

State Investment in
Research &
Development
2012-2013

Table of Contents

Executive Summary	3
Introduction	5
Chapter 1: State funding of research and development	7
1.1 Types of research and development indicators	8
1.2 Government budget spending on research and development	9
1.3 Detailed Government department spending on research and development	10
1.4 Programmes classified by area of research	11
1.5 GBAORD as a percentage of GNP and international comparisons	12
Chapter 2: Expenditure on R&D performed in the public sector	16
2.1 Total expenditure on R&D performed in the Government sector	16
2.2 Types of Research	19
2.3 Fields of science	20
Chapter 3: Human resources dedicated to publicly performed R&D	21
3.1 Research and development personnel	21
3.2 State sector research staff by occupation	22
3.3 State sector research staff by qualification	23
3.4 Research and development staff by fields of science (FTE)	24
Appendix	
1. Methodology	26
2. Definition of Research & Development	27
3. Government Departments and Agencies included in the 2012-2013 survey	28
4. Acronyms	29
5. Main Government Departments/Agencies R&D programmes	30
6: Sample Questionnaire	33
7: Forfás Board Members	37
8: Forfás Recent Publications	38

List of Figures

Figure 1: Gross Expenditure on R&D (GERD) - elements	8
Figure 2: GBAORD trend in current prices, €m. (2004-2013)	9
Figure 3: GBAORD trend (€m) and GBAORD as a percentage of GNP (2004-2013)	12
Figure 4: International comparison of GBAORD as a percentage of GDP/GNP (2012)	14
Figure 5: Average annual growth rate of GBAORD for selected countries, (2003-2012)	15
Figure 6: GOVERD as a percentage of GNP and GOVERD €m trend, (2004-2013)	16
Figure 7: Major State research and development performers, per cent of total (2013)	17
Figure 8: Total R&D personnel & researchers - headcount (2006-13)	21
Figure 9: Total R&D personnel & researchers by occupation - headcount (2012-13)	22
Figure 10: Total R&D personnel by occupation - Full Time Equivalentents (FTEs), (2013)	22
Figure 11: Total R&D personnel by occupation and gender (FTEs), (2013)	22
Figure 12: Total R&D personnel & researchers by qualification - headcount (2012-13)	23
Figure 13: Total R&D personnel by qualification - Full Time Equivalentents (FTEs) (2013)	23
Figure 14: Total R&D personnel by qualification and gender (FTEs), (2013)	23
Figure 15: Researchers classified by gender and field of science (FTE), (2013)	25

List of Tables

Table 1: Main Government Depts & Agencies with spending of R&D activities (2013 est)	10
Table 2: GBAORD classifications for Ireland 2013	11
Table 3: GBAORD as a percentage of economic activity (GDP/GNP) (2003+2012)	13
Table 4: GOVERD as a percentage of GDP, selected countries (2002, 2007, 2011)	18
Table 5: GOVERD by type of research (2012-2013)	19
Table 6: Field of science classified by type of research, (2012-2013) €m.	20
Table 7: Total male/female and as percentage of total by field of science, FTEs (2013)	24

Science Budget Categories

GBAORD (R&D)

- the total expenditure by Government on research and development

GOVERD (R&D)

- the research and development carried-out in Government Departments or Agencies (a sub-set of GBAORD)

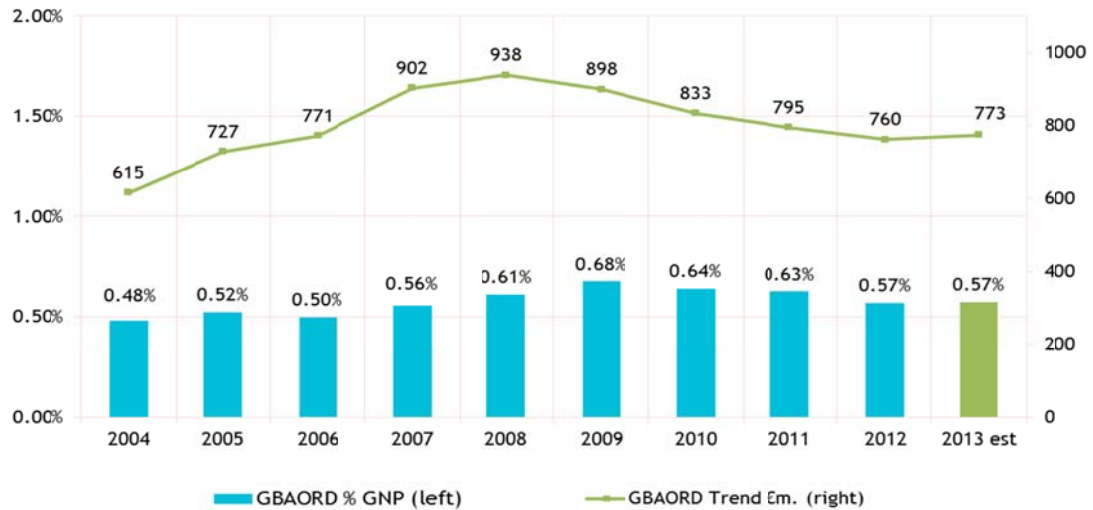
GOVERD (R&D) - Researchers

- the number of researchers working within the Government sector. Data provided for both the total number of researchers and for the number of 'full-time equivalent' staff.

Executive Summary

The State’s investment in research and development, also known as Government Budget Appropriations or Outlays on R&D (GBAORD) decreased in 2012 over 2011 (Figure A).

Figure A. GBAORD trend (€m.) (current prices) and as a percentage of GNP, 2004-2013



- Overall expenditure levels fell from a peak of €938m in 2008 to €760m in 2012 (-19%).
- Estimated direct Government funding for research in 2013 is expected to increase to €773m.
- The intensity level of investment is expected to remain at 0.57 per cent of GNP in 2013 consistent with the 2012 outturn figure.

Ireland’s GBAORD intensity rate in 2012 of 0.57 per cent of GNP and 0.46 per cent of GDP is below the EU27 average at 0.65 per cent of GDP (Figure B).

Figure B. International comparison of GBAORD as a percentage of GDP/GNP, 2012

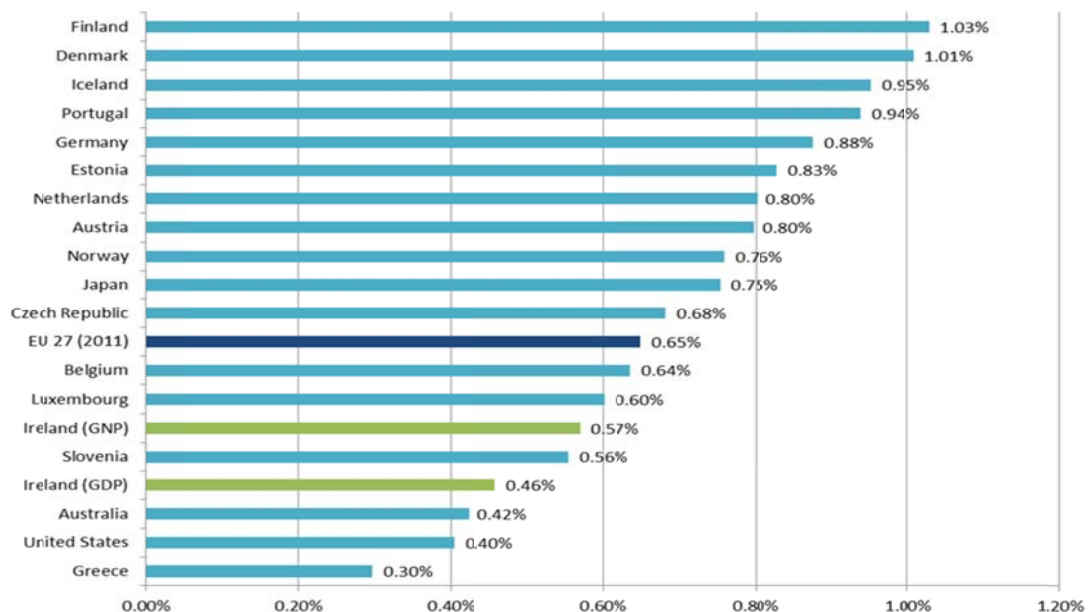
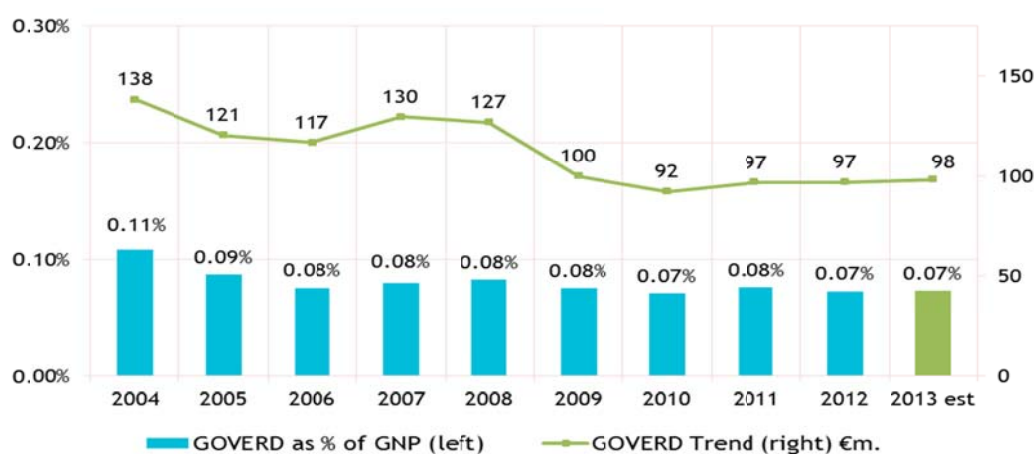


Figure C. GOVERD trend (€m) (current prices) and as a percentage of GNP, 2004-2013



The 10-year trend as illustrated in Figure C shows that levels of Government Expenditure on R&D (GOVERD). This is R&D performed within the State sector by Government Departments and Agencies.

- Expenditure on R&D in the State sector has fallen from a high of €138m in 2004 to an allocation of €98m in 2013 (-29%).
- GOVERD as a percentage of GNP over the ten-year period from 2004 to 2013 shows a drop from 0.11 per cent in 2004 to 0.07 per cent in 2012/13.

