Definition		Definition		Definition		Definition							
	Current Expend.	Capital Expend.	Current Expend.	Capital Expend.	Current Expend.	Capital Expend	Current Expend.	Capital Expend.	Current Expend.	Capital Expend.						
Total Programme Expenditure (€'000)											0		0		0	
	Details ⬇															

Section 2: Research and Development - Detailed Expenditure (€'000)

	Irish government funded expenditure on R&D ONLY (performed in-house)			Non-Irish government funded expenditure on R&D ONLY (performed in-house)									
R&D programme name	Current expenditure (€'000)	Capital expenditure (€'000)	Total (€'000)	Irish industry (€'000)		Foreign industry (€'000)		Private individuals (€'000)		EU public funding (€'000)		Total (€'000)	
				Current expend.	Capital expend.	Current expend.	Capital expend.	Current expend.	Capital expend.	Current expend.	Capital expend.	Current expend.	Capital expend.
1			0									0	0
2			0									0	0
3			0									0	0
4			0									0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0

	Irish government funded expenditure on R&D ONLY (performed elsewhere)			Non-Irish government funded expenditure on R&D ONLY (performed elsewhere)									
R&D programme and performing organisation	Current expenditure (€'000)	Capital expenditure (€'000)	Total (€'000)	Irish industry (€'000)		Foreign industry (€'000)		Private individuals (€'000)		EU public funding (€'000)		Total (€'000)	
				Current expend.	Capital expend.	Current expend.	Capital expend.	Current expend.	Capital expend.	Current expend.	Capital expend.	Current expend.	Capital expend.
1			0									0	0
												0	0
2			0									0	0
												0	0
3			0									0	0
												0	0
4			0									0	0
												0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0

:

Section 3: Science and Technology funding RECEIVED from other government departments or other agencies

(Please note that this section is only applicable if S&T funding has been received from other government departments or other agencies)

Details of funding received from other government departments or other agencies:

Programme name	Name of government department or agency funding was received from	Amount of funding (€'000)

Section 4: Type of Research & Development Activity Undertaken In-house

Please indicate the percentage breakdown of total in-house R&D expenditure in terms of the following categories as defined below:

Basic Research	%
Applied Research	%
Experimental Development	%
	100%

Section 5: In-house Personnel Devoted to Research & Development Within your Organisation [Headcount and Research Time Use (%)]

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

Programme Name	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
													0	0	0
													0	0	0
															0
													0	0	0
													0	0	0
													0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix 7: Government Departments and Agencies' Programmes

Table of Contents

Department of Agriculture, Fisheries and Food

The Department of Agriculture, Fisheries and Food is a multi-functional organisation which provides a wide range of services directly and through specialist state agencies operating under its aegis. We have a broad customer base which includes the taxpayer, farmers, consumers, food processors and other commercial operators, those involved in fishing, forestry, bio energy, research, as well as diverse EU institutions, other State Bodies and special interest groups. Our mission is to lead the sustainable development of a competitive, innovative, consumer focussed agriculture, food, fishery and forestry sector and contribute to a vibrant rural and coastal economy and society.

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. State-sponsored bodies which come under the statutory responsibility of the Minister for Agriculture and Food include Teagasc (The Agriculture and Food Development Authority), the Marine Institute and An Bord Bia.

The main national aims are to improve quality and productivity and to encourage better market orientation in farming, through training, research and advice. These aims are reflected in the following areas:

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT		
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.	2,605	2,301
R&D-Related Veterinary and Meat Laboratory Activities Operation of a central veterinary research laboratory at White Cross, Backweston, Co. Kildare, regional veterinary research laboratories at Cork, Limerick, Sligo, Athlone and a testing laboratory in Waterford.	5,754	5,778
Institutional Food Research 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	16,250	12,614

research in priority areas. It monitors the progress of successful projects, payment of grant aid and evaluation of the programme.		
Agricultural Production Research 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.	**5,040**	**4,000**
Improvement of Livestock Improving the quality of livestock and livestock products through adoption of better breeding and selection practices. 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.	**923**	**1,118**
Genetic Resources in Plants and Animals Operation of an Advisory Committee on Genetic Resources for use in agriculture including making recommendations regarding the selection of research projects for the award of grant aid.	**258**	**362**
International Equine Institute Based in University of Limerick the Institute receives a grant payment from DAFF	**328**	**313**
Dairy Research Fund	**0**	**95**
TRAINING, EDUCATION AND INFORMATION	**831**	**539**
TECHNICAL SERVICES	**42,262**	**35,628**

Department of Agriculture, Fisheries & Food

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, marketing 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.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT **Marine Technical Section** 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. Examples of some of the projects carried out are as follows: ▪ Assessing alternative fishing methods that are energy efficient and non-deleterious to the environment. Harvesting practices that use the natural behavioural patterns of fish to attract/guide/direct fish towards fishing gear will be considered. ▪ Developing and testing gear modifications that improve fuel and operational efficiency of traditional fishing gears including the use of low drag materials, hydrodynamic trawl doors and conversion from bottom trawling to more energy efficient fishing methods. ▪ Combining the use of selective gears and improved onboard quality to develop environmental management systems, specifically for seine caught whitefish and live trawl caught Nephrops. ▪ Assessing the potential of on-board freezing techniques for non-quota brown squid and Nephrops on board Irish vessels. ▪ Improving the design and overall operational efficiency of acoustic deterrent devices used on static nets taking cognisance of new EU	360	464

regulations. ▪ Testing experimental pelagic trawls, designed to assist in the better utilisation of quotas for blue whiting, Atlanto-Scandian herring and capelin in third country or international waters. ▪ Continuing the BIM sponsored 'Tag and Release' programme for Albacore and Blue fin tuna in Irish waters. These projects are carried out in close collaboration with the Marine Institute, GMIT in Galway and AZTI from the Basque country in Spain. ▪ Developing alternative methods and systems for disposal of discarded fishing gear at the major fishery harbours including the provision of improved re-cycling facilities in collaboration with DCMNR.		
Inshore Fisheries Section 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 management and the further development of applied research programmes are funded through the NDP in support of the framework. Additional development projects will be undertaken with the catching and wholesale/distribution sector of industry and will particularly focus on enhancing value and the return to coastal communities. The work involves the development of agreed management plans for the key (brown crab, lobster, shrimp, scallop and whelk) inshore fisheries and will be supported by an NDP funded two-year applied research programme to complement the work undertaken by the section over the past 5 years.	**148**	**569**
Resource Development Section 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.	**200**	**368**
Supporting Measures for Sea Fisheries Development This programme provides grant aid to support a total investment of up to €33.8 million over a six year period to benefit fishermen, their families, vessel owners, producer organisations and other industry associated groups.	**5,302**	**3,150**
Planning and Development	**51**	**77**
Seafood Development Centre (lab.)	**100**	**0**

Department of Agriculture, Fisheries and Food

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.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT 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 ▪ wood energy advice ▪ advice on climate change	3,619	3,650

TECHNOLOGY TRANSFER Technology transfer is one of the core functions of COFORD. A variety of methods, media and technologies is used to disseminate information generated by the research programme, including publications (annual report, information notes, project reports, books, e-newsletters), events (seminars, conferences, workshops, demonstrations, exhibitions) and websites.	**676**	**250**

Department of Agriculture, Fisheries & Food

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:

- Monitoring, data collection and other technical services: e.g. in the areas of fish health, seafood safety, fisheries, oceanography, marine environment, seabed mapping and marine data management.
- Provision and formulation of scientific, technical and strategic policy advice: The Marine Institute provides advice to a range of national and international agencies and departments which supports both national and EU policy decisions across all marine sectors. This includes the formulation of EU Marine Science Policy & Programme Development
- Research – The Marine Institute's activities, in relation to marine research, fall into three main areas:
- 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.
- Research Funder: The Marine Institute administers, on behalf of the Department of Agriculture, Fisheries and Food, the Marine Research Sub-Programme of the National Development Plan 2007-2013.
- 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.
- Access to Research Infrastructure: The Marine Institute operates Ireland's two national Research Vessels. Both vessels are fully equipped with state-of-the-art scientific instrumentation, laboratories and IT equipment. Other research facilities include a renewable ocean energy test and demonstration site in Galway Bay and a range of specialist research equipment available under the National Equipment Pool.
- Sectoral Development: The Marine Institute provides a number of services related to the development of Ireland's vast marine resource. Specifically, the Irish Maritime Development Office (IMDO) is dedicated to the development and promotion of the shipping and maritime transport sector. In addition, the Institute liaises closely with national development agencies in order to maximise the economic potential of existing marine sectors (e.g. marine food) and emerging marine sectors (e.g. marine biotechnology, green technologies and renewable ocean energy).

