Forfás

State Expenditure on Science and Technology 2002 and 2003

Volume Two

Research and Development Budget

PROMOTING ENTERPRISE, TRADE AND SCIENCE, TECHNOLOGY AND INNOVATION FOR ECONOMIC AND SOCIAL DEVELOPMENT

Research and Development Budget

Review of State Expenditure on Research and Development 2002 and 2003

Incorporating financial expenditures in 2001 and 2002 and allocations for 2003 by Government to Institutions engaged in any activity related to research & development.

Evaluation and Indicators Unit 2004

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Contents

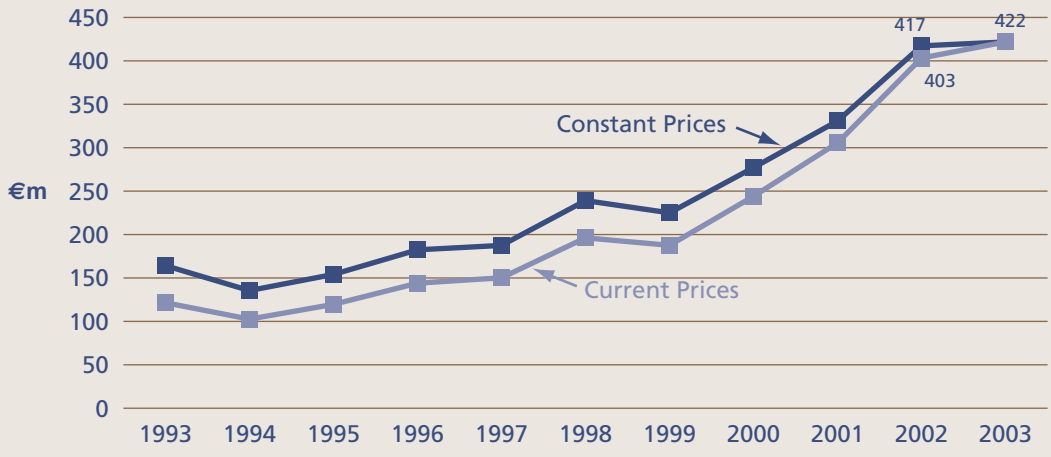
Summary

As Research and Development (R&D) is a very important component of total S&T spend, accounting for about 30% of the total Science Budget, a separate report is prepared on R&D in addition to the *Total S&T Budget* report. This analyses both the funding of scientific R&D by government departments and agencies (whether performed in the public sector or the private sector) and the performance of R&D in the public sector itself. Forfás prepares separate reports on the performance of R&D in the business sector ('BERD') and in the Higher Education Sector ('HERD').

Total R&D Funding

Allocations of public funds to scientific R&D by Government Departments and their Agencies in 2003 amounted to €421.8m, up from €403.3m in 2002. This represents an increase of €18.5m or 4.6%. In real terms (stripping out inflation), public funding of R&D is estimated to rise by just 1.1%, well below the 26.1% real rise posted in 2002.

Total Public Funding Trend (excluding earned income), Current and Constant Prices, 1993-2003



Changes in Funding

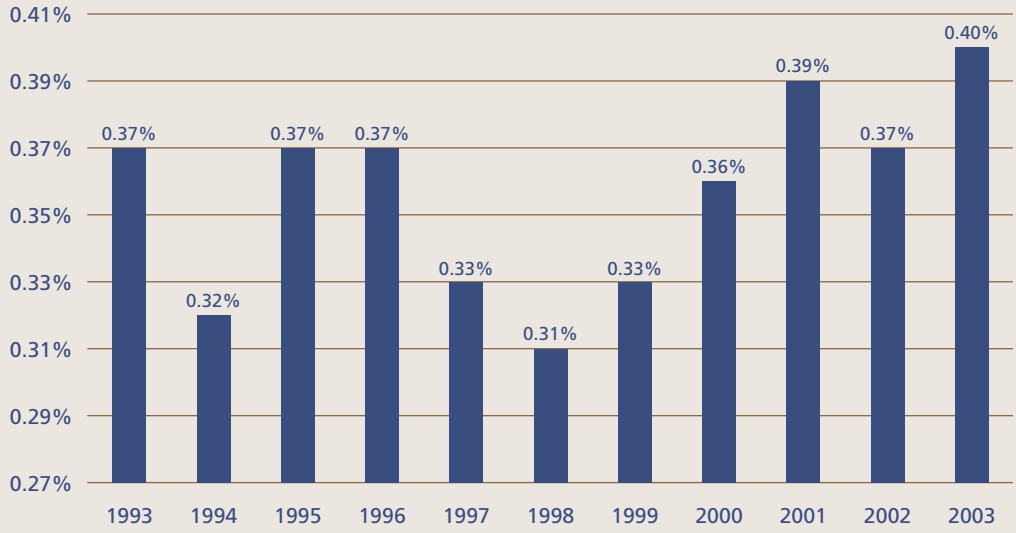
The anticipated level of funding in 2003 shows an increase of €18.5m over the 2002 outturn. The major changes are:

- *Funding for R&D activities by Science Foundation Ireland is up €34m (for research in biotechnology, information and communications technologies)*
- *Other funding by the Department of Enterprise, Trade and Employment increased by €9m.*
- *Allocated R&D spending by the Department of Education and Science via the Higher Education Authority is down €30m (for research in 3rd Level Institutions (€18m) and for buildings (€9.5m)).*
- *IRCSET (Irish Research Council for Science, Engineering and Technology) spending increased by €6m.*
- *Department of Health and Children via the Health Research Board and the Department itself is up €4.6m (this is due to an increase in funding for Health Promotion (up €1.7m) also Research Awards went up by €1.3m and R&D for Health increased by €0.7m).*

GBAORD

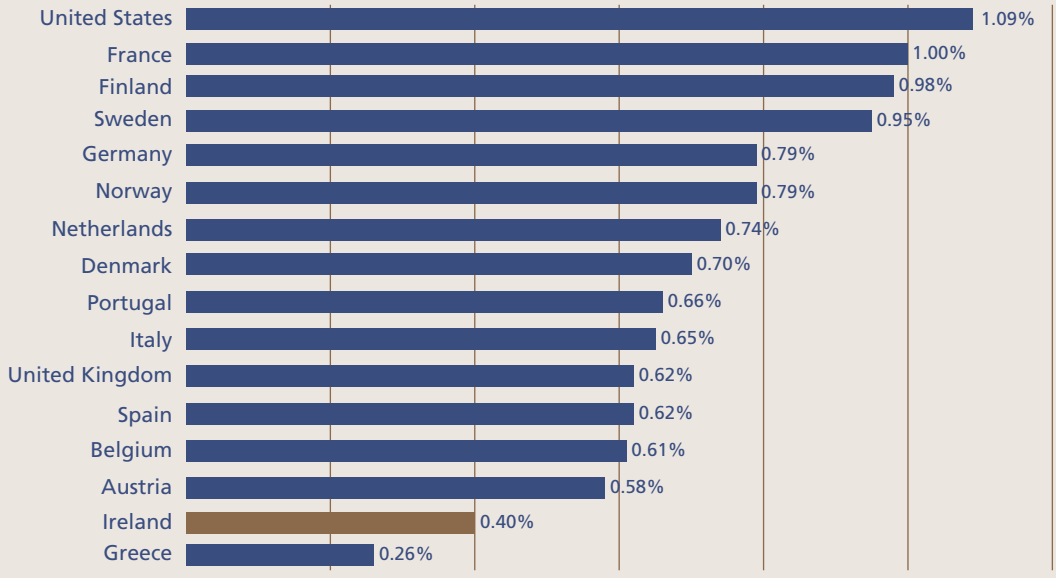
Government budget appropriations or outlays on R&D (GBAORD) show the government's intentions with regard to **spending** on R&D. GBAORD is an internationally used metric of government support for R&D. In this context it includes not just scientific research and development but also research in arts and humanities.

