

State Investment in Science and Technology 1996

Science Budget 1996

The Science Budget 1996 is a review of State Investment in Science & Technology 1985-1996. It incorporates financial expenditures in 1995 and allocations for 1996 by Government to Institutions engaged in any activity related to science and technology.

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COMMENTARY

Introduction

The level of public expenditure on activities which are classified as 'science and technology' is quite large and this has become increasingly recognised. The total amounted to £558m in 1995 and rose to £659m in 1996. An additional £143m in 1995, and £124m in 1996, was generated from earned income or fees directly associated with these public expenditures. So the total amount involved is rapidly approaching the billion pound mark.

It is important to be careful in interpreting these figures. They do not, for example, represent a huge national investment in fundamental research or other esoteric activities. The definition of science and technology used here is a wide one which includes the social sciences as well as the natural sciences and engineering. In addition, modern technologies - particularly information technology and computers - are so widespread that they represent a significant investment for many government departments and state agencies. To take an example which will be familiar to everybody, Met Éireann is included in the Science Budget because all of its activities, while geared to the apparently mundane task of providing the daily weather forecast, utilise applied mathematical and statistical techniques allied with complex equipment and software.

Science Budget Findings

While the body of this document details the 10 Government Departments and 34 separate agencies which go to make up the Science Budget it is useful to divide this total into five broad categories according to main activity of departments and agencies. Amounts shown are public funds (exchequer plus Community Support Framework) allocated to science and technology in 1996.

Education and Training (in scientific and technological fields) (45%)

HEA	£148.8m	Funding of RTCs etc.
Department of Education	£144.0m	Education and research in the universities
Dublin Inst. for Advanced Studies	£1.4m	Research in physics

Health and Social Services (27%)

Health Laboratories	£124.1m	Performance of medical tests
Central Statistics Office	£24.1m	Collection and publication of official statistics
Department of Justice	£16.3m	Technical back-up to the Gardaí
Department of Social Welfare	£5.6m	Technical support for social welfare programmes
Health Research Board	£3.5m	Funding of health research and development
State Laboratory	£2.2m	Chemical and toxicological analysis
ESRI	£2.2m	Economic and social science research

Enterprise Development (15%)

The Department of Enterprise and Employment and its agencies (e.g. Forbairt, IDA, Ireland, Forfás, FÁS, Shannon Development), the National Microelectronics Research Centre (NMRC), plus Údarás na Gaeltachta (further detail on this investment is given below)	£94m
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Natural Resources (9%)

Department of Agriculture, Food and Forestry and its agency (Teagasc) plus COFORD	(£51m)
Department of Marine	(£1.2m)
and its agencies	(£6m)

Environment (4%)

Ordnance Survey	(£4.7m)	Production of ordnance survey maps
- Environmental Protection Agency	(£5.8m)	The national agency for environmental protection
- Geological Survey	(£2.0m)	Advice and information on the geology of Ireland
- Department of the Environment	(£1.9m)	Technical support to the Department
Department of Transport, Energy, Comm.	(£1.6m)	Technical support to the Department
- Radiological Protection Institute	(£1.3m)	Technical support to the Government on radiation issues

The overall increase in public funds in the Science Budget for 1996 amounts to just over £100m. Four areas accounted for almost 80% of this increase; these were:

HEA/Dept. of Education	+£34m	(mainly compensation for fees abolition)
Forbairt	+£20m	(increased grants for R&D in industry plus new initiatives in software and textiles)
Health Laboratories	+£13m	
Central Statistics Office	+£11m	(additional funding for 1996 census).

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Key Issues

Prioritising National Spending

The existing spending distribution, as outlined above, is a mixture of historical factors and short-term expediency. EU funds have also influenced spending trends in some areas. No clear mechanism exists to address the issue of whether the existing allocation of resources is the right one or whether some reallocation, in response to an agreed prioritisation of national needs, is appropriate. This issue was addressed by the Science, Technology and Innovation Advisory Council, which reported in early 1995. A number of priority areas for action, following on from the Council's report, have been identified by the Task Force established by the Government to advise on implementation. They include:

- Establish an inter-departmental committee to work with the existing Cabinet Committee for science and technology, to devise a long-term strategy for science and technology and to facilitate planning of S&T spending, particularly in relation to the need to set priorities on where and how S&T funds should be allocated.
- A national plan for science and technology should be prepared and updated on an annual basis under the aegis of the Cabinet Committee and the inter-departmental committee. The plan should analyse current investment in science and technology and comment on the spending plans of departments and agencies.

