S
3001

PREM 19/2254

MT

PART 5.

CONFIDENTIAL FILING

MORATORIUM ON APPLICATIONS FOR SUPPORT AND INNOVATION

RESEARCH AND DEVELOPMENT

INDUSTRIAL POLICY

PART 1: NOV 1984

PART 5: AUG 1987

& IN ATTACHED FOLDER 'ANNUAL REVIEW 1988'

Referred to	Date	Referred to	Date	Referred to	Date	Referred to	Date
~~4.V.87~~		15.12.88					
~~5.V.87~~		PTS ENDS					
~~14.V.87~~							
~~21.8.87~~							
~~5.11.87~~							
~~9.11.87~~							
~~2.12.87~~							
~~8.1.88~~							
~~7.1.88~~							
~~8.2.88~~							
~~24.3.88~~							
~~11.4.88~~							
~~16.5.88~~							
~~23.5.88~~							
~~26~~.5.88							
~~1.6.88~~							
~~14.6.88~~							
~~23.6.88~~							
~~30.6.88~~							
~~1.7.88~~							
~~7.7.88~~							
~~12.7.88~~							
~~14.7.88~~							
~~20~~ 7.88							
~~29.7.88~~							

PREM 19/2254

PART 5 ends:-

U. BROWN TO HMT 15.12.88

PART 6 begins:-

J. FAIRCLOUGH TO DES 17.1.89

CABINET OFFICE

Qd0349
File Ref: ST 135/8

70 Whitehall London SW1A 2AS Telephone 01 [illegible] 270 0320

CONFIDENTIAL

Tom Burgner Esq
HM Treasury
Parliament Street
London
SW1

15 December 1988

FUTURE OF THE ANNUAL REVIEW OF R&D

It was agreed at the E(ST)(O) meeting last July that the Cabinet Office would set up a group to look at the way the Annual Review might be developed in future. This would take account in particular of changes planned in the Public Expenditure White Paper and the possibility that from 1991 Departments would publish reports on their main expenditure programmes, including science and technology.

I hope the internal work that has been going on in the Treasury to consider the future shape of the Public Expenditure White Paper is now sufficiently advanced for us to begin thinking about the knock on effects for the Annual Review. Subject to that, I would like to set the group up in the New Year and would aim for it to report to the June meeting of E(ST)(O). I suggest the group should have two terms of reference: first to consider the division between the prospective Departmental expenditure reports and the Annual Review, with the aim of harmonising the presentation of the existing financial and textual material; and second to consider the coverage of information and whether between them the two sets of reports should provide more information eg on scientific manpower or more detailed breakdowns of science and technology expenditure.

If you and other members of E(ST)(O) are content with these broad terms of reference, I would be grateful for nominations for membership of the group. Some Departments may be content simply to receive copies of the papers. Names should be sent to Kevin Thomas here in the Cabinet Office. His telephone number is 270-0301.

I am copying this letter to other members of E(ST)(O).

VIVIAN BROWN

CONFIDENTIAL

PG

CABINET OFFICE

70 Whitehall London SW1A 2AS Telephone 01-270 0259.

From John W Fairclough FEng
Chief Scientific Adviser

WO744

Dr R Coleman
Chief Engineer and Scientist
Department of Trade and Industry
1 Victoria Street
London SW1

29 July 1988

Dear Ron,

RECORD OF A MEETING IN THE CABINET OFFICE ON 26 JULY 1988
EC FRAMEWORK PROGRAMME FOR R & D

Professor Fasella, Head of DG XII in the European Commission, yesterday gave us a frank exposition of the Commission's approach to the mid-term review of the EC's Framework Programme for R & D. What he said was heard by too limited a circle and we have therefore prepared the attached full account of his remarks.

As you will see, Fasella invited our comments. It is important that we should maintain a dialogue with the Commission and this is an invitation to which I believe we should respond.

It was agreed at a meeting of the Official Sub-Committee on International Aspects of Science and Technology on 22 July (E(ST)(O)(IA)(88) 4th meeting) that Departments would prepare by the end of September short papers addressing various points at this stage in in our preparations for negotiations on the mid-term review. Departments will clearly need to take Fasella's remarks into account, and, in view of the holiday season, I think we may reasonably respond in the same time scale. May I therefore ask you and colleagues in E(ST)(O) to take an interest in this exercise and to ensure that Richard Escritt and the E(ST)(O)(IA) Secretaries are given considered advice which can also form the basis of our joint response to the Commission.

Yours sincerely,

JOHN W FAIRCLOUGH

cc Members of E(ST)(O) and Members of E(ST)(O)(IA)

RECORD OF A MEETING IN THE CABINET OFFICE ON 26 JULY 1988

EC FRAMEWORK PROGRAMME FOR R & D

Present :	Mr Fairclough	Chief Scientific Adviser Cabinet Office (Chairman
	Professor P Fasella	DG XII Brussels
	M. J Gabolde	DG XII Brussels
	Dr A Keddie	DTI
	Mr R Ritzema	DES
	Dr W D Evans	DEn
	Mr M Woolley	DHSS
	Mr C Evans	HMT
	M Lownds	FCO
	Mr Escritt	Cabinet Office
	Mr Colyer	Cabinet Office

The Chairman said that the meeting afforded an opportunity to take stock and assess the prospects for the future of the Framework Programme.

Professor Fasella said that it was helpful to have early and informal exchanges of views with Member States. He was happy to air the Commission's ideas as they had recently with Minister Curien in Paris.

He first took stock of progress to date. More than 60% of the money under the present Framework Programme was now accounted for by programmes which had been formally implemented. Actual research work under the programmes was another matter and would extend into the future. A further 30% was "on the table" and would probably be decided by the Research Council in December this year. The remaining 9% or so would he hoped be adopted in the first half of 1989.

Turning to the revision, this was provided for in the third year of the programme and it was now being prepared by the Commission. Their expectation was that it would be discussed and adopted in the second half of 1989. They were presently preparing an analysis of the state of research thoughout the Community which it was intended to issue in late 1988. It would include some comparisons with research in other parts of the world and comments on the relationship to 1992.

Turning specifically to the next Framework Programme, Professor Fasella said that the Commission started from two key points.

First, science and technology was increasingly integrated as between interrelated subject areas. Further, there was vertical integration linking science and industry ever more closely. Industry required scientific knowledge and practical know-how to produce competitive goods. At the same time, research was becoming more costly and competitive pressures meant that this cost had to be amortised over a shorter time. This could only be achieved if there was a large market or demand for research results. The Community of the Single Market could provide this and Community co-operation could ensure that the research was cost effective. There were many areas which needed to be covered but by concerting actions the Commission could ensure that its own part in the process was not expensive.

The second starting point was the Community dimension of research actions. Professor Fasella instanced issues relating to the quality of life in the Community which, as in the case of epidemiological studies, were transborder by their very nature; issues of norms and standards; and other aspects of the Single Market.

The present Framework Programme was concentrated on a few objectives e.g. ESPRIT and RACE; fusion. In the next FP the Commission was again thinking of selecting certain strategic areas; it would be "absurd" for the Commission to aim to be involved in everything. Professor Fasella was happy to share the Commission's preliminary thoughts on these.

DG XIII had its own priorities and he would not raise them.

DG XII had identified four key areas on which to concentrate activity:

i. aeronautics
ii. new materials (including superconductivity)

iii. biology (including the specific subsets of the genome - human and other; neurobiology on which the UK had been prominent in offering ideas; plant physiology; cell biology; and agro-industrial research)

iv. global change in the world environment.

These were general priorities and not final views. The Commission would welcome comment. But the objective should be to agree so far as possible on such priorities for the new Framework rather than to become involved in too detailed decisions on individual programmes.

As to the modalities of the next Framework Programme, an important need was to ensure continuity. On the other hand, a fixed five year programme was too long as research needs changed more quickly than this. Instead the Commission would propose a five year rolling programme which would be renewed and revised every three years. He recognised that this could prompt the accusation that the Commission would be able to cheat but he believed that a rolling programme could be subject to strict control, e.g. by a ceiling being put on expenditure in the first two years.

DES asked if a rolling programme would become a permanent feature. Professor Fasella said that the Commission would propose a new rolling programme for 1990-94 with provision for renewal in the third year. He interpreted the Inter-Institutional Agreement as providing cover for multiannual programmes rolling beyond 1992. (After the meeting the Treasury privately cast doubt on this interpretation.) He also drew attention to the footnote to the IIA which said that a unanimous decision was required for the Framework Programme.

The Commission were pressed to say whether some activities would cease within such a rolling FP so that programmes not up to scratch would release funds for new proposals. Professor Fasella said that reductions had already occurred in some cases, for example research on hydrogen as an energy vector and in general non-nuclear energy research had been reduced as the results were ready for transfer to industry.

It was pointed out that it would be theoretically possible to insist that all programmes, however long- or short-running, should be reviewed at the point of renewal of a rolling programme and that it should be understood that some would be reduced, modified or even stopped. On the other hand, the non nuclear programme, for example, for adoption early next year, would hardly have much of a track record to show at a 1990 revision. The Commission (M. Gabolde) was insistent that each programme should follow its agreed duration and use the agreed allocation of resources and that the decision on a Framework Programme should only embody broad policy conclusions setting out the priorities and sums to be allocated. Professor Fasella added that some programmes would not be evaluated externally at the point of the FP renewal but there was continuous internal evaluation through the CGCs. It was important to avoid gaps while evaluations were conducted. The Department of Energy stressed that a rolling programme could give rise to greater temptation to roll everything; this required greater attention to the points of review. M. Gabolde wondered if they should change the terminology if "rolling" gave rise to the erroneous impression that everything would simply be carried forward. The Chairman said that there seemed to be agreement that the need in principle was for better management than could be provided by"lurches" every five years but there did need to be assurance that not everything would be rolled forward.

Asked for his interpretation of the conclusion of the February European Council and the inter-institutional agreement, IIA, Professor Fasella said that the Commission's starting point would be their analysis of the S & T situation and their proposals would be the minimum action which in their view was needed. Their proposals would therefore be realistic. The IIA set out a five year schedule, though each year an extra year could be added. The figures for R & D and integrated mediterranean programmes together were ceilings. "You cannot commit more than that. You are not authorised to commit it. You need a legal basis in specific programmes and a Framework Programme." The overall FP required unanimity; nuclear specific programmes required unanimity; and non-nuclear programmes required a qualified majority. Any amount within the IIA ceilings not spent on R & D could, if a majority so decided, be spent on IMPs. In 1992, for example, about 350 mecu was expected to be spent on IMPs out of the 2.4 becu provided for. If the balance was not taken up for R & D, some Member States could argue more for IMPs though he assumed that the UK would not want this.

On predicitive medicine, Professor Fasella said that 15 mecu was proposed at present but he expected that there would need to be an increase in future years.

DES pointed out that the forthcoming informal discussion meeting with the Commission on 20 September on biology would give the Commission the benefit of the views of experts in tune with national policies. It was not clear that all the advisory bodies available to the Commission avoided overlap. It was stressed that the best advice for the Commission was that which recognised the practical financial constraints so that priorities could be set.

Turning to CREST Professor Fasella said that it had been involving itself too much in work more appropriate for the Research Working Group. The new working rules for CREST, to which the Cabinet Office had contributed, should help. He agreed that CREST had a vital role in the mid-term review and in general it was best if CREST commented early, before the Commission adopted a formal view.

The Chairman reminded Professor Fasella of the criticisms of the EUROMART proposal voiced by the Chancellor of the Duchy at the last Research Council. The UK would continue to be negative until it was convinced that Community action was superior to present arrangements. Professor Fasella resisted the notion that the proposal was purely one of subsidy for the industry. It was rather an enticement to co-operate and to achieve greater efficiency in research effort. The same objections had been raised in the past in relation to ESPRIT when it had been argued that major companies would only be willing to share their lower priority interests and SMEs would be excluded. Events had shown how much ESPRIT had in fact been a success. The DTI agreed that there were some analogies with ESPRIT, but the starting points were very different. There was general concern about the number of new Commission initiatives, such as those directed towards regional objectives e.g. STRIDE, SPRINT, together with the Commission's ideas on dissemination.

10 DOWNING STREET
LONDON SW1A 2AA

From the Private Secretary 29 July 1988

Thank you for your letter of 25 July about the ACARD report on software. The Prime Minister has seen this and is content with the course of action your Secretary of State proposes.

(D. C. B. MORRIS)

Gareth Jones, Esq.,
Department of Trade and Industry.

dti

the department for Enterprise

CC PM.

The Rt. Hon. Lord Young of Graffham
Secretary of State for Trade and Industry

Prime Minister (1)

A report to ACOST rather than a formal, published response to ACARD seems appropriate after all this time.

Since Sir Francis Tombs presented the original ACARD report to you, no personal feathers are likely to be ruffled.

Content with DTI's proposal?

Yes ms 26/7

Dominic Morris Esq
Private Secretary to the
Prime Minister
10 Downing Street
LONDON
SW1A 2AA

Department of Trade and Industry

1-19 Victoria Street
London SW1H 0ET

Switchboard
01-215 7877

Telex 8811074/5 DTHQ G
Fax 01-222 2629

Direct line 215 5422
Our ref LQ5AAT
Your ref
Date 25 July 1988

Dear Dominic

When the ACARD report on software was published in April 1986 you asked my Secretary of State to take the lead in co-ordinating with other Departments the preparation of a Government response.

The many issues raised by ACARD have been considered in depth by DTI officials in consultation with other Government Departments and agencies who have responsibilities for software. The report stimulated a broadening of existing collaboration and some of the recommendations have been implemented.

However, our policy reviews have interrupted the completion of a written response to the report. Both the Chairman of ACOST and my Secretary of State therefore consider that, since two years have now elapsed since the report's publication, there is little to gain from preparing a formal response for publication.

My Secretary of State nevertheless considers it right that ACOST should be informed about current Government policy towards software and has agreed that a paper should be sent to ACOST for discussion in September. Officials are currently drafting this paper, which will be based on the work referred to above. In due course it may be appropriate to make a version of the paper publicly available so that users and suppliers of software can see that Government policies are directed towards encouraging the use of IT and quality software as one means of achieving international competitiveness.

I hope you are content with this course of action.

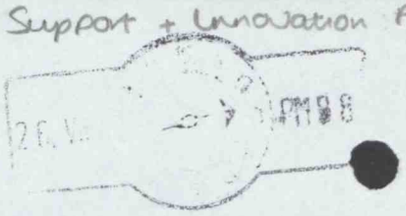
Yours sincerely,

Gareth Jones

GARETH JONES
Private Secretary

the Enterprise initiative

IND Pol : Support + Innovation PTS



FLE
DA.

10 DOWNING STREET
LONDON SW1A 2AA

From the Private Secretary

MR. BROWN
CABINET OFFICE

ANNUAL REVIEW OF GOVERNMENT FUNDED R & D 1988

Your recent minute to Paul Gray refers. I have discussed this with our Press Office who have a preference for the use of a PQ, which puts the publication on the Parliamentary record, and advocates its availability. They suggest a 3.30 publication, linked to a PQ, with CFRs at 9.00 am.

If this causes any difficulty perhaps you could discuss it directly with them.

I am copying this minute to Mr. Fairclough, Mr. Woolley, Mr. Thomas and Mr. Hilton.

(P.A. BEARPARK)

20 July 1988

R Bingham.

Is this right?

Qd.0226

File Ref: ST 134/1

MR GRAY

15 July 1988

R. Bearpark

Our prejudice is against 24 hour embargoes. I see no problem about dispensing with a PQ though I think it is a pity because a PQ puts the publication on Parliamentary record and advertises its availability. I would be happier if we went for 3.30 publication, linked to a PQ with CFRs at 9 am. That gives everyone something

[signature] 19/7

PAS 18/7

ANNUAL REVIEW OF GOVERNMENT FUNDED R & D 1988

1 Your minute of ~~26~~ May said the Prime Minister was content for the 1988 Review to be published. This is to let you know the firm publication date is now Wednesday 27 July.

2 I would also be grateful for your (or Mr Bearpark's) views on a proposed change in the arrangements for publication. In the past, this has been announced by the Prime Minister in Parliament by means of an agreed PQ. This may have been appropriate when the Annual Review was first published in 1983 but no longer seems so now that it is well established as a statistical record. Furthermore, the arrangement makes it more difficult for our Press Office to handle publicity; they cannot let selected journalists have copies a day in advance to give them more time to digest the material before having to write their articles.

3 Subject to your views therefore we would propose discontinuing the arrangement of announcing the publication of the Annual Review through an arranged PQ. We would also propose, as I indicated in my minute to you of 23 May, dispensing with the formal Press Conference which the Chief Scientific Adviser has given in previous years on publication day. Instead we would offer an informal off the record briefing on the figures to journalists who had been given advance copies.

4 I am copying this minute to Mr Fairclough, Mr Woolley, Mr Thomas and Mr Hilton.

[signature]

VIVIAN BROWN

IND Pol: Support - Innovation

PTS

SECRETARY OF STATE FOR ENERGY
THAMES HOUSE SOUTH
MILLBANK LONDON SW1P 4QJ

01 211 6402

J Fairclough Esq
Chief Scientific Adviser
Cabinet Office
70 Whitehall
LONDON
SW1A 2AS

14th July 1988

Dear John,

INTERNATIONAL COLLABORATIVE PROJECTS IN SCIENCE AND TECHNOLOGY

Thank you for copying me your letter of 30 June to the Chancellor of the Duchy of Lancaster.

Like Geoffrey Howe, I certainly agree that, in bringing about a much greater awareness throughout Whitehall of the many science and technology areas in which Departments are or will be involved in international negotiations, the Cabinet Office will be performing a most useful function. It will, of course, allow us to ensure that matters in which we have an interest but no direct role do not slip by unnoticed. More importantly perhaps, it will give us a general feel for the way our international science and technology relations are developing.

I am copying this letter to the recipients of yours.

Yours ever,
Cecil.

CECIL PARKINSON

IND-POL: R&D Pt.5

CONFIDENTIAL

P 03181

PRIME MINISTER

REVIEW OF AGRICULTURAL DEPARTMENTS' R&D PROGRAMMES
E(ST)(88)18

DECISIONS

1. Mr MacGregor's paper is the progress report on the search for savings from agricultural R&D programmes which he was asked to prepare at the last meeting of E(ST) on 26 May.

2. You may wish to concentrate discussion on the following issues:

i. what view the Sub-Committee takes of Mr MacGregor's revised figure for the cut in the level of near-market agricultural R&D funded by Government. He originally offered £24.7m, but E(ST) at its last meeting pressed him to look for more. He now offers £30m, on the understanding that the Government will not be seeking further switches of funding during the transfer period (by which he probably means the next 5 years or so: see iii. below);

ii. when a figure should be announced. The Chief Secretary will argue that it should not be decided finally until the Survey. Mr MacGregor says it is politically necessary to announce it now;

iii. the timetable for changes. The Sub-Committee has already said that if industry does not come forward within the next 12-18 months with proposals to fund programmes, action will have to be taken to withdraw Government support. Mr MacGregor says that it will take 4 years after that to terminate programmes of support. Is that too long?