GBAORD as a percentage of GNP, 1993-2003



- *In 2003, GBAORD increased by an estimated €59.6m (15% over 2002) in nominal terms to total €451m.*
- *In relative terms GBAORD as a percentage of Gross National Product (GNP) increased from 0.37% in 2002 to 0.40% in 2003.*
- *The figure below illustrates GBAORD (Government spending on R&D) as a percentage of GDP in 2003 for 14 EU countries and also Norway and the US.*

Government budget allocated to R&D as a % of GDP, 2003 (or latest year available)



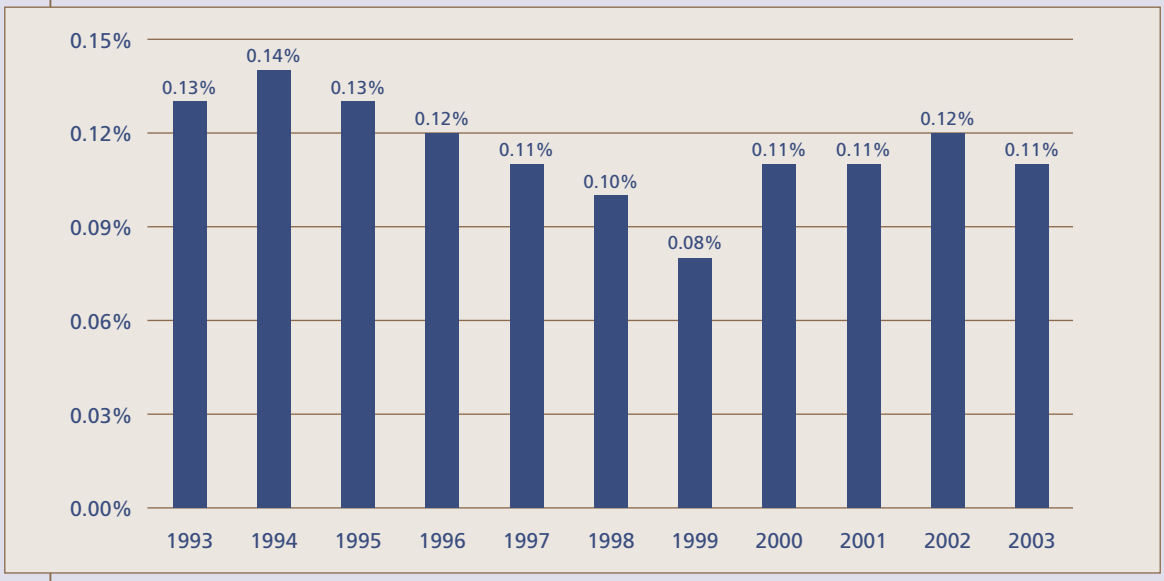
Source: OECD 2003 and Forfás

- *In the United States, GBAORD as a percentage of GDP is 1.09%. However, over half of this total is dedicated to R&D allocated to defence activities.*
- *Ireland's figure doesn't change at 0.4% of GNP as all of GBAORD goes to Civil R&D.*

GOVERD

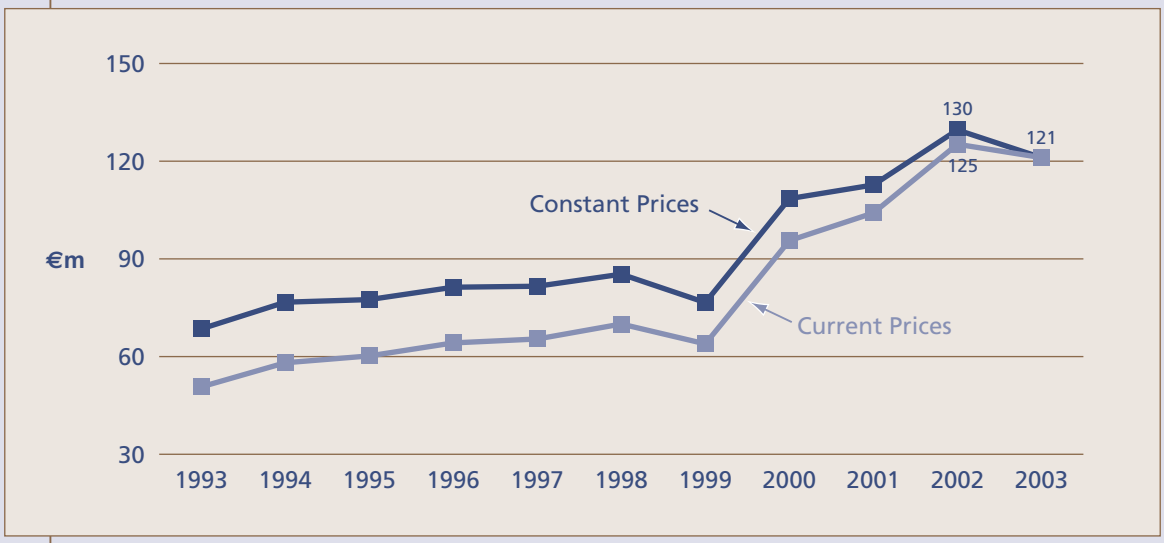
The allocation for **performance** of R&D carried out in the State sector (GOVERD) in 2003 is €121.1m, from €125.2m in 2002 (€104.1 in 2001).

GOVERD as a percentage of GNP, 1993-2003



- *Following three years of relative improvement in performance, GOVERD as a % of economic activity fell to 0.11% of GNP in 2003 from 0.12% of GNP in 2002.*
- *This was a result of GNP growth of 6.9%, combined with the 3.3% recorded fall in GOVERD.*

Expenditure on R&D **performed** *in the public sector, Current and Constant Prices, 1993-2003*



1 Government Funding of Research and Development

1.1 Background

Volume Two of this publication focuses on the performance of Research and Development (R&D) funded and performed by the State within total spending on Science and Technology (discussed in Volume One). It includes the final outturn of spending on R&D activity by the State in 2001 and 2002, alongside proposed spending by the State on R&D in 2003.

Increasing R&D spending, and improving R&D performance, are some of the key drivers identified which will support efforts to move to a more knowledge-driven and competitive economy. The increased complexity and technology content of most activities offers significant opportunities for innovation-based solutions to complex problems. Therefore, the development and delivery of new products and innovative processes to meet market needs, will place firms in a stronger position compared to major competitors.

Funding and support for R&D by the State is an important part of this process. The R&D element of State spending on S&T is important because it is the most discretionary component when compared to other Government expenditures in support of regulatory and statutory functions.

