Forfás R&D Surveys

The Science Budget 2007 / 2008

Forfás

Introduction

The central goal of the government's Strategy for Science, Technology and Innovation[1] is to ensure that Ireland becomes a competitive knowledge-based economy by 2013. Continuous and increased investment each year in all areas of science and technology (S&T) should assist Ireland in reaching that goal. The estimated S&T expenditure figures for 2008 show an expected spend of €2.65 billion which represents a 10% increase in public funding over the 2007 outturn figures. In particular, higher government funding in the S&T areas of higher education, agricultural and marine research and funding for business research and development (R&D), are all contributing significantly to this increase in total S&T spending. Overall R&D spending, one of the most important sub-categories of overall S&T expenditure, also continues to post impressive gains enabling Ireland to be ranked second amongst major competitors regarding average annual spending growth from 2003 to 2008. Alongside improvements in spending metrics, human resource data also shows that the number of researchers in the government sector rose for the third successive year in 2008.

The Science Budget survey monitors the funding and performance of State S&T and 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. 41 government departments and agencies who are engaged in some form of S&T activity are surveyed. The current survey presents findings from the 2008 Science Budget survey, with final outturn data for 2007 and estimates for 2008. The metrics analysed in the report include overall S&T spending, Government Budget Appropriations and Outlays on Research and Development (GBAORD), Government Expenditure on State performed Research and Development, (GOVERD) and finally R&D human resource indicators.

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[2]. 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 2008

[1] Strategy for Science, Technology and Innovation 2006-2013, Department of Enterprise, Trade and Employment
http://www.entemp.ie/publications/science/2006/sciencestrategy.pdf
[2] Frascati Manual, 2002, OECD

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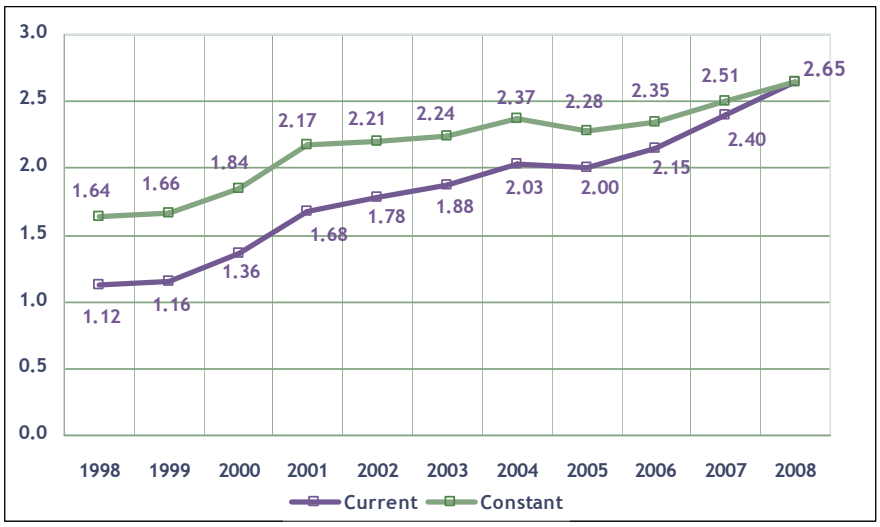
Executive Summary

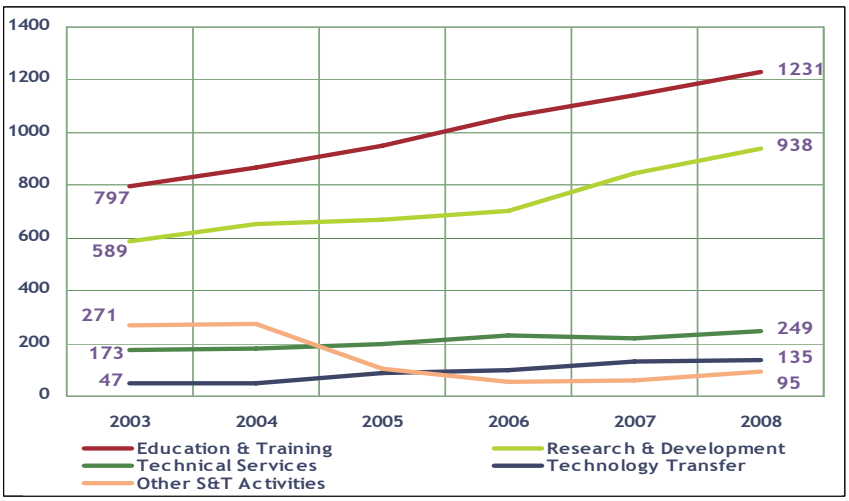
Estimated total expenditure on science and technology (S&T) by the State will increase to an expected €2.65 billion in 2008 compared to the €2.40 billion sum recorded in the 2007 outturn. This will represent a 10.4% increase in current prices in State S&T spending, slightly below the 11.6% increase posted between 2006 and 2007. In real terms (stripping out the effects of inflation) State S&T spending growth is anticipated to ease slightly to 5.6% between 2007 and 2008, compared to the 6.8% real growth rate recorded between 2006 and 2007.

Total science & technology spending by the State sector - 1998-2008 (current and constant prices)



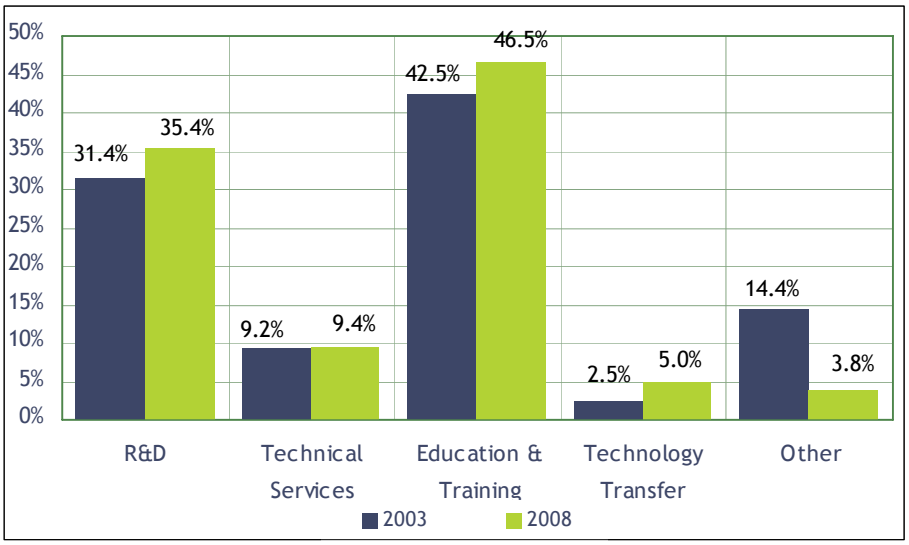
When examined by activity, the largest component of State S&T spending in 2008 was education and training, with a budget of €1.2 billion. The next largest S&T spending category was for research and development activities, which totalled €938 million in 2008. State spending on S&T technical services totalled €249 million, with expenditure on technology transfer totalling €135 million in the year.

Total science & technology spending by activity - 2003-2008 - €m. (current prices)



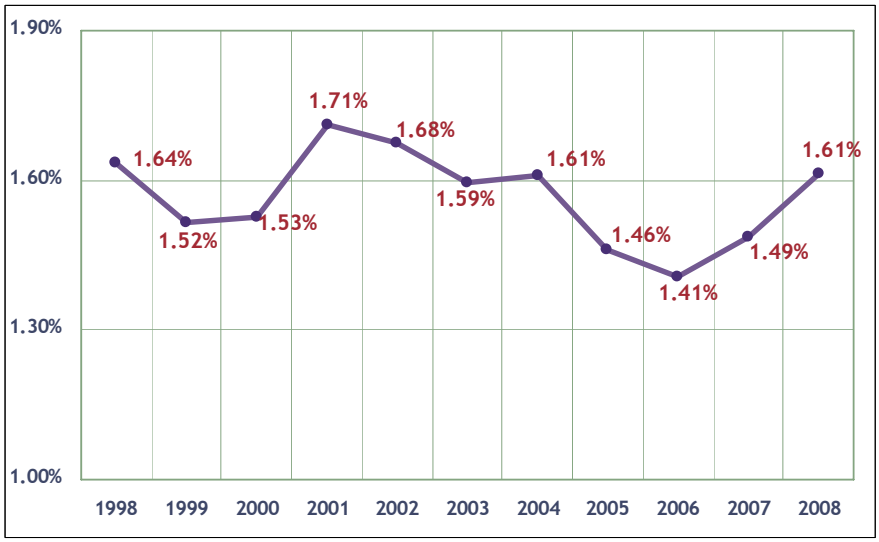
As a percentage of total S&T spending, the education and training category is expected to rise to 46.5% of the total from the 42.5% recorded in 2003. The share of total S&T expenditure on R&D will rise to 35.4% in 2008, compared to the 31.4% share recorded five years previously. The S&T categories of technical services and technology transfer will show small percentage increases in their share of total S&T expenditure in 2008.

S&T expenditure by activity as % of total S&T, 2003 and 2008



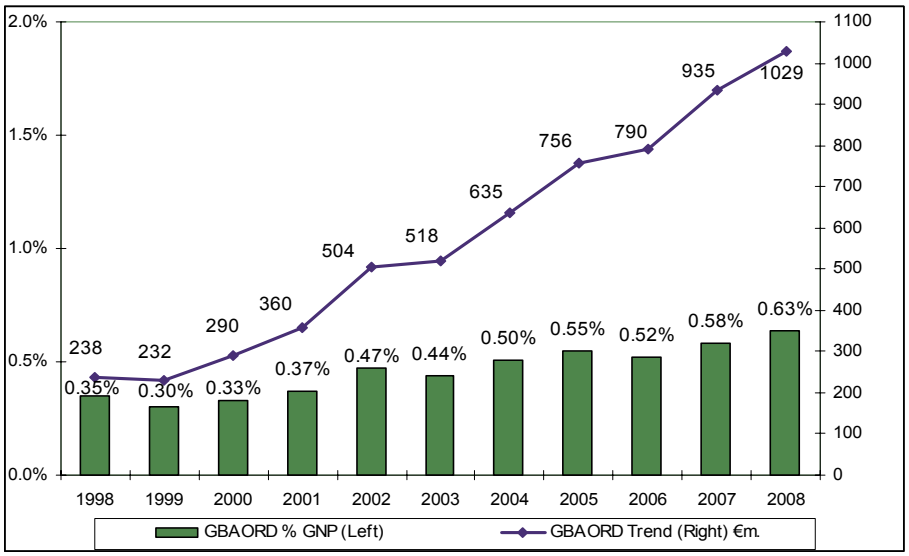
State S&T spending as a percentage of GNP (intensity ratio) is expected to rise to 1.61% in 2008, up from 1.49% of GNP in 2007, as S&T spending growth of 10.4% far outstrips the estimated rise in GNP of 1.7% over the same period. The State S&T spending ratio in 2008 although nearly at its 1998 level of 1.64% of GNP, has moved markedly during this timeframe, reaching an intensity peak of 1.71% of GNP in 2001, and a low of 1.41% of GNP in 2006 as still strong rises in State S&T spending were outpaced by the rapid rise in GNP in that period.

Total science and technology expenditure as a percentage of Gross National Product (1998-2008)



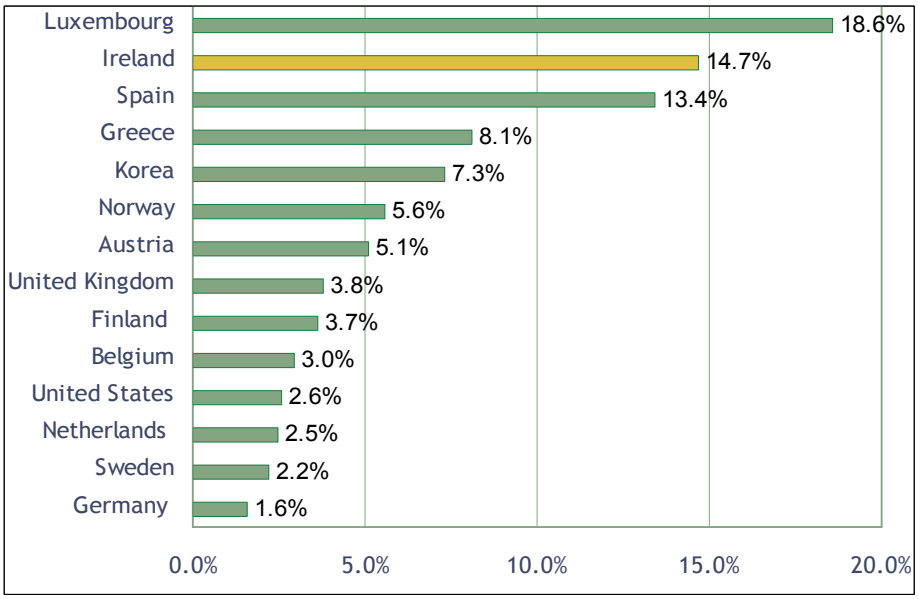
An important component of the total State S&T budget is **spending** on research and development. The government budget appropriations or outlays on R&D metric (GBAORD), includes all exchequer and EU funding for R&D projects including spending on the arts, humanities and social sciences. As a result of these rapid increases in State funding for R&D activities GBAORD as a percentage of GNP has increased from 0.35% in 1998 to an expected 0.63% in 2008.

GBAORD trend and GBAORD as a percentage of GNP 1998 – 2008



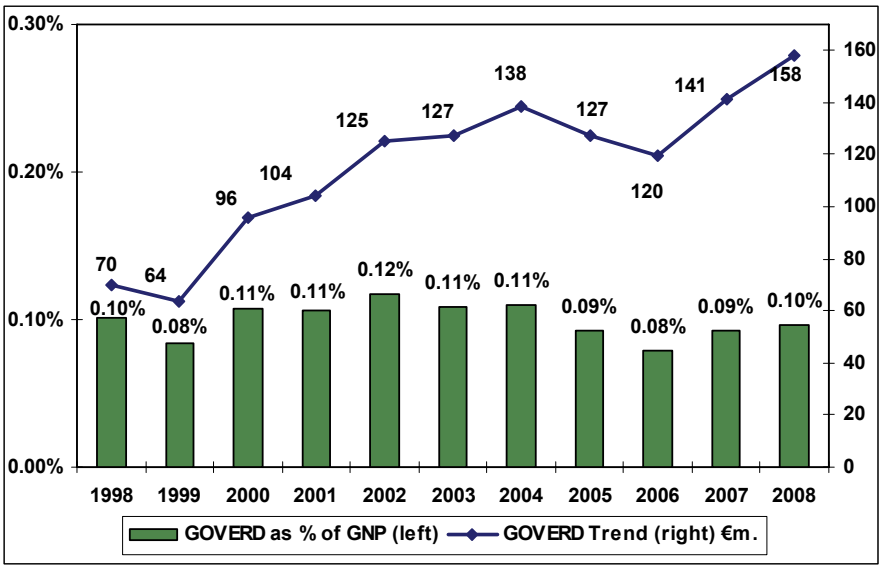
Looking at trends for civil GBAORD (excludes spending on defence R&D) between 2003 and 2008 Ireland had one of the strongest growth rates across the OCED. At 14.7% spending growth Ireland will rank 2nd out of 14 countries for the highest average annual growth rate of civil GBAORD between 2003 and 2008.

Average annual growth rates of civil GBAORD for selected countries (2003-2008 or latest date available)



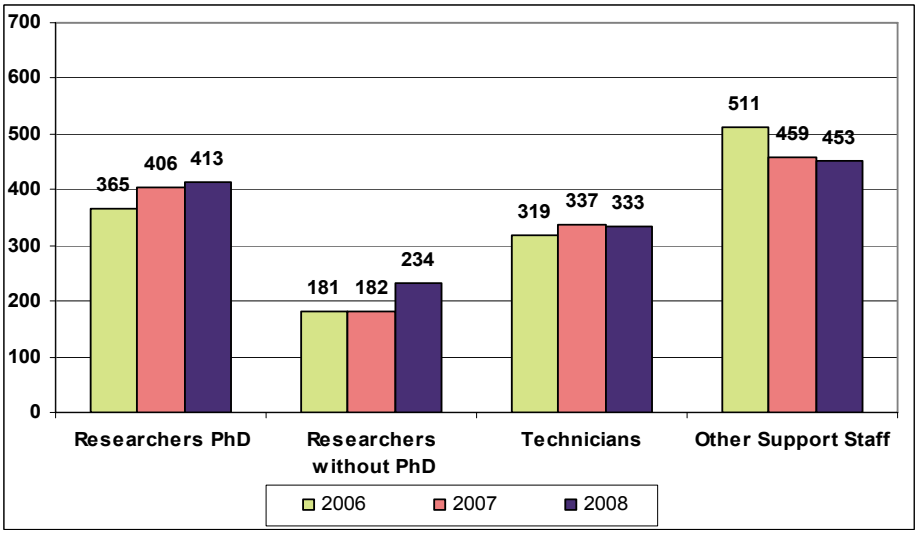
Total expenditure on R&D **performed** in the State sector or GOVERD (excludes higher education expenditure) is expected to increase to €158 million in 2008. This represents a substantial 12% increase in current prices over the actual outturn reported for 2007. In real terms (excluding inflationary effects) R&D performed in the State sector is estimated to increase by 7% between 2007 and 2008. GOVERD as a percentage of GNP is expected to rise to 0.10% in 2008 after a drop to 0.08% in 2006.

