Allocation of the science budget, 1995-96 / Office of Public Service and Science.

CABINET OFFICE

OFFICE OF PUBLIC SERVICE AND SCIENCE

ALLOCATION OF THE SCIENCE BUDGET

1995-96

Office of Science and Technology

2 February 1995

Background to the Allocations

1. The Science Engineering and Technology White Paper *"Realising Our Potential"*, published in May 1993, announced a number of new initiatives and policies aimed at improving the value for money obtained from our annual public expenditure on science and technology. Some of the changes dealt specifically with the Research Council system which is funded by the Science Budget; in particular three new Research Councils came into being on 1 April 1994 (the Biotechnology and Biological Sciences Research Council (BBSRC), the Engineering and Physical Sciences Research Council (EPSRC) and the Particle Physics and Astronomy Research Council (PPARC)) to replace the Agricultural and Food Research Council and the Science and Engineering Research Council. The Medical Research Council (MRC), the Natural Environment Research Council (NERC) and the Economic and Social Research Council (ESRC) continued, with revisions to their Royal Charters.

2. From 1 April 1994 all the Research Councils were required to give special emphasis in their work to the country's industrial competitiveness and quality of life; their missions particularly stressed the importance of interacting with and taking full account of the needs of their user communities.

3. The allocation of the Science Budget for 1995-96 represents the first budgetary allocation since the new Research Council system came into being and takes account of the ways in which the Councils have developed over the months since April 1994. The allocations have also been informed by:

- the findings emerging from the Technology Foresight Exercise which operates under the chairmanship of the Chief Scientific Adviser

- a consultation exercise organised by the Chief Scientific Adviser aimed at identifying key areas of importance to UK industry over the next decade; this consultation was launched to provide input to the 1995 Forward Look in advance of the final reports on Foresight

- the Director-General of Research Councils' (DGRC) own in-depth review of the Research Councils. This review has involved extensive analysis of Research Councils' activities, together with discussions with Chief Executives, Chairmen and representatives of Councils and with many natural and social scientists, mathematicians and engineers working in the universities and Council establishments.

4. The Science Budget for 1995-96 is **£1,281.7 million**, some 2.5% above the real terms value of the 1993-94 settlement. From the £1,281.7 million the Chancellor of the Duchy of Lancaster wishes **£67 million** - or some 5% of the total - to be allocated to priority initiatives designed to advance the Government's science and engineering technology policy as set out in *"Realising Our Potential"*. The initiatives fall into three main areas:

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

This approach follows and builds on that adopted in the allocations for 1994-95, as announced in February 1994.

5. In addition steps have been taken to fulfil the White Paper commitment to handling perturbations in **international subscriptions** from within the Science Budget as a whole rather than solely from PPARC's own budget. Provision has also been made for the establishment of the **Council for the Central Laboratory of the Research Councils** (comprising the Rutherford Appleton and Daresbury Laboratories) as a separate body from 1 April 1995 and have increased the provision for OST's **Public Understanding of Science** programme.

6. This paper continues with more detail on the way in which the £67 million is to be deployed and Annex A summarises the allocations to the individual funded bodies. While some 5% of the total is being specifically targeted to redirecting the Science Budget we must not lose sight of the work being achieved by the funded bodies with the balance of their funding. All of the funded bodies have taken the messages of the White Paper on board and the Research Councils are developing new mechanisms and processes which will both enable them to deliver their missions and also become fit for purpose. Further details can be found in the bodies' Corporate Plans and Annual Reports.

Improved Interaction with Industry

ROPA

7. **The ROPA scheme** (*Realising Our Potential Awards*) was announced in February 1994 with the dual aims of firstly enhancing fruitful collaboration between the science and engineering base and industry and secondly providing to researchers already interacting with industry funds to carry out research in an area of their own choice. The scheme was launched on a pilot basis with funding of £3.5m for 1994-95; this was subsequently increased to £5m in response to demand.

8. The scheme has been very well received and now merits extension to all Research Councils. Schemes will receive **additional** funding of **£14.95m** in 1995-96 (implying a full year spend of some £35m in total on ROPA).

9. The 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.

Industrial Quota CASE

10. This scheme, where studentships are placed in the hands of the industrialists - was successfully piloted last year by all Research Councils (at a cost of **£1.2m** in a full year) and will now form part of the standard portfolio of studentship schemes. In 1995-96 it is expected that some 300 of the total 1000+ CASE studentships will be operated in this way, with some Councils aiming for a final ratio of 50:50. Additional funding of **£250k** (for some 50 awards) will be provided to ESRC to establish a user collaborative studentship scheme along similar lines.