	€'000 2008	€'000 2009
RESEARCH & DEVELOPMENT	**6914**	**6847**
Marine Institute R&D Activities The Marine Institute is also a significant research performer. Staff in five of the Institute's seven service areas (Marine Environment & Food Safety, Fisheries Science, Aquaculture & Catchment Management, Ocean Science, and Strategic Planning & Development) are actively involved in a significant level of research activity in a number of targeted research areas, which includes competing for and securing funds from both national and international (EU FP and InterRegIV) research funding. This research enables the provision of government services, including the provision of policy advice; supports existing economic activity; protects the marine environment and generates knowledge on which to base future economic activity. In addition to the Institute's direct participation in externally funded research projects, it also participates in externally funded marine research via in-kind contribution e.g. through the provision of research facilities/infrastructure for projects that are complementary to the Institute's core activities.		
EU Aqua and Esonim Projects	**215**	**0**
NDP 2000-2006 Marine RTDI Measure and NDP 2007-2013: Marine Research Sub-Programme The Marine Institute administers on a competitive basis the national marine research funding programmes, specifically: Marine Research Sub-Programme of the 2007-2013 National Development Plan; and Marine RTDI Measure of the 2000-2006 National Development Plan. Research funding is awarded on a competitive basis for public good '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 and Access to Infrastructure.	**7428**	**8517**
TRAINING, EDUCATION AND INFORMATION	**2868**	**1710**
TECHNICAL SERVICES	**17037**	**15492**
OTHER S&T ACTIVITIES	**2212**	**2061**

Department of Agriculture, Fisheries & Food

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 2009 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.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT	**45841**	**40628**
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 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.	**27269**	**21974**
TECHNICAL SERVICES	**0**	**400**
TECHNOLOGY TRANSFER Teagasc provides professional technology transfer functions for farmer clients at enterprise level dealing with dairying; cattle; tillage crops; horticulture; financial management; agri-tourism; farm modernization; environmental conservation/control of farm pollution, winter feed quality and overall farm management.	**56983**	**57733**
TRAINING, EDUCATION AND INFORMATION The education and training service of Teagasc ensures that the programmes are student centred, based on a platform of innovation and excellence and respond to the need for a competitive bio economy. Teagasc colleges are being upgraded to meet these challenges. Teagasc courses incorporate management practices and technologies on the home farm, supervised project work and discussion groups. Teagasc are the main provider of further education for school leavers in horticulture, agriculture, forestry and equine studies. Teagasc are currently developing a new business and technology dairy degree programme with University College Dublin and this course is planned to commence in September 2009.	**31587**	**28803**

Department of Communications, Energy and 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".

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT		
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.	209	100
Geological Survey Ireland The Geological Survey of Ireland (GSI) was established in 1845 and is currently a division of the Department of Communications, Energy and Natural Resources. 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.	2991	3238
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.	1851	351
Energy Planning Division This covers a range of Energy RTDDI, administration, capital initiatives and programmes and policy support and advice.	3659	3659
National Digital Research Centre (NDRC) On foot of the closure of Media Lab Europe (MLE), the Government, in April 2005, approved a competitive tendering competition for the operation of the NDRC. The Liberty Consortium which won the contract comprises of five of the leading third level institutes (TLI's) in Ireland, namely University College Dublin (UCD), Trinity College Dublin (TCD), Dublin City University (DCU), Dun Laoghaire Institute of Art, Design and Technology (IADT) and the National College of Art	322	3992

and Design (NCAD). Its objectives are translational digital research and research training (PhD level). The National Digital Research Centre was established to become a leading centre for translational research - translating research ideas from late research to commercial potential. The NDRC aims to collaborate with research bodies and commercial companies on joint-venture translational research projects in the development of innovative new digital products aiming to address social and commercial needs.		
TECHNICAL SERVICES **Petroleum Affairs Division** The purpose of the division is to maximise the benefits to the national economy from exploration for, and production of, indigenous oil and gas resources, while ensuring that activities are conducted safely and with due regard to their impact on the environment and other land/sea users. The technical section of this division provides the technical expertise necessary for the promotion, monitoring and controlling of petroleum exploration and development activities by private enterprise under licence to the department, specifically the creation, processing (where necessary), analysis and interpretation of geological, geophysical and engineering data supplied by licensees and the formulation of technical recommendations and advice.	**821**	**766**
GSI Services GSI Services is a series of externally-funded Public Contracts which enables GSI to work on a cost-shared basis with external partners. In 2008 there were 14 active externally-funded projects (contracts) in operation with the European Commission, local authorities, and State Agencies (EPA, OPW). The projects are operated on a Vote neutral basis i.e. expenditures are balanced by an equal amount of receipts. In the period 2009-2011 it is anticipated that a number of projects will conclude and that a number of new projects will commence.	**400**	**400**
TRAINING, EDUCATION AND INFORMATION	**20**	**20**

Department of Communications, Energy and Natural Resources

Central and Regional Fisheries Boards

The Central and Regional Fisheries Boards were established in October 1980 under the Fisheries Act, 1980. The Boards act under the aegis of the Minister for Communications, Energy and Natural Resources. Their main functions are the protection, conservation, management and development of Ireland's inland fisheries and sea angling resources, and to this end they 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. Seven regional fisheries boards, which were established simultaneously with the central fisheries board, are responsible for fisheries conservation and development in their particular regions. The Fisheries Boards are financed by a grant-in-aid under the fisheries vote, supplemented in the case of the regional boards by fishery rates, licenses, and anglers' registration fees.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT	**5775**	**4490**
Programme Monitoring This 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 sportsfish 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.		

TECHNICAL SERVICES	**281**	**299**
EDUCATION & TRAINING	**51**	**7**

Department of Communications, Energy and Natural Resources

Sustainable Energy Ireland

Sustainable Energy Ireland is Ireland's national energy authority. The authority, which was established under the Sustainable Energy Act 2002, has a mission to promote and assist the development of sustainable energy. 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 renewable 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. SEI has also being identified as a key organisation in delivering the Irish Energy Research Council's Energy Research strategy. Sustainable Energy Ireland manages programmes aimed at:

- assisting deployment of superior energy technologies in each sector as required;
- raising awareness and providing information, advice and publicity on best practice;
- stimulating research, development and demonstration (RD&D);
- stimulating preparation of necessary standards and codes;
- publishing statistics and projections on sustainable energy and achievement of targets.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT 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. SEI'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.	**19421**	**25891**

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. SEI'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. SEI'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. SEI 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% 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.		
TECHNICAL SERVICES	**1028**	**1750**
TECHNOLOGY TRANSFER	**22454**	**12345**
OTHER S&T ACTIVITIES	**0**	**8518**

Department of Communications, Energy and Natural Resources

Ordnance Survey Ireland

Ordnance Survey Ireland (OSI) was set up as a statutory State agency under its own Act on 4th March 2002, under the responsibility of the Minister for Finance. OSI is headed by a director who is responsible for the overall management of the organisation. Ordnance Survey Ireland is the national mapping agency. Its main function is to provide the definitive topographic mapping databases of the country. It therefore creates and maintains a number of mapping datasets which underpin many of the administrative, legal, infrastructural, security and business functions of the State. OSI also provides topographic information for many organisations in the private sector. Development at OSI is geared towards the future needs of the information society.