CONFIDENTIAL

CONFIDENTIAL

iv. the case for increased use of statutory levies. Mr MacGregor argues that this will be necessary if support is to be transferred to industry on the necessary scale.

BACKGROUND

3. The Review of Agricultural R&D was completed in April. E(ST) endorsed on 9 May the principle that responsibility for funding near-market agricultural R&D should be transferred to industry, and that if industry decided not to fund any particular R&D programme then Government support should cease and the work be discontinued. The political difficulty of implementing the scrutiny was recognised, but E(ST) nevertheless felt that more than £24.7m out of the total agricultural R&D programme of £166m should be transferred or terminated. Mr MacGregor, Mr Rifkind and Mr King were asked to re-examine their agricultural R&D programmes, and at E(ST) on 26 May (E(ST)(88)4th meeting) they were asked to produce a progress report by July. On 30 June Mr MacGregor minuted you to say that he faced strong pressure to make an early statement on Agriculture R&D, which included an indication of the total level of industry funding being sought. You felt that such a statement ought to await E(ST)'s decision on the cuts in Government funding.

ISSUES

Scale of Government funded near-market R&D

4. The Review covered £152m of the £166m spent on agricultural R&D programmes in 1987/88. It broke down this £152m into three categories: near-market (£40m), far-market (£53m) and policy work (£59m). The figure of £40m may understate the near-market component because:

i. the Review only classified programmes as near-market if they were within 3-5 years of commercial application. The DTI definition of near-market includes all specific product and process development work, without time limit;

CONFIDENTIAL

ii. the total for policy work rose from £30m in earlier classifications to £59m when the Review was produced.

5. The Review suggested that there were exceptional reasons why £15m of the £40m classified as near-market should remain Government-funded. This explains why Mr MacGregor proposed the figure of £24.7m. Other departments, including DTI, do justify Government funding of near-market research for exceptional reasons, but not on this scale. The justification given by the Review for the £15m was that:

i. £5m was for near-market work in programmes whose total near-market content was small (under a quarter);

ii. £4m was for work which was not specific to particular commodities (eg: soil science, crop production);

iii. £5m was for horticulture near-market R&D which the horticulture industry benefited from but which should be supported because unlike other sectors horticulture got no support under the CAP;

iv. £1m encouraged investment in R&D by small businesses.

6. Mr MacGregor's new paper simply proposes an arbitrary figure of £30m. Around £2m of this would come from withdrawal of support for the National Institute of Agricultural Botany: but the paper gives no indication of where the rest would be found. The Chief Secretary is expected to propose that officials should explore the scope for further savings before decisions are reached in the Survey. Mr MacGregor, on the other hand, will press the case for an immediate decision and announcement because of:

i. the difficulty of opening discussions with the industries concerned without knowing how much he is seeking from them;

ii. the fact that speculation is rife, employees in the establishments involved are concerned, and the Government will lose the initiative in presentation.

7. There seems a strong case for a proper analysis of the sort proposed by the Chief Secretary unless you are convinced by Mr MacGregor's political arguments for an immediate decision and announcement. It is possible that during the discussion Mr MacGregor will be prepared to offer a higher figure than £30m in order to secure a statement before the Recess. In this case it may be worth settling with him in order to make progress. The tone of his paper, however, suggests that he will be highly reluctant to offer more, so that referring the issue to the Survey process may be the best solution.

Levies

8. On 9 May you expressed strong reservations about the imposition of additional levies on the industry to fund R&D. Mr MacGregor accepts that alternative methods of funding should be used where available, but adds that in certain sectors statutory levies may be the only mechanism for financing R&D (paragraph 10). He makes clear that such levies could only be operated if a majority of those concerned gave their consent. Are you prepared to allow statutory levies if this is the only means of funding increases in R&D programmes?

Future Timetable

9. On 9 May it was agreed that the agricultural industry should have 12-18 months in which to come forward with funding prospects for particular near-market R&D programmes. After that Government support would be withdrawn. You might set a deadline of July next year for a final report to E(ST) on the extent to which industry funding has been achieved. This would be 14 months since the remit was given.

10. Mr MacGregor suggests that a further 4 years should be allowed to terminate any programmes for which replacement funding does not become available (paragraph 12). This would take until well after the next Election, and seems a long time. You may feel the period could be reduced to 2 further years, say by July 1991.

11. Mr MacGregor also seeks an assurance that he will not have to seek further industry funding until this programme of transfers and redundancies has been completed (paragraph 14). Mr Fairclough may suggest in discussion that if only around £30m is forthcoming from this year's review, a further scrutiny should be launched in a year's time into Agricultural R&D to establish the full extend of near-market work. This would be most unwelcome to Mr MacGregor, as it could create considerable uncertainty in his negotiations with the industries over funding. You may therefore suggest to Mr MacGregor that, if the final outcome on this year's review is satisfactory, an assurance on future reviews might be given for 2 or 3 years, up to July 1990 or 1991, but certainly not over 5 years.

Funding of Redundancies

12. Mr MacGregor notes that the Agriculture Ministers and Mr Baker have no financial provision to meet any redundancy costs at Government and Research Council establishments which arise from the review (paragraph 13). You may wish to suggest that their requests for additional provision for this purpose be pursued with the Chief Secretary during this year's Survey.

HANDLING

17. You may wish to invite the Minister of Agriculture, Fisheries and Food to introduce his paper. The Chief Secretary, Treasury will wish to respond, followed by the Chief Scientific Adviser, Cabinet Office. The Secretaries of State for Northern Ireland and Scotland may wish to comment in view of their responsibilities for agriculture. Other Ministers may wish to contribute to the discussion.

RJW.

R T J WILSON
Cabinet Office
13 July 1988

SECRET

PRIME MINISTER

MEETING OF E(ST): 14 JULY

The meeting will follow Cabinet. There are two items.

The Policy Unit comments are in the note immediately below. Formal papers and Cabinet Office briefs for the two items are in the dividers.

Agriculture

You saw the E(ST) paper over the weekend. You will want to have a quick look at the Policy Unit comments, which are highly critical of Mr. MacGregor's approach. The Cabinet office brief spells out the ~~key~~ main issues.

The key point is how much further to press Mr. MacGregor to find~~ing~~ savings. Subsidiary issues are timing of an announcement, the timetable for implementation and the case for increased use of statutory levies.

Fusion

You have not seen these papers before. Mr. Parkinson proposes bringing the AEA's National Fusion Programme to a close; the issue to consider is how quickly this should be done. The Policy Unit broadly support Mr. Parkinson's conclusion.

There is an obvious read across here to decisions on the fast reactor - on which you are having a separate meeting with the small Group of Ministers later in the day.

Prcg.

PAUL GRAY
13 July 1988

SECRET

CONFIDENTIAL

cc BMP.

PRIME MINISTER 13 July 1988

E(ST) MEETING

The agriculture paper continues to fight a rearguard action based on a generous definition of the near market period and a hasty attempt to reclassify expenditure in to the 'policy' category. By contrast, the fusion paper is in line with the main decisions already taken on Jet, which recognised no commercial case for continuance. Its essential argument is to cut back the UK's directly funded programme commensurate with the closure of Jet in 1993.

Agriculture

The paper argues that agriculture and particularly horticulture consists of a large number of small firms who cannot individually afford an R&D programme. The fundamental premise is that somebody must fund near market research otherwise British farmers and horticulturalists will be at relative disadvantage to their EEC competitors. It argues that producer associations, controlled by majority votes, should continue to have the power to impose levies for near market research. Dissidents should be forced to contribute because the benefits of the research cannot be restricted only to willingly contributing participants. It makes the further assumption that whatever research cannot be funded by industry, even in such a compulsive manner, must ultimately be picked up by Government. This is old centralist thinking of the kind we have been fighting at the DTI and elsewhere.

MacGregor was asked to look for further savings on near market work over and above the maximum of £24.7m identified at the last E(ST). He is now offering £30m to be achieved over five years. Predictably, MAFF have ignored the clear steer they were given and continued to address the question in terms of the amount of research which industry can be expected to undertake. They were supposed to go the other

CONFIDENTIAL

way round and examine how much near market R&D is being carried on by Government and therefore should cease. It is therefore unsurprising that they have been unable to identify any substantial advance on £24.7m.

ACOST told a Lords Select Committee in April that 77% of MAFF research expenditure was for the improvement of technology. Under the wider definition of near market research adopted by DTI this is equivalent to 'near market'. Nevertheless the E(ST) papers classify only 26% of the MAFF R&D spending as near market. MacGregor has therefore ignored the E(ST) remit to use the DTI definition of near market. His latest paper still defines near market as commercially exploitable up to five years.

Furthermore, these ACOST figures were drawn from published material since when MAFF have decided to reclassify their R&D work. They have now doubled the amount allocated to policy and statutory purposes compared with the ACOST evidence. It has always been accepted that a Government Department, in order to prosecute its prime purpose, must spend R&D funds. MAFF is using this as a bandwagon in order to protect large sums of near market R&D.

Even the grand figure of £30m which they now offer is not really additional saving which could be transferred to other areas of research. £10m was agreed last year in the PES round and MAFF is therefore only offering a real saving of £20m over the long time scale of 5½ years. The £30m figure which is now offered therefore seems highly contrived. Furthermore, since MAFF is under legitimate pressure from the industry to announce its cut-back in research funding, there is some danger that a figure of £30m will be agreed for announcement which will have a cossetting effect for many years.

It would therefore be adroit to use the pressures on MAFF to make a quantatitive announcement by insisting that this must be a much higher figure of say £50m, which would not come under further pressure for several years. The Government was not elected to grow flowers or tomatoes. The old argument, that what Europe does so must we, has been exploded in every other sector of Government and now is the turn of agriculture.

Fusion

We have already agreed the run-down of Jet and negotiations with our European partners are in progress. Of the options presented, Number 3 is the most consistent with the decisions we have taken on Jet, namely a minimum commitment after the introduction of tritium which was the original purpose of the project. Government would not take a direct stake in the NET project but would retain an interest only through its participation in the European Framework programme.

There are critical negotiations under way on the funding of Jet's close-down and the extent to which Europe will support us in the decommissioning costs. It is argued that we must therefore not antagonise our partners when such vast sums are at stake. While recognising this we must not be mesmerised by it, and a UK programme with overall costs somewhere between Options B and C therefore seems appropriate. The Secretary of State's conclusions should therefore be supported.

GEORGE GUISE

Annex Copy of Janury paper on Jet setting out the fundamentals of the fusion case.

PRIME MINISTER 22 January 1988

JET

The Scientific Case

The most productive reaction for energy production occurs between the two heavy isotypes of hydrogen - deuterium and tritium. Temperatures in excess of one hundred million degrees centigrade are required in order to convert the fuel from a gas into a reactive plasma, which consists of ions derived from the nuclei in the gases. Plasma has been named 'the fourth state of matter', and the principle work at JET has been to determine how plasmas behave under different conditions of temperature, pressure and magnetic field intensity.

So far, tritium has not been introduced into the reaction chamber which has operated only with hydrogen and deuterium plasmas. The primary purpose of building the reactor was to develop our knowledge of plasma behaviour to the point where tritium could be introduced. This is an essential step in the development of a commercial fusion reactor based on magnetic confinement. It would therefore be scientifically perverse to stop the work just at the point where tritium appears capable of introduction.

The three initial tasks set for JET were:

- confinement: how the plasma would hold together under different magnetic field conditions, what densities could be achieved and for how long;

- anomolous transport: how the plasma's tendency to break up into small 'islands' of turbulence could be solved;

- interactions with the vessel wall: this has proved the most difficult problem to crack because the plasma tends to wander off track towards the walls of the vessel and thereby cause contamination problems.

I am told by Paul Rebut, the JET Director, that these problems will be solved sufficiently to introduce tritium into the reactor by early 1991. The equipment for so doing should be ready by mid-1990 but there will then be an interval of at least six months before the team has the confidence to introduce tritium. Once this is done the torus machine will be unapproachable behind its three metre concrete walls with all adjustments by remote handling. After the plasma behaviour is sufficiently understood to introduce tritium, fusion reactions producing fast neutrons will commence and the knowledge so obtained used for design work on the next magnetic confinement reactor - the NET (next European torus).

The experimental phase with tritium is scheduled for completion within two years. However, the JET record has been behind timetable and, compared with original estimates, the programme is already two years late. Delays of this order for such a programme should not be regarded as black marks. It does however indicate that conclusion in 1992 is optimistic and a further year is probable.

The scientific case for completing the work on JET is sound. The argument for proceeding with NET is different and one must look both to the economic case and the greater scientific options that are now available compared with the position when the JET programme was agreed in 1977.

The Economic Case

The Department of Energy paper has a subtle thread throughout which pre-supposes that the Fast Breeder Reactor

(FBR) will be developed and, by implication, that the vast expenditure at Dounreay of some £100m per annum will automatically proceed.

Last week we were discussing how the basic economics for nuclear energy in general have changed over the past fifteen years. This has many important implications upon the case for deploying FBRs and the urgency for developing fusion. Although the Chief Scientific Adviser and the Department of Energy do not want to raise the issue of Dounreay at this meeting, I cannot see how one can approach any sensible overall plan for fusion without fundamental reassessment of the FBR programme in the light of changing economics, and safety priorities.

The Costs

I have avoided numbers in this paper. The Department of Energy annexes have ample data cross-correlating European versus UK fusion expenditure. Indeed one would imagine that proper accounting of the expenditure is far more important than whether it achieves any benefit!

One figure which we can actually do something about, is the 10% host premium, currently costing £7m per annum, and unique among major scientific projects. The other is the vast increase in estimated decommissioning costs which now extend upwards to £150m if the tritium experiment proceeds. We should fight both these expenditures.

After 1990, there is no obligation to continue a host premium and we should simply refuse. The decommissioning costs should, in all equity, be shared. Since the JET programme was set up, there has been a great increase in our understanding of the dangers of radiation leading to enhanced safety requirements. Straightforward ocean disposal of waste is therefore no longer acceptable.

Decommissioning costs may be reduced by a delayed dismantling programme since the basic danger is from irradiated atoms with a moderate half life compared with plutonium and uranium fission fragments. The proposals for extending the planning permission should therefore be supported, at the same time as a strong plea for European assistance with decommissioning.

Alternative Methods of Fusion

At the time JET was agreed, magnetic confinement via the tokamac configuration using torroidal magnetic fields seemed the only possible way to achieve controlled thermo-nuclear fusion. There are now two other fundamentally different methods which some scientists support. Both have achieved limited hydrogen fusion with some energy production. Like the fusion reactions in JET however, they have not yet produced anything like the energy release which is needed to maintain them - in the jargon 'ignition'.

One method is inertial confinement, whereby tiny glass pellets of deuterium and tritium are exploded under laser heating. This is being investigated both under the civil and the military programme because it has defence implications since it could lead to the development of a small thermo-nuclear weapon.

The second is muon catalysis or 'cold fusion'. It is based on the production of a form of hydrogen in which muons rather than electrons orbit the nucleus. This has the effect of pulling the nuclei in molecular hydrogen sufficiently close together for fusion to take place. Such a process will need advances in particle physics before the concept can even be established in principle as a possible energy source. Nevertheless, it might be capable of development via a chain reaction, which was the key to the

release of fission energy. Cold fusion could even become the greatest economic benefit from particle physics!

I do not argue that these processes are viable as alternatives to magnetic confinement but they do demonstrate that at least two other directions now exist for fusion research.

Operating Efficiency and Economic Spin-off

The manning levels at Culham, which houses the JET project, are set out in annex A. Of the 235 professionals employed by JET, over half are on secondment from the UKAEA. The overall balance of manning at the Culham site, with 500 professionals leading to a total employment of 1,730 people is therefore far better than at CERN where 300 scientific professionals generate total employment of 3,000.

Annex B shows how contracts placed by JET have benefited UK industry. This is a secondary argument to the scientific value and the spending efficiency of the programme. However, it is encouraging that some £30m per annum of UK business is generated by JET over and above the funding of salaries and other benefits to UKAEA secondees.

Conclusions and Recommendations

1. To stop the JET project before tritium is introduced would be like discontinuing work on a bridge when it had almost reached the other side of the river. The scientific case for continuing is sound and should be supported.

2. The economics have changed radically since the project was agreed. The decommissioning costs are an order of magnitude higher than originally proposed whereas the economic case for a fusion reactor is weaker. Our

European partners should therefore be pressed to help with decommissioning.

3. Britain should cease to pay any host country premium after 1990.

4. The case for the NET is weak and the possibilities of joint progress with the USA, Europe, Japan and the USSR through ITER should be thoroughly investigated. If the politics could be made to work this would seem a far better way to develop a working thermo-nuclear reactor.

5. The Department of Energy must not get away with any implicit argument that the FBR is going to proceed and with it research funds presently exceeding £100m per annum. In agreeing to the specific proposals to extend JET it would be quite appropriate to ask for a full E(ST) paper setting out the long term economics of FBR and Fusion versus conventional thermal reactors and fossil fuels.

GEORGE GUISE

Annex A
Annex B

ANNEX B - UK INDUSTRY BENEFIT

UNITED KINGDOM
ATOMIC ENERGY AUTHORITY

Authority Fusion Programme Directorate
Culham Laboratory
United Kingdom Atomic Energy Authority
Abingdon
Oxfordshire OX14 3DB

Telephone: Direct line Abingdon (0235) 463432
Switchboard Abingdon (0235) 21840
Telex: 83189
Fax: 0235 463682

From The Authority
Programme Director for Fusion
Dr D.R. Sweetman

Mr P Agrell
Department of Energy
Thames House South
Millbank
LONDON SW1

13 January 1988

Dear Peter

CONTRACTS PLACED BY JET WITH UK INDUSTRY

Following on our recent discussions I thought it might be useful to you to have the up-to-date figures for the flow of income to the UK not normally accounted through Departmental channels.

Up to December 1987 49% of all JET contract expenditure was placed with UK industry, the actual value of the UK component being as follows:

	MECU	£m
Up to December 1983	123	72
Contracts in 1984	26	15
" " 1985	30	18
" " 1986	45	30
" " 1987	43	30
TOTAL TO DECEMBER 1987	267	165

(source JET Annual Reports and JET Contracts Branch for Dec '87 figure, average ECU/£ exchange rates used for the year).

This does not include the income from JET to the UKAEA under the Host Support agreement which is currently running at about £13M per annum. Also the sterling salaries and wages of JET staff is currently £7M per annum, most of which will be spent in the UK, and the European School provides some additional income. The total income from JET to the UK is therefore about £50M per annum.