LINK

11. An additional **£3m** has been earmarked for Research Councils to contribute to new LINK programmes as an early means of ensuring that Councils are responsive to the findings of the Technology Foresight programme in joint projects with Government Departments and industry. These programmes will be targeted to key areas of promise and importance identified by the first Foresight round whose formal results will be announced in May. Together with the contributions from LINK partners this implies an additional £12 million public and private sector spend on some 12 new LINK programmes in 1995-96.

Innovative Manufacturing

12. The innovative manufacturing initiative was launched last year and **£2m** additional funding was provided, which will continue into 1995-96.

Enhancement of Underpinning Strategic Science

13. The country must sustain the quality of the key underpinning disciplines, by supporting the best responsive mode proposals in these areas. The enhanced support for chemistry within BBSRC, EPSRC and NERC will continue as previously announced, at a cost of **£7.6m**. It is now proposed to extend this enhanced responsive mode support for the sustenance of fundamental science into the fields of mainstream **physics, mathematics** and **medicine** (including patient and community-based research, work on protein structure/function and cell signalling). This will be introduced at a full year cost of **£4.4m**.

14. The impact of the ROPA scheme on strategic science should also not be overlooked. ROPA is a pure "responsive mode" award; the researcher defines the area of work and the research topic. In 1995-96 a total of **£21.6m** will be spent on ROPA, a significant boost to responsive mode awards.

15. At the same time, strategic areas have been identified where additional support for first class science could pay dividends in preparing the country for emerging technological and market opportunities.

Genome

A fuller understanding of our genetic make-up is fundamental to bringing about significant improvements in diagnosis, treatment and prevention of disease. An additional **£4m** is being allocated to MRC (£3.5m) and BBSRC (£0.5m) which, when combined with the funding allocated last year will lead to an increase of over £12m in a full year.

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 last Budget allocation created the opportunity for public and private sector collaboration in this field. This resulted in the recently launched independent Edward Jenner Institute for Vaccine Research which is co-funded by Glaxo, the MRC and the BBSRC together with the Department of Health. Funding of **£2.5m** in a full year has been allocated to the two Research Councils to cover their participation in this project.

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. Funding of **£1m** (£2m in a full year) is being provided to BBSRC to help get this initiative moving.

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. An additional **£1m** (£2m in a full year) is being provided to supplement BBSRC'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 and **£1m** (£2m in a full year) will be allocated to NERC 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". This cognitive engineering programme, recognised as high priority by ESRC, is to receive additional funding of **£0.6m** (£1.2m in a full year).

16. A further area of concern highlighted by the academic and user communities is that of funding for expensive equipment such as nuclear magnetic resonance spectrometers, electron microscopes etc. **£3m** is to be allocated to the BBSRC, the EPSRC and the MRC, to be supplemented by matching funds and then used to provide 50% funding to universities who are able to bring forward industrial partners prepared to fund the other 50%. In this way private/public sector partnership will be promoted and additional new equipment to the value of **£12m** should be available to our HEIs in 1995-96.

17. The research training support grant (RTSG) paid to departments in institutions (as a contribution towards incidental costs incurred in the training of research students) was highlighted in discussions with the academic and user communities as inadequate. In response, additional funding is being provided to increase this grant from £400pa per student to £600pa (£75pa to £125pa for ESRC). The cost of this additional support will be **£1.04m** in 1995-96, with a full year cost of over £2m. This will benefit the research of some 11,000 students and their supervisors.

Enhancement of People-related Programmes

18. Last year's allocation provided additional funds to the Royal Society and the Royal Academy of Engineering which were in the main targeted to the development of the individual. Additional funding is being provided in 1995-96 of **£0.7m** to the Royal Society and **£0.4m** to the Royal Academy of Engineering to develop these schemes further.

19. The Royal Society will, in addition to increasing its research fellowships to 255, also launch, on a pilot basis, a new fellowship scheme aimed specifically at younger scientists. The *"Rising Tide"* report identified the period immediately after the completion of the PhD as that when women are most likely to drop out of careers in science. The Royal Society's Dorothy Hodgkin fellowships will aim to provide a recognised first step to a research career for the excellent young scientist.