	€'000 2008	€'000 2009
TECHNICAL SERVICES The programme includes revision of rural and urban databases, and creation from aerial photography of a new rural large-scale database. Data is provided in both digital and paper form. Currently urban data is updated on an annual cycle.	**29065**	**29795**

Department of Community, Rural and Gaeltacht Affairs

The Department of Community, Rural and Gaeltacht Affairs was established by Government in 2002 and has 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 a staffing complement of c. 270, the Department is currently headquartered in Dublin, with its other main offices located at Na Forbacha, Co. Galway, and Tubbercurry, Co. Sligo.

	€'000 2008	€'000 2009
RESEARCH & DEVELOPMENT	**52**	**0**
Western Development Commission - Moving West: An Exploratory Study of the Social and Economic Effects of the Relocation of Public Sector Offices to Towns in the Western Region		

Department of Community, Rural and Gaeltacht Affairs

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;
- 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 generous 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.
Údarás na Gaeltachta is financed by grant-in-aid, rents, repayable advances and other income.

RESEARCH AND DEVELOPMENT	€'000 2008	€'000 2009
Research & Development and Feasibility Study Grants Grants of up to 60% subject to a maximum of €126,973 for any one project are available to assist R&D in industry. 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. Feasibility Study Grants enable groups, organisations, businesses, individuals and firms to seek out and evaluate prospective new product ventures. A significant portion of costs directly related to the feasibility study may be covered. Examples of eligible costs are salaries and wages of the company's personnel, cost of consultants, related travel and subsistence and any other additional overheads incurred directly as a result of the Feasibility Study.	6080	7000

Department of Education and Science

The Department of Education and Science was established under the Ministers and Secretaries Act 1924 and is responsible for the administration of public education i.e. first level, second level and third level. Under the new National Development Plan 2007-2013 – Transforming Ireland, the Department will receive exchequer funding for the Government's Strategy for Science, Technology and Innovation (SSTI). The SSTI aims to develop Ireland's capacity for world class research, promote our international standing as a centre of innovation and under-pin our future competitive strength as a knowledge-based economy. The National Development Plan will provide the resources for the delivery on the education elements of the SSTI.

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 will be allocated by the Higher Education Authority (HEA) for research in humanities, social sciences, and science and technology. An allocation for the capital component of the Programme for Research in Third Level Institutions (PRTLI) and the capital element of the Research Technological Development and Innovation (RTDI) is included in the amount made available to the Higher Education Authority. The HEA has been asked to develop proposals and mechanisms for expenditure of this research and development provision on the basis of making funding available to Universities and Institutes of Technology through a competitive process. The Department also funds grants and scholarships to enable students to pursue S&T courses in third level colleges and a range of R&D activities. Expenditure and programmes for the Higher Education Authority and the Dublin Institute for Advanced Studies are listed separately.

Under the NDP/Community Support Framework for 2007-2013, EU funding will be delivered through one National Human Capital Investment Operational Programme and two Regional Operational Programmes, one each for the Border/Midlands Western and Southern & Eastern region part-funded by the European Regional Development Fund and managed by the Regional Assemblies. The education related elements of the regional operational programmes will support R&D activities in the higher education sector.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT		
Direct research & department committee support	**181**	**230**
The Department will directly support a number of educational research projects through its research and development committee.		
EU projects supporting R&D	**1504**	**1300**
Support is being provided for certain projects jointly with the EU. In 2009 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		
St. Patrick's College Support for research activities in the field of education in St. Patrick's College, Drumcondra.	**1310**	**1310**
Irish contribution to UNESCO, the International Institute for Education Planning, and the International Centre for Registration of Serials.	**582**	**582**
EDUCATION AND TRAINING		
Third level grants: Provision of maintenance grants for students under the Higher Education Grants scheme, the VEC Scholarship Scheme and the Third Level Maintenance Grants Scheme for Trainees to enable them pursue S&T related courses in third level colleges, institutions, and Institutes of Technology.	**84523**	**90791**
Third Level Scholarships Provision of Third Level Scholarships enables students to pursue S&T courses in third level colleges and institutions.	**656**	**690**
ICTs Programme for Schools The schools ICT Programme aims to ensure that pupils in first and second level schools have the opportunity to achieve computer literacy and to equip themselves for participation in the information society. It includes a comprehensive teacher-training programme in ICTs.	**12032**	**26320**
Science and Technological Education (Investment) Fund The passing of the Scientific and Technological Education (Investment) Fund Bill 1997 by both Houses of the Oireachtas resulted in the establishment of the Fund which is used to develop technology education at all levels ranging from primary schools to advanced research.	**28814**	**8416**
OTHER S&T ACTIVITIES		
College of Europe Scholarships are also paid to Irish students to attend the College of Europe, Bruges.	**36**	**37**
European University Contributions to the budget of the Institute (Italy) and support of Irish students to pursue research projects.	**256**	**256**

Department of Education and Science

Dublin Institute for Advanced Studies

The Dublin Institute for Advanced Studies is a statutory corporation established in 1940 under the Institute of 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 advanced students in methods of original research.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT 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.	**924**	**897**
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. Major areas of research include seismology, electromagnetic imaging and the Earth's gravity field. The section maintains the Irish Seismic Network. The section is the lead institution in an initiative to form the Irish Geoscience Graduate Programme. In the astronomy/astrophysics section the main areas of research are active galactic nuclei, advanced evolution of massive stars, computational astrophysics, data mining, evolution of extragalactic systems, high-energy astrophysics and star formation. 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. DIAS supplied the long wavelength filters for the imager and beam-splitters for the immediate resolutions spectrograph. The focus in 2009 will shift from hardware to software and two software engineers will be taken on to work on the project. The Institute is a	**1,870**	**2,221**

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.		
TRAINING, EDUCATION AND INFORMATION	**1733**	**173**
TECHNOLOGY TRANSFER	**32**	**32**
TECHNICAL SERVICES	**767**	**767**

Department of Education and Science

Higher Education Authority

The Higher Education Authority (HEA) which is under the aegis of the Minister for Education and Science, is a corporate body with perpetual succession, established in May 1072 under the provisions of the Higher Education Authority Act, 1071. 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 Science out of a total vote for third level and further education. Besides the exchequer grant (via the HEA), colleges and other institutions receive non-exchequer monies, i.e. non-exchequer fees, research grants and other income.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT	**54170**	**84908**
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.		
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.	**8135**	**6000**
HEAnet HEAnet is Ireland's National Education and Research Network, providing high quality	**10235**	**11137**

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. **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, peer-reviewed research publications across a range of disciplines.	**4275**	**4000**
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. €58 million was allocated for the Scheme in 2008.	**54330**	**3670**
Institutes of Technology		
Strategic Innovation Fund		
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.	**225894**	**230959**

Department of Education & Science

Irish Research Council for the Humanities and Social Sciences

The Research Council for the Humanities and Social Sciences (IRCHSS) was established in 2000 by the Minister for Education and Science in 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.

The research council is engaged in the strategic exchange of operational expertise and best practice through its membership of EU ERA-NET consortia for European research councils in the humanities and social sciences. The IRCHSS is the National Contact Point for the Humanities and Social Sciences Framework Programme 7 (FP7).