GOVERD trend and GOVERD as a percentage of GNP



In 2008, 1433 R&D personnel are expected to be employed by the government sector in headcount terms. This equates to 1353 full time equivalent (FTE) R&D active staff. There are now 413 PhD qualified researchers employed in the State sector, compared with 365 in 2006. The number of non PhD qualified researchers has risen from 181 in 2006 to 234 by 2008.

Total research and development personnel (headcount) 2006 - 2008



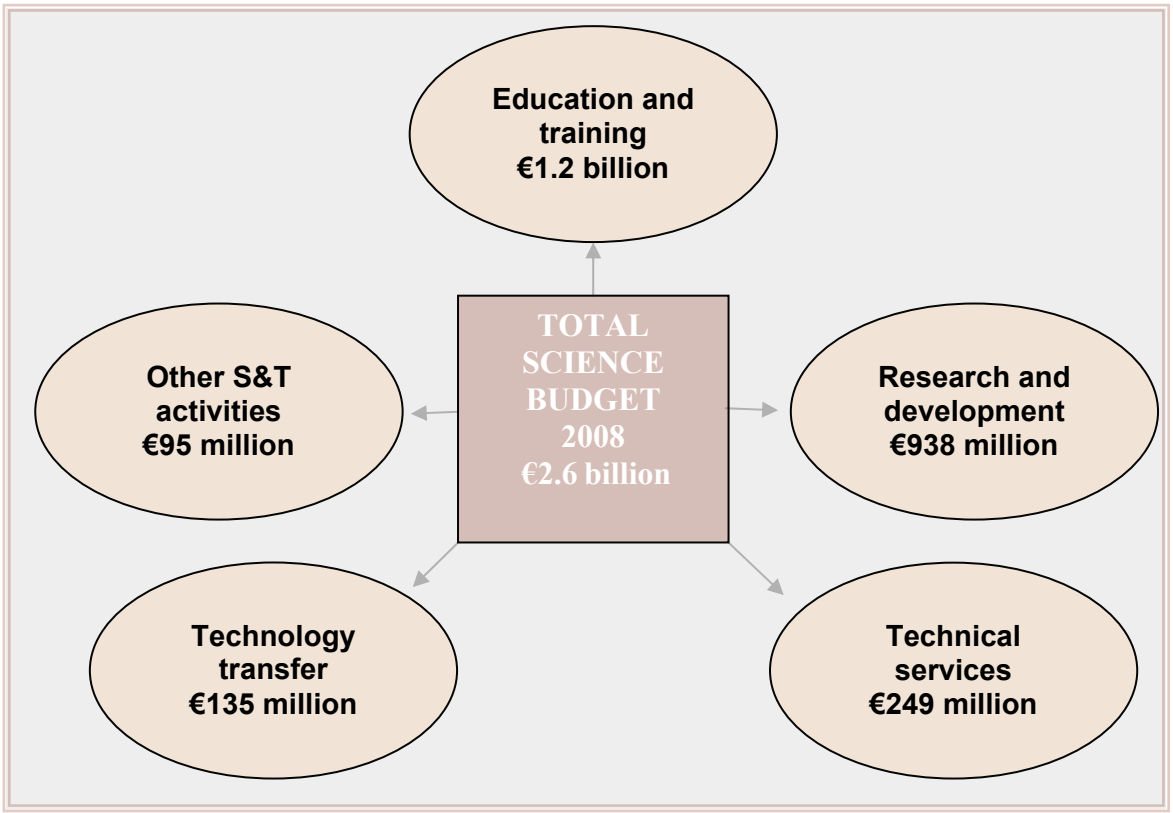
Chapter 1: Science and Technology Budget

In this chapter we will examine the total spending allocated by the State for S&T activities in 2008. The science budget survey breaks expenditure into five main categories: R&D, technical services, education and training, technology transfer and other S&T activities (see Appendix 3 for definitions). Expenditure information is gathered from government agencies and departments engaged in S&T activities, in respect of the actual expenditure they incurred in 2007 and their anticipated expenditure for 2008.

1.1 Total Science Budget

The total S&T estimated expenditure for 2008 is expected to reach €2.6 billion. This figure is an increase on the expenditure reported for 2007 of €2.4 billion. The different components which make up the total science budget are illustrated below in Figure 1. As can be seen below the category with the largest proportion of State S&T spending is education and training, with anticipated expenditure of €1.2 billion. This category continues to be the area with the highest State expenditure showing an 8% increase in the 2008 estimated figure over the 2007 actual expenditure. During 2008 R&D expenditure by the State will total approximately €938 million while technical services, technology transfer and other S&T activities will incur spending of €249 million, €135 million and €95 million respectively.

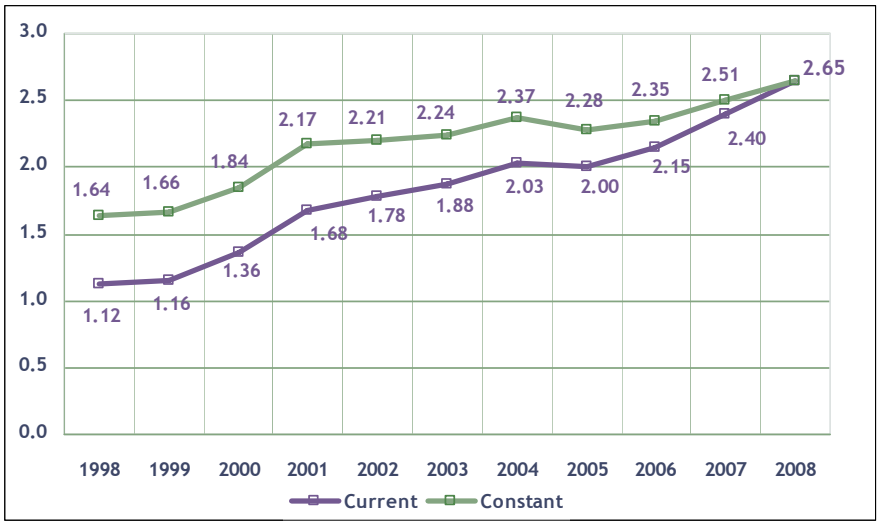
Figure 1: Total Science Budget 2008



1.2 Trends in State science and technology expenditure

Figure 2 below illustrates the upward trend in S&T expenditure which has taken place in the past decade in both current and constant prices. Expenditure has more than doubled in that time period rising from €1.12 billion in 1998 to €2.65 billion in 2008, an increase of 10.4% in current prices and slightly below the 11.6% increase posted between 2006 and 2007. In real terms (stripping out the effects of inflation) State S&T spending growth is anticipated to ease slightly to 5.6% between 2007 and 2008, compared to the 6.8% real growth rate recorded between 2006 and 2007.

Figure 2: Total science and technology spending by the State sector, (1998-2008 current and constant prices €bn.)

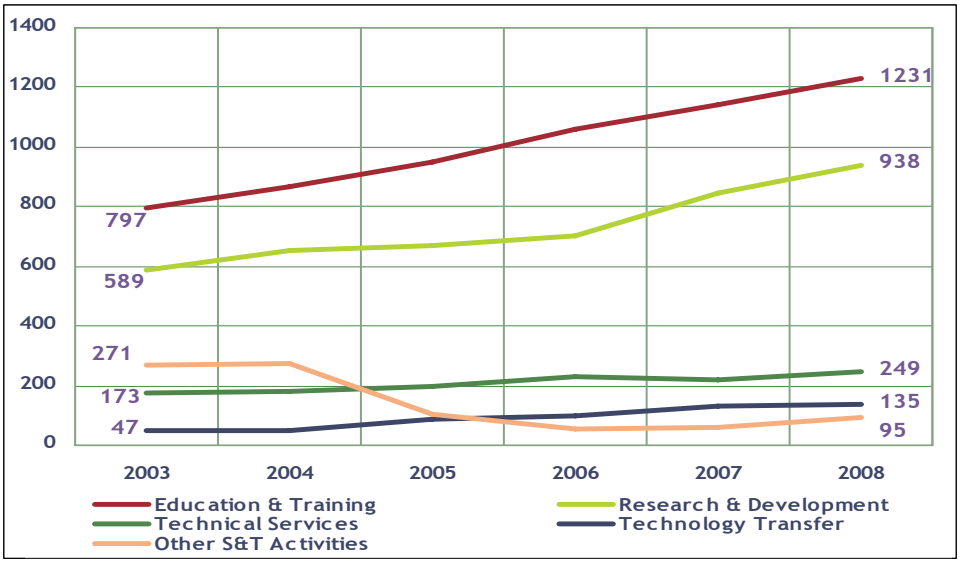


1.3 Trends in categories of State science and technology expenditure

As can be seen in Figure 3, State spending in the education and training category remains high, with spending increasing from €797 million in 2003 to €1.2 billion in 2008, an anticipated increase of 54.4% over the five year period. Expenditure on R&D by the State sector has increased by 44% over the four year period from 2003 to 2007 and is expected to continue rising to reach a total of €938 million in 2008. R&D expenditure as a percentage of total S&T spending was 35% in 2007 and it is expected that it will maintain this share in 2008.

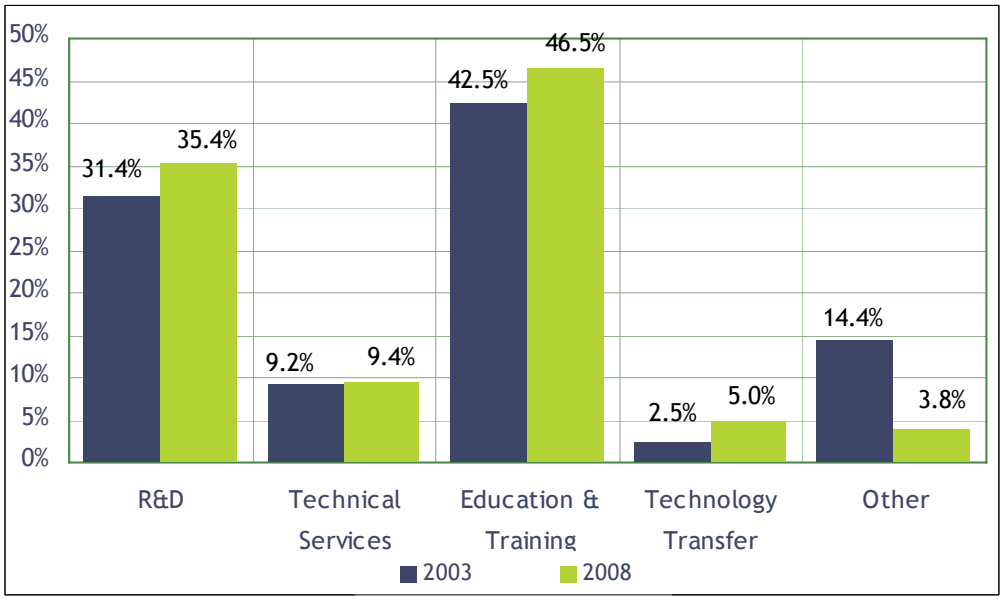
The categories of technical services and technology transfer are defined respectively as "Specialised support services of a scientific or technical nature, generally provided by centralised laboratories or facilities and can be of a routine or non-routine nature." and "Activities which are directed solely or primarily towards the transfer and adoption of new technology, generally in enterprises". In the five year period between 2003 and 2008, State spending on technical services rose from €173 million to an anticipated €249 million while spending on technology transfer is expected to increase to €135 million in 2008 from €47 million in 2003.

Figure 3: Total science and technology spending by activity, (2003-2008) - €m. current prices



State spending in the various S&T categories as a percentage of total expenditure for the years 2003 and 2008 is illustrated in Figure 4. Both R&D and education and training will increase their percentage share of total expenditure by approximately 4% in 2008 from that of 2003. Both technical services and technology transfer will also increase their share of total expenditure in the five year period. The "other S&T activities" category will drop its percentage share of total spending by 11% in 2008.

Figure 4: Share of science and technology spending by category as a percentage of total (2003 and 2008)



Detailed data on State spending by S&T category at institution and programme level is presented in Appendix 7. A summary of the largest increases expected between 2007 and 2008 is as follows:

Department of Education and Science	€57.2m.	(increased funding on education and training and R&D)
Higher Education Authority	€45.5m.	(increased funding on education and training and R&D)
Department of Agriculture, Fisheries and Food	€21.1m.	(increased funding on technical services and R&D)
Enterprise Ireland	€20.7m.	(increased funding on technology transfer, education and training, R&D and other S&T activities)
Sustainable Energy Ireland	€18.1m.	(increased funding on R&D and technical services)
Science Foundation Ireland	€17.7m.	(increased funding on R&D)
Office of Public Works	€13.7m.	(increased funding on other S&T activities)

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

Total expenditure on S&T measured as a percentage of the Gross National Product (GNP) is shown in Figure 5. 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. Figures from the Central Statistical Office (CSO) show that the difference in 2007 between the GDP and GNP measures of economic activity was 18%. The S&T spending intensity level in Ireland will rise to 1.61% in 2008. The growth in State S&T spending is expected to increase by 10.4% between 2007 and 2008 far outstripping the estimated rise in nominal GNP of 1.7% in the same period. The intensity ratio has fluctuated considerably over the ten year period with a high of 1.71% of GNP in 2001 and a low of 1.41% in 2006.

Figure 5: Total science and technology expenditure as a percentage of GNP, (1998-2008)

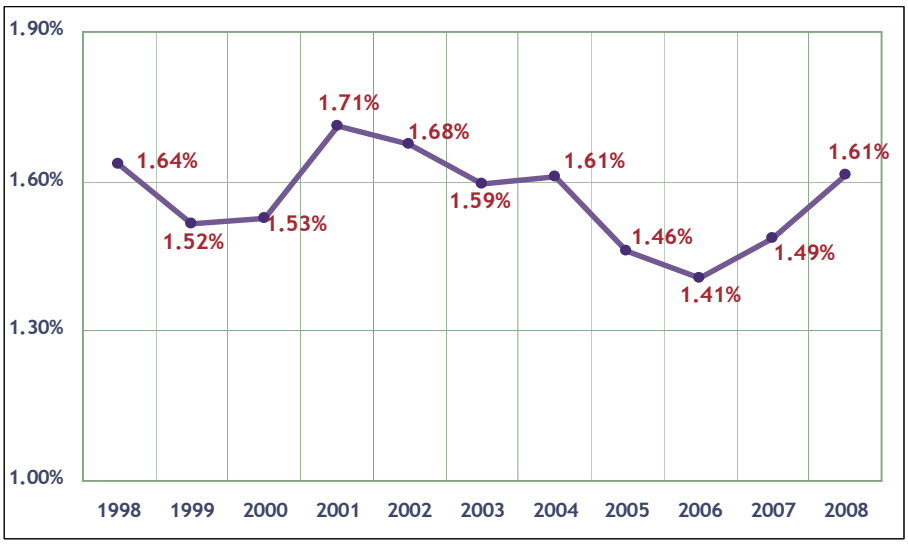
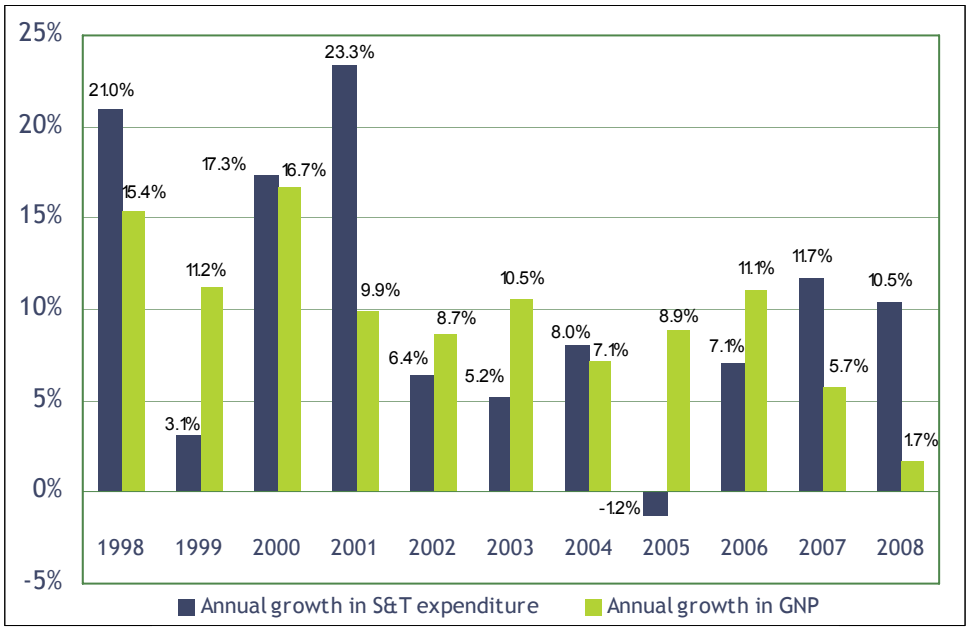


Figure 6: Annual growth rates of science and technology spending and nominal GNP, (1998-2008)



As can be seen in Figure 6 above the greatest percentage increases in S&T spending in the ten year period were seen in 1998 and 2001 with increases of 21% and 23.3% respectively. Expenditure in 2006 recovered from the low of 2005 with an increase of 7.1%. This increased spending continued in 2007 with growth in S&T spending of 11.7% and expected growth in 2008 of 10.5%. The education and training and R&D categories continued to be the main contributors to growth in S&T in recent years.