Figure D. Total R&D personnel/researchers in Government Sector (headcount/FTE terms) 2006-13

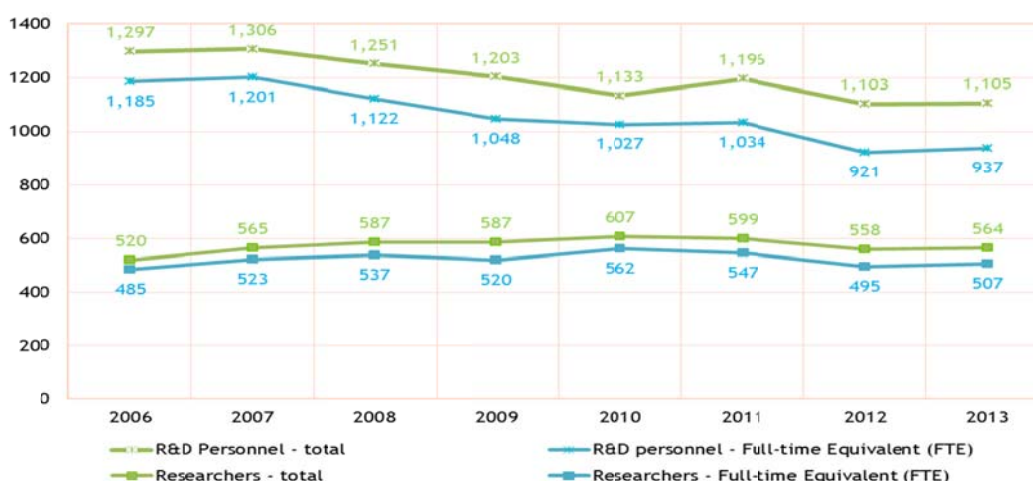


Figure D shows both the total number of R&D personnel employed directly within the Government sector.

- The overall number of R&D personnel (headcount) has fallen by 14.8 per cent since 2006 from 1,297 to 1,105 in 2013 and this trend is also reflected in the full-time equivalent (FTE) numbers.
- The number of (FTE) R&D personnel dedicated to research has risen slightly over the same period. There will be 507 (FTE) researchers employed in 2013 compared with 485 researchers (FTE) in 2006 (+4.5%).

Introduction

This report tracks public funding and performance of State-funded Research & Development (R&D) and aims to capture key performance metrics within the State sector. A total of 35 Government departments and agencies who are engaged in some form of R&D activity in 2012-2013 were surveyed. This report presents findings from the 'Research and Development Funding and Performance in the State Sector - 2012-13' survey undertaken by Forfás with the final outturn data for 2012 together with estimates for 2013.

This survey data is required for, and/or included in, the following reports:

- Commission Regulation (EC) No 995/2012 of 26 October 2012¹. This Regulation covers the production and development of Community statistics on science and technology. Data is required by Eurostat on Government expenditure and on the numbers employed in research and development in the public sector.
- OECD 'International data collection on resources devoted to research and development'².
- Strategy for Science, Technology & Innovation. Indicators collected are included in the SSTI Indicators report to identify issues arising and resulting policy requirements.

The metrics analysed in the report include:

Chapter 1: State funding of research and development

- Government Budget Appropriations and Outlays on Research and Development (GBAORD).
- Data on Government Departments / Agencies funding by area of research and as a percentage of GNP & international comparisons.

Chapter 2: Expenditure on R&D performed in the Public Sector

- Government Expenditure on Research and Development (GOVERD). R&D performed in Government Departments and their Agencies.

Chapter 3: Human resources dedicated to publicly performed R&D

- Data on the overall totals, gender, qualifications and occupations of R&D staff.

The survey is carried out using the definitions, rules and guidelines set out in the OECD Frascati Manual³. This allows for a common dataset to be collected across all OECD and EU countries which facilitates better international comparisons and benchmarking.

¹ Commission Regulation (EC) No 995/2012 of 26 October 2012

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:299:0018:0030:EN:PDF>

² Main Science and Technology Indicators (MSTI) , OECD

<http://www.oecd.org/science/innovationinsciencetechnologyandindustry/msti.htm>

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.

The data refers to direct Government expenditure and other Government expenditures such as R&D tax credits to business are not included.

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

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.

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

Chapter 1: State funding of research & development

In this chapter, total Government spending on research and development (R&D) is charted for the last decade and benchmarked against international competitors.

1.1 Types of research and development indicators

R&D, as defined by the OECD, “comprises creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications”.⁴ This report focuses on the following R&D international data measures:

Government Funding of R&D (GBAORD)

GBAORD - Government Budget Appropriations or Outlays on R&D - (this chapter). This is all the money allocated by Government to R&D to be performed in all sectors of the economy e.g. within the higher education sector, by businesses or by Government Agencies.

R&D Performers (GOVERD, HERD, BERD)

The other international measure of R&D activity is derived by tracking the expenditure of the performers of R&D. The main performers are:

1. Government Sector (GOVERD - Government Expenditure on R&D)
 - GOVERD - Measure of R&D performed in the Government sector. This is the expenditure from all sources spent on R&D performed in Government departments and agencies. This expenditure is tracked in Chapter 2 of this report.
2. Higher Education Sector (HERD - Higher Education Expenditure on R&D)
 - HERD - Measure of R&D performed in the higher education sector. This is the expenditure from all sources spent on R&D performed in universities and institutes of technologies. This expenditure is tracked through the HERD survey. Data from the ‘Higher Education R&D Survey 2010-11’ will be available shortly on the Forfás web site.

⁴ OECD (2002), Frascati Manual: Proposed Standard Practice for Surveys on Research and Experimental Development, OECD, Paris, www.oecd.org/sti/frascaticmanual

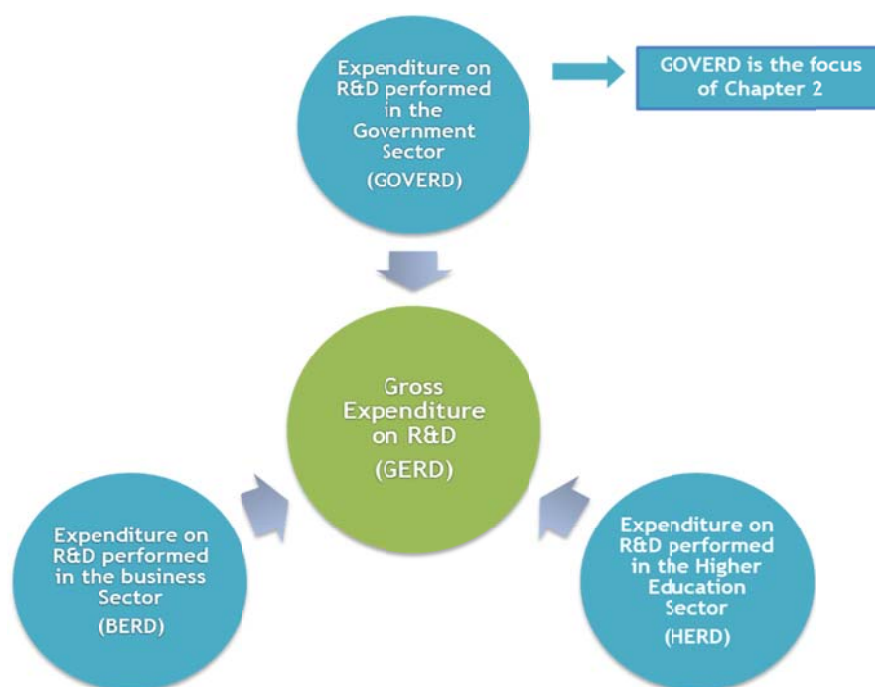
3. Business Enterprise Sector (BERD - Business Expenditure on R&D)

- BERD - Measure of R&D performed in the business enterprise sector. This is the expenditure from all sources spent on R&D performed in businesses. This expenditure is tracked through the BERD survey and the latest available data is from the 'Business Expenditure on R&D 2012-13' survey. This data is accessible on the Central Statistics Office (CSO) web site⁵ and a summary of the findings of this survey is available on the Forfás web site⁶

4. Gross Expenditure on R&D (GERD)

GERD - Collectively, the expenditure by government (GOVERD), business (BERD) and in the higher education sector (HERD) make up the total or Gross Expenditure on R&D (GERD).

Figure 1: Gross expenditure on R&D (GERD) - elements



5 Business Expenditure on R&D 2011-12 - Key Findings, CSO, February 2013

<http://www.cso.ie/en/newsandevents/pressreleases/2013pressreleases/pressreleasebusinessexpenditureonresearchanddevelopment20112012/>

6 Business Expenditure on R&D 2011-12, Forfás. August 2013

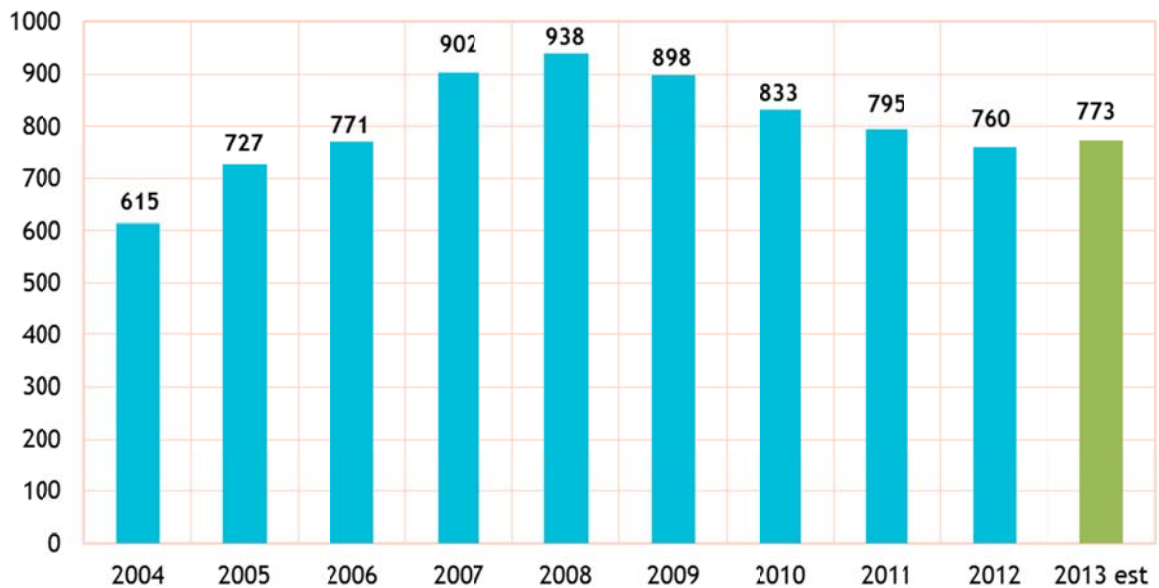
<http://www.forfas.ie/publication/search.jsp?ft=/publications/2013/title,11162,en.php>

1.2 Government budget spending on research and development

The internationally recognised indicator for benchmarking State-funding performance of R&D is the Government Budget Appropriations or Outlays on R&D metric (GBAORD), which includes:

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

Figure 2: GBAORD trend in current prices, €m. (2004-2013)



While there is a decline in expenditure in the last four years, the level of R&D funding from the State remains significant and allocated expenditure in 2013 stands at €773m, a 1.7 per cent increase on 2012 levels. The increased allocated expenditure in 2013 is primarily in the ‘industrial production and technology’ sectors with both Enterprise Ireland and IDA Ireland reporting increased allocations over 2012 figures.