	€'000 2008	€'000 2009
RESEARCH & DEVELOPMENT	12500	14400

Department of Education and Science

Irish Research Council for Science, Engineering and Technology

The Irish Research Council for Science, Engineering and Technology was established in June 2001 by the Minister for Education and Science. 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. IRCSET is an independent and autonomous body established under the aegis of the Minister for Education and Science. The Embark Initiative launched its first programme, the basic research grant scheme, jointly with Enterprise Ireland in December 2001. This was followed by new programmes of assistance, the postgraduate research scholarship awards and the postdoctoral fellowship scheme. The council continues to develop its portfolio of support schemes.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT 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	**24416**	**25100**

the host location. IRCSET offers two types of fellowships: 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 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 SchemeIn 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 EMPLOYMENT

Office of Science, Technology and Innovation

The Department has a wide economic development remit summarised in its mission statement: -

We will work for Government and the people to equitably grow Ireland's competitiveness and quality employment. Within the Science, Technology and Innovation pillar of the Department, a key goal of the Department is:

- We will prioritise investment in science, technology and innovation and the development of the knowledge society

The Office of Science, Technology and Innovation is the part of the Department of Enterprise, Trade and Employment which works to deliver this goal through the formulation of National Science, Technology and Innovation Policy, and by driving the implementation of the Strategy for Science, Technology and Innovation through the enterprise development agencies of the Department. It also plays a vital role in ensuring a co-ordinated approach to the delivery of wider Science, Technology and Innovation policy across 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 in Ireland. The State-sponsored bodies through which the Office of Science, Technology and Innovation drives the Strategy for Science, Technology and Innovation are:

Enterprise Ireland (EI), Science Foundation Ireland (SFI), IDA Ireland, Forfás. Shannon Development, The Patents Office. The Department also provides an annual support for core enterprise focussed activities within the Tyndall National Institute, Cork.

The Department's activities are financed through a general vote of the Oireachtas. 18 staff are currently employed (excluding vacant positions) on science, technology and innovation (STI) activities at the Office of Science, Technology and Innovation (OSTI). The OSTI forms part of the Science, Technology and Intellectual Property Division of the Department. 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 listed above.

In addition, the OSTI is responsible for the funding of, and is represented on, the policy formulation committees of the following five Inter-Governmental S&T Organisations:

- European Space Agency (ESA)
- European Molecular Biology Conference (EMBC)
- Co-operation in Science and Technology Programmes (COST)
- EUREKA
- European Molecular Biology Laboratory (EMBL)

	€'000 2008	€'000 2009
OTHER S&T ACTIVITIES		
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.	13556	14500
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.	164	177
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.	35	36
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.	964	1066
Bioethics Council	437	365

Department of Enterprise, Trade and Employment

Enterprise Ireland

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT		
RTI Competitive Grant Scheme Enterprise Ireland (EI) manages the RTI Scheme on behalf of the Office of Science & Technology. It funds in-company R&D projects on product and process development. The Scheme is available to client companies of EI, IDA Ireland and Udaras na Gaeltachta.	**17952**	**18297**
R&D Initiatives (R&D Capability) EI provides assistance for significant investment in R&D facilities which arise as part of a company's strategic development.	**30092**	**24352**
Innovation Partnerships (under RTDI Collaboration) These are aimed at harnessing the strengths of the third level sector to work in partnership with companies on specific R&D projects.	**7735**	**8345**
Applied Research Enhancements (under RTDI Collaboration) EI 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.	**12971**	**12796**
Industry Led Networks (under RTDI Collaboration) 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 EI works to create real collaboration between companies and the researchers to ensure the transfer of technology.	**1536**	**4109**
Basic Research Grants (RTDI capital expenditure) Funding represents EI's expiring commitments (now managed by SFI and IRCSET).	**211**	**0**
International Collaboration (by colleges) Supports academic researchers to engage in international collaborations and to access international best practice (in terms of research and facilities).	**1756**	**2421**

TECHNOLOGY TRANSFER		
Competency Centres (under RTDI Collaboration) EI supports the establishment and maintenance of centres aimed at developing close interactions with companies with the intention of transferring knowledge and skills about technologies of direct relevance to their business.	**2860**	**10629**
Commercialisation Fund (under RTDI Collaboration) 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 involve, Proof of Concept, Commercialisation and Commercialisation Plus. Particular emphasis is being given to the final stages of support to ensure that transfer actually takes place to the benefit of the receiving company.	**33015**	**30699**
Innovation Vouchers A key aspect of the transfer of knowledge from the research system to the productive sector is the maximising of scale.	**1401**	**2228**
Technology Transfer Strengthening This area supports a network of dedicated staff placed in the commercialisation function within universities and working directly in conjunction with them to ensure that best use is made of research outputs with commercial potential.	**3087**	**3990**
Incubator (RTDI Infrastructure) Through its incubation construction programme, EI invests in on-campus space for start-up companies, including specialised biotech facilities (Wet Labs).	**1336**	**3256**
IPR Fund This area provides support to 3rd level institutions and industrial concerns to assist with the protection and management of patents. Funding is provided for stages of a patent programme up to full specification. In the academic context, it is part of a coherent package of supports (along with the Commercialisation Fund) to ensure the best possible level of technology transfer from research. In the industrial context, funding is given towards the cost of patent protection.	**1437**	**1843**
TRAINING, EDUCATION AND INFORMATION	**2457**	**2581**

Innovation Management: EI facilitates training for companies on R&D techniques, with courses across Ireland that range from introductory through to more advanced targeted tuition. **OTHER S&T ACTIVITIES** Programme Management This area supports a central resource in EI to manage and facilitate the transfer of technology from the research environment into business and also covers the costs associated with a significantly enhanced R&D promotional campaign.	**9156**	**7962**

Department of Enterprise, Trade and Employment

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) and providing advice and counselling for those of our citizens who wish to emigrate. FÁS also provides advice and guidance on and training opportunities for immigrants, whether asylum seekers or economic migrants.

	€'000 2008	€'000 2009
RESEARCH & DEVELOPMENT 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.	943	954
TRAINING, EDUCATION & INFORMATION During 2008, FÁS catered for a total of 48,287 people on its training programmes (including apprentices) and on schemes catered for 31,828 people.	92033	106989
OTHER S&T ACTIVITIES The Overseas Graduate Programme (OGP) previously placed newly qualified Irish graduates with an Honours Degree (or higher) in business, engineering or science related fields into full-time employment with companies abroad particularly in China, Japan. The initial arrangement is for two years but may be extended by mutual agreement. In 2008, 19 graduates were offered positions in Japan (17) and China (2). However, 2 graduates going to Japan subsequently withdrew. In 2009*, 4 graduates were offered positions in Japan (2) and England (2). * The FAS Executive Board has recently approved a restructured OGP aimed at "unemployed graduates" rather than "newly qualified Irish graduates" and if approved by the FAS Board, the new OGP will see placement figures of 20 graduates per annum over a 3-year period (2010 – 2012) in China and Japan respectively.	127	241

Department of Enterprise, Trade and Employment

Forfás

Forfás is Ireland's national policy advisory body for enterprise and science. Forfás was established in 1994 as an agency of the Department of Enterprise, Trade and Employment.

Forfás' policy functions are to:

- Provide independent and rigorous research, advice and support in the areas of enterprise and science policy. This work informs the Department of Enterprise, Trade and Employment and wider government in its responses to the fast-changing needs of the global business environment;
- Ensure the coherence of policies across the development agencies supporting enterprise;
- Evaluate enterprise policy interventions;
- Provide research and administrative support to independent advisory groups which currently include the:

    - Advisory Council for Science, Technology and Innovation (ASC)
    - Expert Group on Future Skills Needs (EGFSN)
    - Management Development Council (MDC)
    - National Competitiveness Council (NCC).

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT		
Science,Technology and Human Capital Division	**136**	**134**
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. The activities undertaken by the S&T Division cover six main areas:		
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.		
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. The CSA works in close partnership with the IDC, and with the Advisory Science Council. The office also interacts with other bodies and agencies: Government departments, Forfás (which provides administrative and research support for the office), Enterprise Ireland, Science Foundation Ireland, The Higher Education Authority and the research councils IRCSET, IRCHSS, as well as with companies and groupings within the business sector, and with individual research and educational institutions.	**518**	**354**
TRAINING, EDUCATION AND INFORMATION	**5204**	**5285**
OTHER SCIENCE & TECHNOLOGY ACTIVITIES	**1230**	**6625**

Department of Enterprise, Trade and Employment

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. (The attraction of overseas investment to the Shannon Free Zone and the Gaeltacht areas are the responsibility of Shannon Development and Údarás na Gaeltachta respectively). With a staff of 280 people and headquarters in Dublin, IDA Ireland has 15 overseas offices as well as a director and staff in each region in Ireland.

