**Allocation of the science budget, 1996-97 / Office of Science and Technology.**

Office of Science and Technology

# *ALLOCATION OF THE SCIENCE BUDGET*

## *1996-97*

*16 January 1996*



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Department of Trade and Industry

## THE SCIENCE BUDGET: ALLOCATIONS

1. Since the publication of the last allocations statement[1], the Office of Science and Technology has been transferred from the Cabinet Office to the Department of Trade and Industry. This allows Government policy on Science, Engineering and Technology to be developed alongside its policies on industry.

2. The Science Budget for 1996-97 is **£1,312.4 million** and represents an increase of some £12 million over the planning figure previously announced. It is also £30 million more than the Science Budget for 1995-96 announced in November 1994.

3. The allocation of the 1995-96 Science Budget, announced on 2 February 1995 by the then Chancellor of the Duchy of Lancaster, included a package of priority initiatives designed to advance the Government's policy for science, engineering and technology as set out in *Realising Our Potential*. **This year's settlement consolidates and develops these important initiatives**, which target three main areas:

- improving interaction with industry and commerce;
- enhancements to basic and strategic science; and
- enhancements to people-related programmes.

4. In announcing the allocations to the Research Councils and others the President of the Board of Trade recognises the pressures exerted by re-orientation of Research Council portfolios to accord with White Paper priorities. 1996-97 will therefore be a period of consolidation and some restructuring. Apart from Foresight Challenge and the equipment initiatives discussed below, no other new initiative is planned. Within the allocations detailed below, the President nevertheless wishes priority to be given to:

- continued funding for the new initiatives in strategic science launched last year and in 1994 (additional costs, including additional LINK programmes, of £19.3 million in 1996-97) as detailed in paragraphs 19 and 20 below;
- a new round of ROPA/PIPSS (£6.5 million; £13 million in a full year);
- a new equipment initiative (£5 million) to be operated as part of a joint scheme involving the HE Funding Council for England;

[1] *Allocation of the Science Budget 1995-96, Office of Science and Technology, 2 February 1995*

- a further increase of £200 pa in the research training support grant (RTSG) from £600 to £800, an increase of 100% in two years, at a cost of £1.04 million (£2.08 million in a full year);

- provision of £10.04 million to meet the increase in PPARC's international subscriptions in 1996, in addition to the £8 million carried forward from last year;

- £0.2 million to increase the number of ESRC studentships;

- £0.5 million towards the restructuring of CCLRC;

- £0.3 million to increase the number of Royal Society University Research Fellowships from 255 to about 270;

- £0.5 million to the Royal Academy of Engineering to enable it to launch its Engineering Foresight Awards.

In addition, the President wishes priority to be given to the maintenance of studentships and responsive mode funding within the remainder of the Research Councils' portfolios.

5. Details of the allocations to the funded bodies are shown in Annex A.

*Foresight Challenge*

6. A large number of outline proposals for the Technology Foresight Challenge have been received, and full proposals related to Science and Engineering Base funding have been requested from those short listed. It is expected that £10 million will be required in the first twelve months starting in about October. Hence £5 million has been allocated in 1996-97, followed by £10 million and £13 million in the subsequent two years.

*International Subscriptions*

7. During the year, agreement was reached at the ESA Council to freeze the budget of the Science Programme in cash terms for the next 5 years, and only compensate for inflation to the extent that it is above 3%. Similarly, agreement was reached in 1994 to freeze the CERN budget until 1997. Nevertheless, the continuing strength of the Swiss franc means that the UK's subscription to CERN is rising rapidly and it will be necessary to earmark around £18 million in 1996 over the 1994 baseline to provide protection to PPARC from exchange rate fluctuations; of this £3 million will be paid in January in 1996. It should be noted that this latest rise takes the cost of the UK's membership of CERN to an estimated **£73 million in 1996**. This is an increase of around 27% since 1994 when

the equivalent cost was £58 million. We cannot afford to continue to pay increases of this magnitude and ways will be sought, urgently, to limit this cost to the UK.