I hope you find this information useful in your current discussions.

Yours sincerely

DR

D R Sweetman

Copy to W M Lomer

Annex A - MANNING LEVELS

Culham Laboratory Manpower Strengths at 31.12.87

		Non-Industrial		Industrial	Totals
		Prof	Non-Prof		
A	Culham	268	315	280	863
B	JET i. UKAEA Staff	131	93	-	224
	ii. Euratom	104	49	-	153
	Sub-Totals	503	457	280	1240

C	Total Contractors on Site:	i. Culham	230	
		ii. JET	259	
	Sub-Total		489	489
			GRAND TOTAL	1729

(Contractors include cleaners, tea ladies, taxi-drivers and more general civil, electrical etc contractors).

cc Bury

PA

PRIME MINISTER

MEETING OF E(ST): 14 JULY

The precise agenda is yet to be settled, but E(ST) will need to take papers by Mr. Parkinson on fusion and Mr. MacGregor on agricultural R & D.

I enclose an advance copy of the MAFF paper. You will recall Mr. MacGregor's extreme reluctance to find more than £25 million savings in near market R & D. Last week you stopped him making a public statement that savings were being sought "of the order of" £25 million. Most of his paper is taken up by lengthy descriptions of how difficult it all is, but at the end of it he has now come forward with a higher figure of £30 million savings. The main issue for the meeting on this item will be how much further to push him.

PAUL GRAY
8 July 1988

KAYAIB

ADVANCE COPY.

THIS DOCUMENT IS THE PROPERTY OF HER BRITANNIC MAJESTY'S GOVERNMENT

E(ST)(88)18
8 July 1988

Copy No 60

CABINET

MINISTERIAL STEERING COMMITTEE ON ECONOMIC STRATEGY

SUB-COMMITTEE ON SCIENCE AND TECHNOLOGY

REVIEW OF AGRICULTURAL DEPARTMENTS' R & D PROGRAMMES

Memorandum by the Minister of Agriculture, Fisheries and Food

---

Introduction

1. At the meeting of the Sub-Committee on 26 May I was asked to produce a progress report in July on the savings that might be available from the Agriculture Departments' R & D programmes from transferring to industry the funding of near market work. At the previous meeting, I was invited, in consultation with my agricultural colleagues, to consider whether the target for industry funding should be put above the level of £24.7 million identified in the review report. It was accepted that it would take time to establish the extent to which industry would take over responsibility for the near market R & D work. This memorandum is, therefore, based on initial discussions with some of the relevant sectors of industry.

not whether; he was told E(ST) thought no savings should be more RCG

2. I have examined again the analysis in the review report against the background of our commitment, which I fully support, to secure industry funding of near market R & D or to terminate the work if such funding is not forthcoming. After careful consideration, I have concluded that the basic analysis in the report is sound, although much work remains to be done to flesh out and implement its conclusions. However, I foresee substantial problems in attracting significantly increased levels of industry funding for near market R & D from the agriculture

CONFIDENTIAL CONFIDENTIAL CONFIDENTIAL

horticulture, food and fisheries sectors. Nonetheless, we do need to find resources to support the more fundamental scientific work and I have therefore considered how we might find rather more than the £24.7 million identified in the report.

Consultation with sectors

3. With this in mind, I have been concerned to press ahead as quickly as possible with the necessary discussions with industry representatives. The aim is to agree a phased transfer of the responsibility for funding the near market work. As already agreed, I am carrying out a programme to bring together within 12 to 18 months detailed proposals for industry funding, making it clear that Government support for these programmes will cease and that present levels of near market R & D can only be sustained through industry support. This will enable me to develop action plans for the transfer of funding and to assess the implications and costs of closures of establishments and any necessary redundancies. We have begun a series of meetings with the individual sectors concerned and progress to date is as follows.

The Corporate Sector: Fisheries and Food

4. I have pressed the corporate sector for increased funding and we are having a series of meetings with the food manufacturers, the agricultural supply industries and the major food retailers. The food manufacturers and the supply industries, including the major agrochemical producers, are funding some pre-competitive research on a collaborative basis and it should be our objective to persuade them to extend the scale of these collaborative ventures, based on publicly supported underpinning science. These industries also carry out substantial in-house research to meet individual companies' commercial needs. The reaction so far has been discouraging but we will be pressing for constructive responses vigorously and systematically. The major food retailers argue for the most part that it is not for them

CONFIDENTIAL CONFIDENTIAL CONFIDENTIAL

directly to fund R & D for the agricultural, horticultural and food sectors. They expect to pay through the price to their suppliers. They see no need or justification for funding research which will not afford an exclusive economic benefit. If the UK industry fails to match overseas suppliers in price and quality, they make no bones about the fact that they will go abroad.

5. The size of the fisheries and food programmes is relatively small. Those programmes not identified as near market in the review (the majority of the spend) are concerned with various types of research which are needed to support policy or meet statutory and public good requirements. We are under increasing pressure to find additional resources to support research on, for example, aspects of nutrition, food quality and safety and various fisheries issues relating to the fresh water and marine aquatic environment. We are in fact currently having to cut back research in these sensitive areas. A difficult issue will arise in Scotland where the review report's recommendations would result in a substantial decrease in the funding of the Torry Research Station at Aberdeen which will call into question the viability of this station. I am currently considering its future.

Agriculture and Horticulture

6. Farmers and horticulturists are together raising some £20 million annually for R & D, about half of which is collected through levy systems. This represents a doubling of funding since 1985; in current circumstances this is a substantial achievement. The forward plans of the major levy bodies (Home Grown Cereals Authority, Meat and Livestock Commission, Horticultural Development Council) envisage some increase in funding over the next 2-3 years. We are pressing them to revise their plans and come forward with additional funding but their

CONFIDENTIAL CONFIDENTIAL CONFIDENTIAL

response will be conditioned partly by the special circumstances to which I refer below and partly by their perception of the Government's long term intentions. It is not that those concerned see no need for near market R & D programmes but because of particular circumstances in these sectors.

7. These special circumstances include notably:-

(a) Both sectors are made up almost entirely of very small businesses whose individual capacity to fund R & D directly is limited by their own modest resources and who are only likely to contribute through a levy system. In this respect, the situation differs from that in any other sector concerned with Government R & D.

(b) Agricultural incomes are falling as a result of the actions taken to reform the CAP and producers are apprehensive about their future prospects. We must expect these pressures on farm incomes to continue even though incomes have been falling, and are likely to continue when incomes in other sectors are increasing. This must affect not only farmers' willingness but also their ability to pay;

(c) Governments in other member states have shown that they are ready to give direct support to their agriculture and food sectors. We have frequently stated that we intend to ensure that our own industry is not put at a competitive disadvantage.

(d) Farmers and growers have in the last year had to face other new Government charges like those for advice, analytical services and for statutory inspections of farm dairy premises.

CONFIDENTIAL CONFIDENTIAL CONFIDENTIAL

CONFIDENTIAL

Horticulture

8. There are some additional considerations in relation to horticulture. Most of this sector receives no support under the CAP. The total of near market horticultural R & D is about £10 million, while the Horticultural Development Council (HDC) is raising only around £1 million from the larger growers. Much of the produce goes direct from the grower or his cooperative to retailer and competition (including imports) is severe, with margins very small. The industry has responded well to pressure for it to fund more of its R & D, and there is the prospect of some extra funding; but it is unlikely that it will be able to raise significantly increased sums over the next few years. Horticulture is the sector most directly affected by the food retailers' refusal to fund R & D. But there is also a particular problem of timing. The continued existence of the HDC hangs on a poll of producers which has to take place in 1989. There are already great problems over free-riding since small producers do not pay the levy. This is causing resentment amongst larger producers. If we now ask growers to increase the funding 10 fold, there is a real risk that we would precipitate an adverse vote. Already there is great alarm in the horticultural sector as a result of the first meeting, and they are arguing that horticulture is being asked to bear a disproportionate burden which it will be impossible for the sector to bear.

9. If there is an adverse vote, there will be no HDC levy and we should then have no credible policy for helping the horticulture sector to meet increasing competition from such as the Dutch, French and Spanish. As the review report recognised, we shall need to develop arrangements for collaborative funding of individual projects. We shall also need to be looking in this sector in particular for a rationalisation of existing research facilities in the Ministry and AFRC with the objective of increasing value for money.

CONFIDENTIAL

CONFIDENTIAL

Mechanisms

10. Because the agricultural and horticultural industries are comprised of so many small and disparate businesses, our policy has been based upon encouraging individual sectors to accept voluntarily (supported where appropriate by a poll of producers concerned) the payment of levies to raise funds for R & D, through statutory bodies like the HGCA, the MLC and the HDC. This has been the only way of getting producers to accept increased funding. In some sectors, producers have come together to create voluntary research clubs. We are examining whether this approach can be further developed. But it seems to have limited application and there is a problem of free-riding by those who are not prepared to pay. The Sub-Committee expressed strong reservations about additional levies being charged on industry. I agree that we must look for other mechanisms in sectors where levies are not applicable. But unless we are ready to see the increased use of statutory levies for R & D where the producers collectively accept this, I think we have to face the fact that the scope for increased contributions from farmers and horticulturists will be very limited.

Transfer to Industry Funding

11. Against this background, £25 million is a very difficult target to ask industry to aim for. The total R & D spending by Agriculture Departments has fallen from £194 million to £166 million at 1987/88 prices since we launched the industry funding initiative in 1984. A further reduction of £25 million following the review report would mean a total reduction in real terms of 27 per cent. Industry is particularly concerned that we should come up with a firm and final target. Until we given them a clear figure, they will suspect that we will go on asking for more. This is what they think we have been doing and they are suspicious that we shall move the goalposts yet again once their responses have been received. With this in mind, I have

- still very large.

£136

CONFIDENTIAL

Goal Posts

Near market research.
Redundancy £35m.

reluctantly concluded that we should press industry to fund £30 million (at full economic cost) of near market research, on the basis that this is a firm figure and that Government funding of the work concerned will cease. I shall need to consult further with agricultural colleagues on the details of the way in which this reduction would affect their R & D programmes. But I propose to include within the figure £2 million of near market work at the National Institute of Agricultural Botany on trialling in support of the recommended list of seed varieties which was identified following a separate internal review.

Timing and Costs

12. A reduction in expenditure of this magnitude will take time to implement. If we are too precipitate we risk closing down programmes and losing the potential for support even of those areas where industry may be ready to invest. We would also incur substantial costs for restructuring and redundancy. It is essential therefore that the further reductions in public spending are of a level, and carried out over a timescale, which allows leaders of the industry sufficient time to change attitudes and make the necessary adjustments to their own organisations and procedures. In order to provide a reasonable timescale, and allow those concerned the best chance of taking over Government-supported work and so keep costs down, I suggest we give industry 4 years in which to take over the funding after their detailed proposals have been received.

13. I should note that where restructuring and redundancy are required, I and my Agricultural colleagues have no financial provision for the costs, and we shall require additional provision for this purpose.

Presentation

14. The consultations with industry representatives on the

CONFIDENTIAL CONFIDENTIAL CONFIDENTIAL

drawing up of action programmes have begun, and as a result damaging speculation is rife. It is therefore highly desirable that I should make a statement now, describing the policy framework and including the total value of the research programmes we are looking to industry to fund. Industry is asking for a clear prospectus of what it is we are looking to them to fund. We are setting out the details of the programmes involved. It is also vital to assure them of the timetable we propose to follow, so that a firm basis for industry funding can be established.

15. For these reasons, I need to clear the air and make a policy statement to Parliament putting our discussions with the industry in context and making clear that we will not be seeking further switches of funding to industry during the period of transfer.

Conclusion

16. To sum up, I and my agricultural colleagues have carefully re-examined the review report. We endorse its basic analysis which provides a sound foundation on which to carry forward Government policy in this area. But we accept that we should seek industry funding for a larger amount than the report identified above, although I must not disguise the very great difficulties of securing this and the likelihood that we shall be faced with substantial costs of closure and redundancies.

17. I therefore ask the Sub-Committee to:

- endorse the basic analysis in the review report but agree that the industry funding target for near market R & D should be £30 million, with detailed proposals from industry to be received within 12-18 months and a phased transfer of funding implemented within a further 4 years;

- agree to the issue of an immediate statement giving these

CONFIDENTIAL CONFIDENTIAL CONFIDENTIAL

details and assuring industry that we shall not be seeking further switches of funding during the transfer period, so that we can press ahead with the necessary consultations to develop the action programmes;

- agree that additional provision will be needed for the Agricultural Departments and DES to meet the costs of closure and redundancies.

J. M.

Ministry of Agriculture, Fisheries and Food
8 July 1988

CONFIDENTIAL
CONFIDENTIAL
CONFIDENTIAL

FCS/88/128

CDP
7/7.

CHANCELLOR OF THE DUCHY OF LANCASTER

International Collaborative Projects in Science and Technology

WILL REQUEST IF REQUIRED

1. I have seen John Fairclough's letter to you of 30 June, detailing two specific proposals for ensuring more timely consideration and better coordination of future decisions on major collaborative ventures.

2. As you know, I am anxious to see established a coherent, collective approach to these collaborative projects. I think the timetable of forthcoming decisions enclosed with John's letter will be a valuable tool in achieving this and I am grateful to him for all the work that has gone into its preparation. Regular updating will, of course, be essential if it is to retain its value and I would hope that this could be done at least every six months, and possibly more frequently if there is sufficient activity in any particular period to warrant this.

3. I also strongly support the aim of establishing, as standard practice, the inclusion of a reference to related issues in all proposals for collective decision on international S&T matters. This will be of great importance if we are to achieve the coherent approach to these projects which we all agree to be necessary.

/4.

4. I am copying this minute to John Fairclough and the recipients of his letter to you.

(GEOFFREY HOWE)

Foreign and Commonwealth Office
7 July 1988

CONFIDENTIAL

iael.mg.docs/4.1.7

GCBG

H M Treasury

Parliament Street London SW1P 3AG

Switchboard 01-270 3000

Direct Dialling 01-270 4650

P Gray Esq
10 Downing Street

1 July 1988

RA

Dear Paul

AGRICULTURAL R&D

You may like to see the enclosed exchanges between ourselves, Cabinet Office and MAFF which form the background to the Minister of Agriculture's minute of yesterday to the Prime Minister. I understand that Mr MacGregor also spoke to the Chief Secretary over the weekend but have seen no record of their conversation. The Chief Secretary is out of the office today. So I do not know whether he will wish to intervene in the correspondence with the Prime Minister. Perhaps you could let me or Jill Rutter know if that would be helpful?

Yours

Bob

R J BONNEY

CABINET OFFICE

70 Whitehall London SW1A 2AS Telephone 01-270

Mr Bonney
CX Sir Peter Middleton
Mr Anson Mr Monck
Mr Burgner Mr Turnbull
Mr Gieve Mrs Imber
Mr Call.

CONFIDENTIAL

P 03155

Mrs S Stagg
P/S to the Minister of Agriculture, Fisheries and Food
MAFF
Whitehall Place
LONDON
SW1A 2HH

24 June 1988

Dear Shirley,

REVIEW OF AGRICULTURAL R&D: MINISTERIAL ANNOUNCEMENT

We spoke earlier today about the draft Parliamentary announcement which Chris Barnes circulated on 15 June. I understand that your Minister will be considering this further over the weekend.

You helpfully made the point to me that your Minister would not wish to say anything which conflicted with decisions of E(ST) or which he could not carry with his colleagues collectively. The position, as you know, is that the Sub-Committee on 9 May concluded that they felt that more than £24.7 million out of the total agricultural R&D programme of £166 million should be transferred to industry funding or terminated if industry was unwilling to pay. It is clearly important not to pre-empt the further discussion which is to take place about the amount to be found. You may wish to see the attached letter which I have already sent Chris Barnes on the point.

I am sending a copy of this letter to Jill Rutter in the Chief Secretary's private office.

Yours sincerely,

Richard Wilson

R T J WILSON

CABINET OFFICE

70 Whitehall London SW1A 2AS Telephone 01-270

P 03154

CONFIDENTIAL

C J A Barnes Esq
Ministry of Agriculture, Fisheries and Food
Great Westminster House
Horseferry Road
LONDON
SW1P 2AE

23 June 1988

Dear Chris,

REVIEW OF AGRICULTURAL R&D: DRAFT MINISTERIAL STATEMENT

Thank you for sending me a copy of your letter to Bob Bonney of 15 June.

I ought perhaps to record what I said when we spoke on the telephone last week. It seems to me that the draft statement which you circulated is not consistent with the position reached in E(ST). The Sub-Committee have invited your Minister, in consultation with the Secretaries of State for Wales, Northern Ireland and Scotland, to re-examine whether more than £24.7 million of the total agricultural R&D programmes should be considered for industry funding and to produce a progress report in July on the amount of savings which will be available from these programmes for re-allocation to science and technology activities of higher priority. (E(ST)(88)88 3rd Meeting, conclusion 7 and E(ST)(88) 4th Meeting, conclusion 2). To announce a specific figure now would risk pre-empting this further discussion in E(ST). If your Minister does wish to proceed with some form of public or Parliamentary statement on this subject, I think it is essential that he clears it in draft with the Prime Minister and other members of E(ST) in good time beforehand, so that they have an opportunity to comment.

I am copying this letter to Bob Bonney (Treasury), David Tanner (DES), the regional Agricultural Departments and Vivian Brown (Cabinet Office).

Yours ever,

Richard.

R T J WILSON

J I Davies Esq MBE, Agriculture Department, Welsh Office, Cathays Park, Cardiff, CF1 3NQ
W H Jack Esq, Department of Agriculture for Northern Ireland. Dundonald House, Upper Newtownards Road, Belfast, BT4 3SB
L P Hamilton Esq. Department of Agriculture and Fisheries for Scotland, Chesser House, 500 Gorgie Road, Edinburgh, EH11 3AW

iael.mg 1.20.6

CONFIDENTIAL

H M Treasury
Parliament Street London SW1P 3AG
Switchboard 01-~~233~~ 270 3000
Direct Dialling 01-~~233~~ 270 4650

R Wilson Esq
Cabinet Office

20 June 1988

Dear Richard

REVIEW OF AGRICULTURAL R&D: DRAFT MINISTERIAL ANNOUNCEMENT

We spoke last week about MAFF's letter to me on this subject and you will by now have seen my reply. You may also like to see Jill Rutter's minute of 17 June below which reports the Chief Secretary's reaction to this exchange. May I leave it to you to take any further action you feel desirable to reinforce the message which we have both already given to MAFF?