Its activities include the international and national promotion of Ireland as a location for overseas investment and the provision of financial incentives (including grant-aid) for the attraction of new overseas investment into Ireland, as well as the expansion of its existing client base of almost 1,000 companies. As part of its brief to develop overseas companies already in Ireland, IDA Ireland focuses on encouraging these companies to locate additional or higher order functions in Ireland, e.g. a research and development unit.

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.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT 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 56 companies undertook to invest in RD&I activities in their Irish operations during 2008 and IDA Ireland committed almost €95 million in grant assistance to these projects.	**47258**	**60000**

Department of Enterprise, Trade and Employment

InterTradeIreland

InterTradeIreland 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 InterTradeIreland 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.

	€'000 2008	€'000 2009
RESEARCH & DEVELOPMENT INNOVA supports cross-border R&D collaboration between companies, with the support of public research organisations where required. INNOVA assists companies to create new products, processes or services or significantly improve existing ones.	47	471
TECHNOLOGY TRANSFER FUSION is an all-island programme which enables knowledge and technology transfer between business and academia to support innovation and increased capability. FUSION develops and facilitates three-way partnerships and projects between companies, third-level research institutions with specialist expertise and high-calibre science and technology graduates.	2146	2160
TRAINING, EDUCATION & INFORMATION WITS RE-ENTER is a pilot project initiated by WITS (Women in Technology and Science) and supported by InterTradeIreland. RE-ENTER is focused on supporting women in Northern Ireland and the Republic of Ireland with science, engineering and technology (SET) qualifications to return to the SET workplace after a period of 1 year or more out of the workforce. The InterTradeIreland All-Island Innovation Programme aims to promote and encourage innovation across the island of Ireland. This programme is being delivered jointly by InterTradeIreland, Queens University Belfast, NUI Galway and University College Dublin. The Programme brings international expertise in innovation to the island of Ireland. Best international practice in an area of innovation is shared with business leaders, students, academics, knowledge transfer professionals and policy makers via innovation lectures, seminars and master classes.	83	103

Department of Enterprise, Trade and Employment

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.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPNMENT SFI Principal Investigator (PI) Programme The 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) The SFI Principal Investigator Career Advancement (PICA) Programme supports outstanding researchers returning to active research after a prolonged absence. SFI/DELL Scholarship 2008 – Young Women in Engineering 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 The SFI North-South Research Partnership Supplement award facilitates collaborations between SFI funded researchers and researchers in Higher Education Institutions (HEIs) in Northern Ireland. US-Ireland R&D Partnership Programme The US-Ireland R&D Partnership 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	**160138**	**165441**

distinguished international reputations.

SFI Industry Research Partnership Supplements
The SFI Industry Research Partnership Supplements award facilitates collaborations between SFI funded researchers and industry.
SFI International Research Partnership Supplements (IRP)
IRP supplement facilitates collaborations between SFI funded researchers and international scientists.

SFI Workshops and Conferences Grants
The SFI Conference & Workshops 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
NanoSci-E+ is a body created specifically for the implementation of collaborative 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
The 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
The SFI Research Frontiers Programme aims to support the very best research in a broad range of disciplines in Science, Mathematics and Engineering.

SFI E.T.S. Walton Visitor Awards
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
SFI UREKA Site 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)

SFI PIYRA Awards recognize 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).		

Department of Enterprise, Trade and Employment

Shannon Development

Shannon Free Airport Development Company was incorporated under the Companies Acts in 1959. 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 Employment, and for Arts, Sport and Tourism, 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 Employment and Arts, Sport and Tourism. Shannon Development's vision for the Shannon Region is that the people of the region, and its investors and visitors, will live, learn, work and play, in the most forward thinking and exciting places in the world. 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:

- Ensure that the more developed areas of the Shannon Region are enhanced to realise their full development.
- Ensure that the potential of the less developed areas of the Shannon Region is realised.
- Create demand for Shannon International Airport.
- Delivering on a new vision for tourism in the Shannon Region.

The key responsibilities of the company include the development and promotion of Shannon Free Zone; the promotion and development of tourism in the Region; the development of industrial and tourism infrastructure; managing the company's property portfolio and the development of strategic projects that have a significant economic impact throughout the Region.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT		
Product and process R&D	**1369**	**1480**
Grants of up to 35% of eligible expenditure are available to firms in the Mid-West region carrying out product and process development projects. All R&D grants paid by Shannon Development are funded from the Exchequer		
Feasibility grants	**0**	**0**
Grants of up to 50% of eligible expenditure are provided for feasibility studies to enable individuals, groups and firms to seek out and evaluate prospective new		

product ventures and market opportunities. Grants paid to industries located on the Shannon Free Zone are funded from Shannon Development's Exchequer Allocation. **TRAINING, EDUCATION AND INFORMATION** Specialised training is given to assist in the starting-up of new high tech firms.	**41**	**11**
OTHER S&T ACTIVITIES	**5**	**31**

Department of the Environment, Heritage and 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".

The Department also funds the Radiological Protection Institute of Ireland, the Environmental Protection Agency and Met Éireann.

	€'000 2008	€'000 2009
TECHNICAL SERVICES		
National parks service/survey inventory monitoring research	**9017**	**5770**
The research branch provides the necessary scientific expertise and advice for the implementation of Ireland's nature conservation policies including those arising under the Wildlife Act, 1976 and various directives and regulations relating to nature conservation.		

Department of the Environment, Heritage and Local Government

The 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 Environmental EPA is a statutory body responsible for protecting the environment in Ireland. It regulates polices and activities that might otherwise cause pollution. The EPA ensures there is solid information on environmental trends so that necessary actions are taken. Our priorities are protecting the Irish environment and ensuring that development is sustainable.

Since 1994, the Environmental Protection Agency (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 individuals. During the National Development Plan (NDP) 2000-2006, the EPA provided €39m to support environmental research. This was administered through the Environmental Research, Technological Development and Innovation (ERTDI) Programme.

The EPA research programme for the period 2007-2013 is entitled Science, Technology, Research and Innovation for the Environment (STRIVE) and is based on the following:

- the Environmental Research Sub-programmes of the National Development Plan 2007-2013;
- the Government's Strategy for Science, Technology and Innovation launched in 2006;
- the EPA's most recent assessments of Ireland's environment;
- the EPA's strategy 2020 Vision – Protecting and Improving Ireland's Environment;
- a series of workshops organised by the Agency, mainly during 2006, involving environmental policymakers, managers and researchers;
- the experience gained in previous EPA research programmes.

It also takes account of developments at EU level in respect of current environment and research programmes and of the wider international context. 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.

The Environmental Research Technological Development and Innovation (ERTDI) Programme 2000-2006 prioritised research on climate change and greenhouse gas emissions. New projects will be funded under the Science, Technology, Research and Innovation for the Environment (STRIVE) Programme 2007-2013. Climate change research allows for development of new expertise and research capacity e.g. in relation to greenhouse gas emission associated with

agriculture and land use e.g. grasslands, peatland & arable land, development of climate model capacity and development of impacts analysis tools.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT	**10111**	**8640**
The Environmental Research Technological Development and Innovation (ERTDI) programme and Science, Technology, Research and Innovation for the Environment (STRIVE) programme		
Climate Change Research Programme	**1560**	**5000**
TECHNICAL SERVICES	**14175**	**16000**
TRAINING, EDUCATION AND INFORMATION	**2875**	**3350**

Department of the Environment, Heritage and Local Government

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;
- Co-operation with the meteorological services of other countries and the representation of Ireland at meetings concerned with international co-operation in meteorology.

