

PRIME MINISTER

3 April 1987

SPACE

It is disappointing but unsurprising that no Department has volunteered re-allocation of any of its R&D budget. The Cabinet Office paper shows what could result from a general pruning. An alternative approach would be to target specific programmes. Of the possible sources identified by the Cabinet Office, the following should be probed further.

DTI

The present Alvey programme will have run down by 1988/89. The Bide report, IT 86, recommends continuation of research under Alvey but with greater emphasis on application. DTI are currently working on a response to IT 86 and no commitment has been made to a second Alvey programme although some £15m per annum has been earmarked. There should be near and medium term commercial benefit from the main Alvey areas such as large scale integrated circuits, software, artificial intelligence and man-machine interfaces. The leading electronic companies should therefore be pushed hard to take this kind of work off the shoulders of Government. Programmes which lead to early commercial applications contrast markedly with basic long term research where leadership is a natural Government function. There is therefore a strong case that Government has already given the Alvey work a good start and now it must be taken forward by industry.

Possible saving £15m pa post 1989.

The Eureka programme grew out of an original 1985 proposal by Mitterand for European collaboration on SDI. Partly because of UK influence it has become a much broader collaboration involving 19 countries (the EEC plus EFTA plus Turkey), which concentrates on high technology projects. It

is not centrally directed but responds to ideas from industry for Eureka money from the DTI Support for Innovation Fund. Approved projects must have a broad European base, involve high technology, and at least two different countries in collaboration.

Again, this is the kind of activity that ought to be driven by return on capital considerations and therefore financed entirely within the private sector. Whereas it is quite appropriate for Government to help with, for example, marketing problems or cutting through EEC bureaucracy, there should not be a continuous call for Government investment. Possible saving £10m pa.

*Eureka
£10m.
Alvey
£15m.* So if Eureka and Alvey were both curtailed after 1988/89 annual funding of up to £25m could be found. I would not recommend any other areas under the DTI's R&D programme. In particular, LINK has only just been announced and it would be very indecisive to start cutting it straight away.

DES/Research Councils

We are discussing separately the management structure of the Research Councils and the great need to improve their method of operation. Once this is done the same, or more work could be done for less total expenditure because hopefully a lot of the frittering will have been stopped. However, it would not be wise, particularly under the present climate of general external criticism, to impose any new cutbacks in this area.

The CERN review is due later this year. I am currently examining the case for particle physics and meeting a number of the key players, in order to brief you properly when the key CERN decisions come up. The matter is complex and the current bandwagon against particle physics is sometimes dismissive of the great work which has been accomplished and

enhanced both Britain's and Europe's prestige. Indeed, the Americans are jealous of what has been achieved at CERN and this formed a large part of the political argument for their recently announced \$4.4bn Supercollider project. While we may indeed decide to withdraw from CERN, it would be preferable to examine that case properly rather than to preempt the decision now by any notional redeployment of future CERN expenditure in favour of Space.

Department of Energy

The original economic logic for developing a fast breeder reactor dates from the 1960's. It was that fossil fuel reserves were running down, that a vigorous thermal nuclear reactor programme would lead to rapid depletion of natural uranium reserves, and that therefore a far more efficient user of uranium should be developed. These arguments have been turned upside down by recent economic events. Owing to the large exploration programme for fossil fuels triggered by the oil crises of the 1970's, there is now no shortage.

The thermal reactor programme has advanced more slowly than anticipated because of environmental and safety objections, while work on fusion has been continuing. Although it might take more than 50 years to develop a fusion reactor, electricity will ultimately be made by this method, with seawater as the fuel! Therefore, the old argument that we would need fast breeder reactors to plus the gap is obsolete. There is a strong vested interest in proceeding with fast breeder technology but it is basically a producer driven case.

The chances of commercial deployment of fast breeder reactors to the extent which would justify their enormous R&D investment is very low. Even if technical problems were all solved, the public outcry about siting machines, which actually use liquid sodium as a coolant, around the

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countryside would delay and probably prevent large scale deployment. I therefore see a strong case for cutting the fast reactor programme and redeploying the funds elsewhere, including space. Total costs are £110m pa and even a partial cutback here could produce more than in any other single area except defence.