20. The Royal Academy of Engineering will take the opportunity of additional funding to launch a programme of industrial secondments for academic engineers, building on a successful pilot scheme. They will also establish a further two Royal Academy of Engineering research chairs, extend their successful visiting professor scheme and take forward other schemes supporting the professional development of practising engineers. Together these programmes will provide a welcome boost to the promotion of greater interaction between industrial and academic engineers.

Public Understanding of Science

21. The Office of Science and Technology (OST) budget for the campaign to promote the public understanding of science, engineering and technology will be increased by **£0.25m** to £1.25m. The budget will be used to support a variety of programmes and projects, including the 1996 national week of science, engineering and technology. It will enable the OST to continue to fund schemes that encourage enthusiasm for science and engineering among young people in particular.

22. The aims of the campaign are twofold:

- to change public perceptions of science and engineering so that there is greater appreciation of the vital contribution that science and engineering make to the nation's economic and social well-being

- to increase public understanding of science and technology so that public debate of scientific and technological issues can be better informed.

International Subscriptions

23. The White Paper charged the DGRC to come forward with proposals whereby uncontrollable perturbations in the level of international subscriptions would be borne across the Science Budget as a whole rather than entirely by an individual Research Council. Proposals for handling the effects of exchange rates and UK contribution percentages on the two major subscriptions - namely to CERN and ESA - have been drawn up and accepted by the Chief Executives of all Research Councils. For 1995, we estimate that the overall impact will be around **£8m** almost entirely attributable to the CERN subscription and caused by (a) the drop in the value of the £ against the Swiss Franc and (b) the increase in the UK's share of the CERN budget from 13.55% in 1994 to 14.36% in 1995 following the relative increase in the UK's net national income. This additional funding will be provided to PPARC but on a ring-fenced basis; it will **not** be incorporated into the baseline and its deployment will be accounted for to the other Chief Executives annually.

Council for the Central Laboratory of the Research Councils (CCL)

24. The establishment of the CCL (formerly the Rutherford Appleton and Daresbury Laboratories) from 1 April 1995 as a body separate from EPSRC should be a cash-neutral exercise. However, we recognise that the move from a grant-aided regime to one in which the new body must earn all its own income represents a significant step. Accordingly, and as a prudent move, **£1.5m** is being allocated from the Science Budget to provide a small contingency to be used against genuine calls for central grant-in-aid. The funding for CCL will be reviewed in-year and this may result in Science Budget reallocations as circumstances dictate.

ANNEX A

Allocations for 1995-96

	Priority Initiatives included in the 1995-96 Allocations £m	1995-96 £m	1994-95[1] £m
BBSRC	*12.2*	161.631	157.1
ESRC	*1.3*	61.232	59.8
EPSRC	*21.1*	365.702[2]	358.9[2]
MRC	*14.0*	277.809	269.3
NERC	*3.2*	155.483	151.7
PPARC	*8.3*[3]	196.367	187.4
CCL	*1.5*	1.500	
Royal Society	*1.5*	20.786	20.1
RAEng	*0.8*	2.617	2.2
OST *(including £3m to be allocated to Research Councils in respect of LINK)*	*3.3*	5.250	3.6
Research Council Pensions		33.298	30.8[4]
Total	*67.2*	**1,281.675**	**1,240.9**