The annual Science Budget is envisaged as an essential input into this process of national priority setting. With this in mind the current Science Budget document has been prepared, with the full co-operation and assistance of all the organisations concerned, by mid-1996 so as to be available, if required, for the annual estimates process for 1997. While such a co-ordinated approach to setting national science and technology targets would not have been likely to succeed in the past, it does fit in well with recent developments within the public sector, particularly the Strategic Management Initiative designed to improve the efficiency and effectiveness of public services. A window of opportunity for action has therefore opened and, if this opportunity is not seized, the existing unsatisfactory procedures will remain unchanged.

Enterprise Development

State support for technology for enterprise development has increased significantly since 1990, from £44m then to £94m in 1996, with the help of EU funds as discussed later. This has begun to fill a gap in the support system for indigenous industry. The poor performance of indigenous firms is due in part to inadequate investment in new technology with a consequent failure of product and process innovation. More generally, we have failed to develop the linkages necessary for a vibrant national system of innovation; the low level of linkages between indigenous firms and the research capability in the third level and state sectors is an obvious example to cite.

The increase in funds in recent years has enabled some existing initiatives to be strengthened and a number of new initiatives to be taken. The most significant of these are:

	1995	1996
Grants for feasibility studies and R&D projects in industry	£24.6m	£33.9m
Establishment and support for specialised centres (PATs, NMRC, Technology Centres)	£11.7m	£12.1m
Training in the effective management of technology in companies	£0.7m	£2.4m
Support for technology transfer in enterprises	£1.6m	£2.1m
Placement schemes to assist small firms to take on graduate technologists.	£1.9m	£2.5m

Together these initiatives constitute a coherent approach to supporting innovation in enterprises at very different stages of development. Support for research and development and for greater interaction with third level colleges is mainly focused on firms with a fair level of in-house expertise, while other schemes are designed to help enterprises to build up such a capability as quickly as possible. It is important that state support for the different initiatives is continued over the next few years at least.

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Support is also available from EU sources for the other two activities funded under the Enterprise Development heading:

	1995	1996
Technology Services in Forbairt	£8.6m	£17m
Third level R&D projects(both basic and applied research, some of it in collaboration with industry)	£5m	£8m

There are indications that the innovation performance of Irish industry is improving. It is therefore important to keep these initiatives in place, subject to suitable monitoring and evaluation to improve performance and reallocate resources as appropriate. How to achieve this as EU funds decline is an important question for industrial policy makers over the next few years.

In early 1996 the Government announced that an additional £4m would be made available in this year's budget to begin implementing the recommendations of the Tierney Report on science, technology and innovation (the STIAC report). Over 50% of this (£2.3m) is going to third level colleges to support research and provide extra funding for post-graduate students, areas of high priority in the Tierney Report. This will enable funding of basic research projects to increase to £2m per year, from £1m in 1994, but still well below the minimum level of £5m per year recommended by Tierney. It will also double the level of grants from £1000 per year to £2000 per year for the 160 graduate students supported by the Office of Science and Technology. Funding has been made available for five post-doctoral fellowships, an area where no previous support was available. These changes are very welcome but there is still much to be done to bring support for post-graduates and for third level research to levels available in other countries, particularly those rapidly improving in this area such as Portugal. The remainder of the £4m package has been allocated to priority areas in industry identified for support by the Tierney Report - expanding the technology transfer support programme, first steps in the establishment of an inter-firm collaboration programme, more support for placements and for technology audits to help small firms identify and address their technological shortcomings, and an awareness campaign to raise the profile of science and technology.