Yours sincerely

Bob Bonney

R J BONNEY

bcc Mr Burgner
Mr Donovan

005/2761

CONFIDENTIAL

FROM: JILL RUTTER
DATE: 17 June 1988

MR BONNEY

cc:
Principal Private Secretary
Mr Anson
Mr Monck
Mr Burgner
Mr Turnbull
Mrs Case
Mr Donovan
Mr Call

REVIEW OF AGRICULTURAL R & D: DRAFT MINISTERIAL ANNOUNCEMENT

The Chief Secretary has seen your minute of 16 June.

2 Given that Mr MacGregor is seeking to make a statement which conflicts with the conclusions of a Cabinet Committee the Chief Secretary feels that Mr Wilson in the Cabinet Office ought to make clear to MAFF that their proposal is quite unacceptable and should not be considered further.

3 The Chief Secretary is not keen on talking to Mr MacGregor himself about this issue.

JILL RUTTER
Private Secretary

2.16.6IAE1

CONFIDENTIAL

604

FROM: R J BONNEY
DATE: 16 JUNE 1988

PS/Chief Secretary

cc PPS
Mr Anson
Mr Monck
Mr Burgner
Mr Turnbull
Mrs Case
Mr Donovan
Mr Call

REVIEW OF AGRICULTURAL R&D: DRAFT MINISTERIAL ANNOUNCEMENT

You will wish to be aware of the following exchange of letters with MAFF on the above subject.

2. MAFF say they want to make a brief announcement about discussions with the industry on increasing industry funding of near market agricultural R&D in order to forestall requests for publication of the long MAFF paper on this subject which was recently discussed by EST. We have taken the line (which is supported by the relevant Cabinet Office officials) that it would be quite inappropriate for Mr MacGregor to make a statement which refers to £25 million as the target for industry funding, when EST has invited him to report back by the end of July on the scope for increasing this figure. We frankly doubt whether there is any real need to make a statement at all at this stage but this is clearly a matter for political rather than official judgement and we have advised MAFF that they should clear their lines first with the Prime Minister as chairman of EST.

3. Past precedent suggests thast Mr MacGregor may well try to speak to the Chief Secretary personally on this issue.

R J BONNEY

MINISTRY OF AGRICULTURE FISHERIES AND FOOD
GREAT WESTMINSTER HOUSE
HORSEFERRY ROAD LONDON SW1P 2AE

Direct line 01-216 6737

or Switchboard 01-216 6311

CONFIDENTIAL

R J Bonney Esq
HM Treasury
Parliament Street
SW1P 3AG

15 June 1988

Dear Bonney

REVIEW OF AGRICULTURAL DEPARTMENTS' R & D: MINISTERIAL ANNOUNCEMENT

As you know, at the last meeting of E(ST) my Minister was asked to report back by July on progress towards the transfer to industry funding of that expenditure in the Agriculture Departments' R & D programmes which was identified in the 'Barnes' review as near to the market.

In order to meet the E(ST) remit my Minister proposes to open discussions with industry urgently and has asked officials to set in hand preparations for a series of meetings with leaders of the major sectors. In the meantime, you will no doubt be aware that there is considerable interest in and speculation about this issue both outside and within Parliament. The volume of Ministers' Correspondence is rising; a number of MPs have sought publication of the report; and the Minister is facing mounting pressure for an announcement. He wishes to avoid publication of the report itself but considers it essential that he should make a statement to Parliament as soon as possible and before the start of the discussions later this month.

I attach a text which he has approved and which has been agreed with the other Agriculture Departments. The intention is that this should issue next Wednesday 22 June. I should therefore be grateful for your agreement as soon as possible. I am copying to Richard Wilson and Vivian Brown (Cabinet Office), the Agriculture Departments and David Tanner (DES).

Yours sincerely

C J A BARNES

cc Mr Wilson
Mr Brown
Mr Weeple (DAFS)
Mr McMurray (DANI)
Mr Bollington (WOAD)
Mr Tanner (DES)

IN CONFIDENCE

R & D: STATEMENT ON THE FOLLOW-UP TO THE BARNES REPORT

Draft Question

To ask the Minister of Agriculture, Fisheries and Food if he will make a statement of the Government's policy on the funding of research and development for agriculture, fisheries and food in the light of the recent review.

Draft Answer

The Government has now re-examined the research and development programmes of the Agriculture Departments in order to pave the way for decisions on those areas of research which should continue to be Government funded and those which should more appropriately be funded by industry. The Government intends to concentrate available resources on the funding of basic and strategic research, as well as on "public good" research on matters relating, for example, to conservation and the protection of the environment, food safety, animal, plant and fish diseases and animal welfare.

It is the Government's view that industry is best able to decide on the research needs close to direct application from which it derives early commercial benefits and that decisions on these programmes should be market driven and funded directly by industry. In this way it is more likely that full value for money will be achieved, that appropriate priorities will be met and that the maximum exploitation will be undertaken.

We shall, therefore, be looking to industry to fund near market research programmes totalling in the region of £25 million, including the £5 million in 1989/90 and £10 million in 1990/91 announced in the Public Expenditure White Paper published in January of this

year. Further discussions will be taking place shortly with individual sectors of the industries concerned about arrangements for transferring to industry the funding of this part of the Agriculture Departments' programme.

The Agriculture Departments will continue to look to the Priorities Board for Research and Development in Agriculture and Food to advise them on the allocation of Government funding, having regard to the priorities and the needs of individual sectors.

CONFIDENTIAL

DA

file cc/s

10 DOWNING STREET

LONDON SW1A 2AA

From the Private Secretary

1 July 1988

Dear Shirley,

R & D STATEMENT

The Prime Minister has seen your Minister's minute of 30 June.

The Prime Minister recalls that at their meeting on 9 May E(ST) felt that more than £24.7 million of the total agricultural R & D programme should be transferred to industry funding or terminated if industry was unwilling to pay. She does not think it would be appropriate for your Minister to make a statement until he has obtained E(ST)'s approval to the scale of savings to be sought.

I am copying this letter to Jon Shortridge (Welsh Office), David Watkins (Northern Ireland Office), David Crawley (Scottish Office), Jill Rutter (Chief Secretary's Office) and Trevor Woolley (Cabinet Office).

Yours,
Paul

(PAUL GRAY)

Mrs. Shirley Stagg,
Ministry of Agriculture, Fisheries and Food.

6

CONFIDENTIAL

Covering RESTRICTED

CABINET OFFICE

70 Whitehall London SW1A 2AS Telephone 01-270 0259

From John W Fairclough FEng
Chief Scientific Adviser

W0707

Rt Hon Kenneth Clarke QC MP
Chancellor of the Duchy of Lancaster
Department of Trade & Industry
1 Victoria Street
London SW1

30 June 1988

Dear Chancellor,

INTERNATIONAL COLLABORATIVE PROJECTS IN SCIENCE AND TECHNOLOGY

You will recall correspondence earlier this year with yourself, the Defence Secretary and the Foreign Secretary about how we might improve forward planning of decisions on international collaboration in the field of science and technology. We had recently emerged from a bouncy ride on the European Transonic Wind Tunnel. My concern was not to create new machinery, but to make better use of what we have. Your view was that it would be helpful to have a clear statement of what I had in mind and of how in practice it would operate.

My proposal consists of two simple objectives on which I think we are now agreed.

First, we should have early warning of major S & T decisions coming up for discussion. To this end I offered to collate and circulate a timetable of forthcoming issues.

Secondly, Ministers would not wish to take decisions without being reminded of the wider context. It should therefore be standard practice that proposals for collective decision on international S&T issues should contain a reference - a paragraph might suffice - to other related issues which might have a bearing, or be affected by the issue in question. Trade-offs are not necessarily implied, though they need not be excluded.

We have prepared a timetable of forthcoming decisions and I enclose a copy of this. It is in two sections: (A) Multilateral and bilateral; and (B) European Community. It is intended to give Departments advance information of items in which they may have an interest and should help them in meeting both the objectives set out above. It does show where key decisions have already been identified for collective discussion.

I am very happy to provide this information to Departments on a regular basis, updating and circulating it to Departments perhaps at 6 monthly intervals. I would therefore ask that, to this end, Departments should continue to keep my people informed of their plans.

We have drawn on Departments' advice in compiling the present list, although the responsibility for its contents is ultimately ours. We are aiming at a moving and varied target and some parts will become outdated more quickly than others. This need not call into question the whole exercise. I believe we should in any case review the working of these arrangements in about a year's time.

I am copying this letter to the Prime Minister, the Foreign Secretary, the Secretary of State for Defence, other members of E(ST) and Sir Robin Butler.

Yours sincerely,

JOHN W FAIRCLOUGH

att.

RESTRICTED

INTERNATIONAL COLLABORATIVE PROJECTS
SUMMARY OF FORTHCOMING DECISIONS

A. MULTILATERAL AND BILATERAL

B. EUROPEAN COMMUNITY

(as at 1 July 1988)

	lead Department (others)	key dates
A. MULTILATERAL AND BILATERAL		
Defence		
(i) EFA Memorandum of Understanding for the development phase signed by FRG, Italy and UK on 16 May. Signature of Spain expected as soon as Spanish Government processes completed.	MOD (DTI)	
(ii) NATO Frigate Replacement (NFR) Project Definition stage now agreed; further continuation dependent on progress in matching missile and ship programmes.	MOD	
(iii) European Defence Industry Study Follow up action on Study's recommendations advocating greater cooperation and more open competition for defence requirements with Europe	MOD	

In the longer term:

(iv) Medium Surface to Air Missile (MSAM) (Bloodhound/Hawk replacement Ministerial endorsement unlikely before 1989	MOD	1989

Space

(i) European Space Agency

(a) **Columbus** (Polar platform). UK applied to join at 5.5%. Affirmative decision on admission to programme was taken by the ESA Council on 28/29 June.	DTI	
(b) **Horizon 2000** (science programme). UK alone in vetoing 5% pa increase; now agreed to study further ESA analysis of implications of no increase. Level must be resolved by end 1988, will be discussed at October ESA Council.	SERC	October & December 1988
(c) **ARAMIS** (mobile communication payload for INMARSAT satellite) INMARSAT Council (UK representative B.Telecom) in late July to review revised proposals. DTI to consider policy in light of INMARSAT conclusions, and revised proposals to come from main UK contractor Marconi.	DTI	October 1988

(ii) Spectrum X (Russian Project) UK invited to join. SERC Council approved proposal at June meeting. DES approval now being sought.	SERC (DTI)	

(iii) British National Space Centre (BNSC) The Chancellor of the Duchy to report to colleagues before summer recess on his review of structure and organisation of BNSC	DTI (MOD, DES (SERC/ NERC))	July 1988
Nuclear Energy		
UK participation in international fast breeder reactor programme currently under review. Progress report to E(ST) due in July.	D/En	July 1988
Science		
(i) Japanese Human Frontier Science Programme (HFSP) Report of feasibility study noted in Toronto Economic Summit declaration. Japanese proposal expected soon. Form of UK participation to be decided in the light of these.	DES (FCO (MRC & SERC))	September 1988
(ii) CERN Negotiations under way on reducing costs, and implementation of Abragam review. Mr Jackson (PUSS.DES) attended CERN Council in June. Need to decide by end year if UK to withdraw on 31 December 1989. Report to E(ST) following CERN Council in October.	DES (SERC)	October, December 1988 (deadline)
(iii) Ocean Drilling Program (ODP) If insufficient funds can be raised, a decision for the UK to withdraw will have to be taken well before end September. Industry now being consulted. Ministers may need to be consulted if such decision becomes necessary.	DES/ NERC (DTI D/En)	30 Sept 1988

(iv) Summit Bioethics Conference The Toronto Economic Summit 19-21 June accepted a European Commission offer to hold a conference of experts on bioethics from the Economic Summit Countries in Spring 1989. The UK may be expected to host a similar conference, possibly in 1991.	Cabinet Office (DHSS DOE, DES, FCO HO MAFF)	Spring 1990 (at the latest)
(v) Synchrotron Radiation ESRF UK now accepted as member. Construction phase begun under a protocol for 1988. Convention still in draft; had hoped to be signed by Ministers in second half 1988; but extension of protocol may now be necessary.	DES/SERC	December 1988
(vi) Neutron Sources (a) ISIS (UK spallation neutron source, RAL) bilateral arrangements agreed in principle with Sweden, Netherlands and France. Negotiations advanced with Italy. Wider FRG participation desirable.	DES/SERC	
(b) ILL (Institut Laue Langevin, Grenoble) (UK/FRG/France) Option to reduce UK subscription in 1992. DES/SERC to consider further in light of need to save costs.	DES/SERC	1991/92

Environment

Assessment of ozone damage; UK Ozone Review Group to produce second report approx September 1988.	DOE	September 1988
International Task Force on North Sea - inaugural meeting held March 1988. Next Quality Status Report to be prepared in 1989.	DOE	1989
North Sea Project: 5 year programme planned to 1991/92. 15 months field study phase starts August.	NERC (MAFF)	August 1988
World Ocean Circulation Experiment (WOCE) - largest oceanographic experiment ever attempted; collaboration between Europe, USA and Japan. Proposals to be discussed at International Scientific meeting, Paris November 1988.	NERC	November 1988

In the longer term:

Possible revisions to Montreal protocols to Vienna Convention on Protection of Ozone Layer (1990)	DOE	1990
North Sea Conference 1990	"	1990
World Climate Conference (1990)	"	1990
Ministerial meeting of Oslo/Paris Commission in 1991.	"	1991

Industrial Collaboration — DTI

The EUREKA organisation is reviewing progress to date; UK also reviewing Government support.

Metrology EUROMET (EC and EFTA collaboration) (co-operation in measurement standards and collaboration) DTI review of progress.	DTI	
"Autoguide" Traffic Guidance UK/FRG collaboration continuing. Extensions foreseen through Prometheus and possibly other EUREKA projects.	DTp	
Vehicle Noise The standard for test tracks set by the International Standards Organisation to be agreed	DTp	
Transport Possible legislation on harmonised text procedures for pedestrian protection (via European Experimental Vehicle Committee)	DTp	1989?
Bilateral S&T Relations		
Hungary 1988-90 Co-operative S&T Research and Development Programme negotiated in March. 10 collaborative projects agreed; 14 will be pursued subject to mutual agreement.	British Council	
Korea Mixed Commission talks were held in June 1988 and covered educational & cultural areas, with report on 1987 S&T talks.	"	
Japan Mixed Commission, late 1988 (may be delayed to mid 1989)	"	late 1988

B. EUROPEAN COMMUNITY

Aerospace Commission paper on "EUROMART" discussed at 29 June Research Council and referred to COREPER. 60 mecu initial programme sought by Commission.	DTI (MoD, FCO)
Energy Energy Demonstration Programme, present Regulation runs out 31 Dec 1989; discussions on replacement programme mid 1988.	DEn
Non nuclear R&D; Present regulation falls on 31 December 1988, continuation under Framework agreed. Discussions on detailed programme to 1992 nearly complete.	"
Technology Development in Hydrocarbon Sector present regulation - 35 mecu p.a. - falls on December 1989); evaluation under way. A replacement programme expected, but discussions not yet started.	"
Fusion Common orientation on the Community 1988-91 Fusion Programme, and Extension of JET Statutes adopted at 29 June Research Council. Evaluation due in 1989.	DEn

Environment		
Radio-active Waste Management Research programme - review; proposal awaited from Commission.	DOE	
Environment Research Programme revision - rolling programme to start mid 1989. (Environmental protection. Climatology. Natural Hazards, Major Technological Hazards, Cultural Heritage), intention to finish CGC discussion in September 1988.	DOE	September 1988
European Commission Joint Research Centre		
1988-91 programme. Common position adopted at 29 June Research Council. Part of EC Framework Programme.	Cabinet Office (DEn, DOE DTI)	
Education and Training		
Commission proposal for extention of COMMETT expected October	DES	October 1988
Technology Transfer	DTI	
Commission proposal for Phase II of SPRINT (Strategic Programme for Innovation and Technology Transfer) expected mid 1988).		
Transport		
Transport Research Programme. No major programme envisaged but the Commission may seek to devote some of the unallocated 25 mecu of section 2.3 of the Framework to transport topics	DTp	
European Experimental Vehicle Committee (EEVC) work on harmonising test procedures on: - side impact - safer steering wheel (late 1988)	DTp	

Agriculture		
Collaborative Linkage of Agriculture and Industry through Research (ECLAIR): debate in Council Working Group to be resumed in July 1988.	MAFF	July 1988
Food Technology (FLAIR): Proposals received; formal negotiation about to begin.	MAFF	July 1988
Medical Informatics		
AIM. Delayed in European Parliament. Council Common position expected in Autumn 1988	DHSS	Autumn
Large Scientific Facilities	DES	July 1988
Programme for Community support. Debate in Council Working Group to be resumed in July 1988		
Forecasting etc		
FAST III. Negotiations continuing in Autumn 1988.	DTI	Autumn

Cabinet Office
July 1988

CCP/0

PRIME MINISTER

PROPOSED STATEMENT BY MR. MACGREGOR ON R&D

I think you may find the attached minute of 30 May from the Minister of Agriculture a bit tiresome. He has been trying to persuade the Chief Secretary that he should make a statement about the scale of near-market R&D savings he is seeking to make. The Chief Secretary has been resisting on the grounds that this:

(i) is unnecessary;

(ii) pre-empts E(ST)'s future decisions.

You will recall that the scale of agriculture R&D near-market savings was discussed at E(ST) on 9 March. You pressed the Minister very strongly to find more than the savings of £24.7 million already identified. Your summing up was that the Committee "~~avert~~ agreed that more than £24.7 million out of the total agricultural R&D programme of £166 million should be transferred to industry's funding, or terminated if industry was unwilling to pay".

You may also like to glance at Richard Wilson's minute of 29 June, which warned that Mr. MacGregor might approach you. That minute reveals that Mr. MacGregor had been pressing for a form of words that would undoubtedly have prejudiced E(ST)'s position - ".....totalling in the region of £25 million". In his minute to you, Mr. MacGregor now proposes "....totalling not less than £25 million".

Even on this revised basis, I think E(ST)'s position would be pre-empted. Once the single figure of £25 million is quoted it would be very hard to get more. And, like the Chief Secretary and the Cabinet Office, I find Mr. MacGregor's arguments about the need for a statment less than compelling.

The options seem to be:

(i) agree to what Mr. MacGregor proposes;

If you are not happy with this:

(ii) resist any statement at this stage until Mr. MacGregor has obtained E(ST)'s approval to the scale of savings he should be seeking;

(iii) agree a statement now but without any figures being quoted, but including some words such as "substantial";

(iv) agree a statement saying savings are being sought in the range of, say, £25-40 million. (I gather John Fairclough thinks £30 million is probably a realistic target).

Which of these four options do you favour?

PAUL GRAY

30 June 1988

PAMACQ

CONFIDENTIAL

CCP/0

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
WHITEHALL PLACE, LONDON SW1A 2HH

From the Minister

PRIME MINISTER

R & D STATEMENT

I am very sorry to have to trouble you over a presentational question relating to the handling of the follow-up to our discussion on R & D funding, but the Chief Secretary and I are disagreed over it and I regret therefore that I have to do so.