Chapter 2: Focus on State funding of research and development

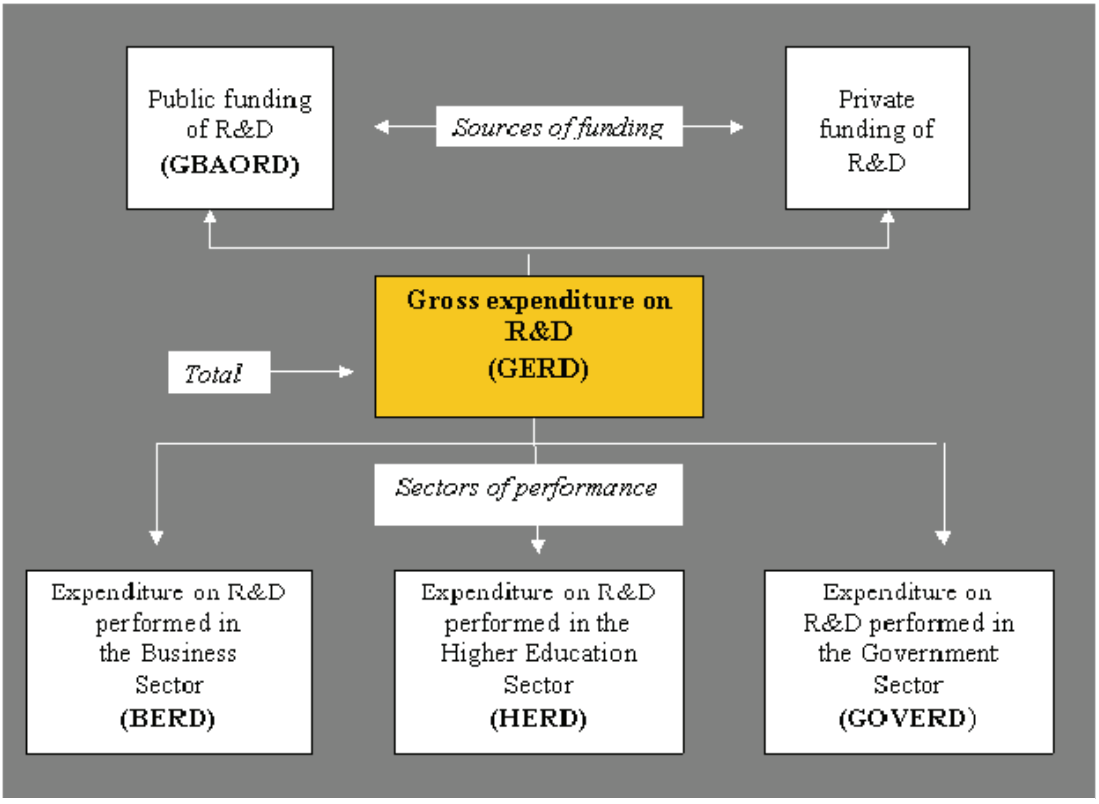
This chapter examines one of the most important aspects of the total Science Budget spending programme – R&D. The government has acknowledged its commitment to the development of a knowledge economy, through the creation and implementation of the Strategy for Science Technology and Innovation. Key to this strategy's success is the continued investment in R&D capabilities, which should help to ensure Ireland's long term economic success, by enabling Ireland to compete effectively with other established and emerging knowledge economies. 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".[3] The Science Budget focuses particularly on R&D and yields the following:

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 7: R&D funding and performance system



[3] Frascati Manual, 2002, OECD

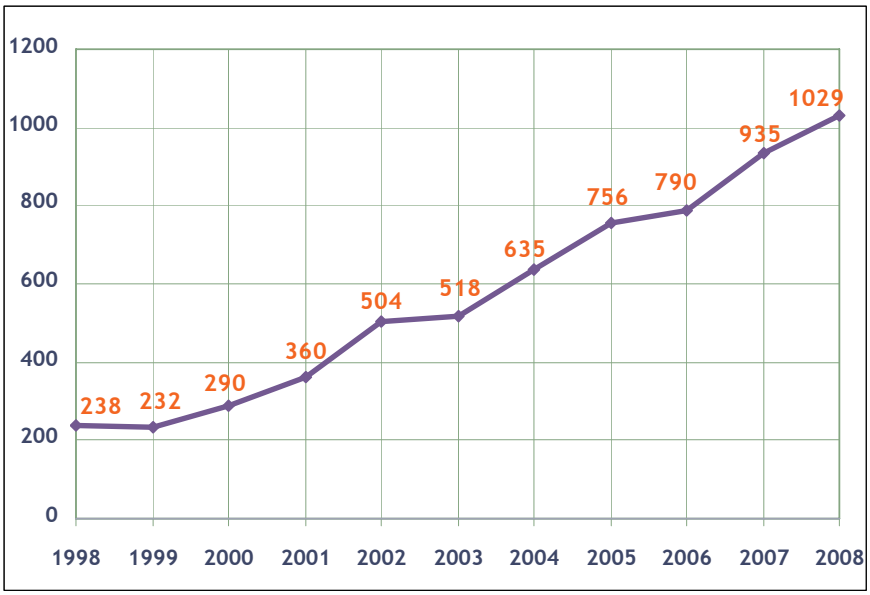
2.2 Government budget spending on research and development

The Science Budget has a strong data focus on the public financing of R&D, through EU and exchequer funds. The internationally recognised indicator for benchmarking State 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 HEA, SFI, 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 and others.

Figure 8 below clearly illustrates the continuous upward trend in GBAORD spending over the last decade. In 1998 GBAORD spending stood at €238 million, and this has since more than quadrupled. It is expected to reach €1.03 billion in 2008[4]. Government spending on R&D climbed by 10.1% in current term between 2007 and 2008, with the rate of expenditure growth easing from the 18.3% rise posted between 2006 and 2007.

Figure 8: GBAORD trend in current prices, €m. (1998-2008)



[4] Revisions have been made to the 2004-2007 GBAORD figures as a result of revised data from some departments

2.3 State spending on research and development

The table below provides a breakdown of public R&D funding by the main administrating government departments and offices. The largest agency funding R&D projects is the Higher Education Authority (HEA). In 2008 this office will fund programmes valuing €354.3 million, 78% (€278 million) of which is funding through the HEA block grant and 22% (€76.4 million) is funding allocated through the Programme for Research in Third-Level Institutions (PRTLI). Total HEA funding will account for 34.4% of the total 2008 government spend on R&D. At 16.9%, Science Foundation Ireland will be the next largest funder of R&D projects, responsible for the distribution of €174 million in research grants.

Table 1: Government departments and agencies funding R&D activities, (2008)

Funding Department/Organisation	2008 €m.	% of total
Higher Education Authority	354.3	34.4%
Science Foundation Ireland	174.0	16.9%
Teagasc	66.4	6.5%
Enterprise Ireland	62.5	6.1%
IDA Ireland	57.0	5.5%
Health Research Board	49.2	4.8%
Sustainable Energy Ireland	40.0	3.9%
Department of Agriculture, Fisheries and Food	37.8	3.7%
Department of Education and Science	34.8	3.4%
Irish Research Council for Science, Engineering & Technology	26.3	2.6%
Department of Communications, Energy & Natural Resources	19.6	1.9%
Marine Institute	17.3	1.7%
Irish Research Council for the Humanities & Social Sciences	12.5	1.2%
Environmental Protection Agency	12.4	1.2%
Others	64.5	6.3%
TOTAL	**1028.6**	**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:

- **€354.3 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.

- **€174 million** - Science Foundation Ireland (SFI). SFI 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. 2008 will see an increase in funding from the outturn of €156 million in 2007 to €174 million in 2008. The allocation of finance is decided by SFI on the basis of scientific merit.

- **€66.4 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.

- **€62.5 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.

- **€57 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.

- **€49.2 million** - The Health Research Board (HRB). The research funding aspect of the HRB provides support for projects, programmes and fellowships in health research through an open competition process, along with an element of peer review. Funding covers all areas of health research from biomedical, translational, clinical and practised based research through to population health and research concerning the health services.

- **€40 million** - Sustainable Energy Ireland (SEI) is Ireland's national energy authority and is responsible for administering the Renewable Energy Research, Development & Demonstration (RE RDD) 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.

- **€26.3 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 by encouraging students and researchers to pursue a full time research career in their chosen field. It does this through a series of programmes of assistance, postgraduate research awards and the PhD fellowship scheme.

- **€17.3 million** – Ireland's 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.

- **€12.4 million** –The Environmental Protection Agency (EPA) protects the environment through its licensing, enforcement and monitoring activities. It also has a statutory role to co-ordinate environmental research in Ireland. It aims to protect and improve upon the natural environment through the provision of scientific knowledge, generated by research programmes developed, co-ordinated and supported by the EPA.

2.4 Programmes classified by area of research

The total expected GBAORD for 2008 can be classified into a number of funded economic areas (see Table 2 below). Over 50% of total GBAORD funding for 2008 has been allocated for performance in higher education. This €567 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 2008 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 2008

Civil GBAORD classifications	€ million
Research financed from general university funds (GUF)	567
Agriculture	127
Industrial production and technology	125
Social structures and relationships	54
Exploration and exploitation of the earth	50
Energy	46
Non-oriented research	27
Environment	13
Transport, telecommunication and other infrastructures	13
Health	7
Total expenditure	**1029**

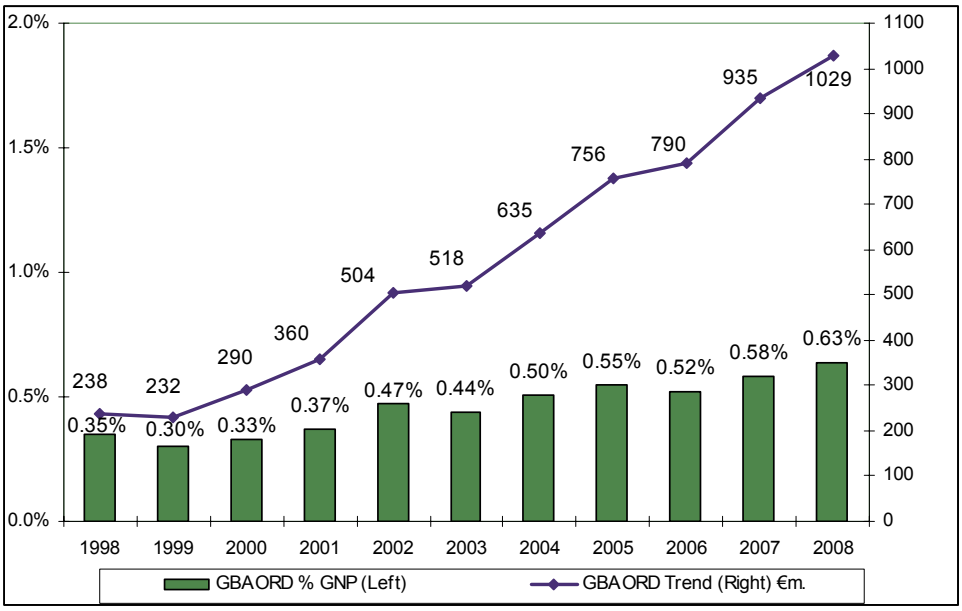
The 2006 Higher Education R&D survey (HERD) examines the positive outputs of increased GBAORD **performed** in the higher education sector. HERD climbed to an expected €660 million in 2007 boosted mainly by increased funding from the public side (totalling €600 million and growing by 10.5%), alongside an additional €60 million funded from other sources. Increased GBAORD funding to the education sector has therefore allowed a narrowing of the R&D performance gap with our OECD neighbours in the HE sector.

Agriculture is the next most important category of R&D funding. At €127 million it accounts for 12.3% of total government spending on R&D programmes. It is followed closely by industrial production and technology, which will account for 12.1% of total GBOARD (and is expected to reach €125 million) in 2008. Social structures and relationships, exploration and energy each account for around 5% of the total government spend on R&D. The remaining 6% of GBAORD is to be divided between non-oriented research, the environment, health, and transport, telecommunications and other infrastructure.

2.5 GBAORD as a percentage of GNP and international comparisons

By examining GBAORD, as a percentage of the country's economic activity (Gross National Product), it is possible to measure the relative importance placed on R&D by the Government. Figure 9 illustrates that GBAORD as a percentage of GNP has been increasing steadily since 1998. The relative GBAORD intensity ratio increases annually when the rate of R&D funding growth outpaces nominal growth across the economy as a whole. GBAORD as a percentage of GNP has increased from 0.35% in 1998 to an estimated 0.63% by 2008.

Figure 9: GBAORD trend (€m.) and GBAORD as a percentage of GNP (1998-2008)



From 1998 to 1999 the GBAORD intensity ratio fell from 0.35% to 0.30% of GNP. The year 2000 saw the beginning of a period of rapid acceleration in R&D funding. By 2004 GBAORD as a percentage of GNP had grown to 0.50% of GNP, and this upward trend has continued, allowing the GBAORD intensity ratio to reach an estimated 0.63% by 2008.

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. In 2008 the US will spend 58% of their GBAORD budget on defence, while the UK will spend 28%. When data is adjusted for these R&D programmes to only include Civil GBAORD programmes the following data can be observed.

