

CONFIDENTIAL

WO556

PRIME MINISTER

26 July 1985

**Item 1** R & D PRIORITIES ACROSS GOVERNMENT (E(A)(85) 40),  
Memorandum by the Chief Scientific Adviser, Cabinet Office.

BACKGROUND

1. Government recognised the need to review R & D expenditure "horizontally", looking across individual departmental programmes, and set up the Annual Review process in 1982 (Cmd 8591, Government Observations on the Lords Select Committee Report "Science and Government"). Against the background of the evolving Annual Review process, the Secretary of State for Trade and Industry suggested to the Chancellor of the Exchequer (letter of 4 April 1985) that the Ministerial Committee on Economic Strategy, Sub-Committee on Economic Affairs (E(A)) should examine R & D priorities across Government, and that Ministers responsible for R & D, but not normally present at E(A), should take part. It was agreed that such a discussion would be timely before the beginning of Public Expenditure Survey bilaterals.

2. You asked for a paper to be prepared by me to focus the discussion, (E(A)(85)40). I have drawn upon the following source material which has been made available to Ministers:-

- (a) **The Annual Review of Government Funded R & D 1985**, prepared by the Cabinet Office, provides a data base detailing expenditure on R & D by all Departments (1983/84 to 1987/88), and sets these in a national and international context. The principal trends of interest to Ministers have been described in the Executive Summary (E(A)(85) 39). Government expenditure on civil R & D is planned to fall by 10% to 1987/88 from a fairly constant base. Defence R & D is increasing to a peak in 1985/86 but

will then decrease by 3% - nevertheless defence R & D will account for 53% of Government R & D in 1987/88. International comparisons show the UK spends less on R & D than most competitors and devotes a larger proportion to defence R & D than most other countries other than the US. UK private industry invests less in R & D than industry elsewhere (Fig 7 of the summary). Competitor nations are increasing (and plan to increase further) the proportion of GDP spent on R & D: in the UK it is declining (Fig 6).

- (b) **ACARD's comments on the 1985 Annual Review** (which have been circulated together with Sir Henry Chilver's covering letter to you) focus on the need to direct Government's R & D expenditure more consistently towards wealth creation and have proposed common criteria and objectives against which departmental programmes should be assessed. The Council is also concerned that the UK's low level of expenditure on R & D is out of step with competitors.
- (c) Sir Henry Chilver has also reported to you (his letter headed '**Financing Innovation in the UK**' has been circulated as E(A)(85) 41) .ACARD's observations that industry is not responding to increased profitability by investing more in R & D for long term competitiveness.
- (d) The Advisory Board for Research Councils have advised the Secretary of State for Education and Science on the pressing need for an increase in the Science Budget and a **Summary of their Advice** has been circulated by the Secretary of State - this is something of a PES pre-emptive strike and is not directly relevant to the central issues raised in my paper.
- (e) **The Secretary of State for Defence** wrote to you on 10 July, copies to members of E(A), raising the question of a **Government Strategy for Industry**. He said that existing machinery does not encourage coherent decision making, across Government, on R & D programmes of significant national importance and action is needed, probably necessitating new machinery.

## PRINCIPAL ISSUES

UK expenditure on R & D, by public and private sector combined is below that of our competitors and has declined in recent years.

2. International comparisons show that we spend a lower proportion of GDP on R & D than our competitors - our actual spend in terms of purchasing power parity compares even more unfavourably:-

	Year	France	W Germany	Japan*	US	UK
Total R & D spend	'83	13.1	18.1	29.0	88.4	12.5
\$ billion						

\*1982 figure

Government plans are to reduce civil R & D expenditure by 10% in real terms by 1987/88. Industrial spending on R & D fell between 1981 and 1983 (the latest date for which we have good statistics). It is probably now increasing slightly in some sectors (electronics for example) but is still falling as a percentage of turnover and, especially, of profits.

### R & D as a spur to wealth creation

3. Even with current low levels of spending, R & D could generate more wealth. Exploitation of R & D is poor in the UK, although probably no worse than our European competitors. ACARD are convinced that the **Government's** civil R & D programmes could be designed to adequately meet Departmental responsibilities **and** simultaneously to make a greater contribution to wealth creation.