1.3 Detailed Government department spending on research and development

Table 1 provides a breakdown of estimated R&D spending by the main administering Government departments and agencies in 2013 and the outturn figures for 2012.

The largest agency funding R&D projects in 2013 was the Higher Education Authority, which has allocated an estimated €212.1m to R&D activities (or 27.4 per cent of the total State spending on R&D). This spending includes expenditure on R&D programmes and indirect funding via the HEA block grant to supported institutions. The HEA also allocates direct funding via the Programme for Research in Third-Level Institutions (PRTL) on behalf of the Minister for Jobs, Enterprise and Innovation.

The next largest funder of R&D activities was Science Foundation Ireland, allocating an estimated €159.1m (20.6 per cent) to R&D in 2013 via research grants and other research supporting programmes.

A summary of the main programmes are outlined in Appendix 5.

Table 1: Main Government Departments and Agencies with spending on R&D activities (2012 and 2013 estimates)

Funding Department/Agency	2012 €m	% of Total	2013 €m	% of Total
Higher Education Authority	234.1	30.8%	212.1	27.4%
Science Foundation Ireland	161.9	21.3%	159.1	20.6%
Enterprise Ireland	92.4	12.2%	107.6	13.9%
Teagasc	59.7	7.9%	59.1	7.6%
IDA Ireland	44.6	5.9%	56.0	7.2%
Health Research Board	36.5	4.8%	43.5	5.6%
Irish Research Council	31.0	4.1%	31.4	4.1%
Dept. of Agriculture, Food and the Marine	28.4	3.7%	26.2	3.4%
Dept. of Jobs, Enterprise and Innovation	20.0	2.6%	21.7	2.8%
Marine Institute	7.8	1.0%	9.0	1.2%
Environmental Protection Agency	9.6	1.3%	8.8	1.1%
Others	34.4	4.5%	38.5	5.0%
Total	€760.4m	100%	€773m	100%

1.4 Programmes classified by area of research

The total GBAORD for 2012 and 2013 can be classified into a number of economic areas:

Table 2: GBAORD classifications⁷ for Ireland 2012-13

	2012 €m	2013 (est) €m
R&D financed from sources other than General University Funds (GUF)	255.5	236.6
Industrial production and technology	144.0	170.1
R&D financed from General University Funds (GUF)	169.5	162.5
Agriculture	99.1	98.3
Health	38.9	46.2
Exploration and exploitation of space	14.8	17.3
Education	10.4	11.1
Environment	9.7	8.9
Political and social systems, structures and processes	6.7	8.8
Energy	4.3	6.5
Transport, telecommunication and other infrastructures	5.4	4.6
Exploration and exploitation of the earth	2.1	2.1
Total	€760.4m	€773m

Over half of total GBAORD funding for 2013 was allocated for R&D performed in higher education (GUF). This €399m includes funding for various agencies, such as Science Foundation Ireland, the Higher Education Authority's Programme for Research in Third-Level Institutes and other research funding bodies operating in the higher education sector.

The Industrial production and technology area shows an increase of €26m over the 2012 outturn figure. This accounts for 22 per cent of total GBOARD in 2013 and is expected to reach €170m.

Agriculture at €98m accounts for 12.7 per cent of total Government estimated spending on R&D programmes in 2013 while health accounts for 6 per cent of total spend.

The remaining GBAORD is divided between exploration and exploitation of space & the earth, education, the environment, energy, political and social systems, transport, telecommunications and other infrastructures.

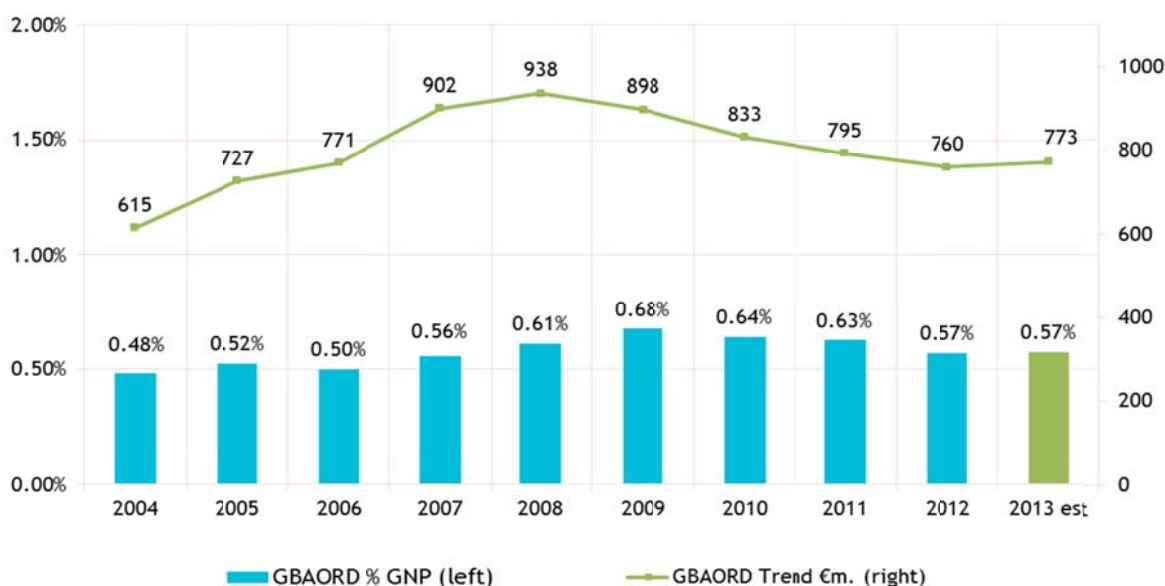
⁷ NABS - Nomenclature for the Analysis and Comparison of Scientific Programmes and Budgets 2007, Eurostat, October 2008, <http://www.oecd.org/dataoecd/62/38/43299905.pdf>

1.5 GBAORD as a percentage of GNP and international comparisons

In order to compare state funding of R&D across countries, the OECD recommends using the GBAORD indicator with data derived using the guidelines set out in the Frascati Manual⁸. GBAORD includes all funding for R&D from direct exchequer sources. It also includes funding for R&D in the humanities and social sciences.

In Figure 3 the GBAORD trend line shows that between 2004 and 2013 there was a rapid increase in state R&D spending from €615m to €938m by 2008 in current prices. There was a downward trend in the following four years. The allocated GBAORD estimate for 2013 of €773m shows a slight increase of 1.7 per cent compared to the 2012 outturn figure of €760m.

Figure 3: GBAORD trend (€m) and GBAORD as a percentage of GNP (2004-2013)



The GBAORD intensity ratio [State R&D funding for R&D activities as a per cent of economic activity divided by Gross National Product (GNP)] has risen over the last decade.

The period 2004 to 2007 saw the GBAORD intensity ratio hover over 0.5 per cent - this was during a period of strong funding arising out of strong economic growth.

Between 2008 and 2011 the GBAORD intensity rate rose as a result of strong R&D spending outpacing nominal economic growth to 0.6 per cent of GNP⁹

Funding during 2012 and allocated funding for R&D activities in 2013 show GBAORD intensity at 0.57 per cent of GNP.

⁸ OECD (2002), Frascati Manual: Proposed Standard Practice for Surveys on Research and Experimental Development, OECD, Paris, www.oecd.org/sti/frascaticmanual

⁹ GNP 2013 - forecast €134.445m, Central Bank, Quarterly Bulletin Q4 - Oct 2013
<http://www.centralbank.ie/publications/Pages/QuarterlyBulletin.aspx>

Alongside this overall funding, we can also examine the civil GBAORD figures. Civil GBAORD is a good metric for international comparisons as it does not include the defence portion of the R&D budget, for which Ireland does not allocate any sum of money.