*ROPA*

8. The ROPA (*Realising Our Potential Awards*) scheme was launched in February 1994 with the dual aims of first, enhancing collaboration between the science and engineering base and industry and second, providing funds to researchers, who are already interacting with industry, to carry out research in an area of their own choice. ROPA was run on a pilot basis in 1994, and in 1995 it was extended to all sectors and all Research Councils. ROPA awards of £71.1 million over 5 years have now been made and a report on the operation of the ROPA scheme was published recently[2].

9. In 1996-97 the ROPA scheme will become more focused in order to keep within financial bounds. Research Councils will continue to use ROPA as a key mechanism aimed at encouraging the development of academic/industry interaction in specific sectors/disciplines. Each participating Council will announce the sectors to be covered in each year's competition and will expect to ensure full coverage of its portfolio over a period of time. The 1996-97 competition is expected to result in awards to the value of £6.2 million - (over £12 million in a full year). This expenditure and future commitments have been taken into account in setting the Research Councils' allocations and planning figures.

10. The key rules for ROPA remain as before. To qualify a researcher needs to be funded by industry for strategic research and his/her proposal must meet simple tests of originality and practicality. But the nature of ROPA should not be misunderstood; it is a responsive mode award which funds work defined by the researcher.

11. ROPA will continue to be run by five Research Councils. PPARC's rather different mission is acknowledged by its own programme for academic/industry participation, PIPSS, which was launched in 1995. Additional funding of £0.3 million is being provided for a further round in 1996.

*Scientific Equipment*

12. The provision of leading-edge equipment in higher education institutions continues to be an area of concern for the science and engineering community. The problem is particularly acute given the high cost of such equipment, particularly in the molecularly based sciences. This point was confirmed in the report following Sir John Cadogan's

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[2] *Report on Initial Experiences with the "Realising our Potential Award" Scheme (ROPA), Office of Science and Technology, 19 October 1995*

review of the work funded by the Science Budget[3]. Last year's allocations provided for a total of £6 million to be used to give 50% grants to universities able to find the other 50% from private sector sources.

13. In 1996, there is to be a joint Research Council/Higher Education Funding Council research equipment funding initiative in Technology Foresight generic science and technology priority areas with matching funding from users and clients (eg industry, charities, Government Departments etc.). The initiative will be run as two coordinated competitions:

competition A - to fund bids from higher education institutions for scientific and engineering equipment costing up to £250,000. £5 million has been set aside for this competition, which will be run UK-wide through four Research Councils (BBSRC, EPSRC, MRC and NERC).

competition B - to fund bids from higher education institutions for research equipment costing over £250,000. The Higher Education Funding Council for England will be providing £11.5 million for this competition for their own constituency of higher education institutions. The applications will be peer reviewed using the Research Councils' systems.

The initiative will be overseen by a steering group which will include representatives of participating Funding and Research Councils and OST.

14. With the matching funding from users, the initiative will result in £33 million being made available for research equipment in 1996-97, which illustrates what can be achieved through the Funding and Research Councils working together to target areas of concern. It will also allow the Funding and Research Councils to take a joint strategic overview of the research equipment needs of the UK universities.

*Research training*

15. The Research Training Support Grant (RTSG) is paid to departments in institutions as a contribution towards the incidental costs incurred in the training of Research Council supported research students. The RTSG was increased from £400pa to £600pa last year (£75pa to £125pa in the case of ESRC). As the grant follows the student it provides a well-focused form of funding. This year's allocations provide for the RTSG to be increased by a further £200pa (£50pa for ESRC students) thereby benefiting the research of some 12,000 students and their supervisors.

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[3]*The Director General of Research Councils' review of the Science Budget Portfolio, Office of Science and Technology, 16 May 1995*

*People-related programmes*

16. The White Paper "Realising Our Potential: A Strategy for Science, Engineering and Technology" recommended a greater emphasis on personal forms of research support such as fellowships. Over 1,000 fellows are supported from the Science Budget. Within this provision, the Royal Society's University Research Fellowship (URF) scheme has a distinctive role to play in ensuring longer-term support for young researchers of the highest proven calibre, and a reserve of talent for the future. Over the last two years the number of these fellows has increased from some 200 to 255. The 1996-97 allocation provides additional funding of £0.3 million (£0.6 million in a full year) for this to be increased further to about 270.