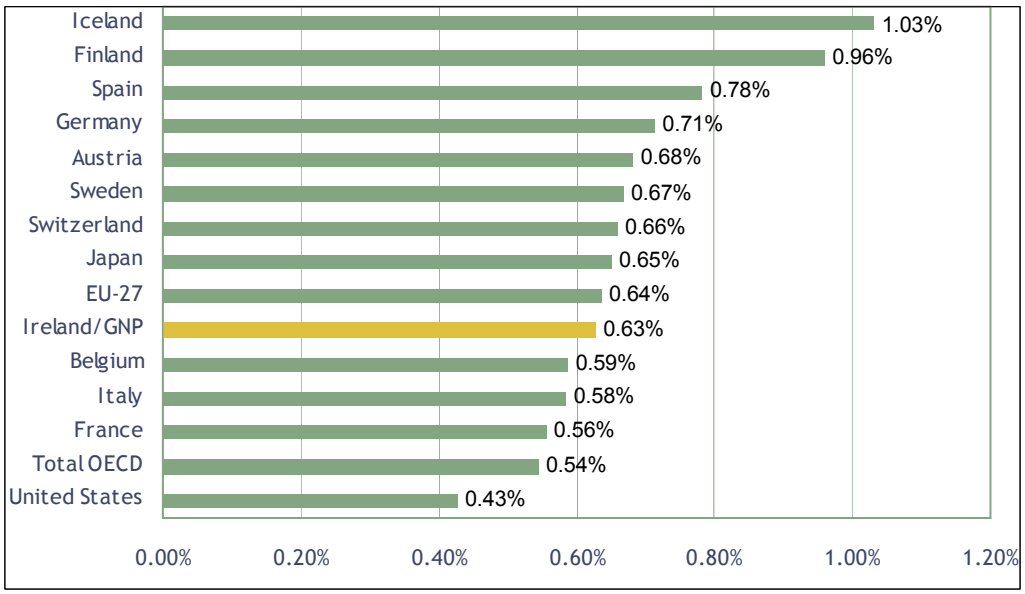
Table 3: Civil GABORD relative comparisons as a percentage of economic activity (GDP/GNP) 1998 and 2008)

Civil GBAORD (1998 and 2008)	1998	2008 (or latest year)
Iceland	0.97%	1.03%
Spain	0.39%	0.78%
Germany	0.74%	0.71%
Austria	0.63%	0.68%
EU-15	0.64%	0.65%
Sweden	0.71%	0.67%
Switzerland	0.65%	0.66%
Japan	0.57%	0.65%
EU-27	0.60%	0.60%
Ireland/GNP	**0.35%**	**0.63%**
Belgium	0.56%	0.59%
France	0.74%	0.56%
Total OECD	0.48%	0.52%
United States	0.39%	0.43%
Greece	0.25%	0.29%
Mexico	0.23%	0.20%

Over the last decade Ireland's GBAORD performance has increased dramatically, rising from 0.35% of GNP in 1998 to an estimated 0.63% by 2008. This is one of the most significant increases of all the EU countries over the ten year period. When compared internationally, Irish civil GBAORD spending as a percentage of economic activity is slightly below the average for the EU 27, but above the OECD average. The increase in GBAORD intensity is evidence that significant growth in public allocations and funding for R&D programmes outpaced growth in economic activity, allowing the intensity ratio to almost double since 1998. By comparison, the EU intensity rates have remained relatively constant, signalling increases in R&D spending only kept pace with increases in GDP across the EU.

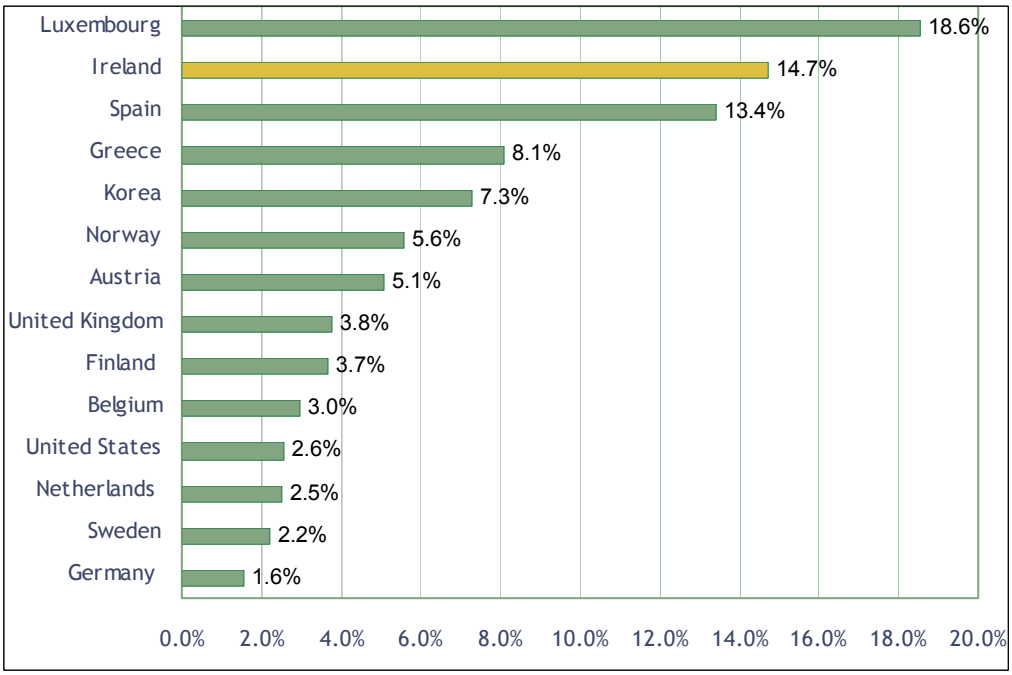
From 1998 to 2008, Iceland, Spain, Austria, Switzerland, Japan, Ireland, Belgium, the U.S. and Greece saw an increase in the civil GBAORD intensity ratio, while in Germany, Sweden, France and Mexico it is expected to fall. The average EU 27 has remained constant.

Figure 10: International comparison of civil GBAORD as a percentage of GDP (2008 or latest date available)



Further examination of the medium term trends for civil GBAORD, shows that Ireland's performance over the previous five years has seen the some of the strongest levels of average annual growth. At 14.7%, Ireland is placed second on a table, with only Luxembourg (18.6%) ranking higher.

Figure 11: Average annual growth rate of civil GBAORD for selected countries, (2003–2008)



Chapter 3: Performance of research and development in the public sector

This chapter focuses on the performance of R&D in the State sector (GOVERD). GOVERD is the metric which is used to measure R&D performed by government departments and agencies from funding coming from public, private and other sources. GOVERD does not include R&D performed in the higher education sector which is gathered separately in the higher education R&D (HERD) survey. Overall R&D performance in the country as a whole can be calculated by combining GOVERD with R&D performed in the higher education sector (HERD) and R&D performed by the business sector (BERD). The main performers of R&D in the State sector continue to be Teagasc and the Marine Institute.

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

Expenditure on R&D performed in the State sector (GOVERD) totalled €141 million in 2007 slightly ahead of the estimated figure of €140.4 million (current prices). It is expected that 2008 will see an increase of 12% on the 2007 outturn figure with spending expected to reach €158 million. In real terms expenditure on R&D performed in the State sector rose by 17.5% between 2006 and 2007 and is predicted to rise again in 2008 by 12%.

Figure 12 below also shows GOVERD as a percentage of GNP. After a drop in 2006 to a low of 0.08% this figure rose to 0.09% in 2007 and is likely to increase to 0.10% in 2008.

Figure 12: GOVERD as a percentage of GNP and GOVERD trend, (1998-2008)

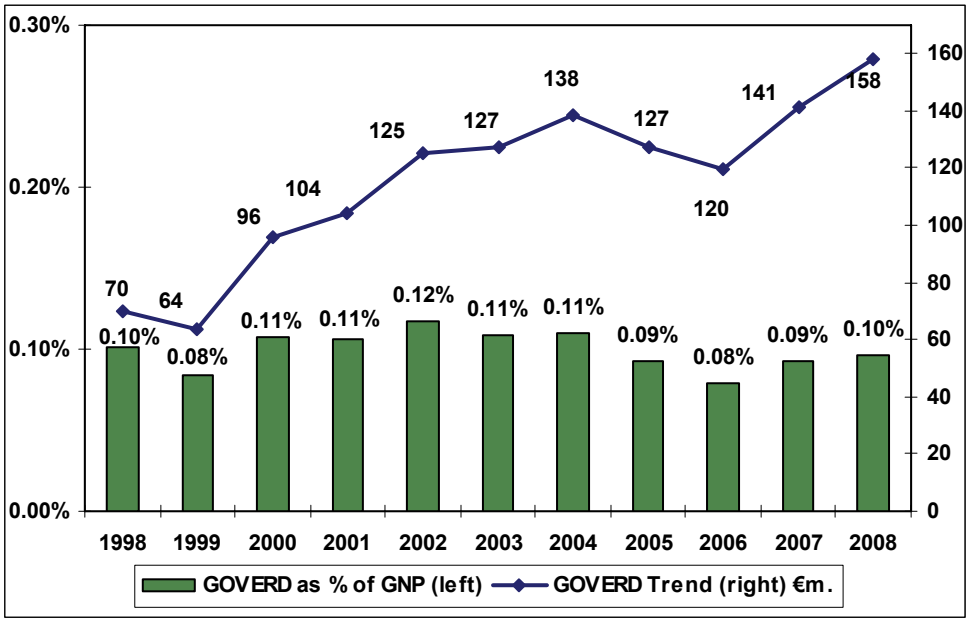
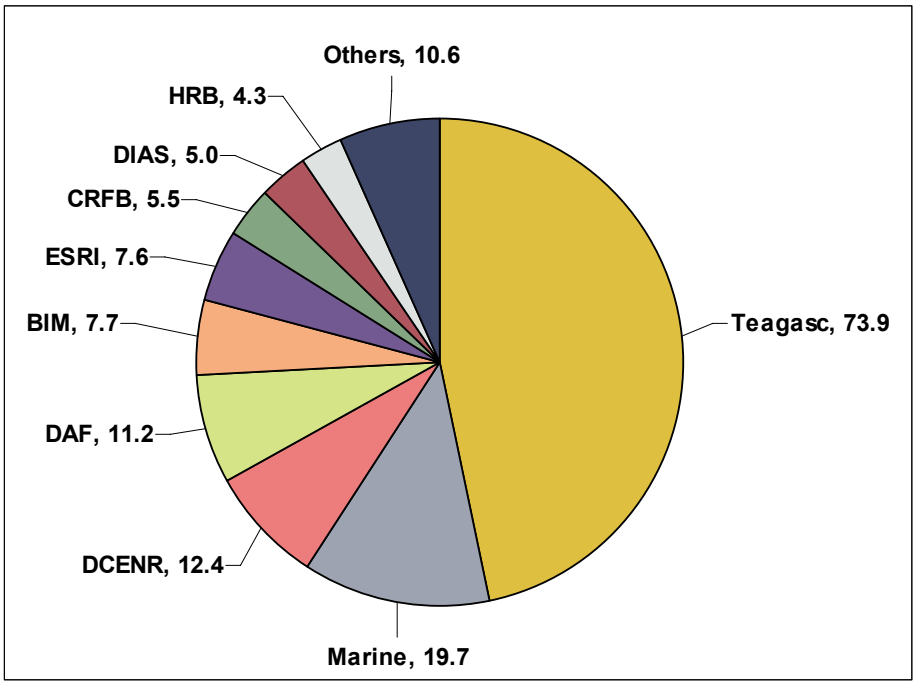


Figure 13: Major State research and development performers, €m. (2008)



As has been the case for the last number of years the largest proportion of R&D performed in the State has been undertaken by Teagasc, the Irish agriculture and food development authority and the Marine Institute, the national agency responsible for marine research, technology development and innovation (RTDI). The predicted spending on R&D by Teagasc in 2008 will be over three and a half times that of its closest rival, the Marine Institute, with expected spending of €73.9m. and €19.7m. respectively. Expenditure on R&D, performed by Teagasc, will represent 47% of total GOVERD in 2008. Teagasc undertakes research in the areas of sustainable agriculture, rural development and food processing.

The Marine Institute's share of total GOVERD in 2007 was 12% and it is expected that this percentage share will be maintained in 2008. Other large performers of R&D include the Department of Communications, Energy and Natural Resources and the Department of Agriculture, Fisheries and Food with anticipated expenditure of €12.4 million and €11.2 million respectively in 2008.

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 (2003 and 2008 or latest available data)

Country	2003	2008
France	0.36	0.37
Germany	0.34	0.35
Finland	0.33	0.33
United States	0.33	0.29
China	0.31	0.28
Total OECD	0.27	0.26
EU-15	0.24	0.25
EU-27	0.24	0.24
Norway	0.26	0.24
Spain	0.16	0.20
Luxembourg	0.17	0.19
United Kingdom	0.18	0.18
Denmark	0.18	0.16
Portugal	0.12	0.12
Ireland/GNP	**0.11**	**0.10**
Turkey	0.06	0.09
Switzerland	0.03	0.02

Table 4 illustrates GOVERD as a percentage of GDP for a selection of countries in 2003 and 2008 or the latest date for which data is available. The figures for Ireland are shown as a percentage of GNP. The GOVERD intensity ratio of 0.10% in Ireland in 2008 is amongst the lowest with only Turkey and Switzerland with lower ratios. Ireland's ratio in 2003 was 0.11%. Ireland's low ratio reflects its smaller public sector, alongside the Irish government's policy to concentrate on increasing R&D funding and performance in the higher education sector. In the period between 2003 and 2008, the EU27 rate has remained unchanged while the OECD has dropped slightly. France has remained at the top of the table with a ratio of 0.37% which is up on the 2003 figure of 0.36% while Germany also shows a slightly increased rate of 35% up from 34% in 2003.

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[5] 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

[5] Frascati Manual; Proposed standard practice for surveys on research and experimental development: OECD 2002

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 (2008)

Type of Research	2008 €m.	% of total
Basic	16.5	11%
Applied	122.6	77%
Experimental	18.9	12%
Total	157.9	100%

As can be seen in Table 5 applied research is the most popular type of research Irish Government departments and agencies engage in. This is in line with previous years. Applied research accounts for 77% of total research undertaken with experimental development accounting for 12% and basic research for 11%.

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 which in turn caused 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, (2008) €m.

Field of Science	Basic	Applied	Experimental	Total
Natural Sciences	5.6	24.1	7.5	**37.2**
Engineering and Technology	0.0	0.0	0.3	**0.3**
Medical and Health Sciences	0.0	4.3	0.0	**4.3**
Agricultural Sciences	8.5	80.7	10.2	**99.4**
Social Sciences	2.5	12.9	0.9	**16.3**
Humanities	0.0	0.4	0.0	**0.4**
Totals	**16.5**	**122.6**	**18.9**	**157.9**

Table 6 shows that the field of science with the highest amount of spending in 2008 was agricultural sciences with expenditure of €99.4 million or 63% of the total. Most of this R&D is performed by Teagasc; the Marine Institute; the Department of Agriculture, Fisheries and Food and Bord Iascaigh Mhara.

The natural sciences category of the fields of science with 24% of total spend, is the next largest category. Research in this area is performed by the Dublin Institute for Advanced Studies; Dept. of Communications, Energy and Natural Resources; Dept. of the Environment, Heritage and Local Government; the Environmental Protection Agency; the Radiological Protection Institute; Met Eireann; the State Laboratory and the Central and Regional Fisheries Board.

Of the remaining categories of fields of science the social sciences make up 10% of the total, medical and health sciences 3% and the remaining categories of engineering and technology and humanities represent 5% of the total.

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

This chapter examines the human resources devoted to R&D activities performed within institutions classified as within the government sector. It excludes R&D personnel working in other sectors of the economy including the higher education and business sectors. Human resources R&D data was collected from questionnaires returned from 41 government departments, offices and agencies. Data for research personnel (researchers and support staff) was collected by occupation, gender, qualification and by time use (time devoted to R&D activities). Collection of data on the time spent by government sector researchers and research support staff allows for the translation of the data from headcount terms to full-time equivalent terms (FTE). 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. The FTE metric allows for more robust international benchmarking to take place across the differing research systems in many countries.

4.1 Research and development personnel

In 2008 the total number of research personnel employed in the government sector rose to 1433 in headcount terms compared to the 1383 research personnel recorded in 2007 (figure 14). The number of researchers employed in the government sector rose for the third successive year, climbing to 647 from the 588 recorded in 2007 and 546 posted in 2006. Of those researchers 413 were qualified to PhD levels and 234 were non-PhD qualified researchers. The number of technicians supporting research activities steadied at 333 in the year in headcount terms. In full time equivalent terms there were 605 FTE researchers in 2008, supported by 748 FTE technicians and other support staff.