Met Éireann is funded directly by the Department of the Environment, Heritage & Local Government but a significant portion of the expenditure is recovered by the department in the form of route charges payable by the airlines for meteorological services to civil aviation and by means of fee for information and advice supplied to commercial and other interests on a repayment basis. 222 staff are employed in the service on a full and part time-time basis.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT 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.	443	411

A community climate change consortium for Ireland (C4I) has been established with a regional climate analysis, modelling and prediction centre (RCAMPC) based in Met Éireann HQ. This C4I project ended in Dec 2007 Met Éireann will continue to contribute to the continuing work in the area of Climate Change through by contributing to the STRIVE and EC Earth Projects in 2009. Some limited development is carried out in the area of Forecaster Workstation and Automatic Weather Observations.		
TECHNICAL SERVICES Included here are the observers plus technical teams who provide the infrastructure and maintenance of automatic weather stations and onward transmission of this data. These include individuals who operate and maintain the computers/platforms on which the climatological database and the numerical weather prediction, wave and surge models are run. The modellers who adapt the numerical prediction weather models to the Irish situation.	**8207**	**7678**
TECHNOLOGY TRANSFER Included here is the adaptation of computers and instruments to our automatic weather collection and forecasting needs.	**140**	**130**
EDUCATION, TRAINING AND INFORMATION Meteorological information is provided, on a routine basis to the media, and the general public and for national shipping, aviation and legal commitments. Training is provided within the service in several areas. In 2004, Met Éireann and UCD agreed to co-fund the creation of a Chair of Meteorology in UCD. Met Éireann continues to utilise this course as part of the Induction training programme for Meteorologists and upskilling/developmental training for other grades.	**9821**	**9133**
OTHER S&T ACTIVITIES Ireland, through Met Éireann, is a member of a number of international organisations which either concern themselves with the co-ordination and standardisation of meteorological activities on a global basis, or comprise co-operative ventures on the part of a number of countries, to make available facilities which would be difficult or impossible for an individual country to provide on its own. These include the WMO, EUMETSTAT and ECMWF. Also included here is the administration budget of Met Éireann.	**3925**	**4175**

Department of the Environment, Heritage and Local Government

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 from an emergency arising from a nuclear accident;
- to provide a dosimeter service and to promote knowledge, proficiency and research in nuclear science and technology.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT		
Monitoring of environmental radiation	**407**	**298**
This programme monitors contamination of the aquatic and terrestrial environment by radioactivity from man-made sources. It also carries out other related research, and provides export certification service to Irish industry.		
Radon studies and information service	**473**	**281**
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.		
TECHNICAL SERVICES	**1734**	**1457**
Radiation protection in medicine and industry		
The programme controls, by licence, the use of ionising radiation in medicine, industry, research and education: prepares regulations and codes for the safe use of ionising radiation and provides personnel dosimetry and instrument calibration		

services. Emergency planning The RPII has a key role to play in the national emergency plan for response to any threat of radiation exposure in Ireland as a result of an accidental release of radioactivity into the environment from a nuclear accident. **TRAINING, EDUCATION AND INFORMATION**	**1956**	**1809**

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. It is a not for profit organisation and holds charitable status.

ESRI research has been a vital constituent in the national debate on economic and social issues over the past 40 years. 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.

	€'000 2008	€'000 2009
RESEARCH & DEVELOPMENT During 2008 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. Income from commissioned research was €4,064,000 in 2008 and is estimated at €4,088,000 for 2009. Income from membership fees amounted to €109,000 in 2008 and estimated at €75,000 for 2009. In 2008 work continued on the National Longitudinal Study of Children in Ireland on behalf of the Office of the Minister for Children and the Department of Social and Family Affairs.	**7647**	**7842**
TECHNICAL SERVICES IN 2008 work continued on the HIPE and NPRS systems for the Department of Health and Children producing a variety of reports on Hospital discharges and Births in Ireland.	**7661**	**6806**

TRAINING, EDUCATION AND INFORMATION	638	610
The ESRI library, which is open to the public, is a research library developed to support the research effort of the institute. The library is particularly strong in the major national and international journals and periodicals covering the main research disciplines in the institute. The institute devotes considerable effort to publishing the results of its research in books, periodicals and journals.		

Department of Health and Children

The Department of Health 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.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT		
National Cancer Registry Board	**3037**	**3367**
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.		
Health Promotion Unit:	**800**	**179**
A policy-formulation function within the Department of Health and Children concerned with strategic planning, priority setting, research and evaluation and the development of a multi-sectoral approach to health issues at national and local level.		
an executive function concerned with the development and implementation of national health promotion campaigns independently or in conjunction with statutory or non statutory agencies.		
OTHER S&T ACTIVITIES	**1483**	**988**

Department of Health and Children

Food Safety Authority of Ireland

GM food tests

The FSAI is the competent authority in Ireland for GM food and as such must ensure that only authorised GM ingredients are on the market and that they are labelled appropriately.

Tests on irradiated food

The FSAI is the competent authority for irradiated food in Ireland and compiles results each year from analysis of a range of foods carried out by the public analyst laboratories. In the EU a certain number of foods may be irradiated in authorised facilities but irradiated foods must be labelled.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT	336	207
TRAINING, EDUCATION AND INFORMATION	138	132

Department of Health and Children

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 aim is to improve people's health, build health research capacity and make a significant contribution to Ireland's knowledge economy.

The HRB's latest Corporate Strategy clearly outlines how we hope to achieve this working in partnership with other organisations.

The HRB's strategic objectives are to:

- Shape the national agenda for research in health and personal social services
- Support research and health information systems linked to national health priorities, in order to improve people's health and the effectiveness of the health system
- Build capacity for world-class health research in Ireland
- Advance the contribution that health research makes to a sustainable knowledge economy
- Increase awareness and understanding of both the impact and the value of health research and information
- Establish Ireland as a significant contributor to international policy on health research.

	€'000 2008	€'000 2009
RESEARCH & DEVELOPMENT		
The Alcohol and Drug Research Unit is a multi-disciplinary team of researchers and information specialists who provide objective, reliable and comparable information on the drug situation, its consequences and responses in Ireland. The Unit maintains two national drug-related surveillance systems and is the Irish national focal point for the European Monitoring Centre for Drugs and Drug Addiction (EMCDDS). The Unit also manages the National Documentation Centre on Drug Use. Through its activities, the Unit aims to inform policy and practice in relation to drug use.	**625**	**556**
The Disability Databases Unit manages two national health information systems for people with disabilities. The National Intellectual Disability Database and the National Physical and Sensory Disability Database. The disability databases provide a comprehensive and accurate information base for decision making in relation to the planning of specialised health and personal social services for people with intellectual, physical or sensory disabilities.	**161**	**0**
The Mental Health Research Unit carries out national and international research, information gathering and the dissemination of research outcomes on mental health	**324**	**352**

and mental illness in Ireland. The results of this research inform national policy, health service management, clinical practice and international academic research. The Unit manages and reports on the National Psychiatric In-Patient Reporting System and is developing COMAR – a system which will collect information in community psychiatric services. Both information systems will inform on policy and planning for mental health services nationally and regionally.		
The Child Health Epidemiology Unit is involved in epidemiological research, mainly in the field of pregnancy and child health. The main focus of the current research programme of the Unit is on the aetiology and primary prevention of neural tube defects and other congenital malformations. The Unit is also developing a research programme into child health inequalities. This will provide accurate evidence for policy makers to make informed decisions on how to address childhood health inequalities.	**515**	**620**
The Research Infrastructure and Special Initiatives Unit has responsibility for developing the infrastructure to support health research in Ireland and for managing special initiatives.	**506**	**572**
The Research Management Unit has responsibility for funding projects in health science, population health and health services research, and programmes in translational research and priority topics in the health services.	**1412**	**1552**
The Research Strategy and Funding Directorate - Awards	**42825**	**40811**
TECHNICAL SERVICES	**4645**	**4440**
OTHER S&T ACTIVITIES	**1055**	**1222**