Table 3: GBAORD as a percentage of economic activity (GDP/GNP)¹⁰

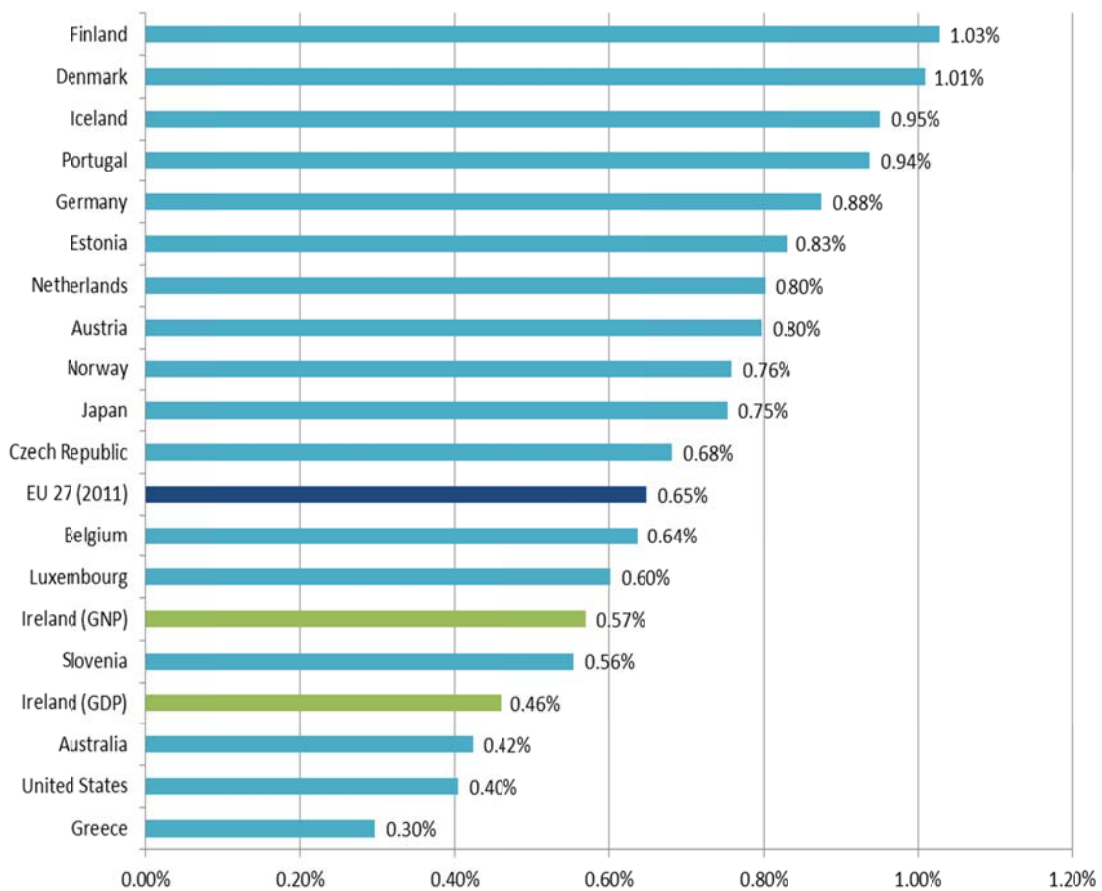
Country	2003	2012
Finland	0.97%	1.03%
Denmark	0.73%	1.01%
Iceland	1.08%	0.95%
Portugal	0.58%	0.94%
Germany	0.74%	0.88%
Estonia	0.37%	0.83%
Netherlands	0.81%	0.80%
Austria	0.65%	0.80%
Norway	0.72%	0.76%
Japan	0.69%	0.75%
Czech Republic	0.48%	0.68%
EU 27 (2003-2011)	0.63%	0.65%
Belgium	0.61%	0.64%
Luxembourg	0.22%	0.60%
Ireland - GNP	0.43%	0.57%
Slovenia	0.54%	0.56%
Ireland - GDP	0.36%	0.46%
Australia	0.54%	0.42%
United States	0.47%	0.40%
Greece	0.27%	0.30%

10 OECD - Main Science & Technology Indicators, July 2013, Vol. 2013/1. All GBAORD data used in these graphs are 'civil' GBAORD i.e. excludes defence expenditure. <http://www.oecd.org/sti/msti.htm>

Over the last ten years most EU countries have seen an improvement in GBAORD performance relative to economic activity.

In Ireland the GBAORD intensity ratio also increased in this period from 0.43 per cent in 2003 to 0.57 per cent of GNP in 2012. The intensity ratio for R&D investment against GDP for the same period was 0.36 per cent in 2003 compared to 0.46 per cent in 2012.

Figure 4: International comparison of GBAORD as a percentage of GDP/GNP (2012*)¹¹



* The latest available data for the EU 27 countries is for 2011.

Finland, with GBAORD spending of 1.03 per cent of GDP, is one of the strongest performing OECD countries.

In 2012, the Irish government invested 0.57 per cent of GNP on research and development or 0.46 per cent of total GDP.

The level of investment intensity of our European partners was 0.65 per cent in 2011 - the latest year for which data is available.

¹¹ OECD - Main Science & Technology Indicators, June 2013, Vol. 2013/1. All GBAORD data used in these graphs are 'civil' GBAORD i.e. excludes defence expenditure. <http://www.oecd.org/sti/msti.htm>

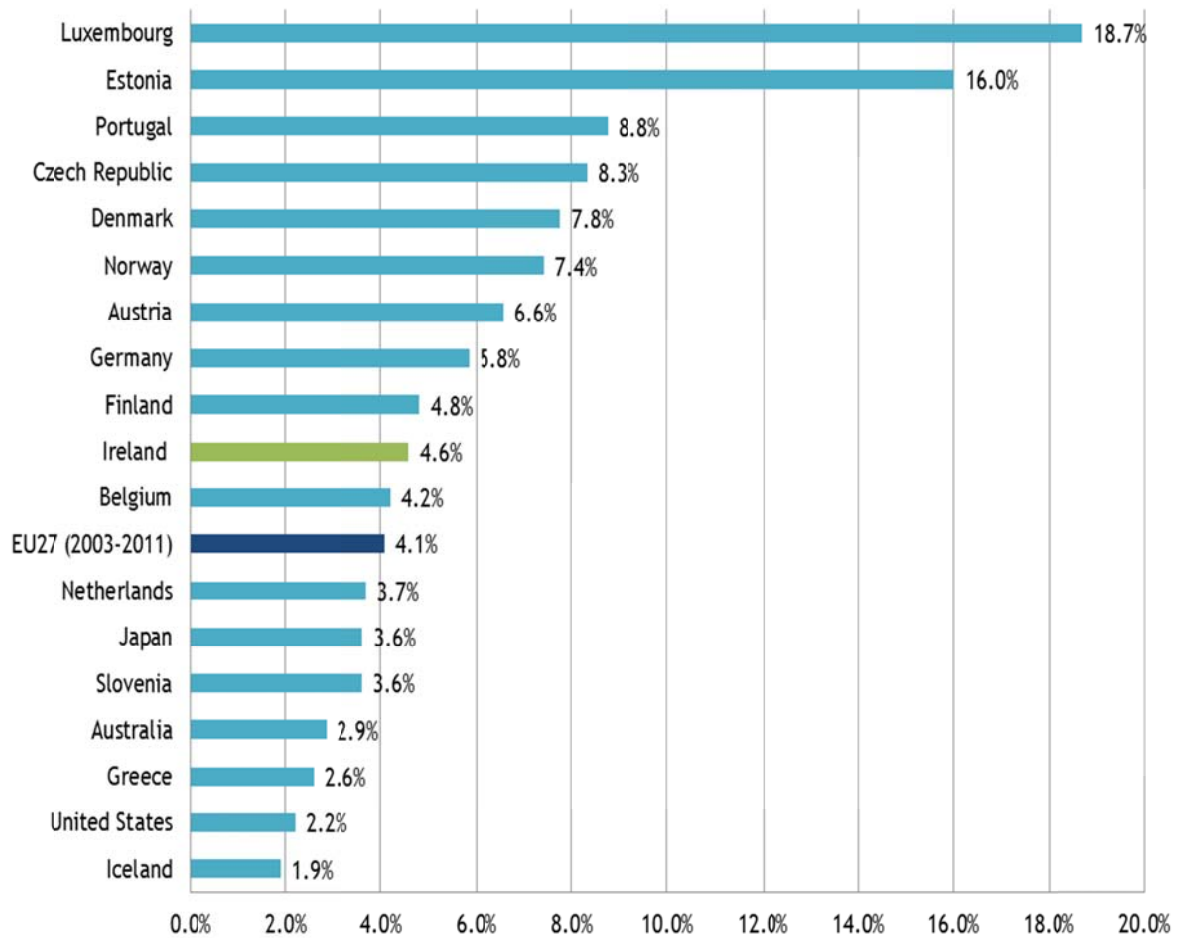
Figure 5: Average annual growth rate of GBAORD for selected countries, (2003-2012)¹²

Figure 5 shows the annual average growth rate of GBAORD since 2003 for all countries where the data is available. Luxembourg stands out with an annual average increase of 18.7 per cent though, as shown in Table 3 (Page 13), this was from a low base.

The average annual growth rate of Ireland's GBAORD for the last 10 years is 4.6 per cent. The latest data available for the EU (27 countries) is 2011 and the annual growth rate between 2003 and 2011 works out at 4.1 per cent.

¹² OECD - Main Science & Technology Indicators, July 2013, Vol. 2013/1. All GBAORD data used in these graphs are 'civil' GBAORD i.e. excludes defence expenditure. <http://www.oecd.org/sti/msti.htm>

Chapter 2: Expenditure on research and development performed in the public sector

Research and development performed by relevant Government departments and their agencies is measured by GOVERD.

The funding for Government Expenditure on R&D (GOVERD) comes from public, private and other sources but does not include R&D performed in the higher education sector which is gathered in a separate survey conducted by Forfás titled, the Higher Education Research and Development (HERD) survey. When GOVERD is combined with the HERD and BERD (Business Expenditure on R&D) data, the cumulative Gross Expenditure on R&D for the country (GERD) can be calculated. As can be seen later in this chapter, the main performer of GOVERD continues to be Teagasc.

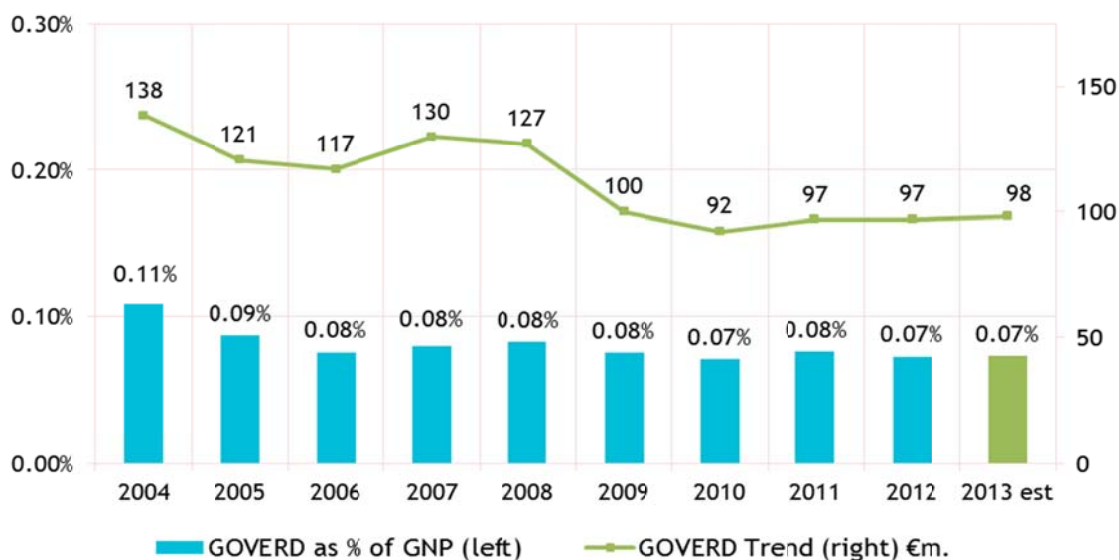
2.1 Total expenditure on R&D performed in the Government sector

The expectation for expenditure on research and development performed in the Government sector in 2013 is that it remains at approximately the same level as 2012. Expenditure is expected to reach €98m in 2013 up from the outturn figure of €97m in 2012. This would represent a marginal increase of approximately 1 per cent.