R&D spending in all countries is **performed** in three distinct sectors of the economy:

- *Business sector (via privately-owned firms)*
- *Government sector (via Public research institutes)*
- *Higher Education sector (via universities, technology institutes)*

The State both **funds R&D** activities performed in all three sectors listed above, and also **performs R&D** within the State sector in order to promote its own strategic objectives. This volume of the report examines both of these State functions (funding and performance), and benchmarks performance domestically and on the international stage. It details results from a survey of 45 government departments, agencies and offices as listed in Table 1 in Volume One of this publication.

The definitions of Research and Development used are given below:

- ***Research:*** *Original, experimental or theoretical investigations under-taken 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 are included under "research" or "development" as appropriate.*

1.2 Total Public Funding of Scientific R&D

Public funding for R&D comes from two sources:

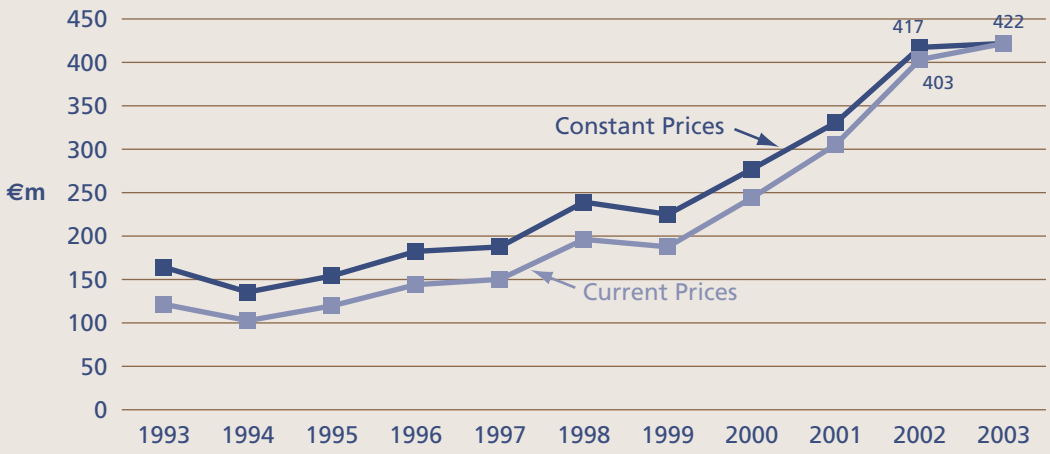
i) The Exchequer,

ii) The Community Support Framework (CSF) of the EU, which consists of three separate funds:

- *The European Regional Development Fund (ERDF)*
- *The European Social Fund (ESF)*
- *The European Agriculture, Guidance and Guarantee Fund (EAGGF).*

The state funds R&D which can be performed in the business, higher education or state sectors of the economy.

Figure 1: *Total Public Funding Trend (excluding earned income), Current and Constant Prices, 1993-2003*



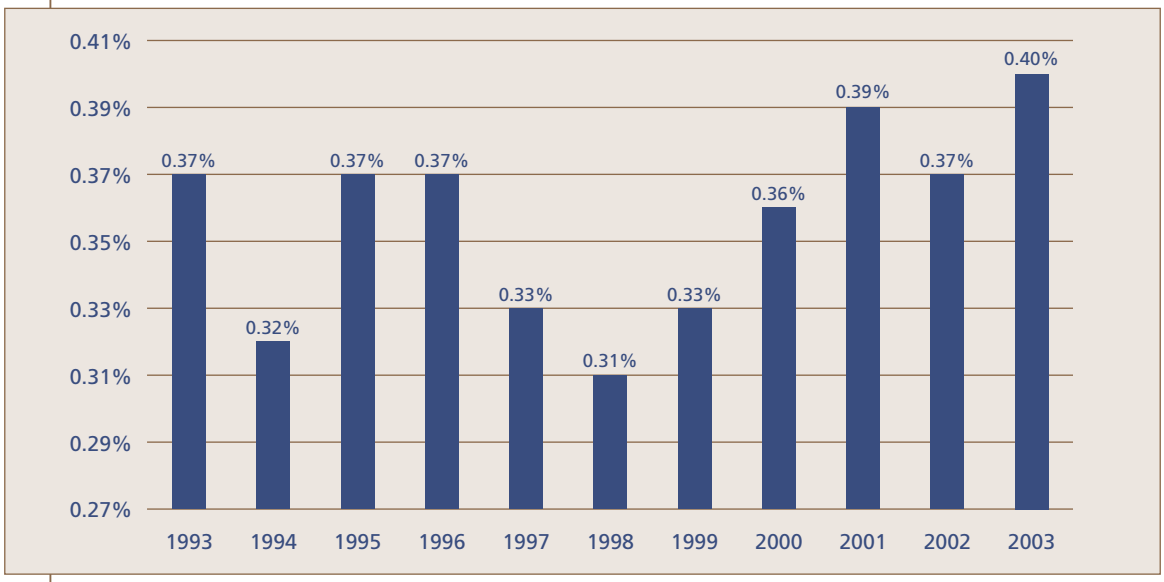
- *Total public funding allocated to R&D in 2003 is estimated to be €421.8m in nominal terms. This represents an increase of €18.5m or 4.6% from total public spending on R&D in 2002.*
- *In real terms (stripping out inflation), allocated public funding of R&D is estimated to rise by just 1.1%, well below the 26.1% real rise posted in 2002.*

More detail on total public funding of R&D is contained in Section 2 of this report.

1.3 GBAORD as a Percentage of GNP

Government budget appropriations or outlays on R&D (GBAORD) show the government's intentions with regard to spending on R&D. GBAORD is an internationally used metric of government support for R&D. In addition to total public funding of scientific R&D (€421.8m in 2003 from Figure 1), GBAORD includes funding for social sciences, arts and humanities which amounts to €29m, which is calculated from the HEA return. Therefore, in this section, government support for R&D across all fields is included.

Figure 2: *GBAORD as a percentage of GNP, 1993-2003*



- *In 2003, GBAORD increased by €59.6m, to €450.8m (15% over 2002) in nominal terms.*
- *In relative terms GBAORD as a percentage of GNP increased from 0.37% in 2002 to 0.40% in 2003.*

A further examination of GBAORD in an international perspective is carried out in Section 4 of this report.

2 Government Funding of Research and Development

2.1 Public Funding of R&D

Table 1 shows the Government funding of R&D, which can be performed either in the Government sector itself, in the business sector or in third level education colleges. The total allocation is €421.8m, up from €403.3m in 2002 (an increase of 4.6%).