Figure 14: Total research and development personnel by occupation (headcount terms, 2006-2008)

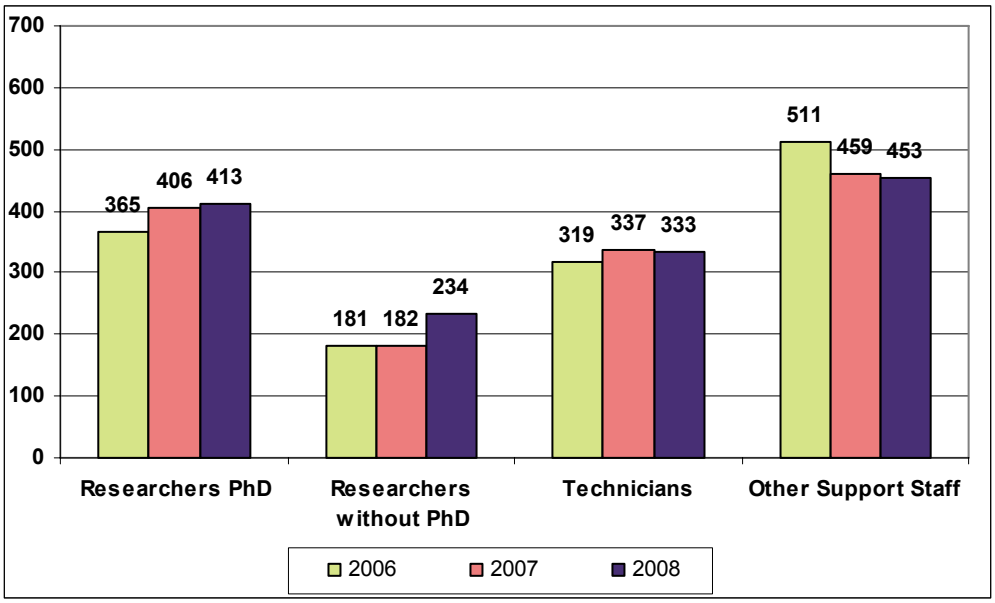
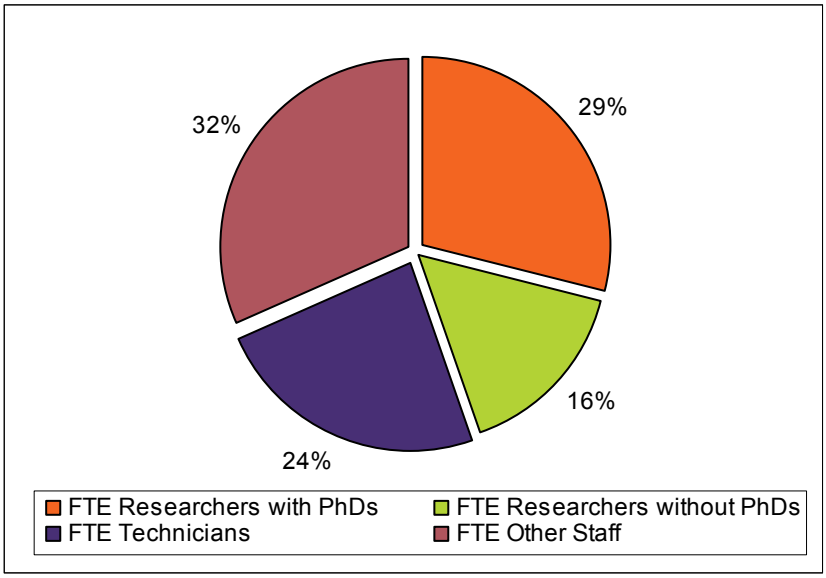


Figure 15 below shows the split in FTE research personnel employed in the government sector by type of occupation in 2008. 29% of research personnel were educated to PhD level, with 16% of total FTE personnel classified as non-PhD researchers. Almost one quarter of government research personnel were employed in technician grades, with the remaining 32% of the FTE total working in other support roles for government researchers.

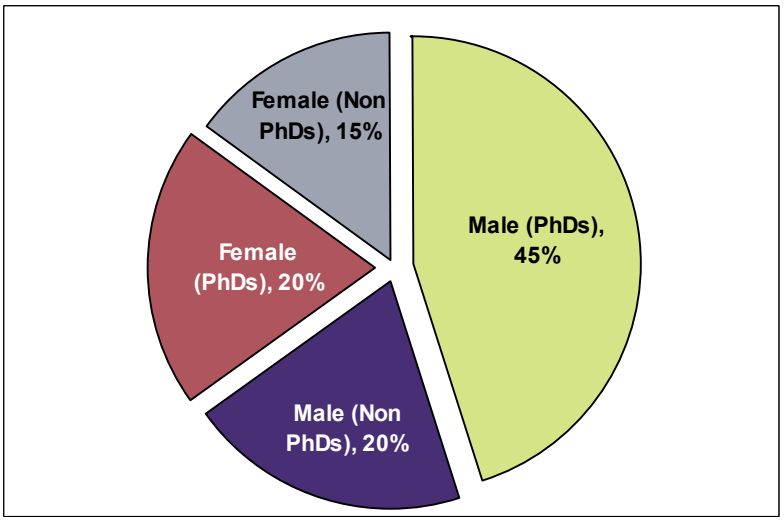
Figure 15: Total R&D personnel by occupation in FTEs, (2008)



4.2 Gender and qualifications of State sector research staff

Figure 16 shows a breakdown of government researcher grades by gender and type of qualification for 2008 in full-time equivalent terms. Of the total 605 FTE researchers employed in the government sector in 2008, 65% were male and 35% were female. 45% of total researchers were male PhD holders, with 20% being female PhD researchers. A further 20% of total researchers were male non-PhD holders and 15% of the total was classified as female non-PhD qualified researchers.

Figure 16: FTE Researchers by gender and qualification, (2008)



4.3 Research and development staff by fields of science

Of the total 605 FTE researchers employed in the government sector (PhD and non-PhD), 392 were male and 213 were female. These totals can be further analysed and broken down into the fields of science where the researchers are working. Table 7 below categorises male and female FTE researchers into the OECD standard fields of science classification, for 2008. It should be noted that this classification has recently been updated to reflect the changing nature of some science disciplines not captured in the previous classification structure.

Table 7: Total male/female (FTE) and as percentage of total by field of science, (2008)

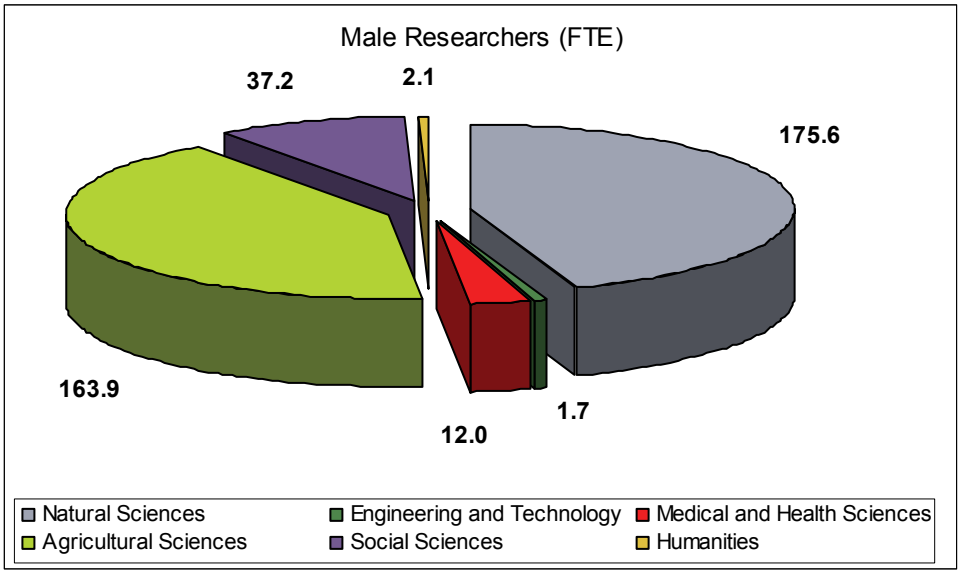
Fields of Science	Male Researchers (FTE)	Male researchers as % of total	Female Researchers (FTE)	Female researchers as % of total
Computer and information sciences	12.0	3.1%	4.0	1.9%
Physical sciences	84.0	21.4%	25.0	11.8%
Earth and related environmental sciences	46.6	11.9%	25.1	11.8%
Biological sciences	33.0	8.4%	16.0	7.5%
Civil engineering	1.7	0.4%	0.1	0.0%
Health sciences	12.0	3.1%	27.8	13.1%
Agriculture, forestry and fisheries	15.1	3.8%	7.5	3.5%
Animal and dairy science	2.5	0.6%	0.8	0.4%
Veterinary science	10.0	2.5%	0.0	0.0%
Economics and business	35.2	9.0%	27.2	12.8%
Other agricultural sciences	4.0	1.0%	2.3	1.1%
Agricultural biotechnology	132.4	33.7%	74.7	35.2%
History and archaeology	2.1	0.5%	0.0	0.0%
Sociology	2.0	0.5%	2.0	0.9%
Totals	392.5	100%	212.4	100%

Of the 393 male FTE personnel working in government sector research posts, over one third were employed in the agricultural biotechnology sciences. The next largest field of science in which male researchers were involved was in the physical sciences which employed over 21% of the total.

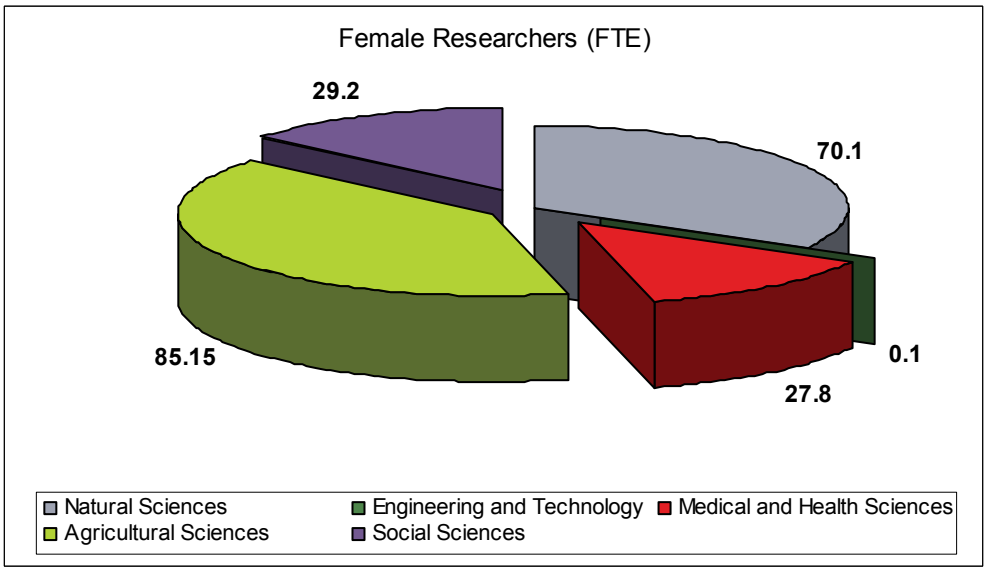
Figure 17 below shows a gender break down within the different fields of science. Female researchers make up 70% of total medical researchers, while male researchers dominate all other categories. The agricultural sector comprises 41% of total male and female research personnel. The next largest share for both sexes is the natural sciences. 45% of total male researchers and 33% of female researchers work in this field.

Figure 17: Researchers classified by gender and field of science FTE, (2008)

Male Researchers



Female Researchers



Appendix 1

Methodology

The information given in this document relates to information supplied by 41 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 2007 outturn costs of programmes and to the expected costs in 2008. 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 2008 Science Budget

The Science Budget records expenditure on science and technology in the government sector. This sector includes:

- government departments
- associated government agencies
- government offices

Table 1 below lists the 41 government departments, agencies and offices included in the 2007/2008 Science Budget.

Table 1: Government departments/agencies and offices funding S&T activities, 2008

Government Departments	Associated Agencies
Dept. of Agriculture, Fisheries and Food	Bord Iascaigh Mhara
	COFORD
	Marine Institute
	Teagasc
Dept of Arts, Sport and Tourism	
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
	Postgraduate Medical and Dental 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 is 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
BIM	Bord Iascaigh Mhara - The Irish Sea Fisheries Board
CRFB	Central and Regional Fisheries Boards
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, 2003 and 2008 (or latest year)

Country	2003	Rank	2008	Rank
Australia	0.32	7	0.28	8
Austria	0.12	29	0.13	30
Belgium	0.13	27	0.16	26
Canada	0.19	20	0.17	24
Czech Republic	0.29	10	0.27	11
Denmark	0.18	22	0.16	26
Finland	0.33	4	0.33	6
France	0.36	2	0.37	3
Germany	0.34	3	0.35	5
Greece	0.12	29	0.12	31
Hungary	0.29	10	0.25	13
Iceland	0.70	1	0.66	1
Ireland/GNP	0.11	33	0.10	33
Italy	0.19	20	0.18	22
Japan	0.30	9	0.28	8
Korea	0.33	4	0.37	3
Luxembourg	0.17	25	0.19	21
Netherlands	0.25	15	0.24	15
Norway	0.26	14	0.24	15
Poland	0.22	19	0.21	19
Portugal	0.12	29	0.12	31
Slovak Republic	0.18	22	0.16	26
Spain	0.16	26	0.20	20
Sweden	0.13	27	0.17	24
Switzerland	0.03	35	0.02	35
Turkey	0.06	34	0.09	34
United Kingdom	0.18	22	0.18	22
United States	0.33	4	0.29	7
Total OECD	0.27	13	0.26	12
EU-27	0.24	16	0.24	15
EU-25	0.24	16	0.24	15
EU-15	0.24	16	0.25	13
China	0.31	8	0.28	8
Romania	0.12	29	0.15	29
Slovenia	0.29	10	0.39	2

Source : OECD, Main Science and Technology Indicators, April 2008.

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

Country	2007 (or latest available data)	Rank
Portugal	56.6%	1
Romania	49.9%	2
Argentina	47.3%	3
Spain	46.6%	4
Russian Federation	45.4%	5
Slovenia	43.5%	6
Iceland	43.5%	7
Slovak Republic	42.9%	8
Finland	42.8%	9
Greece	40.8%	10
Poland	40.4%	11
Italy	39.9%	12
South Africa	39.4%	13
Hungary	38.1%	14
Norway	37.4%	15
Sweden	37.2%	16
Denmark	36.4%	17
Austria	36.2%	18
Czech Republic	36.2%	19
Ireland	**35.0%**	**20**
France	32.9%	21
United Kingdom	32.3%	22
Singapore	31.7%	23
Belgium	31.4%	24
Luxembourg	30.6%	25
Mexico	29.9%	26
Netherlands	29.5%	27
Turkey	29.4%	28
Switzerland	28.6%	29
Germany	28.5%	30
New Zealand	24.8%	31
Chinese Taipei	21.1%	32
Korea	13.5%	33
Japan	13.2%	34

Appendix 6 – Questionnaire

Expenditure ALLOCATED to Science & Technology and Research & Development in 2008

Agency Name:

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

Total In-House Expenditure																
	Research & Development (insert details in section 2 below) (€'000)		Technical Services (€'000)		Training, Education & Information (€'000)		Technology Transfer (€'000)		Other S&T Activities (€'000)		Total Current Expenditure (€'000)		Total Capital Expenditure (€'000)		Gross Expenditure (Current + Capital) (€'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 (DAFF) is concerned with the development of the agriculture, fisheries and food industries, through administration of public services in connection with promotion of farm improvement, participation in international agricultural activities including administration of EU schemes, UN agency activities, and the development and implementation of fisheries policy.

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, Fisheries 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 2007	€'000 2008
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 experimental trials on farms throughout the country.	1689	1770
R&D-related veterinary and meat laboratory activities The operation of a central veterinary research laboratory at White Cross, Backweston, Co. Kildare and regional veterinary research laboratories in Cork, Limerick, Sligo, Athlone and a testing laboratory in Waterford.	8530	8755
Institutional food research In its implementation of the Food Institutional Research Measure of the Research Technology Development and Innovation (RTDI) component of the Productive Sector Operational Programme (OP) under the National Development Plan 2000 – 2006 and 2007 - 2013, the Department is involved in the management of competitive tendering by food research institutions for grant-aid to support food research in priority areas. It monitors the progress of successful projects, payment of grant aid and evaluation of the programme. Expenditure on this programme is expected to rise in 2008 due to additional calls for funding and sustaining existing projects.	14,825	15,965
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. The increase of funding for 2008 stems from on-going financing of existing projects.	8,753	10,042

Improvement of livestock Improving the quality of livestock and livestock products through adoption of better breeding and selection practices. This is being achieved through the 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.	811	664
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.	150	172
US-Ireland co-operation programme in agricultural research This component of the department's expenditure relates to Irish side grant aid to researchers – mainly from Teagasc and UCD – who are participating in the US-Ireland Programme of Co-operation in Agricultural Research. This bi-lateral programme provides opportunities for agricultural researchers from the US and Ireland, working in the same research area, to achieve greater progress through sharing their knowledge by spending a period of time working in each others institutions.	9	20
TRAINING, EDUCATION AND INFORMATION	1354	1330
TECHNICAL SERVICES	38,202	55,985
OTHER SCIENCE AND TECHNOLOGY ACTIVITIES	2095	2840

Department of Agriculture, Fisheries and Food

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 client base is comprised of fishermen, fish farmers, processors and all those engaged in marketing Irish seafood.