### What is wrong with existing machinery

4. Coordination of Government R & D is effected by the Chief Scientific Adviser

600  
400.  
1.000

through the Sub-committee of Chief Scientists. Departments manage their R & D programmes independently, in accordance with the Rothschild customer contractor principle. This has worked well in some respects but Departments do not consider the wider opportunities which might arise from their R & D programmes eg industrial exploitation of the outcome of environmental R & D programmes. In addition current machinery cannot accommodate major R & D programmes of interest to many Departments - finding funds for space R & D has necessitated some arbitrary transfers of funds. Problems are acute when no Department places the programme at the top of its own priority list, but the work is of national importance in pulling through technology.

#### HANDLING

5. The Chancellor of the Exchequer is likely to question the evidence that the UK is failing to increase investment in R & D. Few statistics are available to show trends in private sector investment. But although a few companies are increasing their R & D budgets, the increases are only significant in the electronics sector: in other sectors companies are investing a decreasing proportion of their profit or turnover in R & D.

6. Secretaries of State for the Environment, and for Energy, and the Minister of Agriculture, are likely to say that they already focus on wealth creation aspects in setting R & D priorities. But it is not clear that industrial opportunities receive attention when programmes are planned: for instance, there are too few examples of UK industry developing products to sell worldwide as new environmental legislation comes into force. MAFF R & D programmes do relate to improving the performance of the agriculture industry although the effect of the Common Agriculture Policy means that the results are sometimes financially perverse.

7. The Secretary of State for Defence touched on many of the issues raised in my paper in his own minute entitled A Government Strategy for Industry. He has identified a gap in existing machinery and is likely to support the establishment of a Ministerial group to work out technological priorities for Government and industry and means to give a lead to the private sector.

8. The Secretary of State for Trade and Industry is likely to support the establishment of a Ministerial group to ensure that the nation gets value for money from Government R & D programmes and to come up with ideas on how the private sector should be encouraged to pull its weight. He may suggest that the Minister of State for Industry and Information Technology might lead the group.

9. The Foreign Secretary (in his minute to you of the 8 July) and the Minister without Portfolio (his minute to you 23 July) have indicated their agreement with my analysis and both support the setting up of a Ministerial group.

---

10. You will wish to focus discussion on the longer term national needs for R & D to stimulate wealth creation and prevent the discussion turning into a series of pre-emptive PES points.

11. You will wish to ask the **Chief Scientific Adviser, Cabinet Office**, to introduce his paper. You will wish to ask the **Secretary of State for Trade and Industry** to open the discussion since he proposed the need to consider R & D across Government. You will wish to suggest that the issues raised by the Secretary of State for Defence are closely linked to the Chief Scientific Adviser's analysis of the problems and should be included in this discussion. The **Chancellor of the Exchequer** will wish to comment on the statistics and their interpretation. The **Secretaries of State for Environment, and Energy** and the **Minister of Agriculture, Fisheries and Food** will wish to comment.

#### CONCLUSIONS

12. You may wish to conclude that R & D trends in the UK are alarmingly out of line with those of our principal industrial competitors and that this carries a great threat to our future economic prosperity. Proposals for action are needed and these may well require cutting across entrenched Departmental positions.

13. One option would be to set up a Ministerial Group supported by Cabinet Office (Chief Scientific Adviser) to report back to E(A) in October on how to:

1. Place greater priority on wealth creation from R & D spending across

Government as a whole

ii. Cause the private sector to bring its R & D performance up to that of our industrial competitors

iii. Increase the effectiveness of exploitation of both Government and private sector R & D

A second option would be to put these issues to the Cabinet Office (the Chief Scientific Adviser and the Head of the Economics Secretariat in the lead) and to ask that, in consultation with the Departments concerned, they bring forward proposals to E(A) in the same timescale.

RSN.

SIR ROBIN NICHOLSON  
Chief Scientific Adviser