17. The Royal Academy of Engineering has a range of schemes for supporting and developing engineering education, continuing career development of engineers and the support of engineering research fellows and professors. These schemes are largely supported jointly with industry and charitable trusts. An additional £0.5 million has been allocated to enable the Academy to launch its Engineering Foresight Awards to fund oversees secondments targeted at those technology sectors that have been identified as key to the UK's industrial development.

*Enhancement of underpinning strategic science*

18. Responsive mode support remains one of the best ways of sustaining the quality of the key underpinning basic science disciplines. The 1994-95 allocations announced extra support for chemistry and this was supplemented in 1995-96 by further funding for physics, mathematics and medicine.

19. In addition to responsive mode awards the Research Councils identify strategic areas where they consider that additional support for top-quality science is necessary to ensure that the country is well-placed to take advantage of emerging technological and market opportunities. The strategic areas highlighted for additional support in 1994 and 1995 include:

***Genome***

A fuller understanding of our genetic make-up is fundamental to bringing about significant improvements in diagnosis, treatment and prevention of disease. The allocations in 1996-97 bring the total increase in work in this area funded within MRC and BBSRC up to £13 million.

***Immunology***

An improved understanding of the immune response and its role in the control of infectious diseases is necessary to underpin future developments

in vaccine technology and development. The allocations to MRC and BBSRC include **£2.5 million** to cover their participation in the independent Edward Jenner Institute for Vaccine Research which is co-funded by Glaxo-Wellcome, the MRC and the BBSRC together with the Department of Health.

***Bioprocessing Innovation***

The bioprocessing industries - embracing pharmaceuticals, food, agriculture and parts of the chemical industry - represent one of the UK's leading manufacturing sectors. Underpinning engineering and scientific research is needed now to provide the base on which industry can build to maintain its competitive advantage. Examples of relevant research topics include the development of improved *in vitro* tests to reduce reliance on animal testing, work on less stressful processing of food materials (so as to retain flavour, quality and nutrition) and improvements in quality and efficiency in brewing. The allocation to BBSRC includes £2 million pa for this initiative.

***Wealth-creating Products from Plants***

Increasing knowledge of plant biochemistry and molecular biology now offers the opportunity to manipulate the metabolic pathways within plants to produce a range of industrial products such as fine chemicals, polymers, vaccines, biopharmaceuticals, designer oils and modified starches. Growing such products in the field, as opposed to manufacture in an industrial plant, has environmental benefits and also provides an alternative use for land not required for food production. The allocation to BBSRC includes £2 million pa to supplement the Council's existing basic and strategic research programmes in this area.

***Environmental Diagnostics***

Waste management is a significant issue for business today. The principle of "the polluter pays" is well established yet business risks being penalised by regulations devised without the benefit of adequate scientific information. It follows that underpinning research is required to assist in the developing of environmentally-sustainable business strategies for waste management. The allocation to NERC includes £2 million pa to develop further its existing work on simulation and predictive models with regulators and users.

***Cognitive Engineering***

Reliable and cost-effective interaction between people and computers is becoming increasingly essential in many industries. As people are required to interact with computers more and more it is recognised that further research is needed into the understanding of communication methods if man is to successfully communicate with a machine without having to learn

"machine language". The allocation to ESRC includes £1.2 million for its cognitive engineering programme.

*Council for the Central Laboratory of the Research Councils (CCLRC)*

20. £0.5 million has been set aside for CCLRC, which is available to help with the restructuring programme begun last year.

*High-performance computing*

21. Last year's allocations highlighted the fact that EPSRC looked after a budget covering all Research Councils' high-performance computing needs (£7.2 million running costs in 1995-96). With effect from 1996-97 high-performance computing will be paid for by each Research Council and the allocations reflect this distribution of financial responsibility in 1996-97.

22. An inter-Council committee has been established to advise on the future provision of high performance computing and a sum of £10 million has been earmarked for possible capital expenditure in 1997-98, although this has not yet been allocated to the participating Councils.

*Public Understanding of Science*

23. The OST initiatives budget will continue to provide some £1.25 million for the promotion of public understanding of science, engineering and technology. The budget will support a variety of programmes and projects, of which the main one will be SET97, the 1997 week of science, engineering and technology. It will also, as in 1995, provide some grants in support of the OST's *Women in Science* initiative.