	€'000 2007	€'000 2008
RESEARCH AND DEVELOPMENT		
Marine Technical	979	820
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 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 (a body similar to Ireland's Marine Institute), 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 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. 1. BIM has a demonstration facility based in the NUIG Carna laboratory, which allows for the development of commercially applicable handling protocols and facilitates operator training. In addition the development of 'user friendly' guides for industry will be facilitated. 2. Continuing the development of a comprehensive suite of environmentally friendly fishing techniques for inshore species including size selective dredges and escape gaps for creels. 3. Development work on niche fisheries such as hand-lined mackerel, pollack and squid will continue.	488	390
Resource Development The primary focus of the Resource Development Section work programme will see the further development of mechanisms by which the industry can compete in the marketplace through increased quality. At the core of this strategy is the development of quality schemes for the catching sector that are suitable for integration into the QSP programme. This will enable Irish fishermen to compete at the highest levels of quality and traceability now demanded by the consumer.	240	215
Supporting Measures The Supporting Measures Programme of the NDP provides, through 8 targeted schemes, grant aid of €25 million over the lifetime of the NDP. To date some €26.79 million has been awarded to a total of 109 projects.	3502	3782
Planning and Development	92	125
Seafood development centre (lab.)	100	100

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, 2007-20013.

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;
- to develop national forest research capacity and competence.

	€'000 2007	€'000 2008
RESEARCH AND DEVELOPMENT	3,177	3,823
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 Descriptions of all current COFORD projects are at www.coford.ie.		
TECHNOLOGY TRANSFER	1,030	577
Technology transfer is one of the core functions of COFORD. A variety of methods, media and technologies are 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 (www.coford <http://www.coford> .; www.woodenergy.ie <http://www.woodenergy.ie> ; www.woodspec.ie <http://www.woodspec.ie>).		

Department of Agriculture, Fisheries and Food

The 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 and create employment and protect the marine environment".

The Marine Institute is also responsible for advising the Minister on policy relating to marine research and to advise the Minister on proposals relating to such research and development requiring funding from the exchequer or from any State owned or controlled organisation. In this context, the Institute provides research management services including;

- Leading the implementation of "*Sea Change*: A Marine Knowledge, Research & Innovation Strategy for Ireland 2007-2013".
- The administration of the Marine Research Sub-Programme of the STI Programme of the NDP 2007-2013.

In addition to the research management role, the Marine Institute also carries out and supports R&D in a number of other areas (further details are provided below). Research facilities include: 54 laboratories at the MI's new headquarters in Oranmore, Co. Galway, Aquaculture and Catchment Management Facility in Newport, Co. Mayo; two National Research Vessels; and Ocean Energy Test Site in Galway Bay.

	€'000 2007	€'000 2008
RESEARCH AND DEVELOPMENT		
Strategic Planning and Development Services (SPDS) SPDS' mission is "To stimulate and support the development of strategic R&D actions and programmes (at national and international level) to promote marine related economic development in Ireland". Key functions include (i) overall responsibility for co-ordinating the implementation and management of *Sea Change*; (ii) development of on-going foresight and strategic planning activities at national and international level; and (iii) acting as a catalyst for the management and delivery of developmentally focused national and international research and innovation programmes. Other key functions include R&D support for the development of marine technology, renewable ocean energy, marine biotechnology/biodiscovery, and ICT development, including new applications for both data mining and customer service.	118	100
Sea Change *NDP 2000-2006 Marine RTDI Measure* The guiding objectives of this measure was to enhance and consolidate the performance of the marine sector in Ireland through support for R&D and technology transfer activities; and provide the	5178	10,000

RTDI capacity and infrastructure to enable Ireland to fully utilise its marine resource potential in a sustainable manner. 3 sub-measures were created to structure investment during the lifetime of the plan; Sub-Measure 1: Enhanced Research Vessel Capacity, Sub-Measure 2: Marine RTDI Infrastructure, Sub-Measure 3: Marine RTDI Fund. *NDP (2007-2013) Marine Research Sub-Programme* The management and administration of the marine research component of the NDP is managed by the Marine Institute on behalf of the DAFF. This Sub-Programme is one of the investment streams aimed at achieving the objectives of Sea Change: A Marine Knowledge, Research & Innovation Strategy for Ireland 2007-2013. The Strategy will be implemented via three Research Measures - Industry, Discovery and Policy Support, and two Supporting Programmes - Innovation and Infrastructure. This Sub-Programme will be implemented through a range of mechanisms such as competitive calls for proposals from the research community (including industry) and the acquisition of new marine research infrastructure. *Strategy for Science, Technology & Innovation (SSTI) 2006-2013* The Marine Institute manages funding secured under the SSTI and targeted at specific elements of *Sea Change*. Funding for the period 2007-'09 is targeted at the areas of Marine Functional Foods, Climate Change and Integrated Marine Exploration, and is being administered through competitive calls and building specific research capacity and capabilities within the Marine Institute.		
Ocean Science Services (OSS) Ocean Science Services (OSS) provides support for national and international marine research programmes through the operation of the two national Research Vessels (*RV Celtic Voyager* and *RV Celtic Explorer*). Services also include hydrographic and geophysical mapping for the Irish National Seabed Survey and the implementation of Integrated Mapping for the Sustainable Development of Irelands Marine Resource (INFOMAR). The team is also provides comprehensive oceanographic services, including the National Weather Buoy Network around the Irish coast, establishment of an Irish tide gauge network, ocean modelling, satellite remote sensing and oceanographic support of diverse seagoing research programmes related to marine fisheries and environment.	4,172	3,672
Fisheries Science Service(FSS) The FSS team provides research, assessments and scientific advice on the sustainable exploitation of the marine fisheries resources in the waters around Ireland. The team carries out fisheries surveys in the waters around Ireland, collecting extensive data for both national and international stock assessments of the main commercial species of fish and shellfish. This information is used to produce the annual 'Stock Book' which is the primary source of scientific advice on marine fisheries to the Irish Government and the Industry and is used to support fisheries negotiations with the European Union.	5,950	7,219
Marine Environment and Food Safety The MEFS team comprises 60 scientists who provide scientific services on food safety and the marine environment to the Irish seafood sector, as well as research and monitoring programmes in the areas of fish health and the marine environment. The MI's food safety programmes provide a solid basis for the Irish seafood sector to meet EU regulations and to ensure full consumer safety for the Irish and	762	780

export markets.		
Aquaculture and Catchment Management Services (ACMS) The main functions of ACMS are to research, monitor, analyse and advise in the areas of finfish aquaculture, salmonid rearing, wild salmon & eel stock dynamics and freshwater catchment studies. The team provides a broad range of scientific advice both nationally to the DCMNR and specialist advisory groups (e.g. National Salmon Commission) and internationally to a range of organisations (e.g. EU Commission, ICES and NASCO).	400	450
TECHNICAL SERVICES	13,497	13,092
TRAINING, EDUCATION and INFORMATION	1,191	1,025
TECHNOLOGY TRANSFER	897	965
OTHER S&T ACTIVITIES	7,231	9,190

Department of Agriculture, Fisheries and 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 provide an independent and authoritative research knowledge base, technology transfer and training services for the sustainable development of agriculture and the food processing industry to enable it to respond profitably to consumer demands and requirements and contribute to a vibrant rural economy and society".

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 2007	€'000 2008
RESEARCH AND DEVELOPMENT		
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. Some elements of the programme will expand as a result of greater contributions from industry (Commodity Levy) and external funding (Stimulus Funding). Emphasis will continue to be placed on ensuring that this technology is transferred rapidly to stakeholders through the extension and education programmes of Teagasc. The Department of Agriculture, Fisheries and Food has approved a new research vision proposed by Teagasc. The principal aim of the new vision programme is to invest in centres of excellence that 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. The new research strategy will expand the organisation's resources devoted to biosciences such that world class competence in selected key areas will be established.	40408	45030
Food processing 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,	18962	20025

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. Indeed, this represents a major part of the new Teagasc Vision Programme of Investment which will include research programmes on obesity, infant and elderly nutrition, bioactive mining and gut health.		
TECHNICAL SERVICES The objective of this programme is to provide a range of services that facilitate, promote and service the requirements of the agri-food industries. The specific objective of providing technical service to the food industry is to raise the innovative capacity of the industry and support the development of small and medium scale food enterprises. The provision of services is based on the premise that these are areas where Teagasc research is in a unique position to provide information necessary for the development of the agri-food industries. In agriculture, services are provided in the following areas: • Analytical/diagnostic services such as the nematology service to the Department of Agriculture & Food; analysis of silage, meals, water, compost, soils and plants; diagnosis of animal and other diseases; • Consultancy services to Irish and EU agencies in areas such as land resource management, equipment development and policy analysis; • The National Farm Survey Based on the strategic research capability already outlined, and associated expertise in product and process innovation, Teagasc provides technology development services for food companies (particularly, small and medium scale enterprises), in the following areas; • Consultancy and contract research in product development and product/process improvement; • Pilot plant facilities for R&D and small-scale manufacturing; • Assistance with registration for ISO and installation of quality management schemes; • Assistance with marked investigations, market trends and analysis of market opportunities for food.	4658	5077
TRAINING, EDUCATION AND INFORMATION	3046	3342
TECHNOLOGY TRANSFER Teagasc provides professional advice to farmer clients at enterprise level concerning dairying; cattle; tillage crops; horticulture; financial management; agri-tourism; farm modernization; environmental conservation/control of farm pollution, winter feed quality and overall farm management. Programme support includes the provision of specialist training to advisers to enable them to keep abreast of S&T developments. Through its nationwide network of over 100 offices and 230 advisers, Teagasc maintains contact with 90,000 Irish farmers. It provides advisory services under contract to 34,450 of the more progressive of these farmers.	55423	57984

Department of Arts, Sport and Tourism

Natural History Museum

The Natural History Museum originated as one of the many activities initiated by the Royal Dublin Society in furtherance of its aims to foster the useful arts and science in Ireland. The nucleus of the museum was formed by the purchase in 1792 of the Leskean collection of minerals and insects aided by a grant from Parliament. Under the Dublin Science and Art Museum Act, 1877, responsibility for the Museum was undertaken by the State and the National Museum founded with staff of the Natural History Museum transferred to the Natural History Division of the National Museum. In 1924, the Department of Education took responsibility for the National Museum and in 1982 it was transferred to the Department of the Taoiseach. In 1993 its functions were transferred to the new Department of Arts, Culture and the Gaeltacht. In 2002 it was transferred to the Department of Arts, Sport and Tourism. In May 2005 the National Museum of Ireland was established as a non-commercial semi-State body under the terms of the National Cultural Institutions Act, 1997.

The functions of the Natural History Division of the National Museum include: The provision of public exhibitions, the dissemination of information to the public on zoological, entomological and geological material, and the curation of the collections.

There are 10,000 specimens on exhibition and approximately two million specimens in the research collection. Programme funding for the Natural History Museum is a non-fixed proportion of the budget for the National Museum of Ireland, which is received from the Department of Arts, Sport and Tourism.

	€'000	€'000
	2007	2008
RESEARCH AND DEVELOPMENT	390	390
Curation of collection Fieldwork and foreign travel Research support fund		

Department of Communications, Energy and Natural Resources

The Department was formed in June 2002. 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 2007	€'000 2008
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.	605	377
Geological Survey Ireland	9,233	8,453
The Geological Survey of Ireland was established in 1845 and is currently a division of the Department of Communications, Energy and Natural Resources. The GSI is the national geoscience agency. Its role is the provision of information and advice on all aspects of geology, especially as they relate to mineral resources and the environment. The Griffith Geoscience Research Awards were developed with a view to significantly develop overall research capacity particularly in priority areas of geoscience research as outlined in the National Geoscience Programme 2007-2013. The awards will provide support for essential infrastructure research development particularly within the Geological Survey of Ireland (GSI) in addition to support for PhD students and Researchers.		
National Digital Research Centre Established in November 2006, the NDRC will position itself as a translational research institute with a core mission to act as a national focal point for technology innovation in the digital media domain in Ireland. The Centre is operated by a consortium of 5 of the leading third level institutions 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 and Design (NCAD). The total monies allocated to the NDRC is €25 million over a five year period, 2006-2011.	1,149	5,009
Energy Planning Division This covers a range of Energy RTDDI, administration, capital initiatives and programmes including existing Charles Parsons Awards and policy support and advice. Most of the rest of these capital initiatives and programmes are being developed as the energy research strategy is being finalised	435	3,659
Charles Parsons Energy Research Awards II: The awards are designed to increase Irish energy research capacity and a particular design feature is to attract engineering undergraduate students and graduates into a career in research. The output of the scheme will be skilled researchers in a range of priority research areas of relevance to Irish industry.	6000	0
Griffith Geoscience Research Awards The objective of the awards, which will be managed by the Geological Survey of Ireland (GSI), is to develop overall research capacity particularly in priority	1,000	2,100

areas of geoscience research as outlined in the National Geoscience Programme, 2007-2013 (available at www.gsi.ie). The awards will among other things support the establishment of an all-island geoscience graduate school and seek to stimulate interest by primary and secondary school students in Geology/Geoscience through the production and distribution of geoscience outreach products.		
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. At the end of 2004, three petroleum leases, nine offshore petroleum exploration licences, sixteen licensing options and nine petroleum prospecting licences were in place.	620	853
Geological Survey Ireland (as above)	400	400
TRAINING, EDUCATION AND INFORMATION		
National Digital Research Centre	186	120
Geological Survey of Ireland (as above)	20	20
OTHER S&T ACTIVITIES		
National Digital Research Centre	918	497

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 2007	€'000 2008
RESEARCH AND DEVELOPMENT	2616	5488
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. **RTDI** During 2004 the CFB together with a group of university partners (U.U., U.C.D., U.C.C., N.U.I.G.), completed the 3rd year of a project funded by the EPA RTDI programme. The aim of the research project is to develop a model which will relate water quality (based on the EPA Q ratings system) to fish stocks. The overall objective is to develop an effective methodology, which will establish ecosystem quality and which will assist with the monitoring requirements of the Water Framework Directive.		
TECHNICAL SERVICES	1313	257
TRAINING, EDUCATION AND INFORMATION	66	120

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 Green Paper on Sustainable Energy and the National Climate Change Strategy as provided for in the National Development Plan.

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 2007	€'000 2008
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 CO_2 reduction and sustainable energy in Ireland. It has programmes active in the areas of built environment, industry, renewables, and transport and has three elements: • Public good activity • Shared cost activity • International collaboration on public good activities. The R&D results will provide guidance to policy makers and private entities on the practical, regulatory, technological and market opportunities to achieve sustainable energy goals. SEI's Renewable Energy RD&D Programme was established to help stimulate the market and industry to increase innovation and deployment of renewable energy technology. This programme funds the research, development and demonstration of various renewable technologies including ocean, bioenergy, wind and solar. The Renewable Heat (ReHeat) Deployment Programme is aimed at stimuating 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	20639	40000

means of grant assistance. The CHP Deployment Programme provides grant support to assist the deployment of small-scale (<IMWe) fossil fired CHP and biomass (anaerobic digestion (AD) and wood residue) CHP systems.		
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's Eco Passive Programme is a niche component of the House of Tomorrow that will explore, develop and demonstrate, innovative technical solutions that have the potential to improve energy and CO_2 performance standards in new housing. The Public Sector Programme, which through a combination of part funded design studies, co-funded model solutions and externally resourced Energy Management Bureaux aims to improve the energy performance of the public building stock asserting an exemplar role to the commercial and services sectors. The Energy in Business/Industry programme involves the delivery of a suite of energy support and advisory programmes to business users. SEI concludes agreements with large energy using firms who commit to implementing the IS 393 Energy Management Standard. SMEs receive advice and training through Advisory Service and Energy MAP through direct on-site assessments as well as training and interactive web support.		
TECHNICAL SERVICES **Renewable Energy Information Office** Sustainable Energy Ireland's Renewable Energy Information Office in Bandon Co. Cork is a national service, established to accelerate the development of renewable energy in line with government targets. The office provides independent expert advice on financial, social, environmental and technical issues relating to all renewable energy resources including wind, solar, hydro, geothermal and biomass. REIO has been established to promote the use of renewable energy resources and provide independent advice and information nationwide on financial, social and technical issues relating to renewable energy development.	544	700
TECHNOLOGY TRANSFER The Greener Homes Scheme is the residential component of the alternative heat measure announced in Budget 2006 to increase renewable energy penetration in the heat market. Under the Scheme SEI disperses direct grant support to householders who have installed qualifying renewable heating technologies and systems. The programme covers three critical areas as follows: - Grants for house-holders: Greener Homes Scheme residential grants towards the installation of renewable energy technologies such as wood pellet boilers, solar panels and geothermal heat pumps. - Biomass: Grant assistance for wood chip and wood pellet boilers, aimed at the business, commercial and service sectors.	27788	26500

OTHER S&T ACTIVITIES **(Institutional Infrastructure)** SEI is a semi-State body, with diverse responsibilities, and delivers programmes which vary greatly in scale, nature and method of delivery. SEI delivers a range of supporting corporate services to deliver core business functions and enable the organisation to ensure good corporate governance within all its practices. SEI aims to use information provision to motivate and empower behavioural change in relation to energy purchase and use, and hence deliver a reduction in energy consumption. The provision of a communications and marketing function heightens consumer awareness of the environmental impacts of energy use and highlights options for greater sustainability. Sustainable Energy Ireland's programme implementation responsibilities are underpinned by a number of key development, management and operational support functions, summarised below: • Policy advice and support; • External relations; • Marketing communications and information dissemination. • Curricular based primary and secondary energy education resources.	7058	7000

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

RESEARCH AND DEVELOPMENT	€'000 2007	€'000 2008
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. Feasibility Study Grants enable individuals, groups and firms to seek out and evaluate prospective new product ventures.	5770	6250

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. The Department's gross allocation for 2008 (as included in the 2008 Revised Estimate for Public Services) is €9,325 million.