Support for Research and Development (R&D)

The 1995 Science Budget remarked on the welcome increase in state funding of R&D in recent years. This funding has risen from £80m in 1990 to £135m in 1995 and £162m in 1996. Internationally comparable figures are available for government funding of R&D:

Funding of GERD (total R&D)	1990		1993	
	IRL	EU average	IRL	EU average
Government (%)	30	40	28	40
Industry (%)	60	53	62	53

Despite the recent increases, government support for R&D is holding steady at 0.4% of GDP, compared to the EU average of 0.9%. These lower levels of government funding of R&D in Ireland probably reflect the absence here of a comprehensive infrastructure of public research institutes which most other EU member states possess.

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The trends in R&D expenditure since 1990 by principal actors are shown in the following table:

Institution (selected)	Funding of R&D (£m)*		
	1990	1995	1996
HEA (university research)	21.4	38.1	41.4
Forbairt	8.3	29.6	43.2
Teagasc	16.0	21.7	22.7
Department of Agriculture	1.4	6.9	9.4
IDA Ireland	6.8	5.2	6.1
NMRC	2.2	4.9	5.2
Health Research Board	1.4	3.1	3.5
Overall Total	71.8	135	162

* includes earned income

The major changes occur in Forbairt, where funds for business sector R&D grants increased by £4.5 to £16.5m. Increasing earned income from the Programmes in Advanced Technology has also contributed to the upward trend since 1990. Forbairt also re-imburses Shannon Development, IDA Ireland and Údarás na Gaeltachta for R&D grants to companies under their auspices.

The HEA allocation has three very different components - (i) an apportionment to research of the universities block grant, based on an estimate of time spent by academic staff on research activities (£29m); (ii) contract R&D income earned by the colleges (£8.1m); (iii) funds from OST for basic and applied research projects (£4.3m). The latter funds have been increased by £1m in 1996 as part of a special initiative by the Government to begin implementing the recommendations of the Tierney Report.

Funding of research by the Department of Agriculture, Food and Forestry continues to increase as the new programme for non-commissioned food research comes on stream. Under this programme the Department is supporting research projects, in areas of strategic interest to the food industry, which will be undertaken by researchers in the colleges and research institutes.

It is encouraging to note the continuing increase, albeit modest, in funding for the Health Research Board to £3.5m. The Tierney Report suggested an exchequer funding of £5m per year, so there is still some further progress needed.

Impact of EU Funds

The major financial impact of EU programmes on the Irish science and technology landscape has been well documented. The total EU support for the RTD (research and technological development) component of the current Community Support Framework (CSF) amounts to £354m between 1994 and 1999, or roughly 8% of the total EU funds allocated. For the Industry Operational Programme alone the EU contribution to RTD is £264m or 32% of the total EU funds for the Programme.

The STI Council pointed out that government support for S&T prior to the first Community Support Framework in 1989 was inadequate and a major cause of low industrial innovation and a poorly functioning national system of innovation. The CSF for 1989 - 1993 enabled a wide range of new initiatives to be introduced; these included the Programmes in Advanced Technology (to link university expertise with industry), the industry research and development initiative (to support R&D projects in enterprises), and a range of mechanisms to improve the technological performance of indigenous industry - Technology Audits, Placements, the Technology Transfer and Partnerships programme.

The new CSF for 1994 - 1999 also contains a major science and technology element, enabling these initiatives to continue and also providing some new money for basic research in the colleges and to support a new technology management initiative in industry. This EU support is not distributed uniformly across the five categories in the Science Budget which were

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identified above. It represents about 44% of public funds in 1996 for Enterprise Development and 23% for Natural Resources, but only 6% of funds for Education and Training and very minor amounts under either Environment or Health and Social Services.