3RD WITH PS 29.6

The conclusions of the E(ST) meeting on 9 May require industry to come forward within the next 12-18 months with proposals for funding those programmes identified as near market or to accept that Government funding of these would cease. At the further meeting of E(ST) on 26 May I was asked to produce a progress report for discussion in July. The July meeting of E(ST) has as yet not been scheduled.

ATTACHED

I explained at the E(ST) discussion that, while I am wholeheartedly committed to the policy of transferring to industry the responsibility for funding near market R & D, it would not be possible to give more than an interim report in July. A great deal of further analysis and detailed discussion with industry is needed before I can put considered views to colleagues about the amount of funding which the agriculture and horticulture industries are capable of raising and about the methods necessary to do this. I have been keen to press forward with the necessary consultations with industry before our July discussion.

There is already a great deal of Parliamentary, press and trade interest in this issue, and I am anxious to promote our policy in a positive way and not be put on the defensive. It is highly desirable therefore that I should be able to make a statement now setting out the policy framework for the discussions with industry, including an indication of the total level of industry funding which we have in mind. There are a number of reasons why I need to make a statement of this sort.

First, we have begun the consultation process, and in the next two weeks have a series of meetings with all parts of the industry, presenting them with a firm prospectus of what it is that we want them to fund. This means the near certainty that the whole issue will leak, and as we are having to circulate details of the research programmes we have in mind, it will be possible for someone to add up the figures.

Second, we are coming under increasing pressure from both Houses of Parliament to make a statement of the amount of near market work we want industry to fund. We lose all credibility while we duck this

/question ...

CONFIDENTIAL

question and I am concerned that we may face criticism for not keeping Parliament fully informed. I am going to come under further pressure in Parliament and more generally in public including, for example, at next week's Royal Show. Members of the Lords Sub-Committee which is carrying out an enquiry into agricultural R & D are planning to come to the Show and I am sure that I shall be pressed to define clearly what our policy objectives are.

Third, there are the interests of the staff in the agricultural departments, the AFRC and the Scottish research establishments. There is much concern among them, and many rumours are circulating. With the issuing of the lists of near market projects as the basis for the industry meetings, this means inevitably that the staff, as well as the industry representatives, are likely to speculate, including in the press, as to which areas of research and which jobs are threatened. It would be so much better to make a clear statement to them ourselves as to the total scale of the research which we are looking to industry to fund.

Until we make a statement on policy, we shall therefore continue to appear indecisive and on the defensive. I am convinced, therefore, that I need to make a statement which includes an indication of the sort of figures of industry funding which we are looking for, along the lines that we are looking to industry to fund near market research programmes totalling not less than £25 million and that this is the basis upon which discussions with industry are proceeding. Such a formulation would be designed to avoid prejudicing the further discussion which we shall be having in E(ST).

I have discussed this with the Chief Secretary who is not ready to agree a statement without my referring this to you. I hope that you will accept that I can go ahead on the basis I have indicated.

I am copying this letter to the other Agriculture Ministers, the Chief Secretary and Sir Robin Butler.

for J M
30 June 1988
(Approved by The Minister and signed in his absence)

The Rt Hon Margaret Thatcher MP
10 Downing Street
LONDON SW1

CONFIDENTIAL

From: R T J Wilson
29 June 1988

P 03159

MR GRAY

cc Sir Robin Butler
Mr Fairclough
Mr Monger o.r.

REVIEW OF AGRICULTURAL R&D

1. I understand from MAFF that the Minister for Agriculture, Mr MacGregor, may approach the Prime Minister in the next week or so about a Parliamentary Answer which he wishes to give on the subject of transferring the funding of near-market agriculture R&D programmes to industry. You may find it helpful to have the background.

2. At its meeting on 9 May E(ST) felt that more than £24.7 million out of the total agricultural R&D programme of £166 million should be transferred to industry funding or terminated if industry was unwilling to pay. They asked the Minister of Agriculture to re-examine whether more than £24.7 million should be considered for industry funding. At their next meeting on 26 May they also asked him to produce a progress report in July on the amount of savings which would be available from these programmes for reallocation to science and technology activities of higher priority.

3. Mr MacGregor now wishes to answer an arranged Parliamentary Question on the subject. He says this is necessary because he is under mounting backbench pressure to do so and because he needs to give industry some idea of the overall savings which he is seeking. His officials have circulated the draft Answer attached.

4. You will see that this Answer includes the statement that the Government will be "looking to industry to find new market research programmes totalling in the region of £25 million". The Chief Secretary has objected to this on the grounds that it would pre-empt E(ST)'s future discussion about the extent of the savings to be found from these programmes, which they might wish to be substantially more than £25 million. I think the Chief Secretary's objection is valid and that the reference to £25 million could pre-empt future E(ST) discussion. At the Chief Secretary's request I have confirmed my view to the Minister for Agriculture's private office. I have also said that if Mr MacGregor still wishes to make a statement, I think he ought to clear his lines with the Prime Minister and other members of E(ST) in the normal way.

5. I understand from the Chief Secretary's office that Mr MacGregor is prepared to modify the wording so as to indicate that the savings may exceed £25 million. Even so there must be some risk that the small print would be overlooked by the agricultural industry and that the figure of £25 million would be regarded as the target. Unless the pressures are overwhelming I would have thought that it would be much better to deal with this in an orderly way and wait until E(ST) has reached a firm decision before Mr MacGregor makes his announcement in Parliament.

RTJW.

R T J WILSON

MINISTRY OF AGRICULTURE FISHERIES AND FOOD
GREAT WESTMINSTER HOUSE
HORSEFERRY ROAD LONDON SW1P 2AE

Direct line 01-216 6737

or Switchboard 01-216 6311

CONFIDENTIAL

R J Bonney Esq
HM Treasury
Parliament Street
SW1P 3AG

CABINET OFFICE
P 3430
16 JUN 1988
FILING INSTRUCTIONS
FILE No.

15 June 1988

Dear Bonney

REVIEW OF AGRICULTURAL DEPARTMENTS' R & D: MINISTERIAL ANNOUNCEMENT

As you know, at the last meeting of E(ST) my Minister was asked to report back by July on progress towards the transfer to industry funding of that expenditure in the Agriculture Departments' R & D programmes which was identified in the 'Barnes' review as near to the market.

In order to meet the E(ST) remit my Minister proposes to open discussions with industry urgently and has asked officials to set in hand preparations for a series of meetings with leaders of the major sectors. In the meantime, you will no doubt be aware that there is considerable interest in and speculation about this issue both outside and within Parliament. The volume of Ministers' Correspondence is rising; a number of MPs have sought publication of the report; and the Minister is facing mounting pressure for an announcement. He wishes to avoid publication of the report itself but considers it essential that he should make a statement to Parliament as soon as possible and before the start of the discussions later this month.

I attach a text which he has approved and which has been agreed with the other Agriculture Departments. The intention is that this should issue next Wednesday 22 June. I should therefore be grateful for your agreement as soon as possible. I am copying to Richard Wilson and Vivian Brown (Cabinet Office), the Agriculture Departments and David Tanner (DES).

Yours sincerely

C J A BARNES

cc Mr Wilson
Mr Brown
Mr Weeple (DAFS)
Mr McMurray (DANI)
Mr Bollington (WOAD)
Mr Tanner (DES)

IN CONFIDENCE

R & D: STATEMENT ON THE FOLLOW-UP TO THE BARNES REPORT

Draft Question

To ask the Minister of Agriculture, Fisheries and Food if he will make a statement of the Government's policy on tne funding of research and development for agriculture, fisheries and food in the light of the recent review.

Draft Answer

The Government has now re-examined the research and development programmes of the Agriculture Departments in order to pave the way for decisions on those areas of research which should continue to be Government funded and those which should more appropriately be funded by industry. The Government intends to concentrate available resources on the funding of basic and strategic research, as well as on "public good" research on matters relating, for example, to conservation and the protection of the environment, food safety, animal, plant and fish diseases and animal welfare.

It is the Government's view that industry is best able to decide on the research needs close to direct application from which it derives early commercial benefits and that decisions on these programmes should be market driven and funded directly by industry. In this way it is more likely that full value for money will be achieved, that appropriate priorities will be met and that the maximum exploitation will be undertaken.

We shall, therefore, be looking to industry to fund near market research programmes totalling in the region of £25 million, including the £5 million in 1989/90 and £10 million in 1990/91 announced in the Public Expenditure White Paper published in January of this

year. Further discussions will be taking place shortly with individual sectors of the industries concerned about arrangements for transferring to industry the funding of this part of the Agriculture Departments' programme.

The Agriculture Departments will continue to look to the Priorities Board for Research and Development in Agriculture and Food to advise them on the allocation of Government funding, having regard to the priorities and the needs of individual sectors.

CCBG

dti

the department for Enterprise

The Rt. Hon. Lord Young of Graffham
Secretary of State for Trade and Industry

Jonathon Taylor Esq
Private Secretary to the
Chancellor of the Exchequer
HM Treasury
Parliament Street
LONDON
SW1P 3AG

Department of Trade and Industry

1-19 Victoria Street
London SW1H 0ET

Switchboard
01-215 7877

Telex 8811074/5 DTHQ G
Fax 01-222 2629

Direct line 215 5422
Our ref PS4AUD
Your ref
Date 23 June 1988

NBPM
(It was in fact copied to us at the time).
RRCG
23/6

Dear Mr Taylor,

ACCOUNTING FOR RESEARCH AND DEVELOPMENT (R&D)

My Secretary of State wrote to the Chancellor on 2 June concerning the above but unfortunately this was not copied to E(ST) Colleagues. I apologise for this error and I am circulating the original letter to members of E(ST) under cover of this letter.

yours sincerely,
Ian Bendelow

IAN BENDELOW
Assistant Private Secretary

the enterprise initiative

The Rt. Hon. Lord Young of Graffham
Secretary of State for Trade and Industry

. The Rt Hon Nigel Lawson MP
Chancellor of the Exchequer
HM Treasury
Parliament St
London SW1

Department of
Trade and Industry

1-19 Victoria Street
London SW1H 0ET

Switchboard
01-215 7877

Telex 8811074/5 DTHQ G
Fax 01-222 2629

Direct line 215 5422
Our ref DW1ADN
Your ref
Date 2 June 1988

Dear Chancellor

ACCOUNTING FOR RESEARCH AND DEVELOPMENT (R&D)

Thank you for your quick response to my letter of 19 May on this subject. In the event, the discussion at the Accounting Standards Committee (ASC) went better than expected. The ASC agreed to recommend the adoption of a standard which requires the disclosure of expenditure on R&D but exempts smaller companies from this obligation. The Committee provisionally concluded that the most appropriate distinction was between plcs and private companies but intends to consider this decision further at the next meeting at the end of June as it will create a precedent for those future standards which are not of universal application. Quite rightly, the ASC wishes to avoid having a multiplicity of different distinctions. However, the discussion at yesterday's meeting makes it very probable that the ASC will confirm its provisional decision.

This is a most satisfactory outcome. It has always been our preference to achieve the disclosure of R&D expenditure through an accounting standard rather than through legislation. There is, of course, still the major hurdle to be overcome of obtaining the endorsement of the proposed standard by each of the individual members of the CCAB. This cannot be taken for granted, especially in view of the opposition of the Institute of Chartered Accountants in England and Wales to the disclosure requirement. Nevertheless, I do not think that it would now be appropriate to announce that the Government intend to legislate on this subject. We do not want to risk undermining the ASC's position when it has just taken the positive decision we want. Instead, I propose that we should welcome the ASC's initiative while hinting at the likelihood of legislation if the CCAB

dti

the department for Enterprise

bodies do not endorse the proposed standard. I attach a revised draft answer to the PQ on these lines.

As the PQ has already been put down, I would like to reply to it as soon as possible after Parliament resumes. Please may I therefore ask for any comments by Monday 6 June.

Yours sincerely

Jeremy Godfrey

(approved by the Secretary of State and signed on his behalf in his absence)

the Enterprise initiative

DRAFT PARLIAMENTARY QUESTION AND ANSWER

To ask the Chancellor of the Duchy of Lancaster whether he will require the annual accounts of companies to disclose expenditure on research and development.

Draft reply

As the Government's White Paper "Civil Research and Development" (Cm 185 published in July 1987) made clear, we accept that there is a need to emphasise to shareholders and managers the value of research and development (R&D). It is for companies to ensure that their bankers and major shareholders understand the advantages of R&D. The reporting of R&D expenditure in annual accounts will promote this understanding. The case for disclosure is, however, mainly relevant to public companies. I therefore very much welcome the decision of the Accounting Standards Committee to recommend the adoption of a standard which would require such companies to disclose expenditure on R&D. Such a standard would be preferable to legislation on this subject and I hope that the ASC's recommendation will be acted on.

IND POL: Research
+ Dev
PTS

ps2/49M

CONFIDENTIAL

CR BG

Treasury Chambers, Parliament Street, SW1P 3AG
01-270 3000

15 June 1988

The Rt Hon Lord Young of Graffham
Secretary of State for Trade
and Industry
Department of Trade and Industry
1-19 Victoria Street
LONDON
SW1H 0ET

NBPM
PRCG
16/6

ACCOUNTING FOR RESEARCH AND DEVELOPMENT

Thank you for your letter of 13 June enclosing a revised Parliamentary Answer. I am entirely content with this version.

I am sending copies of this letter to the recipients of yours.

NIGEL LAWSON

012/4210

CONFIDENTIAL

cc/c.

Treasury Chambers, Parliament Street, SW1P 3AG

Brian Hawtin Esq
Private Secretary to the
Secretary of State for Defence
Ministry of Defence
Main Building
Whitehall
London
SW1

CBS 14/6

14 June 1988

Dear Brian,

DEFENCE R & D EXPENDITURE

The ~~Chief~~ flap Secretary has seen your Secretary of State's minute of ~~9~~ June to the Prime Minister and also Charles Powell's letter of ~~11~~ June.

The Chief Secretary would be grateful if his officials could be involved in the preparation of the material for use in public.

I am copying this letter to the Private Secretaries to members of E(ST), to Sir Robin Butler and to John Fairclough.

Yours sincerely,

Jill Rutter

JILL RUTTER
Private Secretary

IND POL: Support and Innovation

PTS

FILE DA.

DOE LPSD
DTI DTN
DES CST
MAFF CDL
DOT CO
FCO Fairclough
DTES

CONFIDENTIAL

10 DOWNING STREET
LONDON SW1A 2AA

From the Private Secretary

11 June 1988

Dear Brian,

DEFENCE R & D EXPENDITURE

The Prime Minister has seen the Defence Secretary's minute of 9 June about presentation of the Government's decision to impose ceilings on defence R & D expenditure. She takes the view that the difficulties identified by the Defence Secretary are manageable. She hopes that the question of presentation can be settled between colleagues directly concerned. She would find it difficult to chair a discussion in E(ST) in the near future.

I am sending copies of this letter to the Private Secretaries of members of E(ST), to Sir Robin Butler and to Mr. Fairclough.

Yours ever,

(C.D. POWELL)

Brian Hawtin, Esq.,
Ministry of Defence.

CONFIDENTIAL

MO 30L

PRIME MINISTER

DEFENCE R & D EXPENDITURE

1. I believe that I may well come under pressure during next month's defence debate to reveal for the first time the existence of the ceilings imposed by E(A) upon defence R&D expenditure. We need now to agree the line which all Ministers - and not just my Defence colleagues and I - will take in defending the policy in public.

2. To date we have avoided making any public reference to R&D ceilings as such and this year's Statement on the Defence Estimates speaks only of "a gradual reduction [in the real level of defence R&D expenditure] over the next decade". But I have now been asked a number of direct questions by the House of Commons Defence Committee, which appears to have learned of the existence of the ceilings, about the extent to which they have been increased to take account of the R&D cost of EFA and other major projects. A copy of their questions, and of my short written reply in which I have avoided any reference to ceilings, is attached.

3. Against this background, my colleagues and I shall need to be prepared for pressure to acknowledge the existence of ceilings, to say what they are, and to comment on the implications for business and for jobs during the forthcoming Defence Debate. We can expect a major row. The Opposition will accuse us of sacrificing British industry, technology and jobs for the benefit of foreign arms manufacturers. No doubt Trident will be dragged into the argument,

and we shall be accused of cutting back the conventional equipment programme, and of penalising our domestic industry, for the sake of the deterrent. Unfair though such criticisms may be, defence firms may see advantage in encouraging them, and those of our supporters with constituency interests may find difficulty to accept the policy once its full implications become clearer.

4. I have of course accepted that it might be possible to buy more defence equipment off the shelf from abroad. But colleagues have recognised that the policy of reducing defence R&D spending would require careful presentation and, in the E(RD) discussion in February last year, assured me of their support in carrying it out. For my part, I am prepared, if asked directly, to acknowledge that ceilings exist and that they were increased on account of EFA (though by less than EFA's full R&D cost); to say what the ceilings are for the PES years (which has already been done in a different guise in Cmd 288); and to state the target for 1996/7. I would also wish to reaffirm that our publicly stated criterion for equipment selection - long term value for money on a national basis - remains unchanged, and that the need to conform to the ceilings is only one of several factors governing the choice of equipment in particular areas. This is consistent with your written reply to Austin Mitchell on 13th January 1986, (Hansard column 517) of which I attach a copy.

5. But the policy will need to be presented positively and the reduction in defence R&D spending shown to be a means of injecting scientific, engineering and skilled manpower resources into the civil sector. We shall have to demonstrate that the civil sector is indeed benefiting, and will continue to benefit, from the dampening down of defence demand. I shall therefore need to look to the Trade and Industry Secretary and the Chancellor of the Duchy of Lancaster to demonstrate that the overall effect of the policy on British industry in general, and jobs in particular, will be beneficial.

6. We need to settle our public line within the next month. If you think a discussion in E(ST) would be useful, I would welcome such a meeting.

7. I am sending copies of this minute to other members of E(ST) and to Sir Robin Butler and Mr Fairclough.

G.Y.

Ministry of Defence
9th June 1988

CONQUEROR
LONDON

(UNCLAS WHEN SENT TO HCDC)

1. Have the ceilings on defence R&D been raised to accommodate the costs of EFA and other major projects added to the programme since 1985?

1a. If the ceilings have been so raised, has the extra funding provided been sufficient to cover all the extra R&D costs of these projects?

Decisions on individual projects including EFA have been and will continue to be taken within the framework of the Government's intention of securing a gradual reduction in the real level of defence R&D over the next decade.

HOUSE OF COMMONS (HANSARD)

13 JANUARY 1986

VOL 89 COL 517.