Table 1: *Public Funding* of Research & Development*

Funding Dept. or Office	Allocating Organisation	2001			2002			2003		
		Exch €'000	CSF €'000	Public Funding €'000	Exch €'000	CSF €'000	Public Funding €'000	Exch €'000	CSF €'000	Public Funding €'000
Enterprise, Trade & Employment	Enterprise, T & E	27	0	27	23	0	23	36		36
	EI	41,112	18,263	59,375	39,645	12,294	51,939	37,163	13,221	50,384
	HEA	12,654	0	12,654	9,806	2,020	11,826	12,850	3,150	16,000
	IDA Ireland	67	4,232	4,299	3,039	2,180	5,219	6,020	3,000	9,020
	Shannon Development	2,689	0	2,689	935	1,138	2,073	1,175	2,000	3,175
	FÁS	1,974	0	1,974	1,944	155	2,099	2,712		2,712
	DIAS	35	0	35	32	0	32	36		36
	ESRI	558	0	558				1,202		1,202
	SFI				31,000		31,000	65,000		65,000
	Forfás	2,315	0	2,315						
	NMAC	23	0	23						
Subtotal		**61,455**	**22,495**	**83,950**	**86,424**	**17,787**	**104,211**	**126,194**	**21,371**	**147,565**
Education & Science	Education & Science	32,991	8,720	41,711	55,356	1,662	57,018	57,830	2,178	60,008
	HEA	72,203	0	72,203	93,839	0	93,839	63,771		63,771
	DIAS	1,019	64	1,084	1,110	52	1,162	1,311	50	1,361
	IRCHSS				6,369		6,369	7,418		7,418
	ESRI	574	0	574				7		7
	IRCSET				3,822		3,822	9,879		9,879
Subtotal		**106,787**	**8,784**	**115,571**	**160,496**	**1,714**	**162,210**	**140,216**	**2,228**	**142,444**
Agriculture & Food	Agriculture & Food	10,430	0	10,430	7,031		7,031	8,486		8,486
	HEA	2,474	0	2,474	3,932		3,932	3,387		3,387
	Teagasc	33,511	0	33,511	46,116		46,116	45,978		45,978
Subtotal		**46,415**	**0**	**46,415**	**57,079**	**0**	**57,079**	**57,851**	**0**	**57,851**
Health & Children	Health & Children	810	0	810	2,982		2,982	4,961		4,961
	HRB	13,028	0	13,028	20,856		20,856	22,820		22,820
	ESRI	129	0	129				611		611
	FSAI				505		505	613		613
Subtotal		**13,967**	**0**	**13,967**	**24,343**	**0**	**24,343**	**29,005**	**0**	**29,005**

Table continued on next page

Funding Dept. or Office	Allocating Organisation	2001			2002			2003		
		Exch €'000	CSF €'000	Public Funding €'000	Exch €'000	CSF €'000	Public Funding €'000	Exch €'000	CSF €'000	Public Funding €'000
Communications, Marine & Natural Resources	Communications, Marine & Natural Resources	5080	0	5080	2,100		2,100	1,700		1,700
	Marine Institute	12,418	399	12,817	13,747		13,747	9,171		9,171
	BIM	7,102	0	7,102	3,153	2,234	5,387	1,473	1,395	2,868
	COFORD	508	0	508	1,086		1,086	1,249		1,249
	HEA	194	0	194	617		617	564		564
	Media Lab Europe				7,465		7,465	5,412		5,412
	CRFB				23		23			
	SEI	23	0	23						
	DIAS	6	0	6						
Subtotal		**25,331**	**399**	**25,730**	**28,191**	**2,234**	**30,425**	**19,569**	**1,395**	**20,964**
Environment Heritage & Local Government	Environment, Heritage & Local Government	2,507	0	2,507	2,296		2,296	2,592		2,592
	EPA	966	0	966	1,650		1,650	1,425		1,425
	Met Éireann	1,379	0	1,379	2,048		2,048	2,107		2,107
	HEA	3,191	0	3,191	4,189		4,189	5,133		5,133
	RPII	263	0	263	320		320	359		359
	ESRI	50	0	50				23		23
Subtotal		**8,356**	**0**	**8,356**	**10,503**	**0**	**10,503**	**11,639**	**0**	**11,639**
Social & Family Affairs	Social & Family Affairs	4,099	0	4,099	4,191		4,191	4,316		4,316
Subtotal		**4,099**	**0**	**4,099**	**4,191**	**0**	**4,191**	**4,316**	**0**	**4,316**
Community, Rural & Gaeltacht Affairs	Community, Rural & Gaeltacht Affairs	1,108	0	1,108	2,166		2,166	1,990		1,990
	Údarás na Gaeltachta	2,299	0	2,299	2,166		2,166	1,990		1,990
Subtotal		**3,407**	**0**	**3,407**	**4,332**	**0**	**4,332**	**3,980**	**0**	**3,980**
Finance	ESRI	1,992	0	1,992	3,796		3,796	2,005		2,005
Subtotal		**1,992**	**0**	**1,992**	**3,796**	**0**	**3,796**	**2,005**	**0**	**2,005**
Taoiseach	NESC	726	0	726	773		773	665		665
	ESRI	78	0	78				23		23
Subtotal		**804**	**0**	**804**	**773**	**0**	**773**	**688**	**0**	**688**
Transport	NRA	585	0	585	679		679	612		612
Subtotal		**585**	**0**	**585**	**679**	**0**	**679**	**612**	**0**	**612**
Central Bank	Central Bank	533	0	533	489		489	526		526
Subtotal		**533**	**0**	**533**	**489**	**0**	**489**	**526**	**0**	**526**
Arts, Sport & Tourism	Arts, Sport & Tourism	216	0	216	232		232	226		226
Subtotal		**216**	**0**	**216**	**232**	**0**	**232**	**226**	**0**	**226**
Total		**273,947**	**31,678**	**305,625**	**381,527**	**21,735**	**403,262**	**396,828**	**24,994**	**421,822**
% Total		**90%**	**10%**	**100%**	**95%**	**5%**	**100%**	**94%**	**6%**	**100%**

*Public funds are Exchequer & CSF funds

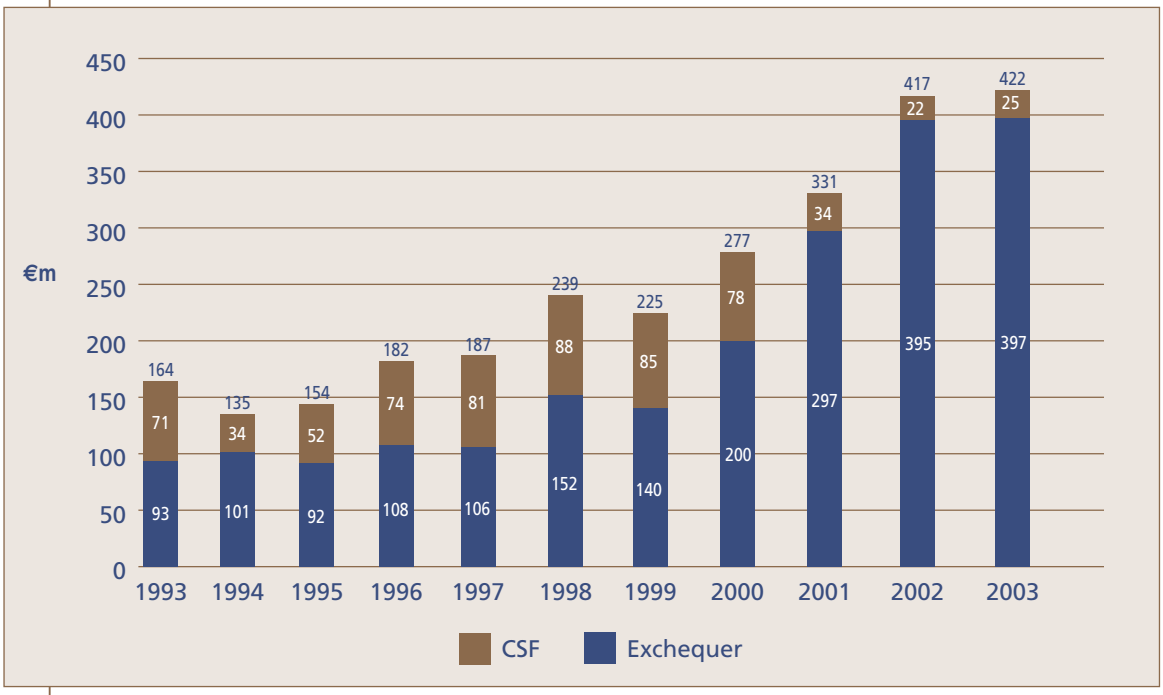
The anticipated level of public funding in 2003 shows an increase of €18.5m over the 2002 outturn. The major changes in allocations relate to:

- *Funding for R&D activities by Science Foundation Ireland is up €34m (for research in biotechnology, information and communications technologies)*
- *Allocated R&D spending by the Department of Education and Science via the Higher Education Authority is down €30m (for research in 3rd Level Institutions (€18m) and for buildings (€9.5m)).*
- *IRCSET (Irish Research Council for Science, Engineering and Technology) spending is forecast to increase by €6m (for Research in 3rd Level Institutions).*
- *The Department of Enterprise, Trade and Employment is expected to increase by €4.2m via the Higher Education Authority (for Enterprise Ireland Grant Schemes)*
- *Department of Health and Children allocation via the Health Research Board and the Department itself is up €4.6m (this is due to an increase in funding for Health Promotion (up €1.7m) also Research Awards went up by €1.3m and R&D for Health increased by €0.7m).*

2.2 Sources of Public R&D Funding

Figure 3 shows the sources of funds for Public R&D over the past decade.

Figure 3: *Sources of Public R&D Funding 1993-2003 (2003 prices, €m)*



The most notable aspects are:

- *Exchequer funding has significantly increased its percentage of the total funding from 57% in 1993 to 94% in 2003 which is an increase in real terms of €304m (327%) since 1993.*
- *This represents an annual growth rate of 11.1% over the last decade in exchequer funding.*
- *The contribution of EU Community Support Framework programmes has decreased in real terms from €78m in 2000 to €25m in 2003. There has been a significant downturn in the contribution of EU Community Support Framework programmes since 2000. In real terms this amounts to a decrease of €53m between 2000 and 2003.*

3 Performance of Research and Development in the Public Sector

3.1 Total Scientific R&D Performed in the Government Sector

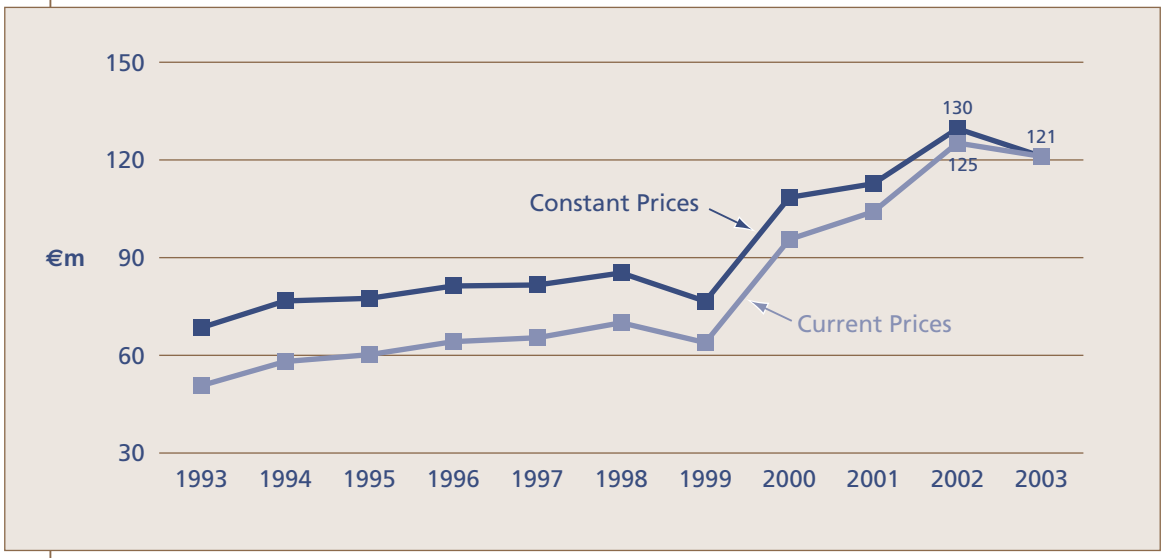
As well as **funding** R&D through various departments and agencies, the State also **performs** some Research and Development.

Expenditure on R&D carried out by government in the state sector but excluding R&D carried out in the Higher Education system is known as GOVERD – GOVernment Expenditure on Research and Development.

Spending on R&D carried out in the Higher Education sector is measured in an additional survey of HERD (Higher Education expenditure on Research and Development).

Figure 4 below shows the nominal and real levels of GOVERD from 1993-2003. Spending in 2003 on GOVERD was estimated to be €121.1m.

Figure 4: *Expenditure on R&D* **performed** *in the public sector, Current and Constant Prices, 1993-2003*



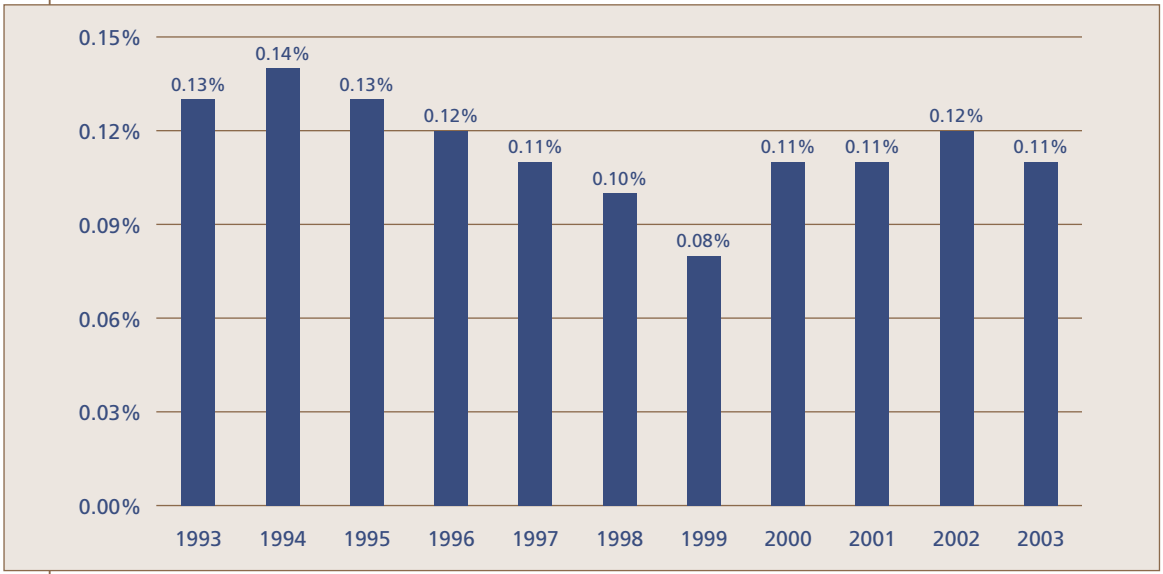
- *Nominal expenditure on R&D performed by the State fell by €4.1m in 2003, a fall of 3.2% from the previous year.*
- *In real terms expenditure on R&D performed by the State fell 6.6% in 2003. This compares to the 20% rise in GOVERD in 2002.*

3.2 GOVERD as a Percentage of GNP

Figure 5 shows the trend since 1994 of performance of R&D in the public sector as a percentage of economic activity as measured by GNP. GNP is used rather than GDP as it is a more appropriate measure of the Irish economy's growth given that it excludes 'net income factor' which takes into account the profit repatriation of multinational firms.