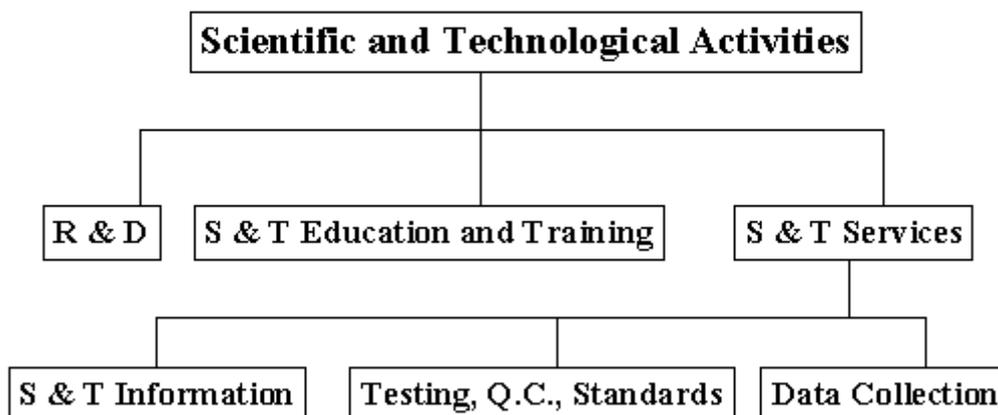
The ending of the current CSF in 1999, and the uncertainty about post-1999 Structural Funds for Ireland, is a most serious issue for Irish science and technology, particularly for those public programmes supporting industrial development and natural resources. It is important that planning for the post-1999 situation should begin immediately and this is another reason why the STIAC recommendations relating to new government structures to facilitate science and technology planning should be put in place as a matter of urgency.

BACKGROUND

Science, Technology and Innovation

'Science and Technology' (S&T) covers a wide range of activities which use pure and applied science to generate innovation via the creation and exploitation of new ideas. The most widely known and measured of these activities is research and development but there are other important ways of acquiring, disseminating and utilising technical knowledge and expertise within the economy. Figure 1 gives a broad indication of what these other activities are.

Figure 1. Schematic representation of S&T activities



Availability of Data on S&T

Traditionally, S&T policy has used statistics and indicators based on research and development as an input to decision making, mainly because detailed data on R&D have been available since the mid 1960s, while the development of indicators on the other aspects of S&T has proceeded at a much slower pace.

When the National Board for Science and Technology was established in 1978, one of the first tasks it carried out was the establishment of a data collection mechanism encompassing all government funded science and technology activities. A lengthy time series now exists on government funding of all S&T activities. This data can be used for the setting of national priorities and targets for science and technology, although the paucity of international comparisons make this task more difficult than the setting of R&D objectives.

This document provides details of the allocations made by Government to S&T activities. In all, 44 government agencies/departments supplied information for the 1996 analysis - some of which are wholly concerned with S&T activities, others of which may allocate a very small proportion of their activities to S&T. The analysis also includes non-exchequer monies - mainly fees and other income - of institutions which operate science and technology programmes.

The information on which the analysis is based was supplied by Government departments, offices, agencies and other recipient institutions following finalisation of the overall Government estimates for the public services for 1996, and after the operating institutions had decided on the distribution of their allocations over their programmes.

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Figure 2 summaries the departments, agencies and offices funding science and technology in 1996.

Figure 2. Government Departments/Agencies Funding S&T, 1996

DEPARTMENTS	AGENCY	DEPARTMENTS	AGENCY

-			
<u>Agriculture, Food &</u>	Teagasc	<u>Education</u>	HEA
<u>Forestry</u>	COFORD		DIAS
<u>Enterprise &</u>	Forbairt	<u>Environment</u>	EPA
<u>Employment</u>	IDA Ireland		NRA
	NMRC	<u>Finance</u>	Central Bank
	Patents Office	<u>Arts, Culture &</u>	Udaras na Gaeltachta
	MAC	<u>the Gaeltacht</u>	Natural History Museum
	FAS	<u>Health</u>	HRB
	Innovation Centre		Postgraduate Medical & Dental Board
	Forfás		Marine Institute
<u>Transport, Energy &</u>	GSI	<u>Marine</u>	BIM
<u>Communications</u>	RPII		Central Fisheries Board
	Met Eireann		
		<u>Taoiseach</u>	
		<u>Justice</u>	
		<u>Social Welfare</u>	

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OFFICES	NESC	CSO	OPW
		State Laboratory	Ordnance Survey

-			
INCORPORATED			
COMPANIES	ESRI	IPC	Shannon Development
			SRAI

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GOVERNMENT FUNDING OF S&T

Total funding and trends

Irish public funds for science and technology come from three sources

- the exchequer;
- Community Support Framework (CSF);
- income earned by the agencies / departments implementing science and technology programmes.

