

W.0495

27 July 1984

PRIME MINISTER

ANNUAL REVIEW OF GOVERNMENT-FUNDED RESEARCH AND DEVELOPMENT

Sir Robert Armstrong has sent you a copy of the 1984 Annual Review of Government-Funded Research and Development, together with ACARD's comments on it.

2. Departments were asked to identify their research programmes according to primary aim and I have summarised the current situation and the trend in the Annex. Departments were also asked to describe their objectives at a strategic level in quantitative terms wherever possible. The general standard of these statements was low and ACARD found it almost impossible to relate individual expenditure plans to components of the statements of objectives. This is a thoroughly unsatisfactory situation which the Sub-Committee of Chief Scientists will work on this year with further guidance from ACARD.

3. One of the purposes of the review is to take an overview of the balance of Government-funded R&D. Some Departments still argue that they and they alone can determine the size and scope of their R&D programmes. I disagree with this view: many areas of science and technology range across several Departments and a co-ordinated view of these must be taken, especially in the important area of strategic research which Lord Whitelaw drew to your attention in his minute of 22 February. Further, R&D requires people and one Department can knowingly or unknowingly pre-empt too large a share of the resources available in scarce skills such as micro-electronics.

4. The Annex is one way of looking at the balance of R&D. It shows that last year the Government spent nearly £4 billion on R&D. Fractionally more than half was spent supporting procurement programmes, the vast majority by the Ministry of

Defence. Of the remainder, approximately 17% was spent on each of the advancement of science and the improvement of technology for industry. Most of the rest, 12% of the total, was spent supporting Departmental policy-making and its implementation.

5. On current plans, MoD will spend a further £380 million cash in 1986/87. In so doing, its proportion of the total Government spend on R&D will further increase by 1%. By the same year, expenditure on advancement of science will have declined by 3% in real terms, and by nearly 1% of the Government total. R&D in support of Government policy-making and its implementation will decline by 4% in real terms. These trends seem to me to be in the wrong direction.

6. I support ACARD's view that there is a high opportunity cost associated with pre-empting an ever-increasing fraction of the nation's R&D resources in defence technology. The ratio of £1 spent on R&D for every £3 spent on purchase of equipment is absurdly high. I have the impression that the MoD is feeding a leviathan with an insatiable appetite for R&D resources. As equipment gets more expensive and production orders are more widely spaced and for smaller numbers of units, the defence industry is fed more R&D contracts "to keep development teams together" even though only a fraction of the products thereby developed can ever be manufactured and purchased with the current defence procurement budget. This trend must stop eventually and I think there is a case for examining the consequences of a reduction of the MoD R&D spend to roughly half its present value over a period of 5 years, with corresponding changes in procurement policy and a switch of the R&D resources thereby released to areas with a greater influence on the economic health of the country. These remarks are not, of course, a criticism of the need for strong military defence, rather on the way the MoD chooses to obtain this.

7. These considerations would, I hope, be examined by the inter-Departmental group proposed in Sir Robert Armstrong's minute.

8. In his minute to you of 22 February, Lord Whitelaw drew attention to the widespread concern on the health of basic and strategic research. You then asked how these problems could be solved without spending more money. Although there is still something to be won from improved efficiency and selectivity in basic research, I believe that the answer lies in re-allocating funds from other parts of Government's R&D spend such as defence.

9. There is real damage being done to our University and Research Council research. Although it is true that the past excellence of this research seems to have had little influence on the economic performance of the country, one does not solve that problem by reducing the excellence of basic research. At a time when the Government's policies have led to encouraging progress in the application of our scientific and technological skills to producing marketable goods and services, it would indeed be ironic if the same Government was to damage irreparably the very source of those skills and so inhibit the development of a strong science- and technology-based industry.

10. I also share the concern on strategic research. Financial constraints have led to some Departments abandoning their longer-term R&D programmes which are a prudent measure for the discharge of their future responsibilities. The results of these actions can already be seen, for example in the area of the environment when policy decisions have to be taken on the basis of an inadequate technical understanding of the problem.

11. In summary I believe that analysis of the annual review of R&D shows that Government-funded R&D is substantially out of balance, a trend which developed over many years as a result of the varying bargaining skills of Departments in the PES round and which previously went unnoticed because of the absence of an overview. In general I think we are over-committed in R&D for defence, agriculture and nuclear energy and under-committed in basic research and in strategic research for areas such as the environment and manufacturing industry.

12. It could be argued that the Government's overall policy demands that any cuts made in the over-committed areas should

revert to the tax-payer rather than to righting the situation in the under-committed areas. I believe this would be a mistake because in most of the under-committed areas Governments in all industrialised countries assume a major funding responsibility because of the effect of research in these areas on long-term economic performance. At the moment Government funding of R&D runs at 2-2.5% of GNP for all major industrialised countries. However the UK figure only gets into this band by virtue of our enormous defence R&D spend. Thus cutting that and not transferring the proceeds to other areas of R&D would leave us well below the norm with, I believe, serious adverse consequences for the development of a strong science- and technology-led industrial economy in the future.

13. The Chief Secretary has asked to be kept informed of the Annual Review so that he may use it in his discussions on Departments' R&D needs during the PES round, and you may wish me to communicate to him the views I have expressed in this minute. His officials have, in any case, asked for guidance on the questions that might be put to Departments and I have prepared a rather detailed note on this which does not cover the overall policy implications I have addressed in this minute but is, of course, consistent with the views I have expressed here. If you take Sir Robert Armstrong's advice on the distribution of the Annual Review to Ministers, I would plan to send my note to Treasury officials at the same time.

14. I am copying this minute to Sir Robert Armstrong.

RBN
ROBIN B NICHOLSON
Chief Scientific Adviser

Cabinet Office
27 July 1984

Total Government Expenditure on R&D by Primary Purpose,
£million cash

	1983/84 Estimated Outturn	1986/87 Plan Cmnd 9143(1) (change in real terms from 1983/84)
Advancement of Science	675	740 (- 3%)
Support for Policy Making	485	525 (- 4%)
Improvement of Technology	655	810 (+ 9%)
Support for Procurement Decisions	2005	2380 (+ 4%)
Support for Statutory Duties	65	75 (- 2%)
Support for Other Activities	65	75 (- 1%)
TOTAL	3950	4605 (+ 3%)

These figures are consistent with the Government's expenditure plans to be found in Cmnd 9143: the details in this table are not to be found in that White Paper.



10 DOWNING STREET

From the Private Secretary

DR. NICHOLSON (on return)
CABINET OFFICE

Maintaining the Strength of the Science Base

We have now received minutes from both the Defence Secretary and the Education Secretary, which I understand have been copied to you separately, in response to my letter to their Private Secretaries of 23 May about maintaining the strength of the science base.

BT | I should be grateful if you could provide advice for the Prime Minister on these responses.

David Barclay

2 July 1984

CONFIDENTIAL

Ms. Courtney
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