GOVERD as a percentage of GNP amounts to 0.11% in 2003.

Figure 5: *GOVERD as a percentage of GNP, 1993-2003*



- *Relative GOVERD performance had risen from 0.08% of GNP in 1999 to 0.12% of GNP in 2002.*
- *This strengthening performance was facilitated as a result of GOVERD increasing by 95.9% between 1999 and 2002, therefore outpacing the increase in GNP in those respective years of 36.8%.*
- *Following three years of relative improvement in performance GOVERD as a % of GNP fell to 0.11% in 2003.*
- *This deteriorating performance was a result of GNP growth of 6.9%, combined with the 3.2% recorded fall in GOVERD levels.*

3.3 Performers of R&D by Source of Funds

Table 2 gives the profile of R&D performance in the public sector.

Table 2: *Performance of Research & Development in the Government Sector*

Performing Department/ Agency	2001 Source of Funds				2002 Source of Funds				2003 Source of Funds				
	Exchequer €000	CSF €000	Private €000	Total €000	Exchequer €000	CSF €000	Private €000	Total €000	Exchequer €000	CSF €000	Private €000	Total €000	% Total
Agriculture & Food	10,379		466	10,845	7,031			7,031	8,486			8,486	**7.0%**
Teagasc	33,511		9,765	43,277	46,116		5,647	51,763	45,978		5,367	51,345	**42.4%**
Communications, Marine & Natural Resources	5,080			5,080	2100			2,100	1,700			1,700	**1.4%**
Marine Institute	12,418	399		12,817	13,747		125	13,872	9,171			9,171	**7.6%**
COFORD	508			508	1,086			1,086	1,249			1,249	**1.0%**
Bord Iascaigh Mhara	7,102		3	7,106	3,153	2,234		5,387	1,473	1,395		2,868	**2.4%**
Central & Regional Fisheries Board					23			23				0	**0.0%**
Media Lab Europe					7465		2958	10,423	5,412		3,123	8,535	**7.0%**
Sustainable Energy Ireland	23			23								0	
Health & Children	810			810	2,982			2,982	4,961			4,961	**4.1%**
Health Research Board	2,953		100	3,053	7,913			7,913	8,886			8,886	**7.3%**
Food Safety Authority					505			505	613			613	**0.5%**
Finance												0	
Economic & Social Research Institute	3,382		826	4,208	3,796		776	4,572	3,873		941	4,814	**4.0%**
Social & Family Affairs	4,099		44	4,143	4,191			4,191	4,316			4,316	**3.6%**
Enterprise, Trade & Employment												0	
FÁS	1,974			1,974	1,944	155		2,099	2,712			2,712	**2.2%**
Enterprise Ireland	476	68		544	525	68		593	652	148		800	**0.7%**
National Microelectronics Applications Centre	23		806	829			968	968			1,179	1,179	**1.0%**
Arts, Sport & Tourism	216			216	232			232	226			226	**0.2%**
Community, Rural & Gaeltacht Affairs	708			708	2,166			2,166	1,990			1,990	**1.6%**

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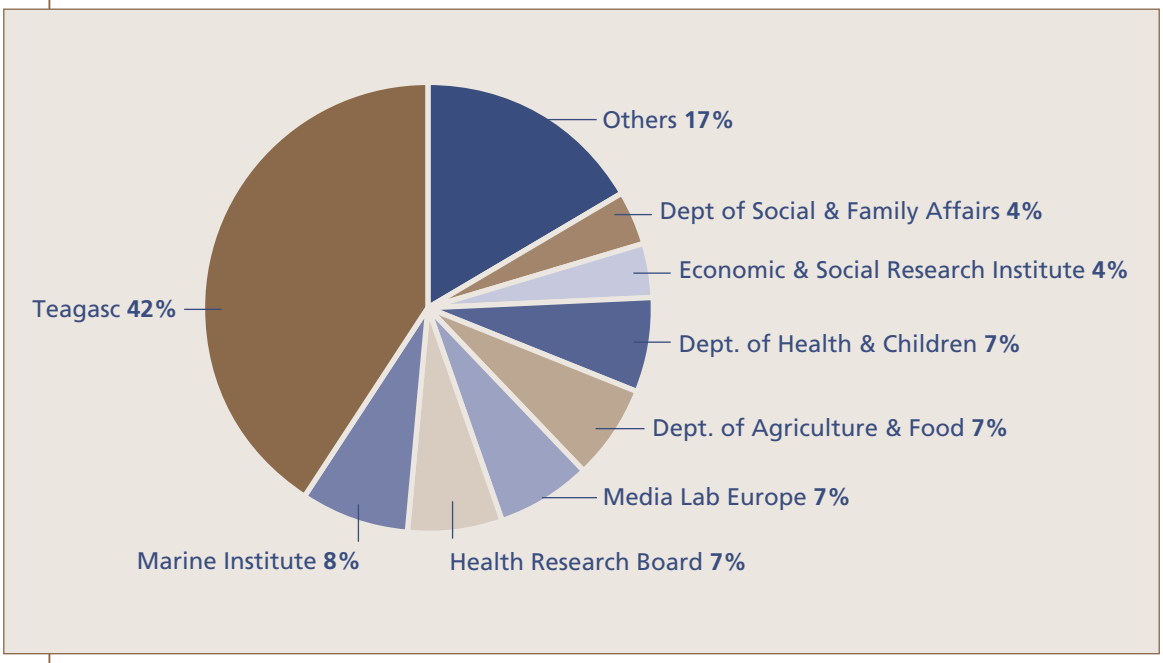
Performing Department/ Agency	2001 Source of Funds				2002 Source of Funds				2003 Source of Funds				
	Exchequer €000	CSF €000	Private €000	Total €000	Exchequer €000	CSF €000	Private €000	Total €000	Exchequer €000	CSF €000	Private €000	Total €000	% Total
Environment, Heritage & Local Government	1689			1,689				0				0	**0.0%**
Environmental Protection Agency	966		142	1,108	1,650			1,650	1,425			1,425	**1.2%**
Met Éireann	1,379		304	1,683	2,048			2,048	2,107			2,107	**1.7%**
Radiological Protection Institute of Ireland	263		102	365	320		58	378	359		77	436	**0.4%**
Education & Science												0	
Dublin Institute of Advanced Studies	1,060	64	98	1,223	1,142	52	56	1,250	1,347	50	59	1,456	**1.2%**
Department of the Taoiseach												0	
National Economic & Social Council	726		1	727	773			773	665		2	667	**0.6%**
Transport												0	
National Roads Authority	585		11	596	679		59	738	612		50	662	**0.5%**
Central Bank	533			533	489			489	526			526	**0.4%**
Total	**90,863**	**531**	**12,669**	**104,064**	**112,076**	**2,509**	**10,647**	**125,232**	**108,739**	**1,593**	**10,798**	**121,130**	**100%**

- *The total 2003 Allocation is €121.1m.*
- *Earned income accounts for €10.8m of the total, so that the public investment in R&D, which is performed in the state sector is €110.3m. The total exchequer R&D support decreased by €4.3m (3.8%) in 2003 from €114.6m in 2002.*

3.4 Major Performers of R&D in the Public Sector

The major public sector performers are shown in Figure 6. The principal R&D performers in the public sector in 2003, as in previous years, are Teagasc and the Department of Agriculture and Food. Their combined performance of R&D represents almost half of the total R&D performed in the public sector.