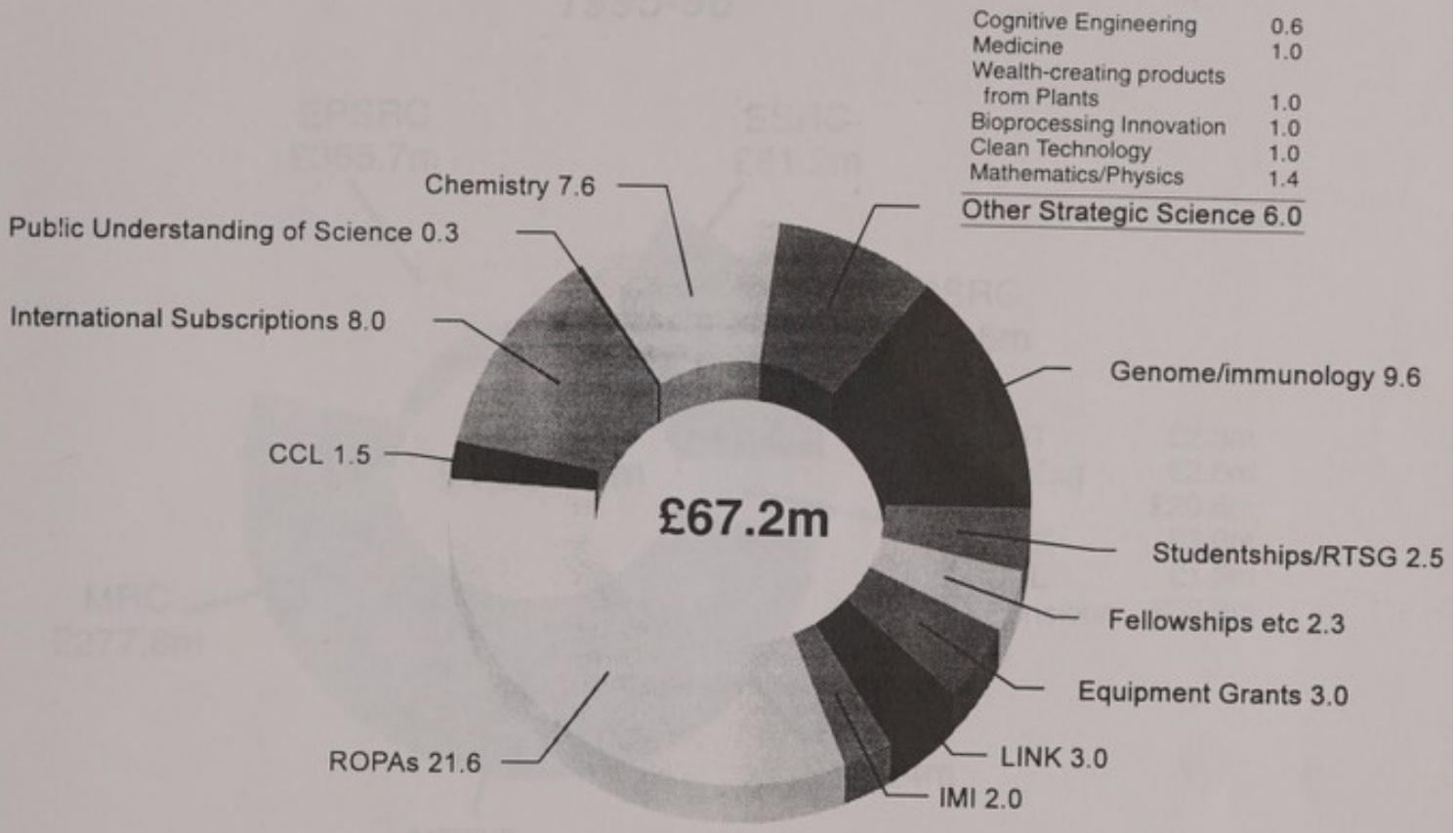
Notes: 1: Figures for 1994-95 take account of reallocations to the Swindon Councils' Pension Scheme and other technical adjustments.

2: Includes £7.2m (£10.6m in 1994-95) spent on high-performance computing on behalf of all Research Councils.

3: Includes international subscriptions reserve of £8.0m

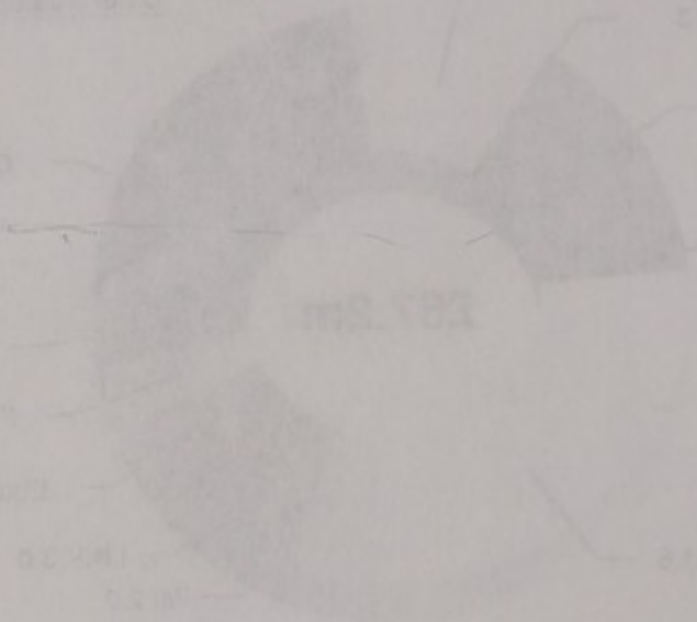
4: In last year's announcement the pension figures (other than those relating to the payments to pensioners of SERC) were included in individual Councils' allocations.

Priority Initiatives



includes initiatives started in 1994-95

£m



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