Figure 6 below shows that GOVERD expenditure levels dropped in 2009 and again in 2010 to below €100m but have been maintained in the last three years and now stand at €98m.

GOVERD as a percentage of GNP over the ten-year period from 2004 to 2013 is also illustrated in Figure 6. This graph shows that, as a percentage of GNP¹³, the level of GOVERD has dropped from 0.11 per cent in 2004 to 0.07 per cent in 2013.

Figure 6: GOVERD as a percentage of GNP and GOVERD €m trend, (2004-2013)



¹³ GNP 2013 - forecast €134.445m, Central Bank, Quarterly Bulletin Q4 - Oct 2013
<http://www.centralbank.ie/publications/Pages/QuarterlyBulletin.aspx>

Figure 7: Major State research and development performers, per cent of total (2013)

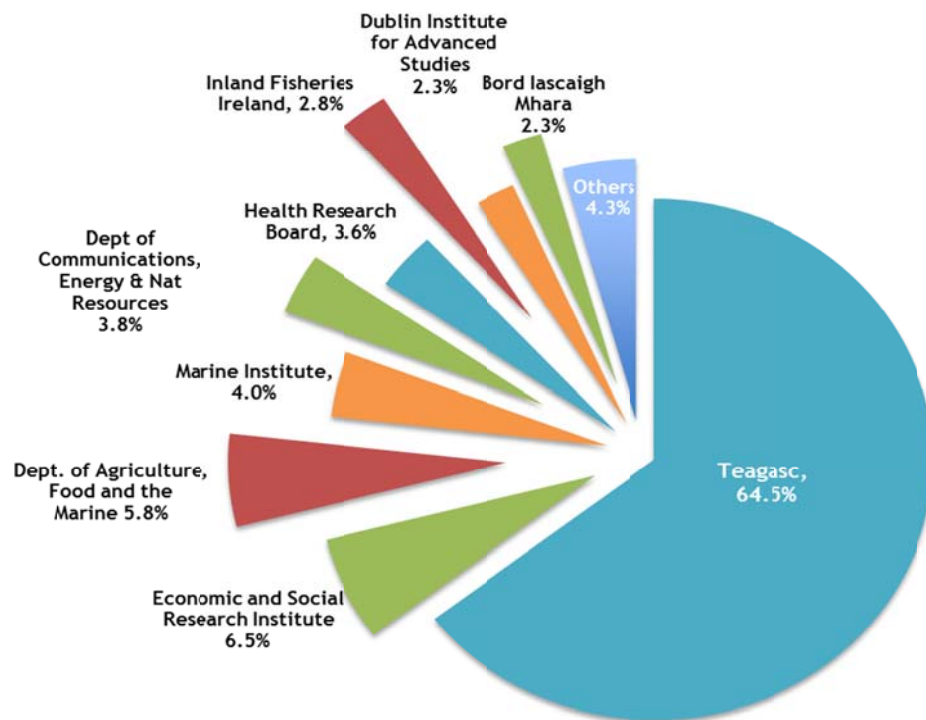


Figure 7 illustrates the major contributors to in-house R&D in the State sector in 2013.

As can be seen, Teagasc, the Irish agriculture and food development authority, continued to be the largest performer of Government R&D in 2013, with expenditure of €63m. This represents 64.5 per cent of total GOVERD which is estimated at €98m in 2013. Teagasc supports science-based innovation in the agri-food and broader bio-economy sectors.

Other major contributors include the Economic and Social Research Institute at €6.3m (6.5 per cent) and the Department of Agriculture, Food and the Marine at €5.6m (5.8 per cent).

The contribution to GOVERD from the Marine Institute is €3.9m (4 per cent).

Table 4: GOVERD as a percentage of GDP, selected countries (2002, 2007, 2011)¹⁴

Country	2002	2007	2011
Germany	0.34	0.35	0.42
Slovenia	0.34	0.35	0.35
United States	0.32	0.32	0.34
Finland	0.35	0.29	0.33
Czech Republic	0.26	0.31	0.32
France	0.37	0.34	0.32
OECD	0.27	0.26	0.28
Luxembourg	0.16	0.21	0.27
Norway	0.26	0.25	0.27
Poland	0.25	0.20	0.26
Spain	0.15	0.22	0.26
EU - 27 countries	0.24	0.23	0.25
Estonia	0.12	0.09	0.19
Hungary	0.33	0.24	0.19
Slovak Republic	0.15	0.16	0.19
Belgium	0.14	0.15	0.18
Canada	0.21	0.19	0.18
Italy	0.20	0.17	0.17
United Kingdom	0.17	0.16	0.16
Israel	0.24	0.18	0.16
Austria	0.12	0.13	0.15
Portugal	0.14	0.11	0.11
Ireland/GNP	0.10	0.09	0.08
Denmark	0.18	0.08	0.07

¹⁴ OECD - Main Science & Technology Indicators, July 2013, Vol. 2013/1

In Table 4, GOVERD as a percentage of GNP¹⁵ in Ireland is compared with GOVERD as a percentage of GDP in countries where data is available. The most recent data available is for 2011 and in this table it is compared with data from 2002 and 2007.

Ireland had the second lowest intensity rate from the selected countries with 0.08 per cent in 2011 compared with an EU-27 average of 0.25 per cent. There is a concentration in Ireland on increasing the R&D performance in the higher education part of the overall research system. Note that the figures for Higher Education Research & Development (HERD) are not included in this survey. Another reason for Ireland's low ratio is the relatively small size of the Irish public research sector compared to other countries.

2.2 Types of Research

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

- **Basic Research** - experimental or theoretical work undertaken primarily to acquire new knowledge, without any particular application or use in view;
- **Applied Research** - original investigation undertaken in order to acquire new knowledge, primarily directed towards a specific practical aim or objective; and
- **Experimental Development** - systematic work, drawing on existing knowledge gained from research and practical experience that is directed at producing new materials, products and devices, to installing new processes, systems and services, or to improving substantially those already produced or installed.

Table 5: GOVERD by type of research (2012-2013)

Type of Research	2012		2013	
	€m.	% of total	€m.	% of total
Applied Research	65.7	67.7%	68.0	69.2%
Basic Research	19.9	20.5%	19.5	19.9%
Experimental Development	11.4	11.8%	10.7	10.9%
Total	€97	100%	€98.2	100%

Of all allocated funds for research to be undertaken by Irish Government departments and agencies in 2013, 69.2 per cent is in applied research, with expenditure amounting to €68m. Basic research accounts for 19.9 per cent of total funding and stands at €19.5m. Experimental development accounts for 10.9 per cent of all expenditure at €10.7m.

When compared to the outturn figures for 2012, there is a slight increase in funding for Applied Research in 2013.

¹⁵ GNP is used as a more accurate denominator for Ireland to reflect the large multinational base in Ireland which repatriates profits to their respective home countries. It could therefore be argued that the GDP figure would not reflect real (i.e. retained) national income in Ireland

2.3 Fields of science¹⁶

The fields of science classifications are defined by the OECD Frascati Manual in agreement with European nations.

Table 6: GOVERD - Field of science classified by type of research, (2012-13) €m.

Field of Science	2012				2013			
	Basic	Applied	Exper- imental	Total	Basic	Applied	Exper- imental	Total
Agriculture, forestry, fisheries & veterinary	17.2	50.9	5.6	73.7	17.1	50.1	6.8	74.0
Economics and business	0.0	8.1	0.0	8.1	0.0	9.4	0.0	9.4
Earth & related environmental science	0.0	1.9	2.4	4.3	0.0	2.2	2.3	4.5
Electrical engineering, electronics	0.0	0.9	3.3	4.2	0.0	2.1	1.4	3.5
Health sciences	0.0	3.3	0.0	3.3	0.0	3.5	0.0	3.5
Physical sciences	2.6	0.0	0.0	2.6	2.3	0.0	0.0	2.3
Educational sciences	0.0	0.3	0.0	0.3	0.0	0.5	0.0	0.5
Social & economic geography	0.1	0.1	0.1	0.3	0.1	0.1	0.2	0.4
Civil & environmental engineering	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.1
Totals	19.9	65.7	11.4	97.0	19.5	68.0	10.7	98.2

The majority of funds spent on research performed in the public sector is spent on applied research, this amounted to an allocation of €65.7m out of a total spend of €97m in 2012 and €68m out of a total allocation of €98.2m in 2013.

Applied research in agricultural sciences continues to be the field of science in which most expenditure takes place. In 2013, €50.1m was allocated to applied science in this area with €17.1m on basic research and another €6.8m spent on experimental development.