Figure 6: *Major Public Sector Performers in 2003*



- *The eight major R&D performers account for 83% (€100.5m) of GOVERD.*
- *The most significant performer of R&D is Teagasc accounting for 42% of the total R&D performance in 2003. The research budget for Teagasc in 2003 is €51.3m, compared to €51.8m in 2002. The budget for 2003 relates to research to the value of €34.9m in Sustainable Agriculture and Rural Development and €16.5m to Food Research.*
- *R&D to be undertaken by the Marine Institute in 2003 amounts to €9.2m.*
- *The Health Research Board engages in R&D relevant to Health and Social Gain to the value of €8.9m.*
- *Media Lab Europe will spend €8.5m on R&D.*
- *The Department of Agriculture and Food performs a further €8.5m in its Agriculture related research.*
- *The Department of Health and Children, ESRI and the Department of Social and Family Affairs perform R&D amounting to €4.9m, €4.8m and €4.3m respectively.*

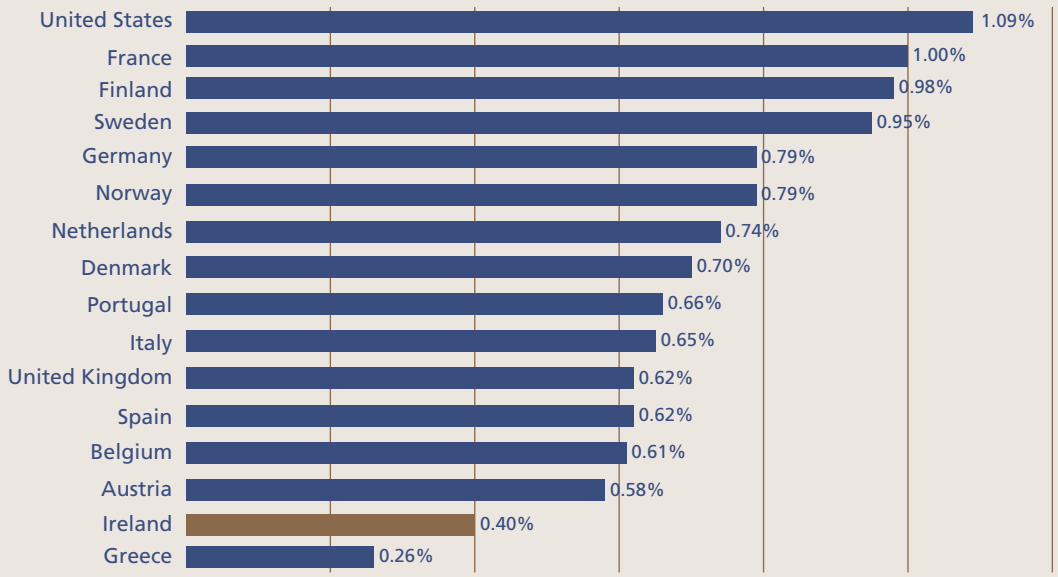
4 International Comparisons on Public Sector Research and Development

4.1 R&D Funding by the Government Sector

It is useful to benchmark Ireland's relative position in comparison to other countries in order to assess our performance. Taking these indicators in isolation may give a false impression of the underlying research scene. Indicators only give a partial view of the reality. In addition, many indicators do not reflect the quality or efficiency of countries in particular areas. For example, a high R&D intensity does not necessarily imply that R&D inputs are efficiently used. Nevertheless, one can assume that little benefits will occur if relatively little R&D is performed.

Figure 7 below illustrates GBAORD as a percentage of GDP in 2003 for 14 European countries and also Norway and the USA.

Figure 7: *Government budget allocated to R&D as a % of GDP, 2003 (or latest year available)*



Source: OECD 2003 and Forfás

- *In the United States, GBAORD as a percentage of GDP is 1.09%. However over half of this total is dedicated to R&D allocated to defence activities, as confirmed by data in Table 4.*
- *Ireland's figure doesn't change as 100% of GBAORD goes to Civil R&D.*

Table 3 shows the total Government funding of R&D (the Government funds R&D performed in the public sector in addition to the business sector and the higher education sector) known as GBAORD.

Table 3: *R&D Funding by the Government Sector for selected countries. Government Funding of Civil R&D* as a percentage of GDP – GBAORD (1993 and 2003 or nearest year)*

	1993	2003
Finland	1.04%	0.95%
France	0.83%	0.78%
Netherlands	0.88%	0.77%
Sweden	0.93%	0.74%
Germany	0.89%	0.74%
Norway	0.86%	0.73%
Denmark	0.64%	0.70%
Italy	0.63%	0.66%
Portugal	0.48%	0.64%
Belgium	0.54%	0.61%
Austria	0.68%	0.58%
United States	0.44%	0.50%
United Kingdom	0.49%	0.47%
Spain	0.42%	0.43%
Ireland (GNP)**	**0.36%**	**0.40%**
Greece	0.20%	0.28%

* Civil R&D is defined as total GBAORD less R&D spending on defence activities.

**Ireland's figure is given as a percentage of GNP as it is a more accurate indicator of economic activity.

- *Out of the countries benchmarked, Finland has the highest relative spending on R&D with 0.95% in 2003 compared to Ireland's 0.40%.*
- *In half of the sixteen countries benchmarked the relative spending on Civil R&D decreased between 1993 and 2001. Ireland's Civil R&D spending as a proportion of GNP increased from 0.36% in 1993 to 0.40% in 2003.*

4.2 R&D Performance by the Government Sector

Table 4: *R&D Performance by the Government Sector for selected countries (1993 and 2003 or nearest year) – GOVERD*

	R&D performed in the Public Sector (% GDP)	
	1993	**2003**
France	0.51%	0.37%
Finland	0.44%	0.35%
Germany	0.36%	0.35%
Denmark	0.31%	0.28%
Netherlands	0.35%	0.27%
United States	0.26%	0.24%
Norway	0.33%	0.23%
Italy	0.24%	0.21%
Portugal	0.13%	0.18%
United Kingdom	0.3%	0.18%
Spain	0.18%	0.15%
Greece	0.15%	0.14%
Belgium	0.06%	0.13%
Sweden	0.13%	0.12%
Ireland (GNP*)	**0.13%**	**0.11%**
Austria	0.13%	0.11%