*Other OST Initiatives*

24. The other main activities supported by OST initiatives include: OST's subscription to CEST; the support of the National Collection of Industrial and Marine Bacteria and the National Collection of Food Bacteria, together with the coordination of all the national Culture Collections; and some bilateral international funding agreements, eg with South Africa. In addition, a sum has been reserved for possible demonstration of a network linking together the generators of knowledge and the potential industrial users. In the first instance, the pilot will be in the NERC sphere of activity with possible extensions to other sectors in future years.

*Financial Allocations*

25. The allocations to the funded bodies for 1996-97, together with planning figures for the following two years are shown in Annex A. In addition to the extra funding detailed above, these figures take account of a number of technical adjustments, of which the main one relates to the way in which the Research Councils now fund their pension arrangements.

26. The Research Councils operate pension schemes providing similar benefits to the Civil Service scheme. With the exception of the MRC (where there is a pension fund), the schemes are funded on a pay-as-you-go basis from a central pool, and the annual cost is shown on the "pensions" line in Table 1. The Research Council employers are now required to make contributions towards this cost based on the pensionable salaries of those employees who are members of the scheme; this follows the practice operated in the Civil Service. The 1996-97 allocation and the planning figures for the subsequent years reflect this change, which has the effect of increasing allocations to the Research Councils and reducing the allocation to the "pension" line. Table I provides a "pre-adjustment" comparison of the 1996-97 and 1995-96 allocations which permits a read-across to be made. The indicative funds for LINK programmes have been allocated to Councils for both years.

| £m | **1996-97** | 1995-96 |
|---|---|---|
| BBSRC | **165.4** | 162.0 |
| ESRC | **61.9** | 61.2 |
| EPSRC | **367.3** | 359.7 |
| MRC | **281.8** | 278.0 |
| NERC | **157.0** | 156.6 |
| PPARC | **189.0** | 188.4 |
| International subscriptions Reserve | **18.0**[a] | 8.0 |
| CCLRC | **0.5** | 1.5 |
| Pensions | **34.8**[b] | 33.3 |
| Royal Society | **21.8** | 20.8 |
| RAE | **3.1** | 2.6 |
| High Performance Computing | **7.2** | 7.2 |

a. £3m will be paid in January 1996
b. Comprises:
i. 13.6% employer's contribution (£24.9m)
ii. £9.87m supplement to pension fund

***Table I** - Comparison of 1995-96 and 1996-97 allocations before adjustments for pensions etc*

27. The planning figures for the second and third years listed in Annex A provide for the on-going cost of the new initiatives and for further limited rounds of ROPAs in 1997-98 and 1998-99. It also provides some additional funds for restructuring of Research Council institutes in the third year. Over the three year period, all funded bodies receive increasing baselines, with the exception of EPSRC and NERC in year two. In the case of EPSRC, this largely reflects inter-Council cash flow adjustment and for NERC it reflects the conclusion of large capital spend on the Southampton Oceanography Centre.

*Administration Costs*

28. The Government has made no secret of its wish for the administrative burden of Research Council bureaucracy to be reduced. This issue has also been commented on by the House of Commons Select Committee on Science and Technology[4]. The Government's policy remains that the maximum resource should be expended, efficiently and effectively, in direct support of research and that the costs and complexities of administering the system are minimised.

29. The Councils have made significant progress towards reducing their administration costs, and further reductions are expected to result from the current Senior Management Review overseen by the DGRC and agreed with the Councils. Furthermore, a cross council review of joint working has revealed that there is scope for development of joint purchasing arrangements so as to exploit their collective muscle in securing the best value for money for goods and services.

30. The administration costs of the Councils have to be seen in the context of the overall distribution of their funds as illustrated in fig A.