These three sources taken together amounted to £783m - the Science Budget for 1996 - and **Table 1** identifies the contribution which each makes to the overall total.

Table 1: Government funding of Science and Technology by source of funds

	1985		1990		1995		1996	
	£m	%	£m	%	£m	%	£m	%
Exchequer funds	273.10	80.6	303.07	72.4	497.96	71.0	570.24	72.8
CSF Funds	1.86	0.5	28.25	6.7	60.11	8.6	88.50	11.3
Total public funds	274.96	81.1	331.32	79.1	558.07	79.6	658.74	84.1
Earned income	63.96	18.9	87.46	20.9	143.06	20.4	124.52	15.9
Total	338.92	100.0	418.78	100.0	701.13	100.0	783.26	100.0

The total 1996 allocation to S&T amounts to £783.3m. This is an increase of 11.7% over the 1995 level or £82m. A significant growth has occurred in public funds which grew by £100m or 18% since 1995. The main reasons for this increase are: the increased exchequer funding of third level S&T courses to compensate for the loss of fee income by the colleges; an increased allocation to the Central Statistics Office to cover the costs of the 1996 Census of Population; increased funds for R&D in companies.

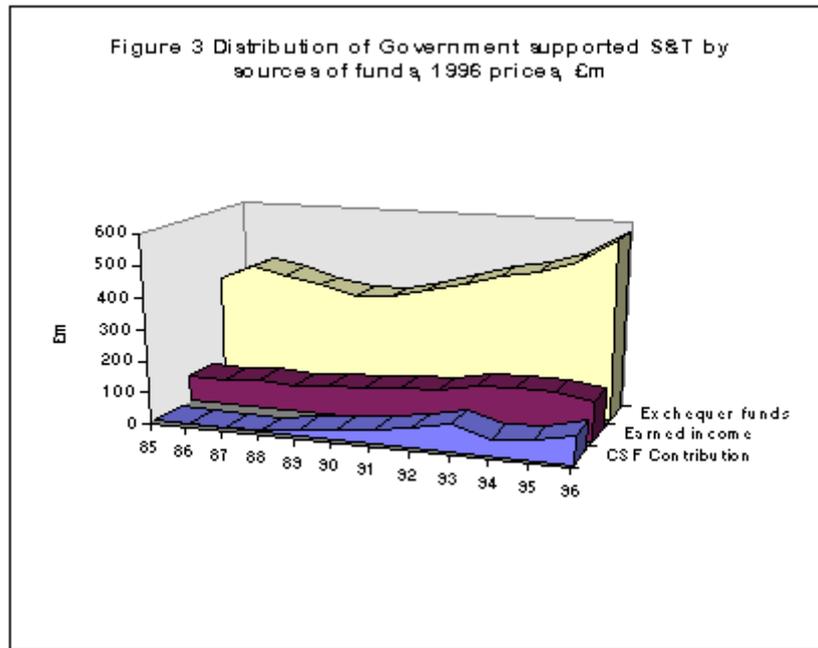
In 1985, the exchequer contributed 81% of the total science budget, a share which has declined to 73% in 1996. This decrease is compensated for, in part, by income earned by S&T agencies and departments which in 1996 accounts for 16% of the total, and in part by CSF funds.

The Community Support Framework comprises a number of individual funds, all of which support S&T activity to a greater or lesser extent. These funds are the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the European Agriculture, Guidance and Guarantee Fund (EAGGF). See **Appendix 1** for further details.

Despite accounting for 16% of the total science budget in 1996, earned income decreased its share of the total by 4 percentage points between 1995 and 1996. This is due to the phased abolition of fees for third level courses. Exchequer funds are now substituting for what was in the past income generated by third level colleges.