Department of Social and Family Affairs

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 and family 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 2008	€'000 2009
RESEARCH AND DEVELOPMENT		
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 effective implementation of NAPS & NAPS/inclusion by the Office for Social Inclusion; the compilation/ development of statistical bases for internal management and for publication. 54 staff are employed on these activities.	**2216**	**2430**
Combat Poverty Agency1 The agency's main functions are policy advice, project support and innovation, research, public education and to support the effective implementation of the National Anti-Poverty Strategy (NAPS & NAPS/inclusion) at national, local and European levels. The Agency undertakes commissions and publishes research, evaluations, policy reports and other information on aspects of poverty. It produces practical resource materials and supports training and education programmes for the community and voluntary sector as well as providing direct funding through grant schemes. It supports innovative approaches to tackling poverty through resourcing pilot programmes. 1 The Combat Poverty Agency and the Office for Social Inclusion will be merged within the Department of Social and Family Affairs in 2009.	**4114**	**4088**
Citizens Information Board The Citizens Information Board (formerly Comhairle) is the national support agency responsible for supporting the provision of information, advice and advocacy on social	**1043**	**774**

services. The Board provides citizen's information for the general public, support for information providers and social policy and research information.		
TECHNICAL SERVICES This expenditure is mainly in respect of fees and expenses for consultancy assignments, research and studies. The services covered are mainly the eGovernment projects; the design and development of new computer systems to support the administration of social welfare services; technical software support.	**14439**	**24107**
TRAINING, EDUCATION AND INFORMATION Library/Publications and Education/Training for Planning (Policy) Unit	**710**	**710**
OTHER S&T ACTIVITIES International Collaboration The department is a member of the International Social Security Association, the aims of which are the protection, promotion and development of social security throughout the world.	**22**	**112**
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).		

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 7 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.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT	**0**	**56**
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.		
Since the mid-1980s, the council has published a series of strategy reports which have identified inter-related policy measures which are appropriate to our situation: A Strategy for Development 1986-1990 (1986); A Strategy for the Nineties: Economic Stability and Structural Change (1990); A Strategy for Competitiveness, Growth and Employment (1993) and Strategy into the 21st Century (1996); Opportunities, Challenges and Capacities for Choice(1999); and An Investment in Quality: Services, Inclusion and Enterprise(2003); and NESC Strategy 2006:People, Productivity and Purpose.		
These reports provided the framework for negotiation of the national agreements between government and the social partners over the past decade.		

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. In addition to its general mandate, the Authority has been assigned a number of specific functions under the Roads Act, including:

- preparing or arranging for the preparation of road designs, maintenance programmes and schemes for the provision of traffic signs and delineation/road markings on national roads;
- securing the carrying out of construction, improvement and maintenance works on national roads, allocating and paying grants to local authorities for these purposes;
- carrying out or assisting with training, research or testing activities in relation to any of its functions;
- promoting the case for Exchequer funding and EU assistance for national roads;
- entering into agreements with the private sector for the financing, operation and management of national road projects, and
- making toll schemes for national roads.

The research activities of the NRA are managed by the Authority's Senior Manager for Research.

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.

In 2007 the NRA launched a dedicated research programme relating to core functions and activities and has allocated funding for this initiative. It is intended to invite proposals on an annual basis.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT		
Safety Engineering and Network Operations Research is carried out on traffic growth, accident counter measures, travel times, vehicle volume forecasts, social attitudes to travel risk and the maintenance and updating of the national road database.	**292**	**412**
Road Pavement and Maintenance Assessment Research is undertaken on the development of procedures for the acquisition of road pavement performance data on construction and maintenance methods.	**308**	**434**
Technical Services The services include: surveys of condition of road pavements, including skid resistance, strength and riding quality; technical support in preparing national specifications for road works; road traffic counting and accident recording; preparation of a road signs manual and cost benefit analysis for transport investment.	**90**	**96**
Information and Specialist Advisory Services Activities include maintenance of detailed databases on traffic counts, road accidents, skid resistance of roads, strength and condition of road pavements, provision of library and technical information services.		
TRAINING, EDUCATION AND INFORMATION	**102**	**108**
TECHNOLOGY TRANSFER	**90**	**96**
OTHER S&T ACTIVITIES	**90**	**96**

Central Bank and Financial Services Authority

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; and the
- 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. The primary objective of the Eurosystem is to maintain price stability in the Euro area. As a member of the Eurosystem, the Central Bank's main responsibilities include:
  - Contributing to the maintenance of price stability (low inflation) and a stable financial system
  - Ensuring safe and reliable payment and settlement systems, to enable firms and individuals to make payments to each other
  - Producing and distributing Euro banknotes and coins and ensuring the security and integrity of the Euro currency
  - Managing foreign exchange assets, on behalf of the European Central Bank.

	€'000 2008	€'000 2009
RESEARCH AND DEVELOPMENT	**1398**	**1166**
The bank continued to monitor, analyse and project short-term developments in the Irish and Euro-area economies during 2008. 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 2008. The bank also assessed 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.		

Central Statistics Office

The Central Statistics Office is responsible for the collection, processing and dissemination of official statistics. The statutory basis for this role is the Statistics Act, 1993. This Act constituted the Central Statistics Office as an independent office under the aegis of the Taoiseach. The CSO's basic mandate, under the Act, is the collection, compilation, extraction and dissemination for statistical purposes of information relating to economic, social and general activities and conditions in the State. The Act also underpins the CSO's role in co-ordinating the statistics produced by other public bodies.

The National Statistics Board (NSB) has the functions of guiding the strategic direction of the CSO and establishing priorities in responding to the demand for official statistics. The Board's Strategy for Statistics 2003-2008 set out a whole-system vision for the development of official statistics; and the NSB is preparing an updated framework strategy for 2009 onwards. The CSO's strategy for 2008 to 2010 sets out a comprehensive approach to the high-level goals of improving the scope, quality and timeliness of our statistics; minimising the burden on survey respondents; and increasing the statistical use of administrative data.

Central Corporate Services

Gross expenditure on central services, which includes senior management, administration and information technology, amounted to 23% in 2008 and it is expected that the percentage will reduce to around 20% in 2009 as cyclical projects (Household Budget Survey and preparations for Census 2011) get under way. Most of the support services (information technology, human resources, finance, training, office services, information and printing) are located in Cork, with services being provided to staff in three main locations: Cork, Rathmines and Swords.

Building on the current Data Management System, the Office is in the process of developing an IT strategy for the next five years, to cater for future needs in relation to data collection, processing, analysis and dissemination.

	€'000 2008	€'000 2009
TECHNICAL SERVICES	50188	55680

Office of Public Works

The Office of Public Works provides services to Government Departments and other agencies in the areas of property management, building construction, engineering construction, building maintenance, conservation and restoration of buildings.

OPW employs specialist 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% of construction, maintenance and conservation work is contracted from the private sector.

Total staff employed at the end of 2008 was 2,138. The Office manages voted expenditure of approx. €496m per annum.

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

	€'000 2008	€'000 2009
RESEARCH & DEVELOPMENT Capital expenditure on buildings where S&T research occurs	**13505**	**4258**
OTHER S&T ACTIVITIES	**29010**	**10924**

The State Laboratory

The State Laboratory is a Civil Service Government office under the aegis of the Department of Finance. It was established in 1924 following the merger of the revenue laboratory and the chemical laboratory of the Department of Agriculture and Food. Its main function is the provision of an analytical and advisory service to Government Departments and Offices. The bulk of the work is statutory in nature and the main areas of its analytical activity are in the revenue, agricultural and environmental arenas and the provision of a toxicology service to Coroners. Its analytical results and advice are used for the purposes of litigation and advice; the implementation and formulation of legislation; and assessing the potential requirements for future national and/or EU legislation. The Laboratory is represented by its staff on national, European (EU) and international committees. It participates at both EU and international levels in the collaborative testing of analytical methods.