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

¹⁶ 'Revised Field of Science and Technology (FOS) Classifications in the Frascati Manual', Feb 2007, OECD <http://www.uis.unesco.org/ScienceTechnology/Documents/38235147.pdf>

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

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

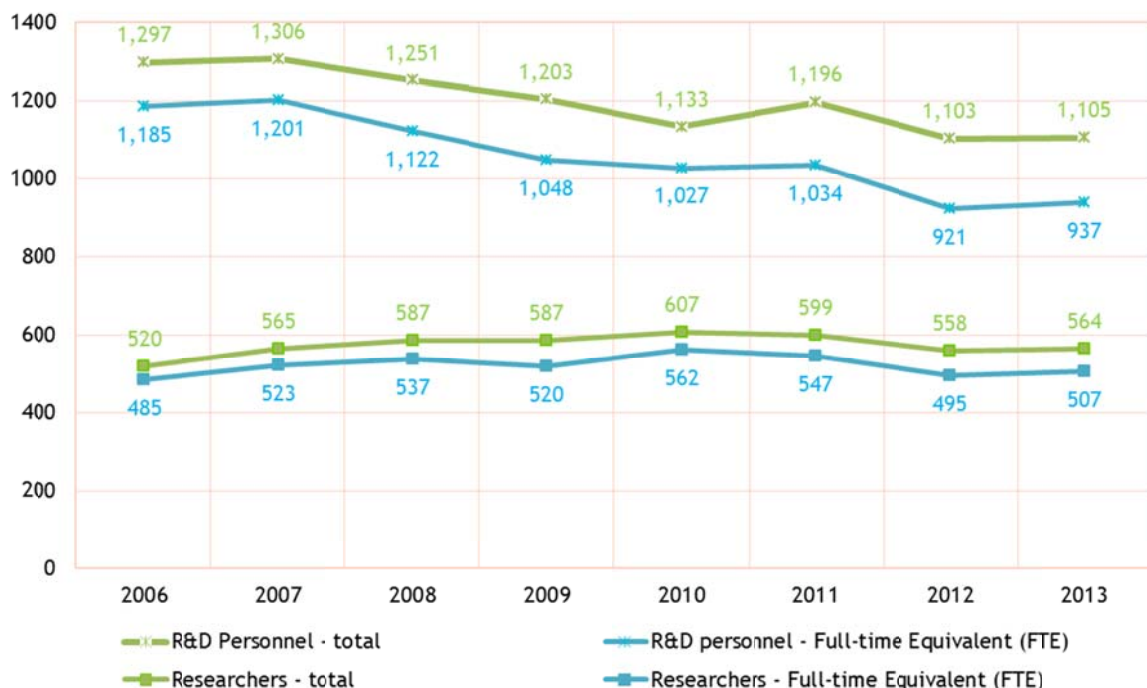
The survey gathers information on the overall totals, gender, occupations and qualifications of R&D staff.

The survey also seeks to ascertain the amount of time spent by staff on R&D activities in ‘full-time equivalent’ (FTE) terms¹⁷. Gathering information on the time spent by Government sector researchers and research support staff, specifically on R&D work, allows for more robust benchmarking with comparable data from other countries.

3.1 Research and development personnel

In addition to researchers, the R&D personnel numbers include support, administrative and managerial staff connected with the programme. While the overall numbers of R&D personnel has dropped since 2006 by almost 200 from 1297 to 1105 in 2013, Government agencies have maintained the number of researchers they employ both in headcount and full-time equivalent terms at approximately 500.

Figure 8: Total R&D personnel and Researchers - headcount terms (2006-2013)

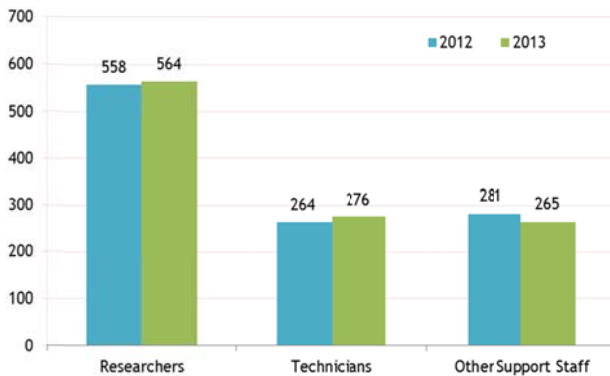


¹⁷ Full Time Equivalent (FTE) - A researcher spending 70 per cent of their time on research activities equals one researcher in headcount terms and 0.7 researchers in FTE terms.

3.2 State sector research staff by occupation

A breakdown of the occupation of research staff is available under the following three categories: Researcher, Technician and Other R&D personnel. 2013 numbers are estimates.

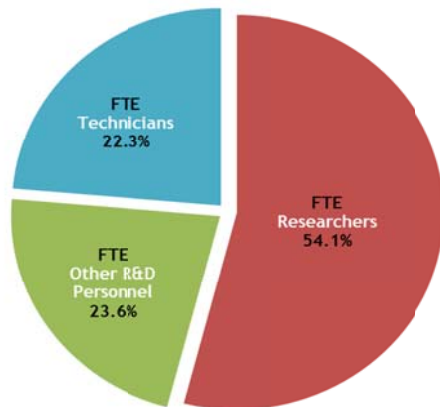
Figure 9: Total R&D personnel by occupation - headcount terms (2012-2013)



A breakdown of R&D personnel shows that the predominant number of R&D personnel are researchers. Based on estimates, it is anticipated that there will be a slight increase of 1 per cent in 2013 in the overall number of research personnel employed in the Government sector.

The total number of research personnel was 558 in 2012 and are expected to total 564 in 2013.

Figure 10: Total R&D personnel by occupation - full-time equivalents (FTEs), (2013)

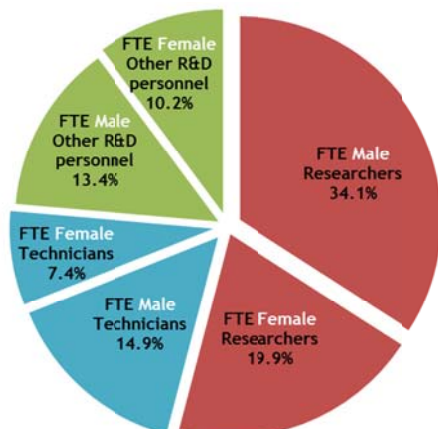


In 'full-time equivalent' (FTE) terms there were 937 R&D personnel in the Government Sector in 2013.

Of this total 506.7 staff were researchers or 54 per cent.

Technicians (209) made up 22 per cent and other support staff (221.3) accounted for 24 per cent of the total full-time equivalent numbers.

Figure 11: Total R&D personnel by occupation & gender - (FTEs), (2013)



The occupations of FTE R&D personnel can be broken down by gender.

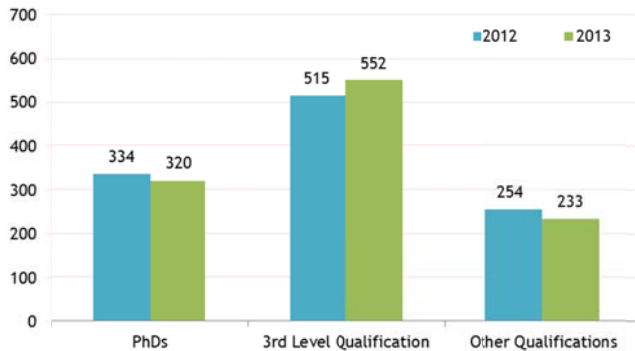
Male researchers (319.8) make up 34 per cent of the total while female researchers (186.8) number 20 per cent.

There are twice the number of male technicians to female technicians - 15 per cent to 7 per cent.

3.3 State sector research staff by qualification

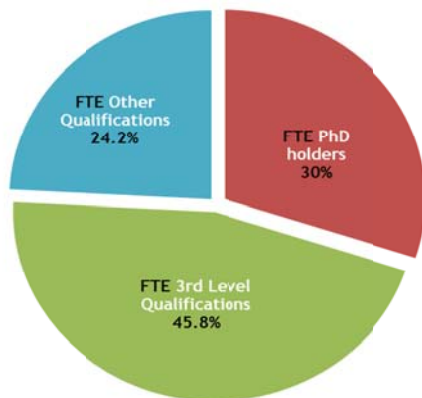
The qualifications of R&D staff can also be broken down according to ISCED 2011 levels - (International Standard Classification of Education)¹⁸. There are three categories: PhD holders (level 8), other university degrees & other tertiary diplomas (levels 5,6,7) and other qualifications

Figure 12: Total R&D personnel by qualification - headcount terms (2012-2013)



It is also possible to track Government employed R&D personnel by qualification. In 2013, the survey showed that 29 per cent of total R&D personnel were PhD holders and an additional 50 per cent held third level qualifications.

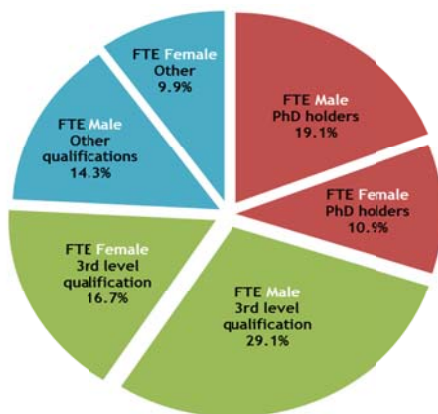
Figure 13: Total R&D personnel by qualification - full-time equivalents (FTEs), (2013)



In ‘full-time equivalent’ (FTE) terms there were 281.4 PhDs in the Government Sector in 2013.

Again in FTE terms there were 429.2 staff with third level qualifications and 226.4 with other qualifications.

Figure 14: Total R&D personnel by qualification and gender - (FTEs), (2013)



The chart shows the gender breakdown of R&D Personnel (FTEs - full-time equivalent numbers).

Of the total number of PhD holders employed, males (178.8) outnumber females (102.6) by almost two to one 19 per cent males to 11 per cent females.

¹⁸ ISCED 2011 - International Standard Classification of Education
<http://www.uis.unesco.org/Education/Documents/isced-2011-en.pdf>

3.4 Research and development staff by fields of science

Of the total 506.7 (FTE) researchers employed in the Government Sector in 2013, 318.6 were male and 188.1 were female, and the following table sets out their fields of science.

Table 7: Total male/female and as percentage of total by field of science, FTEs (2013)

Fields of Science	Male Researchers	Male researchers as % of all male researchers	Female Researchers	Female researchers as % of all female researchers
Agriculture, forestry and fisheries & veterinary	153.0	48.0%	83.5	44.4%
Electrical Engineering, electronics	80.3	25.2%	22.2	11.8%
Physical sciences	42.0	13.2%	9.0	4.8%
Economics and Business	30.0	9.4%	32.6	17.3%
Earth & related environmental sciences	4.9	1.5%	3.5	1.9%
Educational sciences	3.0	0.9%	3.6	1.9%
Health sciences	3.0	0.9%	30.0	15.9%
Other social sciences	2.0	0.6%	3.3	1.7%
Environmental Engineering	0.5	0.2%	0.5	0.3%
Total	318.6	100%	188.1	100%

When analysed by the OECD standard fields of science¹⁹, the following statistics emerge for 2013. The majority of the Government researchers work in the ‘agricultural, forestry and fisheries’ field. Some 48 per cent of all male researchers and 44.4 per cent of female researchers are engaged in research and development work in this area.