The most significant trend to emerge from this analysis of sources of funds is the increasing contribution which the CSF is making to the Government's science and technology programmes. In 1996 it is expected that the CSF will contribute £89m or 11.3% of the overall total to science and technology. **Figure 3** illustrates these funding trends.

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An analysis of the actual amounts of money spent or allocated to S&T shows that in real terms exchequer funds grew by 3.1% per annum between 1985 and 1995. The real increase between 1995 and 1996 amounted to 14.0%, reflecting increased exchequer funding in 1996. Earned income grew by 5.3% per annum between 1985 and 1995, a trend which was reversed in 1996 when earned income showed a decline of 13% in real terms over the 1995 level.

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Appendix 1 - Community Support Framework initiatives in support of S&T

INTRODUCTION

The EU Community Support Framework (CSF) consists of a series of Operational Programmes many of which have Measures in support of S&T initiatives. These Operational Programmes are listed below with their appropriate source of funds.

The Community Support Framework comprises a number of individual funds, all of which support S&T activity to a greater or lesser extent. These funds are the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the European Agriculture, Guidance and Guarantee Fund (EAGGF). This appendix describes in detail the S&T programmes receiving CSF support.

Table 1. Operational Programmes and their Funding sources

Operational Programme	Funding source
Industrial Development	ERDF, EAGGF, ESF
Agriculture, Rural Development and Forestry	EAGGF, ERDF, ESF
Fisheries	ERDF
Environmental services	ERDF
Economic infrastructure	ERDF
Human Resources Development	ESF, ERDF

Table 2 presents a list of Operational Programmes, Sub-Programmes and Measures which have an S&T component and which are included in the science budget.

Table 2 List of RTD-Related Activities in the Community Support Framework 1994-1999 Covered In The Science Budget	
Operational Programme for Industrial Development	
Sub-Programme 3: Research and Development	
Measure 1:	Industry R&D Initiative
Measure 2:	Industry/Third Level Co-operation Services
Sub-measure 1:	Capability Support
Sub-measure 2:	Technology Services
Sub-measure 3:	Technology Service Centres
Sub-measure 4:	PATs
Measure 3:	Human Resource Development
Sub-measure 1:	Graduate Training
Sub-measure 2:	Enterprise Development
Sub-measure 3:	RTD Management Development
Measure 4:	Research Support

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Table 2 continued (List of RTD-Related Activities in the Community Support Framework 1994-1999) Covered In The Science Budget	
Sub-Programme 6: Development of the Food Industry	
Measure 3:	Research and Development
Sub-measure 1:	In-Company Research and Development
Sub-measure 2:	Institutional Research and Development
Operational Programme for Agriculture, Rural Development and Forestry	
Sub-Programme 1: Structural Improvement and Rural Development	
Measure 5:	Research
Sub-measure (a):	Research in Sustainable Agriculture and Rural Development
Sub-measure (b):	Research Stimulus Fund
Sub-Programme 2: Forestry	
Measure 2:	Forestry Development
Sub-measure (b):	Research and Development
Table 2 continued (List of RTD-Related Activities in the Community Support Framework 1994-1999) Covered In The Science Budget	
Operational Programme for Fisheries	
Measure 8: Marine Research	
Sub-Measure 1:	Research Vessel Capability
Sub-Measure 2:	National Marine Research Laboratories
Sub-Measure 3:	Fisheries/Aquaculture R&D
Sub-Measure 4:	Marine Food Processing
Sub-Measure 5:	National Marine Survey
Sub-Measure 6:	Marine Technology Development
Sub-Measure 7:	Evaluation of STRIDE OP
Operational Programme for Environmental Services	
Sub-Programme 4: Environmental Monitoring, Research and Development	
Measure 1:	Environmentally Sustainable Resource Management
Measure 2:	Cleaner Production
Table 2 continued (List of RTD-Related Activities in the Community Support Framework 1994-1999) Covered In The Science Budget	
Operational Programme for Economic Infrastructure	
Sub-Programme 1: Energy	
Measure 2:	Energy Efficiency/Conservation
Operational Programme for Human Resources Development	
Sub-Programme 1: Initial Education and Training Advanced Technical Skills Programme	
Sub-Programme 5: Measure to Improve the Quality of Training Provision	
Measure 5:	Vocational Training Infrastructure
Sub-measure 1:	Third Level Capital
-	Dublin Institute of Technology, Regional Technical Colleges and Vocational Education Committee Colleges Sector
-	University Sector