Under the new NDP 2007-13 – Transforming Ireland, the Department will receive exchequer funding for the government's Strategy for Science, Technology and Innovation (SSTI).

The government's Strategy for Science, Technology and Innovation (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 NDP will provide the resources for full delivery on the education elements of the SSTI.

Included in the Department's 2008 gross allocation is €1,617 million which will be made available to Universities and Institutes of Technology. This includes current and capital funding for research and development.

Current funding is available to all Universities and Institutes of Technology to support the development of their research capabilities, to support outstandingly talented individual researchers, and to encourage co-operation within institutions and between institutions. This funding 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.

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 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 2007	€'000 2008
TRAINING, EDUCATION AND INFORMATION **Institutes of Technology:** Capital funding of the scientific and technical activities in the Institutes of Technology. Since 1 February 2007 the current element of funding for the Institutes of Technology has been provided by the Higher Education Authority.	394618	407234
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.	126026	136599

Third Level Scholarships: Provision of third level scholarships enables students to pursue S&T courses in third level colleges and institutions.	610	656
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. The new NDP also includes provision to support a new strategy for the ICT in Schools Programme. The "Schools ICT Initiative" will build on the roll-out of broadband to all schools and is aimed at embedding ICT in teaching and learning through a programme of development that will involve investment in hardware and software facilities at classroom level, the development of technical support services for schools, enhanced curriculum based digital content, teacher education and ongoing professional development support. The new strategy will be pursued in partnership with industry and wider stakeholders. The provision in 2008 for the current and capital components of this programme is €19.239m and €18m respectively. This money will assist with the development of computer networks in first and second level schools.	11579	37239
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. The three main objectives of the Fund are: (i) To review, extend and modernise the infrastructure of third level institutions, particularly in the technological sector (ii) To develop new areas of activities where emerging skill needs have been identified (iii) To invest in promoting innovation to maintain and further our economic growth.	3827	6000
RESEARCH AND DEVELOPMENT		
Miscellaneous R&D Activities	20780	26900
Direct research & department committee support The Department will directly support a number of educational research projects through its research and development committee.	553	576
EU projects supporting R&D Support is being provided for certain projects jointly with the EU. In 2007 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	1408	1420

• 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
International Science & Technology Activities Irish contribution to UNESCO, the International Institute for Education Planning, and the International Centre for Registration of Serials.	577	600
Institutes of Technology	4000	4000
OTHER SCIENCE & TECHNOLOGY ACTIVITIES		
College of Europe Scholarships are also paid to Irish students to attend the College of Europe, Bruges.	35	36
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 (not included in the Science Budget), 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 2007	€'000 2008
RESEARCH AND DEVELOPMENT		
The School of Theoretical Physics:	758	856
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.		
The School of Cosmic Physics:	4,697	4,216
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. 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, initially through the PRTLI Cycle 3 CosmoGrid programme which included a major investment in the IBM Blue Gene System. Recently it secured further funding for the e-INIS Programme funded under PRTLI Cycle 4.		
TRAINING, EDUCATION AND INFORMATION		
The School of Theoretical Physics:	443	439
The School provides information and advice in the broad area of theoretical physics and mathematics. It gives lectures to advanced students in the Dublin universities as well as organising public lectures for a general audience. It also supervises Ph. D. students registered at one of the universities. Interaction with interested parties in industry is welcomed and it can provide information and help in the following areas in particular: Particle Physics; Statistical Mechanics; Electronics; Monte-Carlo Simulation; Coding theory; Probability Theory and Applications; Telecommunications; Relativity Theory and Gravitation.		

TRAINING, EDUCATION AND INFORMATION		
The School of Cosmic Physics: The geophysics section secured funding to initiate the Irish Research Graduate Programme (IGGP). It is envisaged that the IGGP will expose graduate students to broad-based geoscience through the provision of short courses across a number of institutions in Ireland. In addition as part of its outreach policy, the section has launched a "Seismology in Schools" pilot project which will involve both primary and secondary schools. DIAS undertakes to train teachers in the introduction of seismology in schools. This follows increasing interest from students in earthquakes and earth science in general. The school provides information on astronomical and geophysical phenomena on request to government departments, to educational authorities, to the Garda Siochana and to the legal, engineering and medical professions. **Cosmic Physics JETSET Marie Curie** JETSET is a four-year Marie Curie Research Training Network (RTN) that commenced in February 2006. Its main scientific goals are focused on understanding the driving mechanisms of jets from young stars (including their possible crucial link with planet-forming disks); the cooling/heating processes, instabilities and shock structures in stellar and lab jets; and the impact of jets on energy balance and star formation in the galactic medium.	1,971	1,396
TECHNOLOGY TRANSFER The Irish Centre for High-End Computing, part funded and hosted by DIAS, has a mandate to perform technology transfer in the area of advanced computational methods. It has a cooperation agreement with Met Eireann to assist with the operational weather forecast simulations.	57	39
TECHNICAL SERVICES	1,096	751

Department of Education and Science

The 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 1972 under the provisions of the Higher Education Authority Act, 1971. The HEA has the following general functions:

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

In addition, it has the following specific functions:

- advising the Minister on the need for the establishment of new institutions of higher education, on their nature and form, and on legislative measures in relation to their establishment (or in relation to existing institutions);
- maintaining a continuous review of the demand and need for higher education and making recommendations to the Minister on the provision of student places and the balance between institutions;
- making recommendations to the Minister on the provision for higher education and research, either in relation to current or future periods;
- instituting and conducting studies on problems of higher education and research, and publications or reports of such studies;
- payments to institutions of higher education out of monies provided by the Oireachtas, such amounts as may be approved by the Minister (with the consent of the Minister of Finance).

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.

The HEA does not directly fund research in universities. The block-grant is not specifically earmarked for any purpose by the HEA but is divided between departments at college level. As academic salaries are funded by the block grant it is assumed that a percentage of the grant goes to fund research.

Approximately 56.5% of current exchequer expenditure, provided by the HEA and 68.8% of non-exchequer expenditure is for the area of science and technology. A distinction is made between the HEA block grant allocated to academic departments and administration and support services.

	€'000 2007	€'000 2008
RESEARCH AND DEVELOPMENT		
General Promotion of Knowledge	175910	172871
General support for R&D activities in the relevant faculties in Universities and other designated higher education institutions i.e. implicit support for R&D contained in the HEA allocations to individual colleges and institutions together with external sources and research funds. In addition to funds for R&D which are implicit in the HEA's grant to colleges because of the integral part which research plays in the working time of academic staff, third level colleges are awarded grants for research from a variety of sources. These funds are included here for completeness but are not part of the HEA budget to colleges. These figures include funds from the various operational programmes that pass research grants to university researchers.		
Programme for Research in the Third Level Institutions (PRTLI)	62476	76400
The Programme for Research in Third Level Institutions (PRTLI) is a government initiative, to strengthen the basic research capabilities of third level institutions in Ireland. The programme is funded under the National Development Plan (NDP) with assistance from the European Regional Development Fund and through a partnership with private sources. A total of €605 million has been allocated to date. The management of the programme and the allocation of funds (current and capital) are co-ordinated by the Higher Education Authority (HEA) on behalf of the Department of Education and Science.		
Training, education and information	451110	497722
General support for undergraduate education and training in the following faculties in universities and other designated higher education institutions: education and related sciences; architecture, medical and related sciences and natural sciences. Also provision of equipment to support science and technology education and training.		

Department of Education and 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 2007	€'000 2008
RESEARCH AND DEVELOPMENT	5455	5072
TECHNICAL SERVICES	1096	751
TRAINING, EDUCATION AND INFORMATION	2414	1835
TECHNOLOGY TRANSFER	57	39

Department of Education and Science

Irish Research Council for Science, Engineering and Technology

The Embark Initiative is managed by IRCSET - the Irish Research Council for Science, Engineering and Technology which was established in June 2001 by the Minister for Education and Science, in order 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 2007	€'000 2008
RESEARCH AND DEVELOPMENT The Embark Initiative seeks to position 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 are involved in a number of EUROCORE projects through the European Science Foundation. **The postgraduate research scholarship scheme** In addition to the Embark Scholarships, in 2004, 2005 and 2006 co-operative awards were offered in conjunction with a number of research partners. This aspect of the scheme continued to be expanded in 2007 to encompass a larger number of research areas and to ensure a greater number of talented researchers receive support. **The postdoctoral fellowship scheme** The Embark Initiative's postdoctoral fellowship scheme is designed to stimulate and support postdoctoral research in the sciences, engineering and technology. This unique initiative is designed to empower researchers at an early stage of their research career to build upon their PhD work and to benefit from the experience of established research teams.	24029	26300

DEPARTMENT OF ENTERPRISE, TRADE AND EMPLOYMENT

The Minister for Enterprise, Trade and Employment, currently Ms. Mary Coughlan, T.D., assigns extensive functions, powers and responsibilities for the management and promotion of scientific research and development in Ireland to the industrial development agencies.

The mission statement of the department is:

> We will work for government and the people to equitably grow Ireland's competitiveness and quality employment.

One of the main goals of the department is:

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

The State-sponsored bodies entrusted with either the implementation or formulation of policy programmes for which the department has responsibility are as follows:

- Enterprise Ireland (EI)
- Science Foundation Ireland (SFI)
- IDA Ireland
- Forfás
- Shannon Development
- The Patents Office.

The department also provides an annual subvention to the Tyndall National Institute, Cork.

The department's activities are financed through a general vote of the Oireachtas. 15 staff are currently employed (excludes 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 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)

€14.2m was provided for in 2007 in respect of Ireland's membership of these organisations. A breakdown of spending is shown in the following table:

Subscriptions to international organisations	€'000 2007	€'000 2008
European Space Agency (ESA) A principal objective of Ireland's membership of the ESA is to promote opportunities 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.	13,285	13,576
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.	154	164
COST European co-operation in the field of scientific and technical research - is based on an inter-governmental framework between 35 countries for research cooperation of nationally funded research activities in the field of scientific and technical research.	0	4
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.	34	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.	742	970

Department of Enterprise, Trade and Employment

Enterprise Ireland

Enterprise Ireland is the government agency responsible for the development and promotion of the indigenous business sector. Its mission is to accelerate the development of world-class Irish companies to achieve strong positions in global markets resulting in increased national and regional prosperity.

EI's key focus, for Irish companies is covered under the following five areas of activity :

- Achieving export sales
- Investing in research and innovation
- Competing through productivity
- Starting up & scaling up
- Driving regional enterprise
-

EI also provides assistance for international companies who are searching for world-class Irish suppliers and can help international companies who want to set up food and drink manufacturing operations in Ireland.

	€'000 2007	€'000 2008
RESEARCH AND DEVELOPMENT		
RTI Competitive Grant Scheme	16504	16180
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, Shannon Development and Udaras na Gaeltachta.		
R&D Initiatives (R&D Capability)	19496	20000
EI provides assistance for significant investment in R&D facilities which arise as part of a company's strategic development.		
Innovation Partnerships (under RTDI Collaboration)	8290	6821
These are aimed at harnessing the strengths of the third level sector to work in partnership with companies on specific R&D projects.		
Applied Research Enhancements (under RTDI Collaboration)	6763	15462
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.		
Industry Led Networks (under RTDI Collaboration)	4259	2236
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.		
Basic Research Grants (RTDI capital expenditure)	366	200
Funding represents EI's expiring commitments (now managed by SFI and IRCSET).		
International Collaboration (by colleges)	1038	1552
Supports academic researchers to engage in international collaborations and to access international best practice (in terms of research and facilities).		

TECHNOLOGY TRANSFER	42412	46181
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.		
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.		
Networking Initiatives & Innovation Vouchers		
A key aspect of the transfer of knowledge from the research system to the productive sector is the maximising of scale.		
Technology Transfer		
Complementing EI's domestic work to maximise technology transfer between researchers and companies in Ireland. Specialist EI personnel trawl the international scene for opportunities and work with companies in Ireland to broker agreements (either inward or outward).		
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.		
Incubator (RTDI Infrastructure)		
Through its incubation construction programme, EI invests in on-campus space for start-up companies, including specialised biotech facilities (Wet Labs).		
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.		
TRAINING, EDUCATION AND INFORMATION	1961	2800
Innovation Management: EI facilitates training for companies on R&D techniques. These range from introductory through to more advanced targeted tuition.		
OTHER S&T ACTIVITIES	8292	8628
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.		

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 EURES 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.

FÁS is the largest non commercial State agency, employing a total of 2,265 staff nationwide.

	€'000 2007	€'000 2008
RESEARCH AND 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 includes labour market research and analysis, skills forecasting, surveys and evaluation, and policy advice and analysis. It also provides a central library and technical information service for FÁS and this, in turn, links with CEDEFOP, the European Centre for the Development of Vocational Training. The Department includes the Skills and Labour Market Research Unit which provides a research function for the Expert Group on Future Skills Needs.	895	980
TRAINING, EDUCATION AND INFORMATION During 2007, FÁS catered for a total of 47,907 people on its training programmes (including apprentices) and on schemes catered for 31,603 people.	95,281	98,107
OTHER SCIENCE AND TECHNOLOGY ACTIVITIES	424	313
Overseas Graduate Programme The Overseas Graduate Programme places newly qualified Irish graduates with an honours degree (or higher) in business, engineering or sciences related fields into full-time employment with companies abroad particularly in China, Japan and Taiwan. The initial arrangement is for two years but may be extended by mutual agreement. In 2007, 36 graduates were offered positions in Japan (24), China (12). FÁS are currently reviewing the Overseas Graduate Programme and are investigating the possibility of using the "Science Challenge Model" to place graduates into universities and research institutes in China and Japan. In the meantime, in 2008 "traditional placement" will continue in Japan and in a smaller way in China .The Overseas Graduate Programme will continue to provide international postgraduate educational and training opportunities for the country's most talented graduates and building collaborations that access the world's best scientists and facilities will be instrumental in transforming Ireland's scientific and technological base to embrace the new challenges of the global economy and the 21st century.		

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 2007	€'000 2008
RESEARCH AND DEVELOPMENT		
Science & Technology Division The mission of Forfás in science and technology is to enhance Ireland's performance in science, technology and innovation and thereby contribute to economic and social development. 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 Inovation 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.	251	294

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.	260	508
TRAINING, EDUCATION AND INFORMATION	4964	5250
OTHER SCIENCE & TECHNOLOGY ACTIVITIES	2243	2647

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 12 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 2007	€'000 2008
	43,917	55,000
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 45 companies undertook to invest in RD&I activities in their Irish operations during 2007.		

Department of Enterprise, Trade and Employment

Inter*Trade*Ireland

Inter*Trade*Ireland is the cross-border Trade and Business Development body. Inter*Trade*Ireland's mission is to enhance the global competitiveness of the all-island economy through the creation of knowledge-intensive all-island trade and business development networks and the implementation of all-island trade and business development programmes. 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 2007	€'000 2008
RESEARCH & DEVELOPMENT	832	350
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.		
TRAINING, EDUCATION & INFORMATION	13	55
TECHNOLOGY TRANSFER	2884	2590
FUSION is an all-island technology transfer programme which offers firms with technology-based needs, such as the development of new products and processes, the opportunity to work within three-way partnerships that include third-level research institutions with specialist expertise and a high-calibre science and technology graduate.		
OTHER S&T ACTIVITIES	124	34
Expertiseireland.com is an online resource which provides access to the academic research expertise available across the island of Ireland. Facilities include researcher profiles, a searchable database of relevant funding sources and details of technology licensing opportunities.		

Department of Enterprise, Trade and Employment

Science Foundation Ireland

Science Foundation Ireland (SFI) was established by the Irish Government to support globally competitive scientific and engineering research in strategic areas that advance the country's technological and economic success and reputation. SFI is included as a sub-measure under the National Development Plan 2007-2013 (NDP) and its programmes and priorities are consistent with the objectives for investing in research, technological development and innovation as set out in the Strategy for Science, Technology and Innovation (SSTI).