Mr. Austin Mitchell asked the Prime Minister (1) further to her letter dated 1 January to Sir John Cuckney concerning the future of Westland helicopters, whether she will make it her policy that no orders will be placed for production models unless and until it can be shown that the military requirement can be met at an acceptable cost and that the European consortium is also the most cost-effective source of supply, in the event that Westland accept the European consortium proposal;

(2) further to her letter dated 1 January to Sir John Cuckney concerning the future of Westland helicopters, whether she will list in the *Official Report* the considerations which will be taken into account in deciding which helicopter comes from the most cost effective source; what weight will be given to the reduction in public revenue and the increase in public expenditure which would result from a loss of jobs in the United Kingdom; and whether contracts for the supply of the military helicopters will be open to tender on a specification which will admit competition from the United States of America as well as European firms;

(3) what is the Government's policy regarding discrimination against United States suppliers of defence materials.

The Prime Minister: As I said in the letter to which the hon. Member refers, Government policy will remain that the United Kingdom should procure its helicopters from the most cost-effective source. Our policy is to secure the best long term value for money on a national basis in procuring the equipment which the armed forces need for their tasks. Accordingly we buy British whenever it is sensible, economic and consistent with our international obligations to do so, and acquire from overseas only when the advantages of cost, performance and time scale outweigh the longer term benefits of procuring the British alternative. The criteria used in deciding the source of our requirements are set out in the 1983 open government document "Value for Money in Defence Procurement".

dti

the department for Enterprise

16pm CABG

The Rt. Hon. Lord Young of Graffham
Secretary of State for Trade and Industry

. The Rt Hon Nigel Lawson MP
Chancellor of the Exchequer
HM Treasury
Parliament St
London SW1

Department of Trade and Industry

1-19 Victoria Street
London SW1H 0ET

Switchboard
01-215 7877

Telex 8811074/5 DTHQ G
Fax 01-222 2629

Direct line 215 5422
Our ref DW1ADN
Your ref
Date 2 June 1988

Dear Chancellor

ACCOUNTING FOR RESEARCH AND DEVELOPMENT (R&D)

Thank you for your quick response to my letter of 19 May on this subject. In the event, the discussion at the Accounting Standards Committee (ASC) went better than expected. The ASC agreed to recommend the adoption of a standard which requires the disclosure of expenditure on R&D but exempts smaller companies from this obligation. The Committee provisionally concluded that the most appropriate distinction was between plcs and private companies but intends to consider this decision further at the next meeting at the end of June as it will create a precedent for those future standards which are not of universal application. Quite rightly, the ASC wishes to avoid having a multiplicity of different distinctions. However, the discussion at yesterday's meeting makes it very probable that the ASC will confirm its provisional decision.

This is a most satisfactory outcome. It has always been our preference to achieve the disclosure of R&D expenditure through an accounting standard rather than through legislation. There is, of course, still the major hurdle to be overcome of obtaining the endorsement of the proposed standard by each of the individual members of the CCAB. This cannot be taken for granted, especially in view of the opposition of the Institute of Chartered Accountants in England and Wales to the disclosure requirement. Nevertheless, I do not think that it would now be appropriate to announce that the Government intend to legislate on this subject. We do not want to risk undermining the ASC's position when it has just taken the positive decision we want. Instead, I propose that we should welcome the ASC's initiative while hinting at the likelihood of legislation if the CCAB

bodies do not endorse the proposed standard. I attach a revised draft answer to the PQ on these lines.

As the PQ has already been put down, I would like to reply to it as soon as possible after Parliament resumes. Please may I therefore ask for any comments by Monday 6 June.

Yours sincerely

Jeremy Godfrey
(approved by the Secretary of State and signed on his behalf in his absence)

DRAFT PARLIAMENTARY QUESTION AND ANSWER

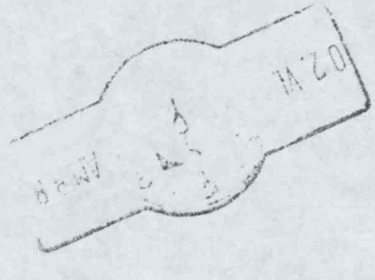
To ask the Chancellor of the Duchy of Lancaster whether he will require the annual accounts of companies to disclose expenditure on research and development.

Draft reply

As the Government's White Paper "Civil Research and Development" (Cm 185 published in July 1987) made clear, we accept that there is a need to emphasise to shareholders and managers the value of research and development (R&D). It is for companies to ensure that their bankers and major shareholders understand the advantages of R&D. The reporting of R&D expenditure in annual accounts will promote this understanding. The case for disclosure is, however, mainly relevant to public companies. I therefore very much welcome the decision of the Accounting Standards Committee to recommend the adoption of a standard which would require such companies to disclose expenditure on R&D. Such a standard would be preferable to legislation on this subject and I hope that the ASC's recommendation will be acted on.

DW1ADO

IND POLICY: R+D p45



SCOTTISH OFFICE
WHITEHALL, LONDON SW1A 2AU

CONFIDENTIAL

The Rt Hon Kenneth Baker MP
Secretary of State for Education
and Science
Department of Education and Science
Elizabeth House
York Road
LONDON
SE1 7PH

31 May 1988

Dear Kenneth

DES SUPPORT FOR CIVIL SCIENCE RESEARCH

I am sorry I was not able to be at the meeting of E(ST) on 26 May which considered your memorandum (Policy for Civil Science Research funded by DES; E(ST)(88)14). Although I whole-heartedly agree with the overall thrust of your proposals and with the objectives that you have advanced, I have a number of concerns about the way in which these proposals are being implemented which I thought I might register with you before you put in hand work on a White Paper.

As your officials know, I have been concerned about the recommendation in the ABRC report "A Strategy for the Science Base" for a three-tiered hierarchy of higher education institutions according to their research capability, because of its potential implications for Scottish universities, for the level of R & D activity in Scotland and for the technological strength of Scottish companies. I am glad therefore that you have recognised the force of the arguments against this unduly rigid approach. But the approach that you have recommended, that of continuing with the present initiatives of the Research Councils and the UGC aimed at greater selectivity and concentration, is not itself without risk.

A number of the smaller universities in Scotland are finding that the incremental pressure of successive subject rationalisations, coming as they do on top of the financial pressures that we have exerted through the overall level of grants for the universities and from the UGC's new approach to grant allocation, pose a risk of real damage to the university system. Indeed, the successive blows of subject reviews, which not surprisingly fall more often on those who did less well from the UGC's reallocation of grant, may well undermine the financial viability of one or

two institutions, quite apart from the effect on the morale of university management that is already evident. The process of concentration also has potential implications for the traditional breadth of Scottish degrees, and I shall be interested to see how the UGC takes this into account in its reviews of chemistry and physics.

I do not suggest that these risks should deflect us from the goals of selectivity and concentration, but I do think that we shall need to recognise in any White Paper that emerges the practical limits that exist to the pace at which rationalisation can be achieved. And we shall need to handle sensitively the different considerations between teaching and research in achieving that concentration.

Equally, it is important that the procedures by which selectivity is implemented should attract general confidence throughout the university community. I know that it can sometimes be difficult to find people of the right calibre and willing to serve on the Research Councils, its sub-committees and on the UGC's subject committees, but it is very important that the membership of these bodies should command confidence. That will require a recognition of the geographic dispersion of institutions as well as the academic merit of individuals.

I am sending copies of this letter to members of E(ST) and to the Chief Scientific Adviser.

Yours ever,

MALCOLM RIFKIND

Cite DAS

10 DOWNING STREET

LONDON SW1A 2AA

From the Private Secretary

MR BROWN
CABINET OFFICE

ANNUAL REVIEW 1988

Thank you for your minute of 23 May, following our earlier telephone conversation. The Prime Minister is content for the 1988 document to be published in late June or early July as proposed.

As to arrangements for subsequent years, the Prime Minister agrees that it is not necessary for the whole document to be shown to her in draft. She would, however, be grateful if you could continue to consult her about the timing of publication.

I am copying this minute to Mr Fairclough, Mr Woolley, Mr Thomas and Mr Hilton.

PRC6.

PAUL GRAY
26 May 1988

PRIME MINISTER

ANNUAL REVIEW OF GOVERNMENT FUNDED R & D

The attached Cabinet Office minute of 23 May seeks your approval for publication of this annual review. I will not trouble you with the document itself, which is literally nearly two inches thick and, as the Cabinet Office note says, is a non-contentious elaboration of existing public expenditure projections. It does not therefore prejudice the outcome of the current discussions in E(ST) on possible changes in priorities.

The Cabinet Office also propose that in future there is no need for your approval to be sought for publication. I think it is unnecessary for the text to be cleared with you, but it would be helpful to retain control over the timing of publication.

Content to agree that this year's review should be published at the end of June or beginning of July; and that in future only the timing, not the content, of the publication should be cleared with you?

RRCB.

Yes

PAUL GRAY

25 May 1988

VC3BAB

Qd.0137

File Ref: ST 134/1

MR GRAY

cc Mr Fairclough
Mr Woolley (also with draft copy of Review)
Mr Thomas
Mr Hilton (Press Office)

23 May 1988

ANNUAL REVIEW 1988

1 We spoke on the telephone about whether to continue the past practice of seeking the Prime Minister's approval for publication of the Annual Review. It is essentially a statistical, non-contentious publication prepared by ourselves and the Government Statistical Service. It sets out the latest outturn figures for Departments and other public sector funding bodies' expenditure on R & D (for 1986/7) and shows forward expenditure projections amplifying the material on science and technology in the most recent Public Expenditure White Paper. The statistical tables are supplemented by descriptive text provided by Departments. The document has been cleared through the official Committee E(ST)(O) (which includes Treasury). It has also been made available in draft to ACOST. The two main summary tables are attached to the Chief Scientific Adviser's paper going to E(ST) this Thursday.

2 You suggested we should continue to give the Prime Minister an opportunity to see the document before it goes to the printers, at least for this year. I attach a draft, which is in final form apart from some outstanding art work. We plan to publish it at the end of June or beginning of July, three or four months earlier than in previous years. This is in order to fit the publication into the E(ST) timetable and shorten the interval from the PEWP.

3 We are intending to discontinue the previous practice of the Chief Scientific Adviser giving a press conference when the Review is published. Instead we will offer factual briefings to journalists if they want to be taken through the detailed figures.

4 I would be grateful to know by 1 June if the Prime Minister is content for us to proceed to publication. I would also welcome your advice on whether, for future years, we should continue to send the whole document to the Prime Minister in draft or simply make available the summary tables to E(ST) as we have done this year.

VIVIAN BROWN

NH6/46M

Treasury Chambers, Parliament Street, SW1P 3AG
01-270 3000

The Rt Hon Lord Young of Graffham
Secretary of State for Trade
and Industry
Department of Trade and Industry
1-19 Victoria Street
LONDON SW1H 0ET

23 May 1988

Dear David

ACCOUNTING FOR RESEARCH AND DEVELOPMENT

Thank you for your letter of 19 May. I fully recognise the need to avoid a disclosure requirement that appears to conflict with our objectives for deregulation. The proposal in my earlier letter would have had the advantage of including UK subsidiaries of foreign-owned companies, while still exempting the large mass of medium sized and small firms. But I do not feel strongly about thus, and am willing to agree that the requirement should be restricted even further to companies which are PLCs, since this will still cover the bulk of R & D carried out in the UK while limiting the requirement to a much smaller group of companies. I am therefore content with the proposal in your letter.

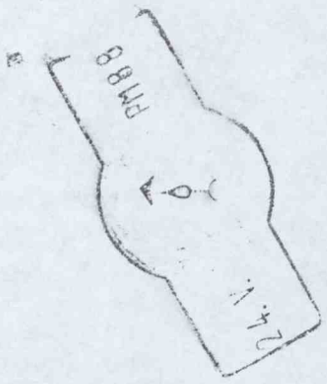
I am copying this letter to the recipients of yours.

Yours

Nigel

NIGEL LAWSON

IND POLICY: R+D pt 5



CONFIDENTIAL

cCO.
DTI SS
COL
CS, HMT
DTEn.
LPSO.
FCO.

DTpt.
MAFF
DES
DOE
MOD

10 DOWNING STREET
LONDON SW1A 2AA

From the Private Secretary

23 May 1988

ACCOUNTING FOR RESEARCH AND DEVELOPMENT

The Prime Minister has seen your Secretary of State's further letter of 19 May to the Chancellor of the Exchequer. In the light of his further comments, she is content for an announcement to be made along the lines proposed.

I am copying this letter to the Private Secretaries to members of E(ST) and Sir Robin Butler.

PAUL GRAY

Stephen Ratcliffe, Esq.
Department of Trade and Industry

VC

DTI

bc: BS

010

CCRG.

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
WHITEHALL PLACE, LONDON SW1A 2HH

From the Minister

MBRM
PRCG
23/5

The Rt Hon Lord Young of Graffham
Secretary of State for Trade & Industry
Department of Trade of Industry
1-19 Victoria Street
London SW1H OET

23 May 1988

Dear David,

ACCOUNTING FOR RESEARCH AND DEVELOPMENT (R&D)

WITH PC? / WILL REQUEST IF REQUIRED

Thank you for copying to me your letter of ~~19~~ May to Nigel Lawson.

I am writing to confirm that I am in agreement with the course of action you propose.

I am copying this letter to the Prime Minister and members of E(ST) and to Sir Robin Butler and Nigel Lawson.

Yours ever,

JOHN MacGREGOR

dti

the department for Enterprise

CBG

The Rt. Hon. Lord Young of Graffham
Secretary of State for Trade and Industry

Department of Trade and Industry

1-19 Victoria Street
London SW1H 0ET

Switchboard
01-215 7877

Telex 8811074/5 DTHQ G
Fax 01-222 2629

The Rt Hon Nigel Lawson MP
Chancellor of the Exchequer
HM Treasury
Parliament Street
LONDON
SW1P 3AG

Prime Minister

I think the highlighted passages probably meet your earlier concerns. Content now to agree to the proposed statement?

RRCG
20/5

Yes

Direct line 215 5422
Our ref PS4AQD
Your ref
Date 19 May 1988

Dear Nigel,

ACCOUNTING FOR RESEARCH AND DEVELOPMENT (R&D)

Thank you for your letter of 10 May welcoming my proposal to exclude smaller companies from any requirement to disclose expenditure on R&D in their annual accounts. I have also received comments from the Prime Minister, and other colleagues.

Colleagues generally have supported my proposal, but the Prime Minister has expressed concern that the additional burden it would impose would outweigh the benefits, even for larger companies, and you have suggested that the requirement should apply to all large companies, irrespective of whether or not they are PLCs.

I share very much the Prime Minister's concern about the implications of a disclosure requirement for our deregulatory objectives. This was why I concluded that the requirement should not apply to private companies but only to the 0.5 per cent of companies which are PLCs. Most such companies are large. I would not expect the disclosure requirement to be a burden to them.

dti

the department for Enterprise

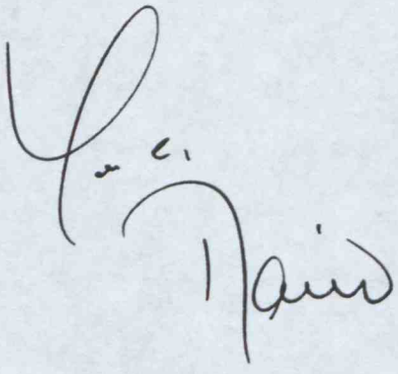
There is already an accounting standard which defines expenditure on R&D and lays down how it is to be treated in accounts. The proposed new standard will make some changes to the required treatment but the consultation on the proposed standard has not suggested that there is any fundamental problem in identifying what is R&D expenditure, although there are inevitably some difficulties at the margin. The additional burden involved in disclosing total expenditure will therefore be slight.

There is widespread public support for requiring at least large companies to disclose their R&D expenditure and we are publicly committed to backing such a requirement. I do not think that the potential burden is such as should cause us to reverse our position.

I remain of the view that the right distinction in any statutory requirement on this point is between PLCs and private companies rather than large companies and others. My objective is to encourage shareholders and potential investors to take an interest in company R&D expenditure, and for them to bring pressure on a company in appropriate cases. This argument applies much less strongly to private companies than to PLCs as the shareholders of the former are already well placed to influence the management. Moreover, to apply the requirement to all companies which are not defined as "medium" or "small" in the Companies Act would increase the number of companies affected from about 5,000 to 13,000. I am not convinced that this would be justified.

I hope therefore that we can agree to go ahead as I have proposed. I would be grateful to have a reply by Monday 23 May, as the ASC meets on Wednesday morning and preliminary discussions with the ASC chairman will be necessary.

I am copying this letter to the Prime Minister and members of E(ST) and to Sir Robin Butler.



the Enterprise initiative

DRAFT PARLIAMENTARY QUESTION AND ANSWER

To ask Her Majesty's Government/the Chancellor of the Duchy of Lancaster whether they/he will require the annual accounts of companies to disclose expenditure on research and development.

DRAFT REPLY

As the Government's White Paper "Civil Research and Development" (Cm 185 published in July 1987) made clear, we accept that there is a need to emphasise to shareholders and managers the value of research and development (R&D). It is for companies to ensure that their bankers and major shareholders understand the advantages of R&D. The reporting of R&D expenditure in annual accounts will promote this understanding. The case for disclosure is, however, mainly relevant to public companies and the case for making disclosure mandatory on private companies is much weaker in relation to the burdens that disclosure is likely to involve for them. We/I have therefore decided that future legislation should amend the Companies Act 1985 so as to require disclosure of R&D expenditure in the annual accounts of public limited companies. We/I believe that limiting disclosure in this way represents the best balance between encouraging R&D in companies and the need to avoid burdensome legislation.

NBPM
PRCG
16/5

CC BG

FCS/88/100

SECRETARY OF STATE FOR TRADE AND INDUSTRY

Accounting for Research and Development

WILL REQUEST IF REQUIRED

1. Thank you for copying to me your letter of ~~3~~ May to Nigel Lawson.

2. I welcome these moves towards greater transparency of R & D activities by British companies. Although I would not argue that the disclosure requirements should be introduced solely for the purpose of providing Government with information, this is nevertheless an important aspect when it comes to comparing our national R & D performance with that of our major competitors, and seeing what conclusions we can draw for our priorities in the future. For this purpose also it should be sufficient to concentrate, as you suggest, on the public limited companies.

3. Given the potential difficulties you see with the introduction of a revised Standard by the Accounting Standards Committee, I agree that it would be preferable now to aim for a legislative amendment instead.

4. I am copying this minute to the recipients of your letter.

(GEOFFREY HOWE)

Foreign and Commonwealth Office
16 May 1988

CONFIDENTIAL

DSG

File

bc: BG

10 DOWNING STREET

LONDON SW1A 2AA

From the Private Secretary

16 May 1988

Dear Stephen,

ACCOUNTING FOR RESEARCH AND DEVELOPMENT

The Prime Minister has seen your Secretary of State's letter of 3 May to the Chancellor of the Exchequer, and the Chancellor's reply of 10 May.