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At the start of the CSF 1994-1999 yearly targets of funding were set. These are presented in **Table 3**, as an indication of the level of support given by the individual Operational Programmes. Timing differences which have occurred in some areas limit the direct comparability of these data with those presented in the science budget analysis.

Table 3: Research and Technology Development Expenditure, CSF 1994-1999							
Breakdown by Measure and Year							
IR£m	1994	1995	1996	1997	1998	1999	Total
Research and Development Sub-Programme							
<small>(Sub-Programme 3, OP for Industrial Development)</small>							
Measure 1: Industry R&D Initiative							
Total	26.914	30.295	30.060	29.735	29.735	29.665	176.404
Measure 2: Industry/Third Level Co-operation Services							
Total	30.867	31.962	31.962	31.262	32.552	32.942	191.657
Measure 3: Human Resource Development							
Total	1.295	2.826	2.826	2.826	2.826	2.826	15.425
Measure 4: Research Support							
Total	2.750	3.090	3.140	3.640	4.474	5.020	22.114
Total Measures 1-4	61.826	68.173	67.988	67.463	69.697	70.453	405.601
Table 3: Research and Technology Development Expenditure, CSF 1994-1999							
Breakdown by Measure and Year - Continued							
IR£m	1994	1995	1996	1997	1998	1999	Total
Food Research and Development							
<small>(Measure 3, Sub-Programme 6, OP for Industrial Development)</small>							
Total	12.883	12.363	12.226	13.078	14.027	14.194	78.771
Agriculture and Rural Development Research							
<small>(Measure 5, Sub-Programme 1, OP for Agriculture, Rural Development and Forestry)</small>							
Total	6.801	6.239	6.239	6.239	6.238	6.238	37.992
Forestry Research and Development							
<small>(Sub-measure (b), Measure 2, Sub-Programme 2, OP for Agriculture, Rural Development and Forestry)</small>							
Total	1.000	1.000	1.000	1.000	1.000	1.000	6.000
Table 3: Research and Technology Development Expenditure, CSF 1994-1999							
Breakdown by Measure and Year - Continued							
IR£m	1994	1995	1996	1997	1998	1999	Total
Marine Research							
<small>(Measure 8, OP for Fisheries)</small>							
Total	1.358	1.722	1.198	1.198	1.268	1.578	8.322
Environmental Monitoring, Research and Development							
<small>(Sub-Programme 4, OP for Environmental Services)</small>							
Measure 1: Environmentally Sustainable Resource Management							
Total	0.938	0.510	0.420	0.420	0.420	0.385	3.092
Measure 2: Cleaner Production							
Total	0	0.321	0.411	0.411	0.411	0.447	2.001
Total Measures 1-2	0.938	0.831	0.831	0.831	0.831	0.832	5.093
Table 3: Research and Technology Development Expenditure, CSF 1994-1999							
Breakdown by Measure and Year - Continued							
IR£m	1994	1995	1996	1997	1998	1999	Total
Energy Efficiency/Conservation							
<small>(Sub-Programme 1, Measure 2, OP for Economic Infrastructure)</small>							
Total	2.345	4.286	6.873	6.873	6.955	6.793	34.124
Advanced Technical Skills Expenditure							
<small>(in Sub-Programme 1, OP for Human Resources Development)</small>							
Total	10.087	7.871	7.871	7.871	7.871	7.871	49.439
TOTAL PLANNED EXPENDITURE							
	97.239	102.486	104.225	104.552	107.887	108.958	625.342
<small>Figures may not sum due to rounding.</small>							