The next largest category for men is ‘electrical engineering & electronics’ with 25.2 per cent of male R&D staff working in this area.

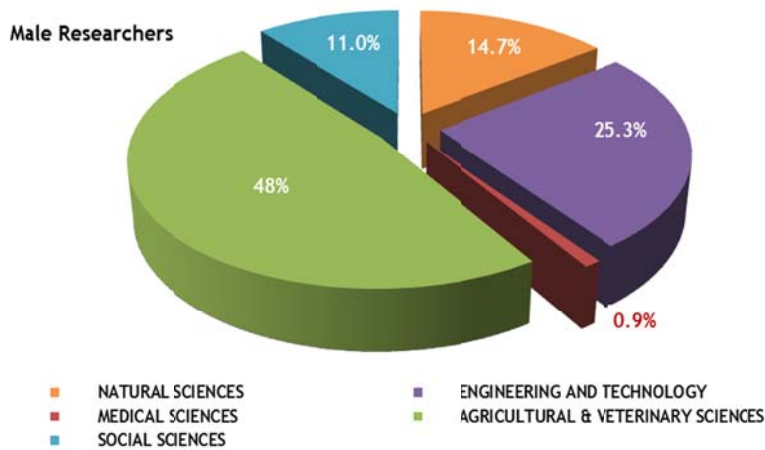
For women the next two areas are ‘economic & business’ with 17.3 per cent and the ‘health sciences’ with 15.9 per cent.

In terms of the numbers of researchers, there are more or as many male researchers in every Field of Science with the exception of ‘health sciences’, ‘economics and business’, ‘other social sciences’ and ‘educational sciences’.

¹⁹ ‘Revised Field of Science and Technology (FOS) Classifications in the Frascati Manual’, Feb 2007, OECD <http://www.uis.unesco.org/ScienceTechnology/Documents/38235147.pdf>

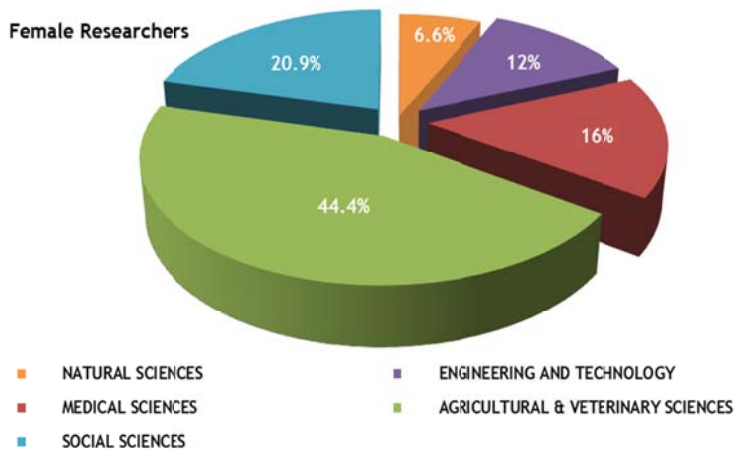
Figure 15 below illustrates the gender breakdown within the different major fields of science for male and female researchers in full-time equivalents number (FTE). The total estimated number of FTEs in 2013 was 506.7.

Figure 15: Researchers classified by gender and major field of science (FTE), (2013)



Almost half of all male researchers (FTE) are engaged in research in the ‘agricultural sciences’.

A quarter are working in the ‘engineering and technology’ field.



Approximately 45 per cent of female (FTE) researchers are working in ‘agricultural sciences’.

The next largest concentration of female researchers are employed in the ‘social sciences’.

Appendix 1

Methodology

The information given in this report relates to information supplied by 35 institutions in receipt of monies from the exchequer for the performance or support of research and development.

- Expenditure data for specific programmes refer to the 2012 outturn costs of programmes and to the expected costs in 2013. 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 Jobs, Innovation and Employment which funds, but does not operate or manage research 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 (HEA) and the Department of Education and Skills through its recurrent core funding - general university funds (GUF). This core grant is allocated as a block grant to cover core teaching and research activities within institutions - the internal allocation of funds as between teaching and research are at present a matter for each institution. The allocation of the core grant is determined on a formula basis. The allocation is based on a standard per capita amount in respect of weighted EU student numbers in four subject price groups. Student numbers in the four groups are weighted to reflect the relative cost of the subject groups. A further weighting is given for research students. 5% is also top-sliced from the aggregate grant for all higher education institutions.

Appendix 2

Definition of Research & Development

For the purpose of this survey research and development is defined as:

Research:

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

Development:

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

These definitions are in accordance with the standard practice for surveys on research and development set out in the ‘Frascati Manual - OECD, 2002’²⁰

²⁰ OECD (2002), Frascati Manual: Proposed Standard Practice for Surveys on Research and Experimental Development, OECD, Paris, www.oecd.org/sti/frascaticmanual

Appendix 3

Government Departments and Agencies included in the 2012-2013 'R&D Funding and Performance in the State Sector' survey

Government Departments	Associated Agencies
Department of Agriculture, Food and the Marine	Bord Iascaigh Mhara Marine Institute Teagasc
Department of Arts, Heritage and the Gaeltacht	Údarás na Gaeltachta
Department of Communications, Energy and Natural Resources	Inland Fisheries Ireland Sustainable Energy Authority of Ireland
Department of Education and Skills	Dublin Institute for Advanced Studies FÁS Higher Education Authority Irish Research Council (encompasses the former Irish Research Council for Humanities and Social Sciences and Irish Research Council for Science, Engineering and Technology)
Department of Jobs, Enterprise & Innovation	Enterprise Ireland Forfás IDA Ireland Inter <i>Tradel</i> Ireland Science Foundation Ireland Shannon Development
Department of the Environment, Community and Local Government	Environmental Protection Agency Met Éireann Radiological Protection Institute of Ireland
Department of Finance	Economic and Social Research Institute
Department of Health	Health Research Board
Department of the Taoiseach	National Economic and Social Council
Department of Transport, Tourism and Sport	National Roads Authority
Offices	Central Bank and Financial Services Authority of Ireland Office of Public Works

Appendix 4

Acronyms

BERD	Business Expenditure on R&D
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
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 (now Irish Research Council)
IRCSET	Irish Research Council for Science, Engineering and Technology (now Irish Research Council)
NESC	National Economic and Social Council
NRA	National Roads Authority
OPW	Office of Public Works
OST	Office of Science and Technology - Department of Jobs, Enterprise and Innovation
RPII	Radiological Protection Institute of Ireland
SEAI	Sustainable Energy Authority of Ireland
SFI	Science Foundation Ireland

Appendix 5

Main Government Departments/Agencies R&D programmes

The State currently invests in a wide range of R&D programmes. A summary of the main programmes in 2013 includes:

€212.1 million - The Higher Education Authority's (HEA) 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. Research is funded from the core grant which is allocated to institutions and the internal allocation of funds between teaching and research is a matter for each institution.

€159.1 million - Science Foundation Ireland (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. The allocation of finance is decided by SFI on the basis of scientific merit. In line with the recommendations of the Report of the Research Prioritisation Steering Group, SFI is committed to supporting scientific research in areas with the greatest potential for economic return.

€107.6 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. For example, EI's R&D Fund is designed to provide support for research, development and technological innovation relevant at all stages of company development, and will enable companies to progress from undertaking an initial research project to high level innovation and R&D activity.

€59.1 million - Teagasc, the Agriculture and Food Development Authority, is the Irish institute responsible for research in agricultural production, the environment and the rural economy. The annual research portfolio comprises 300 research projects, carried out by 500 scientific and technical staff in research centres throughout Ireland. The four main research areas are: Animal and Grassland - The aim of this programme is to increase the profitability, competitiveness and sustainability of Irish livestock production through research and innovation. The Crops, Environment and Land Use programme is in place to develop and transfer cost-effective crop production systems, along with evidence-based knowledge to support and underpin the development of an environmentally sustainable, competitive and profitable agri-food sector. With the Rural Economy and Development programme advanced social science investigation tools are utilised to understand the linkages between the various forces affecting the agri-food and rural economy to improve the quality of life in rural Ireland. Finally, the Food Programme undertakes scientific research leading to the establishment of technological platforms that can be exploited by the Irish Food Processing Industry by adding value and ensures the safety and quality of food products.

€56 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. The 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.

€43.5 million - The Health Research Board's (HRB) is the lead agency in Ireland supporting and funding health research. It provides research funding and maintains health information systems and commissions research linked to national health priorities. Its research funding role 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.

€31.4 million - The Irish Research Council²¹ manages a suite of inter-linked research schemes, funding scholars at various career stages from postgraduate study to senior research project based awards. For early stage researchers these include the Government of Ireland Postgraduate Scholarships and Government of Ireland Postdoctoral Fellowships, which fund research at pre- and post-doctoral levels, and the Research Development Initiative Scheme, which allows researchers and research teams to expand their activities into new research areas by way of stimulus project grants and knowledge transfer initiatives. For established academics, the Government of Ireland Research Fellowships and the Government of Ireland Senior Research Fellowships offer research opportunities for members of the academic staff of recognised higher education institutions to undertake stated projects. The Government of Ireland Research Projects Grants Scheme funds world-class, innovative research undertaken on an extended or group project basis. The Council manages and monitors all awards funded under these schemes on a bi-annual basis.

€26.2 million - The Department of Agriculture, Food and the Marine provides a wide range of services directly and also through specialist state agencies operating under its aegis. The Department operates a number of testing centres and laboratories in the areas of veterinary diagnostics and research, meat control, seed testing, plant variety testing, cattle performance testing, pesticide control, and dairy products control. Research and development expenditure in 2012 was concentrated in the areas of crop improvement, veterinary and meat laboratory R&D activities, food and agricultural production and improvement of livestock genetic resources in plants and animals.