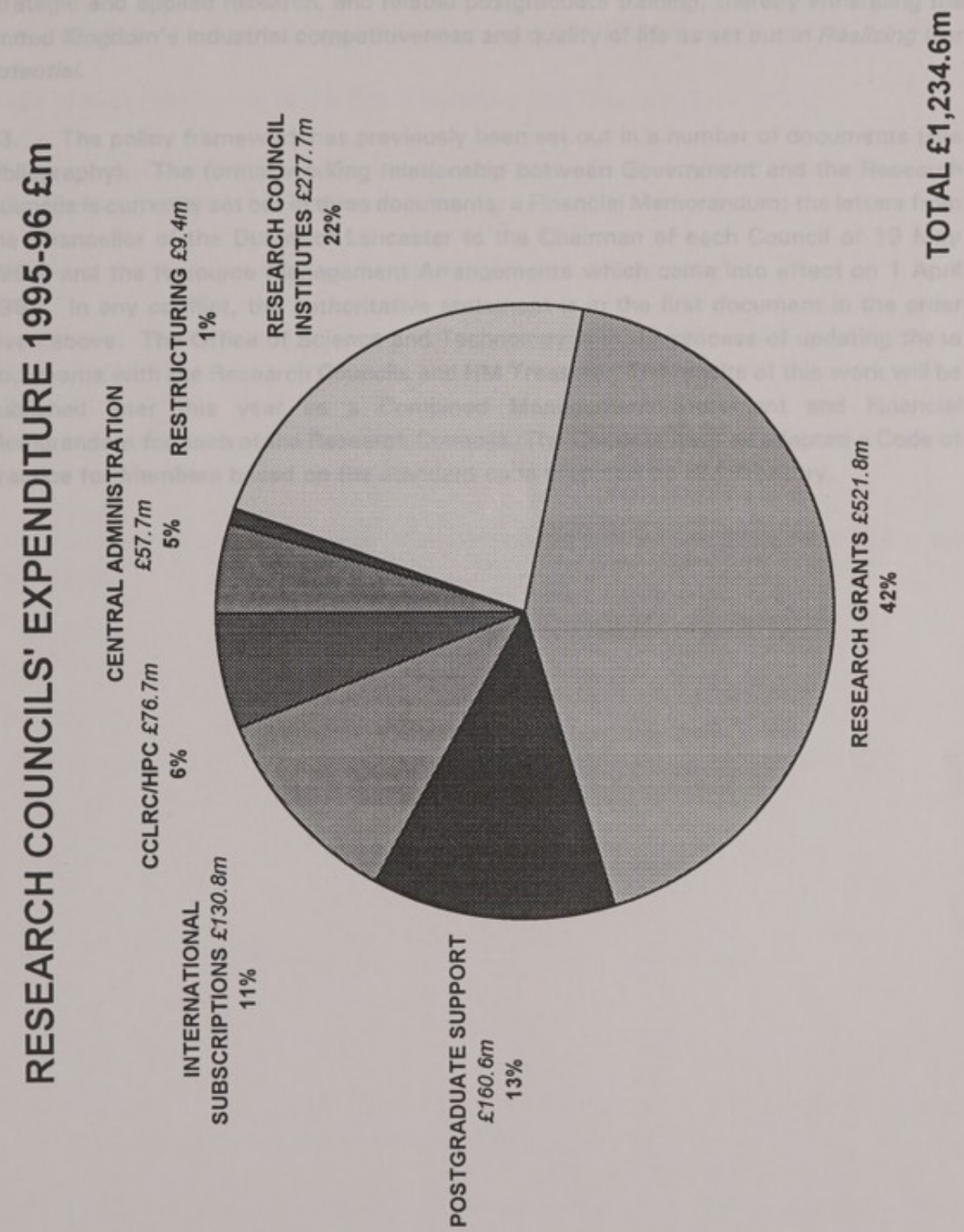
| £m | **1996-97** | 1995-96 |
|---|---|---|
| BBSRC | **7.74** | 7.74 |
| ESRC | **3.25** | 3.59 |
| EPSRC | **16.99** | 18.34 |
| MRC | **13.40** | 14.00 |
| NERC | **8.31** | 8.72 |
| PPARC | **4.69** | 5.30 |
| | **54.38** | 57.69 |

***Table II** - indicative spend on central administration*

31. With effect from 1996-97, the allocations will contain a maximum figure in respect of the amount of money each Council can spend on central administration. Indicative figures for 1996-97, are shown in Table II. During the coming year officials from OST will work with those in Councils to refine the figures, agree consistent cross-Council definitions and set targets for the following year.