The State Laboratory is directly funded from the exchequer and at end of 2008 had 93 staff serving, of whom 70 (including the State Chemist) are directly involved in science and technology activities; the remainder are in administration and support services.

	€'000 2008	€'000 2009
TECHNICAL SERVICES Agriculture and Food In the agriculture sector, the analytical work carried out in the State Laboratory is a critical component in the control of the quality and safety of Irish food and food products. Samples from food producing animals, animal feedstuffs, fertilisers, foods and plants are analysed to monitor compliance with European and National legislation governing their production, distribution and sale. Animal feedstuffs Animal feedstuffs are analysed for their nutrient content, growth promoters, antibiotics, mycotoxins, dioxins and also for minerals, trace elements and heavy metals. Microbiology Microbiological techniques are employed to detect a number of quarantine bacterial plant pathogenic diseases. Fertilisers Fertilisers are monitored for compliance with legislation by determining the levels of the nutrients nitrogen, phosphorus and potassium, trace elements and toxic heavy metals. In addition the nitrate content of vegetables is also monitored.	**9726**	**9465**
Toxicology – Veterinary Fluid and tissue from food producing animals are analysed to monitor compliance with EU veterinary residue legislation and the Irish National Residue Plan and to fulfil the Laboratory's role as an EU-appointed National Reference Laboratory for Veterinary Residues. The analysis is primarily for hormones and other drug groups. Veterinary medical products are assayed for compliance with various legislative		

prescripts and analyses are also carried out on samples seized in accordance with the Animal Remedies Act. Revenue In the Revenue sector, the State Laboratory advises the Revenue Commissioners on the correct classification of goods under the Customs and Excise Tariff of Ireland and on the application of the appropriate excise duties applicable to hydrocarbon oil products and alcoholic beverages. In addition, it assists the Revenue Commissioners in their role of controlling compliance with the export refund and import levy systems of the EU Common Agriculture Policy. Hydrocarbon oils, alcoholic beverages and non-potable alcohol containing products are analysed to assist the Revenue Commissioners to accurately determine the revenue accruing to the State, to prevent the illegal use of rebated products, and to prevent the illegal production of laundered diesel. The Common Customs Tariff (CCT) determines the duty payable on imported goods. Chemical analysis carried out by the State Laboratory enables the Revenue Commissioners to classify goods for this purpose. Environment/special services In the Environment area, Hydrocarbon oils are analysed for lead, sulphur and benzene levels and biological samples are analyses to monitor exposure of workers to the toxic elements in the workplace. Expert advice and chemical analysis services are provided to architects and conservators responsible for the restoration and conservation of buildings and cultural artefacts. Tobacco analysis A tobacco chemistry capability to provide an analytical service to the Office of Tobacco Control to implement Irish legislation transposing EU Directive 2001/37/EC on the tar, nicotine and carbon monoxide (CO) content of tobacco smoke has been established. Irish Medicines Board An analytical service is provided to the Irish Medicines Board to monitor samples seized for enforcement purposes under the provisions of the Medicinal Products (Amendment) Regulations. A variety of analytes ranging from hormones and steroids to pharmaceutical products are analysed. Toxicology – Human Analysis is carried out on post mortem biological tissues and fluids of human origin in order to ascertain the cause of sudden or unexplained deaths, to identify the presence or absence of legal drugs, illegal drugs and other relevant substances; the analysis quantifies the levels of these substances. Quality Control and Accreditation Accreditation to EN/ISO 17025 was awarded to the State Laboratory by the Board of Irish National Accreditation Board (INAB) in July 2003. Once accredited, INAB carries out annual surveillance visits to ensure ongoing compliance of the Quality System with their requirements and to assess new test methods being added to the scope of accreditation.		
TRAINING, EDUCATION AND INFORMATION	**104**	**180**

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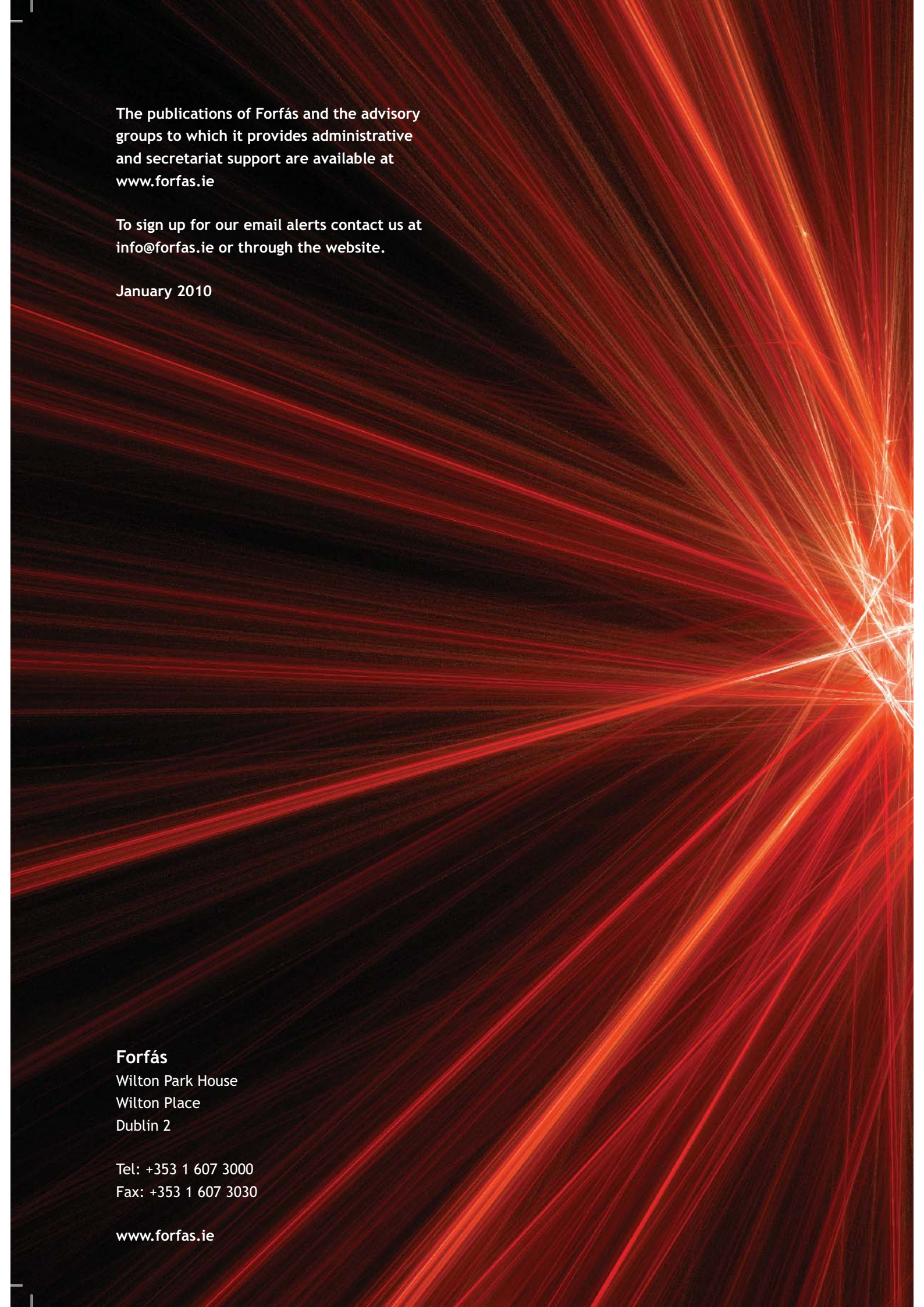

The publications of Forfás and the advisory groups to which it provides administrative and secretariat support are available at www.forfas.ie

To sign up for our email alerts contact us at info@forfas.ie or through the website.

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