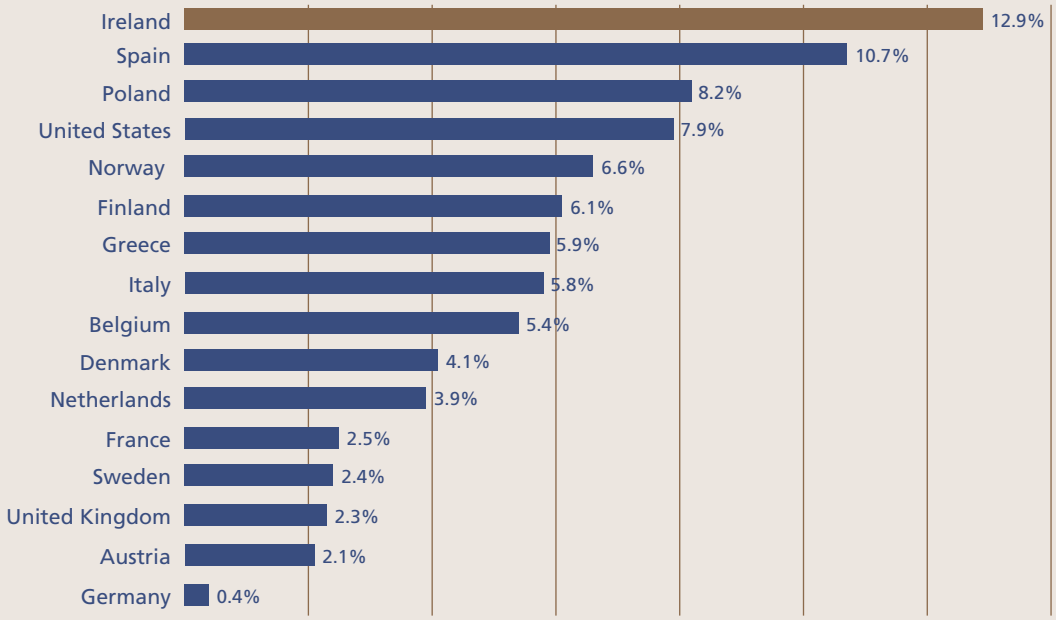
- *R&D performed in the Public Sector as a percentage of GDP has decreased in Ireland from 0.13% of GNP in 1993 to 0.11% of GNP in 2003.*
- *Only two out of the sixteen countries benchmarked (Portugal and Belgium) have increased R&D performed in the Public Sector.*

There is a wide variation in approaches and results between the different countries. Most of the countries have a similar profile, performing a significant level of R&D in the public sector and funding still more in other sectors. Ireland has a tradition of having very little R&D performed in the public sector with the significant investment being carried out in the business and higher education sectors.

4.3 Government R&D Budget Average Annual Growth

Figure 8 below shows that Ireland, Spain and Poland witnessed strong increases in GBAORD in the period 1996-2003. GBAORD for Ireland saw an annual growth rate of 12.9%. The larger economies such as France (2.5%), Germany (0.4%) and the UK (2.3%) have shown much slower growth rates in the same period.

Figure 8: *Government R&D budget average annual growth (%), 1996-2003 (or latest year available)*



- *Growth in GBAORD in Ireland between 1996 and 2003 is calculated to average 12.9% per annum, the strongest growth performance of the 16 countries benchmarked.*
- *The period 1998 to 2001 the average annual growth rate of GBAORD in Ireland was 21.1%.*
- *This slowed to 3.5% growth in 2002, before picking up again to an annual growth rate of 15.1% in 2003.*

Reports Published by Forfás 2004

Report	Date
Broadband Telecommunications Benchmarking Study	January 2004
Research and Development in Ireland, 2001 – at a glance	January 2004
Competitiveness through Innovation National Competitiveness Council (NCC)	February 2004
International Trade & Investment Report, 2003	March 2004
Wireless Communications: An Area of Opportunity for Ireland	April 2004
National Code of Practice for Managing Itellectual Property from Publicly Funded Research Irish Council for Science, Technology & Innovation (ICSTI)	April 2004
Forfás Annual Report	April 2004
Innovation Networks	June 2004
Enterprise Strategy Group Report **Ahead of the Curve**	July 2004
Export Licensing of Military and Dual-Use Goods in Ireland	July 2004
Statement on Nanotechnology Irish Council for Science, Technology & Innovation (ICSTI)	July 2004
Building Ireland's Knowledge Economy – **The Irish Action Plan for Increasing Research and Development to 2010**	September 2004
A Model to Predict the Supply and Demand for Researchers	September 2004
Statement on Prices and Costs National Competitiveness Council (NCC)	September 2004
State Expenditure Priorities for 2005 Irish Council for Science, Technology & Innovation (ICSTI)	September 2004
Sustainable Development in Ireland Irish Council for Science, Technology & Innovation (ICSTI)	October 2004
Annual Competitiveness Report 2004 & **The Competitiveness Challenge Report** National Competitiveness Council (NCC)	October 2004

Functions of Forfás

Forfás is the national policy and advisory board for enterprise, trade, science, technology and innovation. It is the body in which the State's legal powers for industrial promotion and technological development have been vested. It is also the body through which powers are delegated to Enterprise Ireland for the promotion of indigenous industry and to IDA Ireland for the promotion of inward investment.Science Foundation Ireland was established as a third agency of Forfás in July 2003. The broad functions of Forfás are to:

- advise the Minister on matters relating to the development of industry in the State
- advise on the development and co-ordination of policy for Enterprise Ireland, IDA Ireland, Science Foundation Ireland and such other bodies (established or under statute) as the Minister may by order designate
- encourage the development of industry, science and technology, innovation, marketing and human resources in the State
- encourage the establishment and development in the State of industrial undertakings from outside the State, and
- advise and co-ordinate Enterprise Ireland, IDA Ireland and Science Foundation Ireland in relation to their functions.

Is é Forfás an bord náisiúnta um polasaí agus comhairle le haghaidh fiontraíochta, trádála, eolaíochta, teicneolaíochta agus nuála. Is é an comhlacht é a bhfuil comhactaí dlíthiúla an stáit maidir le cur-chun cinn tionscail agus forbairtteicneolaíochta dílsithe ann. Is é an comhlacht é freisin trína dciomnaítear cumhachtaí ar Fhiontraíocht Éireann le tionscail dúchais a chur chus cinn agus ar ghníomhaireacht Forbartha Tionscail na hÉireann (GFT Éireann) le hinfheistíocht isteach sa tir a chur chun tosaigh. Bunaíodh Fondúireacht Eolaíochta Éireann mar an treas eagraíocht de chuid i Forfás mí Iúil 2003.
Is iad feighmeanna Fhorfáis:

- comhairle a chur ar an Aire ó thaobh cúrsaí a bhaineann le forbairt tionscail sa Stát
- comhairle maidir le forbairt agus comhordú polasaithe a chur ar fáil d'Fhiontraíocht Éireann, d'GFT Éireann, Fondúireacht Eolaíochta Éireann agus d'aon fhoras eile dá leithéid (a bunaíodh go reachtúil) a d'fhéadfadh an tAire a ainmniú trí ordú
- forbairt na tionsclaíochta, na teicneolaíochta, na margaíochta agus acmhainní daonna a spreagadh sa Stát
- bunú agus forbairt gnóthas tionsclaíoch ón iasacht a spreagadh sa Stát, agus
- Fiontraíocht Éireann, GFT Éireann agus Fondúireacht Eolaíochta Éireann a chomhairliú agus a chomhordú ó thaobh a gcuid feidhmeanna.

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