The Prime Minister is concerned about the implications of the proposed disclosure requirement for the Government's objectives on deregulation. She also wonders whether a requirement would lead to time-consuming arguments about the precise definition of R & D. She is, therefore, doubtful whether the arguments in favour of disclosure justify this step; and in any event, she thinks the coverage of companies affected by any such requirement should be kept to a minimum.

I am sending copies of this letter to the Private Secretaries to the members of E(ST) and to Sir Robin Butler.

Yours,

Paul

Paul Gray

Stephen Ratcliffe, Esq.,
Department of Trade and Industry.

DSG

CONFIDENTIAL

CONFIDENTIAL

PRIME MINISTER

ACCOUNTING FOR RESEARCH AND DEVELOPMENT

Lord Young and the Chancellor are in correspondence about arrangements for obliging companies to disclose as separate items in their accounts levels of R & D expenditure. They are agreed that:

(i) A provision requiring disclosure should be included in the forthcoming Companies Bill.

(ii) The purpose of this requirement is to enable investors to judge a company's performance and if necessary bring pressure on it to step up its R & D investment. On this basis the rationale for disclosure does not extend to small firms.

Lord Young and the Chancellor are however advocating different ways of defining the companies that should meet the disclosure obligation. Lord Young suggested the requirement should be placed on public limited companies (PLCs); the Chancellor is now suggesting requiring disclosure for all companies which are too large to qualify as "medium sized" under the 1985 Companies Act. But I understand that they are likely to reach an early agreement, probably on the basis of the Chancellor's proposals.

Content for the R & D disclosure requirement to be introduced in legislation, with the precise coverage to be decided between the Chancellor and Lord Young?

RRCG.

PAUL GRAY
12 May 1988
KAYACF

CONFIDENTIAL

CcBG

ELIZABETH HOUSE
YORK ROAD
LONDON SE1 7PH
01-934 9000

NBPM
RRC6
13/5

The Rt Hon Nigel Lawson MP
Chancellor or the Exchequer
H M Treasury
Parliament Street
LONDON SW1P 3AG

11 May 1988

Dear Nigel,

ACCOUNTING FOR RESEARCH AND DEVELOPMENT

David Young copied to me his letter to you of 3rd May on this subject. Like him, I attach great importance to maintaining our steady encouragement to the private sector to increase its expenditure on R & D and thereby to complement the Government's policies for publicly funding R & D and for the progressive transfer of near-market research to industry. I therefore welcome his proposal to make an early announcement declaring our intention to include provision in future legislation, covering PLCs and their subsidiaries. I quite understand his reasons for excluding other companies but I think it important that we should continue to make it clear that our policy of wishing to see more R & D undertaken and paid for by the private sector applies across the whole of industry including small firms. And I think we should continue to endeavour by whatever means we can to ensure that our information about private sector R & D expenditure is as complete as possible.

As David knows I have myself argued this line in the House on occasions and should therefore be grateful to have the opportunity to see his proposed answer in draft.

I am copying this letter to the Prime Minister, to other members of E(ST) and to Sir Robin Butler.

Yours ever,

Kenneth

Ind Pol: R+D Pr 5

11. V. PM 88

cc BG

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
WHITEHALL PLACE, LONDON SW1A 2HH

From the Minister

NBPM

RRC6

13/5

The Rt Hon Lord Young of Graffham
Secretary of State for Trade and Industry
Department for Trade and Industry
1-19 Victoria Street
London SW1H OET

11 May 1988

Dear Secretary of State,

ACCOUNTING FOR RESEARCH AND DEVELOPMENT

Thank you for copying to me your letter of 3 May to Nigel Lawson. attached.

As you know, I am very anxious that we should secure increased industry funding of R & D in agriculture, fisheries and food. My own view is that disclosure would help in this not only by enabling investors to judge the performance of companies, but perhaps also by allowing other interested groups - such as levy funding bodies and producer organisations - to have an accurate picture of the total private sector effort. This is more than simply providing Government with information. But without some kind of formal requirement - either in law or as an accounting standard - there will always be scope for argument about the true extent of such contributions.

I take your points about drawing the line at the PLC or PLC-headed group and not imposing unnecessary burdens on small companies, and therefore agree to the line you are proposing.

I am copying this letter to the Prime Minister, members of E(ST), Nigel Lawson and to Sir Robin Butler.

Yours sincerely

Byanie

M JOHN MacGREGOR
(Approved by the Minister and signed in his absence)

mjd 3/139m

CONFIDENTIAL

Treasury Chambers, Parliament Street, SW1P 3AG
01-270 3000

10 May 1988

The Rt Hon Lord Young of Graffham
Secretary of State
Department of Trade and Industry
1-19 Victoria Street
London SW1

ACCOUNTING FOR RESEARCH AND DEVELOPMENT

Thank you for your letter of 3 May. It is disappointing that the attitude of some bodies, including the influential ICAEW, is likely to prevent the ASC from agreeing an adequate disclosure requirement as part of a revised Standard on R&D. It would have been desirable, as the Government said in reply to the House of Lords Committee on Civil R&D, for disclosure to be implemented without legislation. However we have always made clear that we do not rule out the statutory route and, in view of the likely outcome of the ASC meeting, it is clearly right to make our intentions clear as soon as possible thereafter. The debate on this issue has already gone on too long.

I therefore welcome your intention to take the initiative on this issue. And I agree in principle with your proposal to exclude small companies from the burden of disclosure. I would however prefer to see the limit set at a lower level than you suggest, requiring disclosure for all companies which are too large to qualify as 'medium sized' under the 1985 Companies Act. Such a level would be likely to include all companies carrying on significant R&D programmes and would, for example, ensure that large UK subsidiaries of foreign owned companies were included, as they should be, while not adding to the burdens on genuinely small companies.

I agree with your proposal for handling by means of an arranged Question (no doubt you will clear the terms of this) and for

dealing with the ASC. Sir Anthony Wilson, the Treasury observer on the ASC, will be in touch with your department so as to ensure a common approach.

I am copying this letter to the recipients of yours.

NIGEL LAWSON

dti

the department for Enterprise

The Rt. Hon. Lord Young of Graffham
Secretary of State for Trade and Industry

The Rt Hon Nigel Lawson MP
Chancellor of the Exchequer
HM Treasury
Parliament Street
LONDON
SW1P 3AG

Department of Trade and Industry

1-19 Victoria Street
London SW1H 0ET

Switchboard
01-215 7877

Telex 8811074/5 DTHQ G
Fax 01-222 2629

Direct line 215 5422
Our ref PS5APQ
Your ref
Date 3 May 1988

Dear Nigel,

ACCOUNTING FOR RESEARCH AND DEVELOPMENT

Over the past year the Accounting Standards Committee (ASC) has been consulting on a draft revised Standard on the measurement and disclosure of expenditure on research and development (R&D). The Government's main interest has been to support the draft Standard's proposed requirement that R&D expenditure written off against the profit or loss account and any development costs amortised in the balance sheet are to be disclosed as separate items in the annual report and accounts of companies. The ASC consultative period ended on 30 November and the ASC meeting on 25 May is likely to be asked to agree the new text, perhaps with some detailed amendments to meet various concerns.

A requirement to disclose R&D expenditure in company accounts was recommended by the 1986 Report of the House of Lords Select Committee on Civil R&D. My Department's Technology Requirements Board is also strongly in favour of disclosure. The White Paper in July 1987 replying to the House of Lords Report (CM 185 "Civil Research and Development") accepted the need for more industrially-funded R&D. However, among the range of measures taken or announced in the White Paper to encourage more R&D there was no proposal to legislate to make disclosure of R&D expenditure compulsory, in view of the progress being made by the ASC. Nevertheless, on other occasions we have made clear our readiness to consider legislation if the parts of the revised Standard requiring disclosure were not agreed.

the Enterprise initiative

In fact the overwhelming majority of all those consulted by ASC have supported disclosure in the manner suggested by the draft Standard. However, there are a few dissentients which carry weight. These include the Institute of Chartered Accountants in England and Wales (ICAEW), which is not convinced that disclosure is necessary for the purpose of ensuring that accounts give a "true and fair" view. The ASC is not a Government body, although DTI and the Treasury each has a non-voting observer who attends meetings, and for Standards to be adopted a two-thirds majority in the Committee and unanimous support by the six major professional accounting bodies is required. Unless the ICAEW changes its views the likelihood is that the revised Standard will be agreed but with the disclosure requirements deleted.

I have been looking again at our commitment in the light of our objectives on deregulation. The principal purpose of requiring disclosure of R&D spending is, of course, to enable investors to judge the company's performance and, if necessary, bring pressure on the company to step up its R&D investment. But this argument is relevant only to public companies, especially those whose shares are quoted on the Stock Exchange or those that are growing to a size at which a quotation could become desirable. The case for extending this requirement to independent private companies is weak: such a requirement would impose an unnecessary and unjustifiable burden. I have therefore concluded that our aim should be to secure disclosure of R&D spending in the reports and accounts of only public limited companies (PLCs), including their consolidated accounts where they have subsidiaries. Drawing the line at the PLC or PLC-headed group would provide a simple definition and, I believe, capture the preponderance of R&D spending.

I recognise that adopting this proposal would represent something of a change in the line we have previously taken. It may be argued that by restricting the disclosure requirement we should be losing the opportunity to obtain information about the R&D activities of small firms. My Department's statisticians however tell me that they do not regard disclosure of R&D expenditure in company accounts as a useful source of statistical data. I am also not attracted to the idea of imposing on companies disclosure requirements directed at providing the Government with information. My proposal seeks to limit the requirement as far as possible only to the purpose for which disclosure is required. Moreover, as the requirement to disclose is for economic, not

dti

the department for Enterprise

accounting, purposes, it ought to be a requirement imposed by law, not by Accounting Standard. I therefore propose that a suitable amendment be included in the detailed revision of the accounting Schedules to the Companies Act which are already agreed for the forthcoming Companies Bill.

So far as the ASC is concerned it would be unfortunate if the ASC were to adopt the Standard in its present form, which applies the disclosure requirement to all companies. If the ASC decides in favour of a disclosure requirement, it may resist the idea of restricting it in the way we might wish, although it might be persuaded to exclude small companies. I suggest that the Government observers should take such action as may be necessary to steer the ASC away from reaching a conclusion that conflicted with our present objectives. In doing so the observers will almost certainly be obliged to reveal our legislative intentions. I therefore suggest that we prepare an arranged Question, for answer shortly after the ASC meeting, announcing our intention to include provision in future legislation.

I would be grateful to know by 13 May if you and copy recipients are content for us to proceed on the above basis so that the DTI observer may inform the ASC Chairman in advance of the meeting of our views and take whatever other steps are necessary to secure a satisfactory outcome.

I am copying this letter to the Prime Minister, members of E(ST) and to Sir Robin Butler.

Yours,
David

the Enterprise initiative

Cite RR

PRIME MINISTER

You may think that the papers circulated to the Committee are overlong and a bit 'guffy'! But Mr. Fairclough's initiative is, I think, a valuable one. It is his beavering away which has allowed Ministers to consider, for the first time, the priorities for Government R&D. I hope therefore that despite any shortcomings that you may see in the papers, you can encourage this process.

There may be scope, for future years, for a Cabinet Minister to chair a meeting to give preliminary consideration to papers of this sort with a view to preparing a paper setting out the strategic issues which the Committee would consider at meetings under your chairmanship. Mr. Parkinson, once the fast breeder reactor issue is settled, would be a candidate to chair these preliminary meetings.

N.L.W.

NLW

22 April 1988

52/10

CC Sa (+1)

MINISTRY OF AGRICULTURE FISHERIES AND FOOD
GREAT WESTMINSTER HOUSE
HORSEFERRY ROAD LONDON SW1P 2AE
Direct line 01-216 6217
or Switchboard 01-216 6311

CONFIDENTIAL

D H Andrews Esq CB, CBE
Room 222
WPW

NBPM
RRCb
22/4

14 April 1988

Dear Secretary

REVIEW OF EXPENDITURE BY THE AGRICULTURAL DEPARTMENTS ON RESEARCH AND DEVELOPMENT

I submit the report on my review. I am copying to Louden Hamilton, Bill Jack, John Fairclough and J I Davies.

Yours sincerely

C J A Barnes

C J A BARNES

The Minister will wish to see Mr Barnes' Report.

Mrs Haine - PS/Min (+1)

cc Miss Williams
Miss Tozer
Miss Bowles
} with copy of report

Mr Smith
Prof Bell
Mr Mason
Dr Shannon
Dr Crossett
Mr Kuyh
Mr Barnes

Frank Story
PS/Perm Sec
15/4/88

CONFIDENTIAL

REPORT ON A REVIEW OF EXPENDITURE BY THE AGRICULTURAL DEPARTMENTS ON RESEARCH AND DEVELOPMENT

C J A BARNES

April 1988

CONFIDENTIAL

REPORT ON A REVIEW OF EXPENDITURE BY THE AGRICULTURAL DEPARTMENTS ON RESEARCH AND DEVELOPMENT

INDEX

SUMMARY AND LIST OF CONCLUSIONS AND RECOMMENDATIONS pages i - ix

	Paragraph	Page
INTRODUCTION	1- 5	1- 2
BACKGROUND	6-14	2- 6
STRUCTURE OF THE INDUSTRIES COVERED BY THE REVIEW	6- 9	2- 4
Agriculture	7	3
Fisheries	8	3
Food	9	4
PUBLICLY FUNDED R & D	10-14	4- 6
Objectives	10	4
Customers and contractors	11	4- 5
Scale	12	5- 6
Other sources of funding	13	6
Organisation of publicly-funded R & D	14	6
ANALYSIS OF NEAR MARKET R & D	15-57	6-24
CATEGORISATION OF R & D	16-25	7-12
Work for policy purposes	17	7- 8
Far market work	17	8
Near market work	18-19	8
Projects with a small near market content	20-21	8- 9
Work that is not commodity specific	22	9-10
Special circumstances of horticulture	23	10
Near market expenditure at RAs and SFIA	24	10-11
Near market expenditure for industry funding	25	11-12
DISCUSSION OF EVIDENCE ON NEAR MARKET WORK	26-37	12-17
The Government's approach	26	12
Role of contractors	27	12-13
Attracting industry funding	28	13-14
Mechanisms for industry funding	29-37	14-17
Levy funding	30-31	14
RAs and producer groups	32-35	15-16
Collaborative schemes and research clubs	36	16
Tax incentives	37	16-17
GENERAL CONCLUSIONS	38-44	17-20
Transfer to industry funding	38	17
Scope for collaborative funding	39-40	17-18
Mechanisms for raising funds	41	18-19
Guidelines for future government commissioning	42	19
Organisational and staffing implications	43-44	19-20

	Paragraph	Page
RECOMMENDATIONS BY SECTOR	45-57	20-24
CROPS	46-50	20-21
Cereals	46	20-21
Potatoes	47	21
Sugar beet	48	21
Oilseed rape	49	21
Peas and beans	50	21
HORTICULTURE	51	21-22
LIVESTOCK	52-54	22-23
Dairying	52	22
Beef, sheep, pigs	53	22
Poultry and eggs	54	23
OTHER AGRICULTURE	55	23
FISHERIES	56	23
FOOD	57	24
TECHNOLOGY TRANSFER SERVICES	58-66	24-26
AGRICULTURE	60-64	24-26
FISHERIES AND FOOD	65-66	26
R & D FOR STATUTORY AND POLICY PURPOSES	67-72	26-28
International collaboration	68-70	27-28
National collaboration and contracting out	71-72	28
TABLES IN THE TEXT		
1 PUBLIC EXPENDITURE ON 'AGRICULTURAL' R & D	12	5
2 EXPENDITURE WITHIN THE REVIEW	12	6
3 CATEGORISATION OF EXPENDITURE BY GROUP AND COMMISSION	25	11
4 NEAR MARKET EXPENDITURE FOR INDUSTRY FUNDING, BY INDUSTRY AND DEPARTMENT	25	12
ANNEXES		
I ORGANISATIONS CONTACTED DURING THE REVIEW		29
II ORGANISATION OF PUBLICLY FUNDED R & D, GROUPED AS IN PARAGRAPHS 46 TO 57		30-39
III GUIDELINES FOR COMMISSIONING OF FUTURE WORK		39-41
IV TABLE A: EXPENDITURE BY AGRICULTURAL DEPARTMENTS WITH MAJOR CONTRACTORS		42
TABLE B: NEAR MARKET EXPENDITURE ON AGRICULTURAL R & D BY COMMISSION AND CONTRACTOR		43
V ANALYSIS OF NEAR MARKET WORK BY SECTOR		44-60
VI TECHNOLOGY TRANSFER SERVICES		61-69
VII GLOSSARY		70-71

CONFIDENTIAL

REPORT ON A REVIEW OF EXPENDITURE BY THE AGRICULTURAL DEPARTMENTS ON RESEARCH AND DEVELOPMENT

SUMMARY

1. In October 1987 E(ST) asked the Agricultural Departments to review their R & D programmes and identify action programmes which would enable government to take decisions on the extent to which it should continue to fund near market R & D for agriculture, fisheries and food; on the provision and funding of technology transfer services; on the promotion of industry research associations; and on the scope for more cost-effective provision of the R & D carried out for statutory and policy purposes. The review covered the expenditure of £166 million in 1987/88 funded by the Agricultural Departments but not the £49 million expenditure under the Science Budget which is administered by DES.

Background

2. In reaching conclusions I have had in mind that agriculture (including horticulture) is an industry with many small businesses and considerable diversity of enterprises. It differs from other industries because the policies pursued and market constraints operating under the CAP do not allow it to take advantage of the favourable conditions enjoyed elsewhere in the economy. (Real aggregate farm income is now half the level of a decade ago). Fishing, like farming, comprises many small businesses; because it is a hunting industry whose resource is renewable much fisheries R & D is in support of stock assessment and management in the context of EC and international obligations. In addition there is a significant expenditure on the aquatic environment, mainly for public health purposes. The food and drink industry is also a major employer and a significant contributor to GDP. I have been aware that there have been reductions of £20 million in R & D expenditure by the Agricultural Departments since the 1984 PES round and that a further £10 million is to be saved by 1991. The cumulative effect of these reductions is estimated to be 17% in real terms across the whole programme over the six year period.

Near market R & D

3. I adopted an initial definition of near market work as that:

> "which is reasonably likely to lead directly to commercial application, whether as a product, process or system within up to three to five years."