SFI, 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 2007	€'000 2008
RESEARCH AND DEVELOPMENT		
Biotechnology (BioT)	65781	73306
Information and Communications Technologies (ICT)	68914	76797
Frontiers Engineering and Science (FES)	21927	24435
SFI AWARD PROGRAMMES		
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 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. Supplements should be directly related to, and enhance, the existing SFI peer-reviewed programmes. **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; will foster new and existing industrial research activity that could make an important contribution to the respective economies: and will expand educational and research career opportunities in science & engineering **SFI Research Professor Recruitment Awards** The SFI Research Professor Recruitment Awards aims to attract to Ireland outstanding researchers, with particularly distinguished international reputations. **SFI Industry Research Partnership Supplements** The SFI Industry Research Partnership Supplement award facilitates collaborations between SFI funded researchers and industry. **SFI International Research Partnership Supplements** The SFI International Research Partnership (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 relating to the areas of research that underpin Biotechnology, Information and Communications Technology and Sustainable Energy and Energy-Efficient Technologies. **Tyndall National Access Programme** The Tyndall National Institute in association with the Department for Enterprise, Trade and Employment will provide access for researchers to state-of-the-art research facilities and equipment, funded by SFI, with consequent benefits for research quality, innovation and economic competitiveness. **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** SFI Strategic Research Clusters (SRCs) will help link scientists and engineers in partnerships across academia and industry to address crucial research questions. **SFI STARs: Secondary Teacher Assistant Researchers Award** The SFI STARs programme aims to engage teachers' interest in science as		

researchers, to develop connections between second and third level education institutions and to disseminate new skills and knowledge which can be passed on to pupils.

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 funding will be €150,000 (Professorships) and €75,000 (Lectureships) in direct costs per annum. A minimum cost share contribution for each post of 20% (of SFI direct costs) by industry sponsors will be required (€30,000 and €15,000 p.a., respectively), bringing the total award value per annum to €180,000 and €90,000, respectively.

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. Proposals to this initiative are now invited in all fields of mathematics. **SFI Institute Development Award** The SFI Institute Development Award, as a follow-on programme to the Institute Planning Grant, provides Research Bodies with the opportunity to establish long-term sustainable initiatives in the area of women in science and engineering research activities and research management. **SFI Institute Planning Grant** The SFI Institute Planning Grant provides research bodies with the opportunity to conduct a self-assessment of women's participation in science and engineering research activities and research management. **SFI Centres for Science, Engineering, and Technology: Campus-Industry Partnerships (CSET)** CSETs help link scientists and engineers in partnerships across academia and industry. The aim of this is 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 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.

The key responsibilities of the company include the development and promotion of Shannon Free Zone; the development of the Knowledge Network throughout the region; 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, or 'flagship', projects that have a significant economic impact throughout the region.

	€'000 2007	€'000 2008
RESEARCH AND DEVELOPMENT	1175	1673
Product and process R&D 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 Allocation and from Enterprise Ireland. It is estimated that €1.673m will be received in 2008.		
Feasibility grants 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.	64	0
EDUCATION AND TRAINING Specialised training is given to assist in the starting-up of new high tech firms.	36	0
OTHER S&T ACTIVITIES	40	16

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 employs over 1,200 staff. The Department also funds the Radiological Protection Institute of Ireland, the Environmental Protection Agency and Met Éireann.

	€'000 2007	€'000 2008
TECHNICAL SERVICES National parks and wildlife services	**6330**	**64**
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.

The main responsibilities of the EPA are:

- Licensing
- National Environmental Enforcement
- Monitoring, Analysing and Reporting on the Environment
- Regulating Ireland's Greenhouse Gas Emissions
- Environmental Research and Development
- Strategic Environmental Assessment
- Environmental Planning, Education And Guidance
- Proactive Waste Management
- Environmental Research

  2007 was an important year for the EPA's environmental research initiatives. In October, a new research programme, called STRIVE (Science, Technology, Research and Innovation for the Environment) was launched. A total of €101 million has been allocated to EPA's environmental STRIVE research programme for the period 2007-2013. This will be funded through the NDP 2007-2013 and the Inter-Departmental Committee for the Strategy for Science, Technology and Innovation (IDC-SSTI). The STRIVE programme aims to fund research that will address key environmental management issues, which will ultimately protect and improve the natural environment.

- Climate Change Research

  During 2007, a new Climate Change Research Programme was established with funding from the Interdepartmental Committee for Innovation & Technology for Science Strategy. Thirteen projects and four fellowships were awarded in the first round of funding in 2007. The EPA has established an interagency committee for the co-ordination of research on climate change in Ireland.

	€'000 2007	€'000 2008
RESEARCH AND DEVELOPMENT • The environmental research technological development and innovation (RTDI) programme (2000 - 2006) and Science, Technology, Research and Innovation for the Environment (STRIVE) programme (2007 – 2013)	7982	7112
• Climate Change Research Programme (2007 - 2009)	2670	5330
TECHNICAL SERVICES	11650	14600
TRAINING, EDUCATION AND INFORMATION	2735	3200

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 for civil airlines operating to and from airports in Ireland and/or flying over Irish territory, and the supply of advice on meteorological aspects of civil aviation problems generally;
- Development work in applied meteorology;
- 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 2007	€'000 2008
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. 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 2008. Some limited development is carried out in the area of Forecaster Workstation and Automatic Weather Observations.	883	514
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	7638	9730

numerical weather prediction, wave and surge models are run. The modellers who adapt the numerical prediction weather models to the Irish situation.		
TECHNOLOGY TRANSFER Included here is the adaptation of computers and instruments to our automatic weather collection and forecasting needs.	150	150
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.	9281	10656
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.	4272	4803

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 2007	€'000 2008
RESEARCH AND DEVELOPMENT		
Monitoring of environmental radiation This programme monitors contamination of the aquatic and terrestrial environment by radioactivity from man-made sources. It also carries out other related research, and provides export certification service to Irish industry.	298	266
Radon studies and information service The monitoring of indoor radon levels in homes, schools and workplaces and related research to determine the extent of elevated radon levels in buildings is the main element of the programme. Information and advice to government and other agencies on all matters relating to ionising radiation are provided by the Information Service.	254	213
TECHNICAL SERVICES	1761	1653
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	2285	2052

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 2007	€'000 2008
RESEARCH AND DEVELOPMENT During 2007 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.	6667	7929
TECHNICAL SERVICES In 2007 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. 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.	9185	7735

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 2007	€'000 2008
RESEARCH AND DEVELOPMENT		
National Cancer Registry Board The National Cancer Registry Board was established in June 1991, under the Health (Corporate Bodies) Act, 1961. Its functions are inter alia, to research and analyse information relating to the incidence and prevalence of cancer and related tumours in Ireland and to promote and facilitate the use of data collected in approved research projects and in the planning and management of services.	2165	3514
Health Promotion Unit: • 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.	847	806
OTHER S&T ACTIVITIES	1190	2075

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 2007	€'000 2008
RESEARCH AND DEVELOPMENT	502	503
TRAINING, EDUCATION AND INFORMATION	147	143

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:

1. Shape the national agenda for research in health and personal social services
2. 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
3. Build capacity for world-class health research in Ireland
4. Advance the contribution that health research makes to a sustainable knowledge economy
5. Increase awareness and understanding of both the impact and the value of health research and information
6. Establish Ireland as a significant contributor to international policy on health research.

	€'000 2007	€'000 2008
RESEARCH AND DEVELOPMENT	4430	4239
The Research Strategy and Funding Directorate This Directorate manages all aspects of HRB funded research activities. The Directorate is comprised of three units: • Research Management Unit • Research Infrastructure and Special Initiatives Unit • The Policy, Evaluation and External Relations Unit **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. **The Research Infrastructure and Special Initiatives Unit** has responsibility for developing the infrastructure to support health research in Ireland and for managing special initiatives. The Unit is responsible for co-ordinating the work of the Cancer Consortium, the Irish Clinical Research Infrastructure Network (ICRIN), and the development of other large-scale infrastructure initiatives such as clinical research centres, networks and health research centres. **The Policy, Evaluation and External Relations Unit** has responsibility for the development of research policy, evaluating the outcomes of HRB funded research and promoting national and international links. The Unit also commissions work from time to time on topics relevant to health research.		

The Health Information and In-House Research Directorate This Directorate manages all aspects of HRB's national health information systems and internal research activities. The Directorate is comprised of four units: • Alcohol and Drug Research Unit • Child Health Epidemiology Unit • Disability Databases Unit • Mental Health Research Unit **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 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 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 Mental Health Research Unit** carries out national and international research, information gathering and the dissemination of research outcomes on mental health and mental illness in Ireland. The results of this research inform national policy, health service management, clinical practice and international academic research.		
TECHNICAL SERVICES	4327	4619
OTHER S&T ACTIVITIES	1059	1246

Department of Health and Children

Postgraduate Medical and Dental Board

The Postgraduate Medical and Dental Board was established in 1980 under the terms of the Medical Practitioners Act, 1978. It replaced the former non-statutory Council for Postgraduate Medical and Dental Education and Training (established in 1973).

The board has the following functions:

- To promote the development of postgraduate medical and dental education and training and to co-ordinate such developments;
- to advise the Minister for Health, after consultation with other bodies, on all matters, including financial matters, relating to the development and co-ordination of postgraduate medical and dental education and training;
- to provide career guidance for registered medical practitioners and registered dentists.

The Minister for Health, out of monies provided by the Oireachtas, makes annual grants toward expenses of the Board.

	€'000 2007	€'000 2008
TECHNICAL SERVICES	2299	2414
TRAINING, EDUCATION AND INFORMATION	4495	4720
OTHER SCIENCE & TECHNOLOGY ACTIVITIES	1294	1359

Department of Social and Family Affairs

The main functions of the Department of Social and Family Affairs 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 2007	€'000 2008
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 National Anti-Poverty Strategy (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.	2850	2993
Economic and Social Research Institute (ESRI) In addition to projects commissioned by the department, it also has an ongoing research programme with the ESRI. Aspects of this programme include: the detailed analysis of household surveys providing a vital source of information on, for example, the nature and causes of poverty, the position of vulnerable groups etc.; the ESRI tax-benefit model (SWITCH), which enables the potential effects of tax and social welfare changes to be modelled and specific items of research e.g. relative poverty levels in a comparative perspective.	59	13
Combat Poverty Agency The agency's main functions are policy advice, project support and innovation, research, public education and to support the effective implementation of the 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.	4008	4568
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 services. The Board provides citizen's information for the general public, support for information providers and social policy and research information.	1170	1101

TECHNICAL SERVICES	23729	30000
Consultancy etc. This expenditure is mainly in respect of fees and expenses for consultancy assignments, research and studies. The services covered are mainly the REACH/e-government projects; the design and development of new computer systems to support the administration of social welfare services; technical software support.	145	152
TRAINING, EDUCATION & INFORMATION		
Library/Publications		
International Collaboration		
International Social Security Association		
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.		
OTHER SCIENCE & TECHNOLOGY ACTIVITIES	65	145
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 2007	€'000 2008
RESEARCH AND DEVELOPMENT 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.	1666	1616

Department of Transport

The National Roads Authority

The National Roads Authority (NRA) 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 research functions in the area of road safety have been assigned to the recently established Road Safety Authority on establishment.

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 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 2007	€'000 2008
RESEARCH AND DEVELOPMENT	209	336
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.		

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. **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.		
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 & INFORMATION** **TECHNOLOGY TRANSFER** **OTHER S&T ACTIVITIES**	84	86
	101	104
	84	86
	84	86

Offices

Central Bank

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. 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 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.

	€'000 2007	€'000 2008
RESEARCH AND DEVELOPMENT	992	1398
The bank continued to monitor, analyse and project short-term developments in the Irish and Euro-area economies during 2007. 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 2007. 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 provided by 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 has the function of guiding the strategic direction of the CSO and of establishing priorities in responding to the demand for official statistics. The Board's *Strategy for Statistics 2003-2008* was published in 2003 and set out a framework for the development of official statistics to support decision-making by government and by society in general, with an increased emphasis on the effective statistical use of administrative records.

This is also reflected in the CSO *Statement for Strategy 2004-2006*. Over the course of the three-year strategy, the CSO has established new units to work on data integration in the areas of social, business and government statistics. These units are working actively with other Departments and agencies to identify their data needs and to help realise the statistical potential of administrative records.

The number of staff provided for in the CSO's 2008 Vote is 813. This includes permanent household survey field staff who collect statistics in the Quarterly National Household Survey and the EU Survey of Income and Living Conditions.

IT & Corporate Directorate - Central Services / Administration

Net expenditure on central services, which includes senior management, administration, research and development and information technology amounted to 29% in 2007 and is expected that this percentage will hold in 2008.

In both 2007 and 2008, the figures include a major ongoing IT investment programme, to provide an updated processing framework for over 100 surveys. The design of this new IT framework will incorporate the capability to cater for additional new statistical requirements. The project went live in September 2007 and will be bedded-in during 2008.

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: Rathmines, Swords and Cork.

All permanent CSO staff are recruited through the Public Appointments Service. As well as providing core personnel services, Personnel and HR Division is also responsible for a range of corporate support services. These include administrative support for the Performance Management and Development System (PMDS); for training and staff development; and corporate planning.

The CSO operates under an Administrative Budget Agreement with the Department of Finance. Budgeting and financial management are organised by Administration and Finance Division. New financial systems were installed in 2004, as part of the Management Information Framework, to support the provision of financial information throughout the organisation and the delegation of budgets to function and line managers.

The in-house desk-top-publishing and printing facility is used to prepare most of the CSO's publications, releases and survey forms. The CSO publishes more than 200 statistical releases every year, simultaneously on paper and on the CSO website (www.cso.ie). A new version of the website was launched in February 2005, with a more user-friendly layout and better accessibility features. The site includes an online dissemination database giving easy access to customised tables from a wide range of CSO statistics.

The e-government and Business Co-ordination division is responsible for the CSO's e-Public Service Strategy to extend the use of e-technology in both the collection and dissemination of data. The division co-ordinates with other e-government initiatives such as the Reach project. It also provides a range of related internal services, including standard statistical classifications and a central business register. An up-to-date comprehensive register of businesses is required under EU Regulation 2186/93 and also to meet national statistical needs. The division is responsible for developing the CSO's business register to optimise its use in the conduct of business surveys.

	€'000 2007	€'000 2008
TECHNICAL SERVICES	51145	51130

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 2007 was 2,128. The Office manages voted expenditure of approx. €681m 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 2007	€'000 2008
RESEARCH AND DEVELOPMENT		
Capital Expenditure on buildings where S & T research occurs	15093	10500
OTHER S&T ACTIVITIES	9097	27397

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 2007	€'000 2008
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.	29092	32046

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, Fisheries 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. The Laboratory employs a total of 98 permanent staff, of whom 80 (including the State Chemist) are directly involved in science and technology activities; the remainder are in administration and support services.

	€'000 2007	€'000 2008
TECHNICAL SERVICES	9008	10308
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.		

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. **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. **Environment/special services** The environmental area embraces a number of government departments and samples are analysed for compliance with the Safety Health and Welfare at Work Act. Hydrocarbon oils are analysed for lead, sulphur and benzene levels and cultural artefacts and building materials are also analysed. **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. Biological samples are also analysed for drugs in criminal cases (such as murders and alleged rapes) and in cases of deaths in custody. **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. The Quality System is continuously assessed and improved through regular internal audits and laboratory performance is monitored through participation in proficiency testing schemes and inter-laboratory comparisons.		
TRAINING, EDUCATION AND INFORMATION	152	180

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Forfás Publications 2008

Enterprise Statistics at a Glance 2008 Forfás	November 2008
National Skills Bulletin 2008 Expert Group on Future Skills Needs	November 2008
Environmental Goods and Services Sector on the Island of Ireland Forfás & InterTradeIreland	October 2008
Annual Business Survey of Economic Impact 2007 (web-only) Forfás	October 2008
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Review of the European Single Market	February 2008
Future Skills Needs of the Irish Medical Devices Sector Expert Group on Future Skills Needs	February 2008
Annual Business Survey of Economic Impact (ABSEI)	January 2008

Forfás Websites

The publications of Forfás and the independent advisory councils to which it provides administrative and research support are available on the Forfás website www.forfas.ie.

Email notifications direct to your inbox are available on the latest announcements, press releases and publications. To sign up for our email alerts contact us at info@forfas.ie or through the website.

NOTES

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