[4] House of Commons Science and Technology Committee Second Report 1993-94, "The Forward Look of Government-Funded Science and Technology 1994" , 20 July 1994

***FIGURE A***


RESEARCH COUNCILS' EXPENDITURE 1995-96 £m
CENTRAL ADMINISTRATION £57.7m 5%
RESTRUCTURING £9.4m 1%
RESEARCH COUNCIL INSTITUTES £277.7m 22%
CCLRC/HPC £76.7m 6%
INTERNATIONAL SUBSCRIPTIONS £130.8m 11%
RESEARCH GRANTS £521.8m 42%
POSTGRADUATE SUPPORT £160.6m 13%
TOTAL £1,234.6m

## THE POLICY FRAMEWORK

32. The Government provides the Science Budget to promote high quality basic, strategic and applied research, and related postgraduate training, thereby enhancing the United Kingdom's industrial competitiveness and quality of life as set out in *Realising Our Potential.*

33. The policy framework has previously been set out in a number of documents (see bibliography). The formal working relationship between Government and the Research Councils is currently set out in three documents: a Financial Memorandum; the letters from the Chancellor of the Duchy of Lancaster to the Chairman of each Council of 19 May 1994; and the Resource Management Arrangements which came into effect on 1 April 1989. In any conflict, the authoritative statement is in the first document in the order given above. The Office of Science and Technology is in the process of updating these documents with the Research Councils and HM Treasury. The results of this work will be published later this year as a Combined Management Statement and Financial Memorandum for each of the Research Councils. The Councils have all adopted a Code of Practice for Members based on the standard code prepared by HM Treasury.

## BIBLIOGRAPHY

Resource Management Arrangements (1 April 1989)

The 1993 Science, Engineering and Technology (SET) White Paper Cm 2250

Code of Best Practice for NDPB Board Members HM Treasury (June 1994)

The Research Councils' Royal Charters, granted on 16 December 1993 except for CCLRC which was granted on 14 December 1994.

Allocation of the Science Budget 1995-96, OST (2 February 1995)

The Director General of the Research Councils' Review of the Science Budget Portfolio, OST (16 May 1995)

Government response to the Multi-Departmental Scrutiny of Public Sector Research Establishments (September 1995) Cm2991

The Government's annual Forward Look of Government-funded Science, Engineering and Technology.