²¹ In 2012, The Irish Research Council for Science, Engineering and Technology (IRCSET) and The Irish Research Council for Humanities and Social Science (IRCHSS) were merged into the Irish Research Council.

€21.7 million - The Department of Jobs, Enterprise & Innovation has a wide economic development and job creation remit. Within the Department, the Office of Science, Technology and Innovation (OSTI) is focussed on delivering this goal through the development, promotion and co-ordination of national science, technology and innovation policy, and by progressing the Strategy for Science, Technology and Innovation. In support of these aims, the Department manages Ireland's membership of the European Space Agency (ESA) (a principal objective of this membership is to promote opportunity for high-technology industry in Ireland) and the European Molecular Biology Laboratory (EMBL) (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.

€9 million - The Marine Institute's activities, in relation to marine research, fall into three main areas. (1) Research Performer: The Marine Institute undertakes research (both applied and experimental development) through its operational programmes and also through leading and participating in many national and international research projects. (2) Research Funder: The Marine Institute administers the *Marine Research Sub-Programme of the National Development Plan 2007-2013*. (3) Research Promoter, Coordinator and Catalyst: As the lead implementing agency for *Sea Change - A Marine Knowledge, Research & Innovation Strategy for Ireland 2007-2013*, the Institute co-ordinates and promotes marine research, bringing together industry, higher education institutions and government bodies to support the development of Ireland's knowledge economy and the marine sector.

€8.8 million - The Environmental Protection Agency supports R&D activities in a range of environmental areas. This work is carried out by researchers in third-level institutions, state agencies, Government departments, local and regional authorities, the private sector and individuals. The EPA research programme for the period 2007-2013 is entitled Science, Technology, Research and Innovation for the Environment (STRIVE). The purpose of the programme is to protect and improve the natural environment by addressing key environmental management issues through the provision of world-class scientific knowledge generated through a competitive programme of research developed supported and co-ordinated by EPA. The research programme is based around "three pillars" (climate change, water and sustainable environment) representing the key research priorities associated with delivering a protected Irish environment.

Appendix 6 - Sample Questionnaire

Research & Development Funding and Performance in the State Sector 2013

This Survey provides details of the allocations and outturns by government on research and development activities. This data is required under Commission Regulation (EC) No 995/2012 implementing Decision No 1608/2003/EC of the European Parliament and of the Council concerning the development of statistics on science and technology.

[Commission Implementing Regulation \(EU\) No 995/2012 of 26th October 2012](#)

This is a request for details of the expenditure **ALLOCATION in 2013** on research and development in your organisation

Please return by: **Thursday 27 June 2013**

Research and Development

Research and experimental development (R&D) comprises of 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. (Frascati Manual, OECD 2002)

[Frascati Manual - OECD 2002 \[Standard Practice for Surveys on Research and Experimental Development\]](#)

In-House Research & Development Expenditure ALLOCATION in 2013

Agency Name:

Section 1: Research and Development - **IN-HOUSE** (performed within your organisation) Expenditure (€'000) [If no R&D is performed In-House please go to Section 5]

In-House R&D programme name	Detailed expenditure (€'000)		Total Expenditure (€'000)	Region		Type of in-house Research Activity (see detailed note below)				Irish Sources of Funding (as recorded under Total Expenditure in column E)				Foreign Sources of Funding (as recorded under Total Expenditure in column E)				
	Detailed current expenditure (€'000)	Detailed capital expenditure (€'000)		S. & E.	B. M. W.	Estimate by NUTS 2		Basic	Applied	Experimental development	Irish Government (€'000)	Irish Enterprises (€'000)	Higher Education (€'000)	Private non-profit (€'000)	European Commission (€'000)	Foreign Enterprises (€'000)	International Organisations (€'000)	Other Sources (€'000)
						Current	Capital											
1			0	%	%	%	%	%										
2			0	%	%	%	%	%										
3			0	%	%	%	%	%										
4			0	%	%	%	%	%										
5			0	%	%	%	%	%										
6			0	%	%	%	%	%										
Total	0	0	0						0	0	0	0	0	0	0	0	0	

Section 2: **Computer Software** included in Section 1 developed for an **IN-HOUSE R&D Programme**

Capital spending on software with a useful life of a year or more that is acquired or developed wholly for R&D purposes

Computer Software developed for R&D purposes	Purchased [see comment for definition]		Developed In-house [see comment for definition]	
	Capital (€'000)	Current (€'000)	Capital (€'000)	Current (€'000)

Definition: Types of in-house Research Activity

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

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

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

In-House Research & Development Personnel in 2013

Agency Name:

Section 3: **In-House Personnel** engaged in Research & Development Within your Organisation - **by occupation** (Headcount and % Research Time)

Please note that this section refers only to personnel involved in R&D performed within your organisation as recorded in Section 1.

R&D Programme Name (Please record the staff working by Programme as recorded in Section 1)	Researchers				Technicians				Other R&D Personnel				Total R&D Personnel	
	Male		Female		Male		Female		Male		Female		Male	Female
	Headcount	Time Use (%)	Headcount	Time Use (%)	Headcount	Time Use (%)	Headcount	Time Use (%)	Headcount	Time Use (%)	Headcount	Time Use (%)	Headcount	Headcount
1													0	0
2													0	0
3													0	0
4													0	0
5													0	0
6													0	0
Total	0		0		0		0		0		0		0	0

Section 4: **In-House Personnel** engaged in Research & Development Within your Organisation **by qualification** (Headcount & % Research Time)

R&D Programme Name (Please record the staff working by Programme as recorded in Section 1)	PhD holders				Other University Degrees/ 3rd level diplomas				Other Qualifications				Total R&D Personnel	
	ISCED 2011 - level 8		ISCED 2011 - levels 7,6,5		ISCED 2011 - levels 4,3,2,1		ISCED 2011 - levels 4,3,2,1		ISCED 2011 - levels 4,3,2,1		ISCED 2011 - levels 4,3,2,1		Male	Female
	Headcount	Time Use (%)	Headcount	Time Use (%)	Headcount	Time Use (%)	Headcount	Time Use (%)	Headcount	Time Use (%)	Headcount	Time Use (%)	Headcount	Headcount
1													0	0
2													0	0
3													0	0
4													0	0
5													0	0
6													0	0
Total	0		0		0		0		0		0		0	0

Definition: Time Use (%)

The following activities are deemed as "research activities" for the purpose of this survey

Include

Personal research or team research
Writing research proposals or research reports
Supervision of PhD students
Other research based activities including administration and planning

The following activities are **not** deemed as "research activities" for the purpose of this

omit

Teaching
General administration
Supervision of non-PhD students
Other non-research based activities or external activities

External Research & Development Expenditure ALLOCATION in 2013

Agency Name:

Section 4: Research and Development - Funded by your organisation but Performed Elsewhere (not in-house) (€'000)

R&D programme name (see note below on Transnationally Co-ordinated Research)	Name of organisation where this R&D is performed	Detailed current expenditure (€'000)	Detailed capital expenditure (€'000)	Total Expenditure (€'000)
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
				0
		0	0	0

Transnationally Co-ordinated Research
 Also include on this list all funding to 'transnationally coordinated research projects' - these fall into three categories:
 1. Inter-governmental or European Commission bodies that carry out R&D activity with own dedicated research facilities i.e. CERN, ILL, EMBL, JRC, ESO, ESRF.
 2. Europe-wide transnational public R&D programmes e.g. European Space Agency, Eureka, EMBC etc.
 3. Bilateral or multilateral public R&D programmes established between Member State governments e.g. HIRLAM

Appendix 7: Forfás Board Members

Eoin O'Driscoll (Chairman)

Chairman, Southwestern

Martin Shanahan

Chief Executive, Forfás

Mark Ferguson

Director General, Science Foundation Ireland

John Murphy

Secretary General, Department of Jobs, Enterprise and Innovation

Barry O'Leary

Chief Executive, IDA Ireland

Frank Ryan

Chief Executive Officer, Enterprise Ireland

Michael O'Leary

Secretary to the Board, Forfás

Appendix 8: Recent Forfás publications

Addressing Future Demand for High-Level ICT Skills Forfás, EGFSN	November 2013
Business Expenditure on Research & Development (BERD) 2011/2012 Forfás, CSO	August 2013
State Investment in Research & Development 2011 - 2012 Forfás	August 2013
Social Enterprise in Ireland: Sectoral Opportunities and Policy Issues Forfás	July 2013
Ireland's Construction Sector: Outlook and Strategic Plan to 2015 Forfás	July 2013
Forfás Annual Report 2012 Forfás	July 2013
Research Prioritisation: Framework for Monitoring Public Investment in Science, Technology and Innovation and 14 Action Plans Forfás	July 2013
Monitoring Ireland's Skills Supply - Trends in Education and Training Outputs 2013 EGFSN	July 2013
National Skills Bulletin 2013 EGFSN	July 2013
Annual Business Survey of Economic Impact 2011 Forfás	July 2013
Global Entrepreneurship Monitor (GEM) 2012 Global Entrepreneurship Monitor	July 2013
Annual Employment Survey 2012 Forfás	July 2013
Ireland's Competitiveness Performance 2013 Forfás	May 2013
Making it in Ireland: Manufacturing 2020 Forfás	April 2013
Future Skills Requirements of the Manufacturing Sector to 2020 EGFSN	April 2013

Sectoral Regulation Forfás	April 2013
EGFSN Statement of Activity EGFSN	March 2013
Costs of Doing Business in Ireland 2012 Forfás	March 2013
Vacancy Overview 2012 EGFSN	February 2013
Action Plan for Jobs 2013 Forfás, DJEI	February 2013
A Review of the Equity Investment Landscape In Ireland Forfás	January 2013
Regional Labour Markets Bulletin 2012 EGFSN	January 2013
A Review and Audit of Licences Across Key Sectors of the Irish Economy Forfás	December 2012
Global Entrepreneurship Monitor (GEM) 2011 Global Entrepreneurship Monitor	September 2012
Annual Employment Survey 2011 Forfás	August 2012
National Skills Bulletin 2012 NCC	July 2012
Monitoring Ireland's Skills Supply - Trends in Education and Training Outputs 2012 EGFSN	July 2012
Ireland's Competitiveness Scorecard 2012 NCC	July 2012
Forfás Annual Report 2011 Forfás	July 2012



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

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

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