MAFF

The general level of spend on increased efficiency of production is difficult to justify for an industry which is in surplus and predicted to remain so. I have no detailed arguments on agriculture other than to observe that the high R&D spend is yet another example of the power of the farming lobby.

MOD

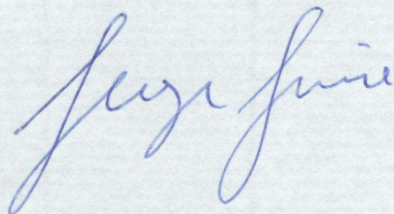
The MOD R&D budget has already been cut back and the Department is under considerable pressure to improve the efficiency of its R&D spend. We spend over 50% of Government R&D on defence compared with 33% in France, 10% in Germany and only 3% in Japan. In the short term the percentage of UK R&D spent on defence is actually rising although over the longer term UK defence R&D is set to decline. However, the ratio of defence to civil R&D is unlikely to fall because some civil programmes are also being reduced while none of the defence reduction has been reallocated to civil expenditure.

There is therefore an opportunity for redressing the balance in favour of civil R&D. Defence R&D savings should come both from shifts to collaborative R&D programmes and from increased 'off the shelf' purchases. Rather than reallocating these savings to procure additional defence equipment, we should examine the case for allocating some of the savings to civil R&D programmes including space.

Conclusion and Recommendation

I continue to believe that anything less than Option 3 will be read as Government myopia and ambivalence about our commitment to space. Option 1 does not really get us anywhere politically and Option 2 is bad value for money. Option 4 would actually give us better value for money than Option 3 but the funding may not be available. I recommend:

1. that you probe the expenditure commitments for the second Alvey programme, the Eureka programme and the fast-breeder reactor; total savings could be up to £135m pa
2. that we commit to Option 3 even if some of the necessary funding has to be taken from the reserves.



GEORGE GUISE

GOVERNMENT FUNDED R&D EXPENDITURE

R&D EXPENDITURE IN 1985/86 FIGURES IN £m	BASIC SCIENCE	APPLIED STRATEGIC	APPLIED SPECIFIC	DEVELOP- MENT	TOTAL
MAFF	6.4	22.2	46.7	46.4	121.7
DES (excl. UGC)	-	-	8.0	6.8	14.9
D/Em (excl. UKAEA)	5.0	9.0	7.7	13.3	34.8
UKAEA	-	39.4	130.9	19.4	189.6
DoE	-	4.2	33.6	6.4	44.2
ODA	-	-	24.0	0.0	24.0
DHSS	-	8.9	15.6	2.9	27.4
HSC	-	0.3	5.0	2.2	7.5
Home Office	-	0.3	12.8	1.0	14.2
DTI	4.3	112.6	73.2	177.3	367.4
D/Tp	-	1.1	22.8	0.8	24.7
NI Depts	0.5	2.1	9.6	1.5	13.8
Scottish Depts	13.5	8.0	27.0	6.5	54.9
Other	17.2	6.2	12.5	9.4	45.3
SUB TOTAL - CIVIL DEPTS	46.9	214.1	429.4	294.0	984.3
AFRC	29.1	20.4	-	-	49.5
ESRC	10.9	6.4	1.6	-	18.9
MRC	39.2	41.4	40.9	-	121.5
NERC	49.8	12.2	3.1	-	65.2
SERC	154.2	112.4	16.6	1.2	284.5
SUB TOTAL - RES COUNCILS	283.3	192.8	62.2	1.3	539.7
UG Committee etc	486.6	105.8	77.4	-	669.8
TOTAL - CIVIL R&D	816.7	512.8	569.1	295.2	2193.8
MOD	-	34.5	348.0	2005.8	2388.3
TOTAL - ALL GOVT	816.7	547.2	917.1	2301.0	4582.1