Appendix 2 - Definitions

Definitions of S&T Activities

1. **Research:** Original, experimental or theoretical investigations under-taken to acquire new knowledge, with or without a particular application or use in view.
2. **Development:** Systematic work drawing on existing knowledge gained from research and/or practical experience, that is directed to producing new products, processes, systems, services, varieties and breeds and to improving substantially already existing ones. Data collection conducted solely or primarily as part of the research and development (R&D) process included under "research" or "development" as appropriate.
3. **Information and Specialist Advisory Services:** Provision of information via **formalised scientific and technical information and documentation (STID)** services includes all expenditure (manpower and materials) involved in acquiring, controlling or transmitting information to users with the involvement of staff whose primary function is in formalised STID services, e.g. provision of S&T information, advice, liaison.

Specialist advice, information analysis, libraries, publications and documentation services, translations, technical seminars and conferences. Provision of information **via non-formalised STID services** includes expenditures on providing know how and expertise by members of staff who, while not specifically engaged in formalised STID services, provide specialist advice, liaison, consultancy or other general information services.

4. **Technical Services:** Specialised support services of a scientific or technical nature generally provided by centralised laboratories or facilities, and can be of a routine or non-routine nature. Essentially they comprise the technical back-up analytical, diagnostic and data collection/processing services.
5. **Training:** : Education and training of third level or equivalent students in science and technology disciplines.
6. **Technology Transfer:** : Activities which are directed solely or primarily towards the transfer and adoption of new technology, generally in enterprises. The horizontal transfer of technology, primarily from abroad, but also from colleges to enterprises is included here.
7. **Other S&T Activities:** : Activities which cannot be conveniently grouped under the above headings can be included here e.g. grants to international organisations, policy planning units etc.
8. **Third Level Education:** : All universities, Regional Technical Colleges and Dublin Institute of Technology.
9. **Public Funds:** : Exchequer monies and funds from the European Regional Development Fund.

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Appendix 3 - Index of Acronyms

BIM	Bord Iascaigh Mhara - The Irish Sea Fisheries Board
C&RFB	Central and Regional Fisheries Boards
CenBank	Central Bank
COFORD	National Council for Forest Research and Development
CSF	Community Support Framework
CSO	Central Statistics Office
Dagri	Department of Agriculture, Food and Forestry
Deduc	Department of Education
DEE	Department of Enterprise and Employment
DEnrg	Department of Transport, Energy and Communications
DEnv	Department of the Environment
DFin	Department of Finance
DHlth	Department of Health
DIAS	Dublin Institute for Advanced Studies
Djust	Department of Justice
DMar	Department of the Marine
DSocW	Department of Social Welfare
EAGGF	European Agriculture Guidance and Guarantee Fund
EOLAS	Eolas - The Irish Science and Technology Agency
ERDF	European Regional Development Fund
ESF	European Social Fund
ESRI	Economic and Social Research Institute
EU	European Union
FAS	FAS - the National Training and Employment Authority
Forb	Forbairt
Forfás	Forfás - the Policy and Advisory board for Industrial Development
GSI	Geological Survey of Ireland
HEA	Higher Education Authority
HRB	Health Research Board
IDA	Industrial Development Agency Ireland
InnovC	Innovation Centre
IPC	Irish Productivity Centre
MAC	National Microelectronics Applications Centre
MI	Marine Institute
MS	Meteorological Service
NAB	National Accreditation Board
NESC	National Economic and Social Council
NHMus	Natural History Museum

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NMRC	National Microelectronics Research Centre
NRA	National Roads Authority
NSAI	National Standards Authority of Ireland
OPW	Office of Public Works
OST	Office of Science and Technology - Department of Enterprise and Employment
PatO	Patents Office
PGMDB	Postgraduate Medical and Dental Board
RPII	Radiological Protection Institute of Ireland
SFADCo	Shannon Development
SRAI	Salmon Research Agency of Ireland
StLab	State Laboratory
TEAG	Teagasc - The Agriculture and Food Development Authority
UN	United Nations
UnaG	Udaras na Gaeltachta
V&OS	Valuation and Ordnance Survey