Annex A

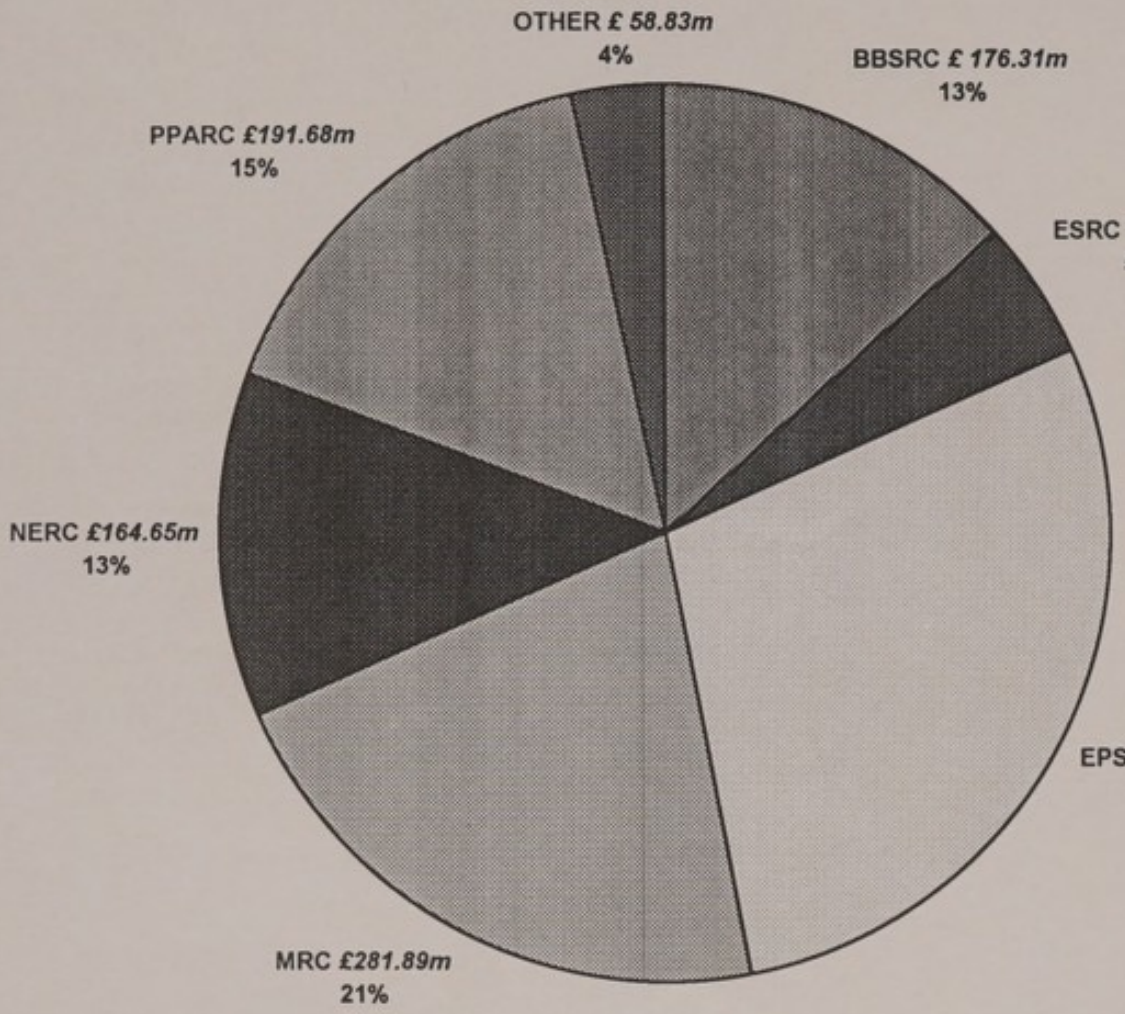
| £m | Allocation[1] 1996-97 | Planning figures 1997-98 | 1998-99 |
|---|---|---|---|
| BBSRC | 176.31 | 176.89 | 179.98 |
| ESRC | 63.08 | 63.62 | 65.64 |
| EPSRC | 375.95 | 373.46 | 376.78 |
| MRC | 281.89 | 282.96 | 286.86 |
| NERC | 164.65 | 162.32 | 167.90 |
| PPARC | 191.68 | 191.73 | 194.90 |
| International subscriptions reserve | 15.04 | 18.00 | 18.00 |
| CCLRC | 1.45 | 1.45 | 1.45 |
| Research Council Pensions Supplement | 9.87 | 11.53 | 12.97 |
| Royal Society | 21.82 | 22.27 | 22.62 |
| Royal Academy of Engineering | 3.12 | 3.37 | 3.44 |
| OST Initiatives | 2.53 | 2.78 | 2.85 |
| Foresight Challenge[2] | 5.00 | 10.00 | 13.00 |
| High-performance computing | | 10.00 | |
| Total | 1,312.39 | 1,330.39 | 1,346.39 |

Science Budget Allocations and Planning Assumptions

1. A like-for-like comparison between the 1996-97 and 1995-96 allocations, ie net of technical adjustments, is given in table II of the booklet.

2. After allocation by the Foresight Challenge Advisory Group, the sums involved will be managed by the relevant Research Councils.

# SCIENCE BUDGET 1996-97 £m




| ANALYSIS OF OTHER | | |
|---|---|---|
| Royal Society | £ 21.82m | 1.66% |
| International Subscriptions | £ 15.04m | 1.15% |
| Reserve | | |
| Pensions Supplement | £ 9.87m | 0.75% |
| Foresight Challenge | £ 5.00m | 0.38% |
| RA Engineering | £ 3.12m | 0.24% |
| OST Initiatives | £ 2.53m | 0.19% |
| CCLRC | £ 1.45M | 0.11% |

**TOTAL £1,312.39m**