After a detailed analysis of the 2000+ projects commissioned by the Agriculture Departments I was able to categorise expenditure into (i) the minimum required by government for statutory and policy purposes; (ii) that relating to work far from the market;

and (iii) that supporting near market work. After taking account of a number of practical difficulties and the special circumstances of the horticulture industry I reached the view that a maximum of £24.7 million (at full economic cost) of publicly funded near market R & D should be considered for industry funding using established mechanisms (mainly levies) wherever possible. (Although research associations appear to work effectively in the food sector I do not see them serving the needs of producer groups in agriculture). However, it became clear during the course of the review that industry's perceptions of what constitutes near market differ from the definition above and time horizons are generally much shorter than five years. Industry is funding a good deal of near market work already and I have therefore suggested that work which is between three and five years away from commercial application should be funded on a collaborative basis by industry and government. In this sense, the £24.7 million referred to above is a gross figure, as are the sums referred to in the sectoral recommendations (paragraphs 45-57 of the report).

4. In the time available it was not possible to identify the impact on particular establishments of failure by industry to replace government expenditure nor any consequential costs associated with redundancies and restructuring. Decisions on transfer of funding can only be taken after discussions with industry have been held. I have, however, been conscious of the many practical and legal difficulties which would be involved and have tried to take account of these in the detailed sectoral recommendations. In practice, it seems unlikely that the process of transfer to industry funding can be completed before 1992. The customer-contractor system seems to be working well, but my enquiries suggest that it could be improved. In particular, I have suggested guidelines for commissioning future work, with the objectives of identifying more clearly that work which is required to support policy or statutory responsibilities and of developing the process of appraisal, monitoring and evaluation.

Technology Transfer

5. As agreed at the outset, I conducted a factual survey of technology transfer arrangements, noting that MAFF and DAFS are to begin in April this year their own reviews of charging for advice. The survey is at Annex VI. My general conclusion is that continuing government support for and provision of technology transfer services in agriculture is needed if public good obligations are to be met and an efficient and competitive agricultural industry sustained. I believe that changes in the funding of near market R & D will have implications for technology transfer although it is too soon to speculate what these will be.

R & D for statutory and policy purposes

6. I have noted that arrangements already exist for national

and international collaboration and for contracting out some work. The scope for extending this seems somewhat limited but I have suggested that opportunities should be pursued as part of the appraisal process.

CONCLUSIONS AND RECOMMENDATIONS

		paragraph	page
	GENERAL		
1.	The near market work in those projects whose near market content is small should not be considered for industry funding. .	20	9
2.	Non commodity specific near market work should continue to be publicly-funded.	22	9
3.	There should be a further study to assess the value to the farming community of work that is not commodity specific and to identify the potential beneficiaries. It may be possible to fund the cost of the DAFS expenditure on economics and marketing through advisory charges; those conducting the charging review may wish to consider the extent to which this could be accommodated.	22	9-10
4.	For horticulture, the aim might be for £9.5 million of near market work to be jointly funded by industry and government on a 50/50 basis, with government guaranteeing to continue to fund up to £5 million.	23	10
5.	It is justifiable for the government to continue funding near market expenditure at RAs on the basis that it is essentially pump-priming to encourage small businesses to undertake work which is of a speculative nature.	24	10
6.	The Special Researches Fund expenditure on fisheries with SFIA should continue to be publicly- funded but should not in future be used to fund near market projects.	24	11
7.	A maximum of £24.7 million (at fec) of publicly-funded near market work should be considered for industry funding.	25	11

	paragraph	page
8. The objective should be to achieve transfer to industry funding in two years wherever possible, and in all cases decisions should be reached within that period, but the considerable practical and legal difficulties involved may require a longer timescale.	38	17
9. Mechanisms should be sought to enable joint funding with the farming industry of near market work, with greater emphasis placed on collaboration the further the work is from application.	39	18
10. New arrangements for government contracts should be scrutinised to see if they can be streamlined whilst maintaining protection of the public interest. The position of intellectual property rights in such arrangements needs clarification.	40	18
11. Industry funding should be generated where possible through established means.	41	19
GUIDELINES		
12. For the future when new near market work is commissioned it should be relevant to support for statute or policy or on the collaborative basis described in paragraphs 23 and 39.	42	19
13. The Agricultural Departments should redescribe their commissioned programmes for agriculture so that the policy related elements are more clearly defined than at present.	42	19
14. There should be improved arrangements to allow industry a more direct influence on the strategic and collaborative programme and better feedback about resultant changes.	42	19
15. The customer-contractor system provides a sound basis for commissioning, but it could be strengthened by moving further towards contract-type description of commissioned work with all contractors, including those in-house, increasing their efforts to identify objectives, resource needs and timescales: objectives and inputs should be strictly adhered to.	42	19

	paragraph	page
16. Effort should be directed towards post-hoc evaluation in order to assess the effectiveness of the new arrangements.	42	19
17. The monitoring system should ensure that work which is drawing close to the market is identified.	42	19
CEREALS		
18. The HGCA levy should continue to be used as the mechanism for the provision of R & D funds by industry.	46	20
19. An action manager should be identified to develop and agree with the HGCA a programme for the phased transfer to industry of funding for near market R & D from the start of the 1989 financial year (1 August 1989) with a view to completion by 31 July 1991.	46	20
POTATOES		
20. The existing levy arrangements operated by the GB PMB would be an appropriate channel for increased funding.	47	21
21. An action manager should be identified to develop and agree with the PMB a programme for the phased transfer to industry funding of near market R & D from 1 January 1990 with a view to completion by 31 December 1991.	47	21
SUGAR BEET		
22. The near market R & D for sugar beet should be offered for industry funding through the SBREC: an action manager should be identified to open discussions with SBREC with a view to completion by 31 March 1991.	48	21
OILSEED RAPE		
23. Subject to the necessary Parliamentary time being found in the 1989/90 session, the aim should be to have an oilseed rape levy in place by the start of the 1990 oilseed rape year (1 June 1990) and with a view to transfering the funding of near market R & D by 30 June 1992.	49	21

	paragraph	page
24. If a statutory levy were not acceptable the establishment of an organisation similar to PGRO, funded by voluntary levy, should be considered with, initially at least, a degree of government contract funding. An action manager should be identified with the remit to develop and agree with industry representatives arrangements for establishing such an organisation by 1991 with a view to transfering the funding of near market R & D within 18 months of its formation.	49	21
PROTEIN CROPS		
25. Additional funding for protein crops could most appropriately be sought through the PGRO mechanism and an action manager should be identified to liaise with PGRO over the transfer of the work from 1 April 1989 with a view to completion by 30 march 1991.	50	21
HORTICULTURE		
26. The existing levy mechanisms should be used and an action manager should be identified to explore with the industry the proposal for collaborative funding outlined in recommendation 4 above with a view to agreement by the end of the financial year 1991/92.	51	22
27. An action manager should be identified to explore with mushroom growers whether scope exists for an RA type approach, perhaps based at IHR Littlehampton if mushroom work is transferred there on the closure of Lea Valley EHF.	51	22
28. Conclusions should be reached by 31 March 1990 on how collaborative industry/government funding for mushroom R & D can be achieved with a view to completion by 31 March 1992.	51	22
29. Discussion should take place with English Hops Ltd and the three other producer groups with a view to establishing collaborative industry/ government funding of the £0.11 million near market work I have identified, on a similar basis and timescale to the rest of horticulture.	51	22

	paragraph	page
30. Rationalisation of the arrangements for R & D and technology transfer in horticulture merits further consideration.	51	22
LIVESTOCK		
31. The Milk Marketing Boards are at present the only feasible mechanisms for additional funding by the milk industry of R & D.	52	22
32. An action manager should be identified to begin discussions with the MMBs on transfer to industry funding of the near market work which I have identified. However, the process cannot begin until legal difficulties have been resolved. Transfer of near market work would then need to begin with a view to reaching decisions within the following two years and completion as soon as possible thereafter.	52	22
33. The MLC levy should be the main mechanism for attracting extra funding for R & D on beef, sheep and pigs. But the possibility of realigning it and dividing the R & D between the sectors should be considered.	53	22
34. There is a case for additional funding to be raised solely from producers; an action manager should be identified to develop and agree with the MLC and the industry a programme for the phased transfer to industry of funding for £4.2 million worth of near market R & D with a view to completion by the end of the MLC's corporate plan period (1990/91).	53	22-23
35. An action manager should be identified to explore with the BPF the possibility of a transfer of funding for the poultry near market R & D to make recommendations by 31 March 1989 with a view to completion by 31 March 1991.	54	23
36. An action manager should be identified to open discussions with the egg industry about the possibility of funding the near market R & D through the BEIC, with the same timescale as for poultry.	54	23

	paragraph	page
OTHER AGRICULTURE		
37. The sectoral action managers responsible for specific commodities should carry forward in discussion with the industries concerned the possibility of transfer to industry funding of a number of near market projects in the non comodity specific Commissions on the same timescales as the other work.	55	23
38. Work transferred to funding by industry in Scotland should bear its appropriate loading for statistical support.	55	23
FISHERIES		
39. MAFF's Fisheries Department should begin a study and cost analysis as soon as possible with the objective of producing detailed proposals on the Torry Research Station's future status and funding arrangements before the end of 1989.	56	23
40. Transfer to industry funding of identified expenditure at DFR related to fish farming should be sought within two years.	56	23-24
41. Fisheries Departments in MAFF and DAFS should consider whether technology transfer/advisory activities relating to fish farming should be charged for.	56	24
FOOD		
42. The development of an RA model in association with the appropriate RI with, initially at least, some government contract funding, appears to offer the best prospect for attracting industry funding in respect of meat processing and milk utilisation if the results of the studies are positive.	57	24
43. In general, if additional funding is to be raised for food R & D, extension of existing collaborative arrangements for underpinning strategic initiatives seems likely to provide the most effective approach. Programme managers should be commissioned to develop such initiatives.	57	24

	paragraph	page
TECHNOLOGY TRANSFER SERVICES		
44. The government's public good obligations, together with its declared support for a competitive and efficient UK agriculture make it essential to continue the provision and funding of technology transfer services.	64	26
R & D FOR STATUTORY AND POLICY PURPOSES		
45. While the government should seek to increase the amount of statutory/policy R & D it obtains through national and international collaboration and by contracting out to UK industry, the opportunities in practice are likely to be somewhat limited.	72	28
46. As part of the ongoing appraisal procedure, Departments should assess (i) the scope for licensing technology either from within the UK or for abroad; (ii) the scope for international collaboration; and (iii) the extent to which it would be appropriate or possible to contract out the work to UK industry.	72	28

CONFIDENTIAL

REVIEW OF EXPENDITURE BY THE AGRICULTURAL DEPARTMENTS ON RESEARCH AND DEVELOPMENT

INTRODUCTION

1. At its meeting of 1 October 1987 (E(ST)(87) 2nd Meeting) the Sub-Committee discussed a note prepared by the Chief Scientific Adviser on priorities for science and technology (E(ST)(87)11). The Sub-Committee agreed with a proposal in the note that a review on the model of the Rayner efficiency scrutinies should be carried out in respect of the Research and Development (R & D) programmes of the Agricultural Departments. The review would identify action programmes which would enable the Sub-Committee to make decisions in Spring 1988 on the extent to which government should continue to fund near market R & D; it would cover the provision and funding of technology transfer services, would explore the promotion of industry Research Associations (RAs) and would also examine whether there was scope for more cost-effective provision of the R & D carried out for statutory and policy purposes.

2. The terms of reference, agreed between the Agricultural Departments and the Cabinet Office are as follows:

> "To develop action programmes to enable government to take decisions on the termination or transfer to industry funding of support for near market agriculture, fisheries and food R & D work in the Agricultural Departments' research establishments and laboratories and that commissioned from outside bodies, subject to the identification of specific near market programmes or projects which, while not justifying government funding on the basis of science and technology policy, might still exceptionally justify such finding for other policy purposes.
>
> This should include
>
> (a) examination of the provision and funding of technology transfer services to determine those for which industry should bear the full cost, subject to the identification of the special cases where government should provide some subsidy for other policy purposes;
>
> (b) exploration of the promotion of industry research associations as one way of encouraging small firms to fund R & D technology transfer activities;
>
> (c) the scope for increasing exploitation of international and national collaboration in R & D required by the Agriculture Departments for statutory and policy purposes;
>
> (d) the scope for increasing the contracting out to UK industry of the R & D required for statutory and

policy purposes which cannot be supplied through collaboration or inward licensing.

The action programmes should include costings and timings as far as practicable for their completion in 2 years."

3. The review covered expenditure funded by the Agricultural Departments but not the grant in aid funding provided by the Department of Education and Science (DES) through the Science Budget. I have been advised that approximately 50% of the DAFS spend at the Scottish Agricultural Research Institutes (SARIs) equates to Science Budget funding but is not provided as grant in aid. I have also been aware of the Department of Agriculture for Northern Ireland's (DANI) special position under which its funding is carried within the Northern Ireland Expenditure Block whose overall size is determined according to a comparability formula and from which funding for agriculture R & D is allocated in the context of Northern Ireland's local expenditure priorities. Finally, I have noted that, under Northern Ireland's constitutional position, DANI's R & D expenditure is part of the 'transferred matters'.

4. The report is divided into three main sections, dealing with;

Analysis of near market R & D	(paragraphs 15 to 57)
Technology Transfer Services	(paragraphs 58 to 66)
R & D for statutory and policy purposes	(paragraphs 67 to 72)

RAs are discussed in paragraphs 32 et seq. There are also supporting Annexes. The study was carried out in close consultation with the Cabinet Office (Science and Technology Secretariat) and nominated contacts in DAFS & DANI. Information was received from a wide range of sources and a note of those approached is at Annex I. The direct cost of the review to the Agricultural Departments was approximately £40k.

5. It was agreed at the outset that the joint paper by the Agricultural Departments and the Agricultural and Food Research Council (AFRC) on the Strategy for Public Support of Agriculture, Fisheries and Food R & D should be made available as part of the basis for the review. I have drawn upon it as appropriate.

BACKGROUND

STRUCTURE OF THE INDUSTRIES COVERED BY THE REVIEW

6. Together, the agriculture*, fisheries and food and drink industries contribute about 5% to UK Gross Domestic Product (GDP) and employ directly about 1.2 million people, with share considerably greater numbers in associated sectors such as retailing. Employment in food retailing, wholesaling and non-residential catering is estimated at almost 2 million, with a share of GDP in excess of 4%.

* References throughout the report to agriculture include horticulture.

Agriculture

7. Agriculture contributes almost 2% to GDP and employs about 600,000 people*. The industry is diverse and fragmented with a large number of small businesses (approximately 254,000 holdings) and a wide range of interests and abilities. The typical farmer may be self-employed, or his business may be run as a family undertaking. In employment terms therefore such businesses are of a quite different scale from small firms in manufacturing. Timescales of production vary from a few months to several years and constraints are imposed by differing soil and climatic conditions, as well as by continuing reductions in support under the Common Agricultural Policy (CAP). There are differences by type of production and by region. In Scotland for example 90% of useable agricultural land is within the Less Favoured Area where rates of return are lower and where agricultural support plays an important part in maintaining rural infrastructure. Much of the hill and marginal land in England and Wales is in this category. The situation in Northern Ireland is exacerbated by the Province's poor economic situation. There, agriculture has a special role to play in the regeneration of the Northern Ireland economy. It was put to me that these points needed to be taken into account in assessing agriculture's ability to fund near market R & D; that the industry needed to be able to remain competitive, particularly in view of the move to a single European market in 1992; and that agriculture and horticulture differed from other industries because the policies pursued and market constraints operating under the CAP did not allow them to take advantage of the favourable conditions enjoyed elsewhere in the economy. Real aggregate farm income is now half the level of a decade ago. Finally, it was pointed out that the pace at which technical change could be taken up varied according to the value and impact of the technology and the different abilities of individual farmers to absorb and implement it.

Fisheries

8. In 1986 UK fish landings by British vessels alone had a quayside value of over £363 million**. Like farming, the UK fish catching industry comprises many small businesses. There are about 16,000 full-time and 6,000 part-time fishermen, with probably five times that number employed in secondary industries such as fish processing, transportation and retailing. Fishing is a hunting industry whose resource is renewable; a large component of fisheries R & D is thus devoted to stock assessment and management, much of it carried out in support of UK obligations under the Common Fisheries Policy (CFP) or in the context of international collaboration on fish stocks under the International Council for the Exploration of the Sea (ICES). A significant component of the expenditure under this heading is for protection of the aquatic environment and is thus devoted to public health rather than the fisheries industry itself.

* Annual Review of Agriculture 1988 (CM 299)
** Sea Fisheries Statistical Tables 1986

Food

9. The UK food and drink manufacturing industry's gross output at current prices is about £40 billion. The industry contributes about 3% to GDP and directly employs about 550,000 people. Its scale and its impact on employment depends to a large extent on efficient UK agricultural and horticultural production.

PUBLICLY FUNDED R & D

Objectives

10. The Agricultural Departments' R & D programmes are designed to support and advance the following strategic aims:

to encourage the agriculture, fisheries and food industries to meet the needs of UK consumer and export markets and to contribute to the government's wider economic and social objectives;

to foster efficient and competitive agriculture and fisheries industries within the framework of the CAP and the CFP;

to seek to achieve a reasonable balance between the interests of agriculture, the economic and social interest of rural areas, the conservation of the countryside and the promotion of its enjoyment by the public; and to encourage high standards of animal welfare;

to encourage the development of efficient and competitive food and drink manufacturing and distribution industries; to ensure high standards of food quality, food wholesomeness, hygiene and safety; and to ensure that consumers are given adequate nutritional information;

to advance the sciences relevant to agriculture, fisheries and food.

Customers and contractors

11. The customers for publicly funded R & D are the three Agricultural Departments. Nearly half the work on agriculture and 10% of that on food funded by MAFF is carried out in-house by the three services of the Agricultural Development and Advisory Service (ADAS) and the Ministry's Food Science Laboratory respectively; the remainder is commissioned with external contractors, primarily the AFRC, the food RAs and the Universities. MAFF-funded R & D on fisheries and the marine environment is mainly undertaken in-house through the Directorate of Fisheries Research (DFR) laboratories and the Torry Research Station, with about 16% commissioned with external contractors such as the Natural Environment Research Council (NERC) and the Sea Fish Industry Authority (SFIA). DAFS-funded agricultural and food R & D is undertaken mainly at the Scottish Agricultural Research Institutes (SARIs) and Scottish Agricultural Colleges (SAC) with a small amount of work

in-house; fisheries R & D is conducted almost entirely at the Department's marine and freshwater laboratories. DANI's programme of R & D is carried out mainly in-house. The Welsh Office does not directly fund research but contributes to MAFF's Chief Scientists' research Commission reviews and makes an input into the commissioning of programmes by MAFF.

Scale

12. The government has been reducing its expenditure on R & D for agriculture, fisheries and food. Savings of £20 million over the survey period were identified in the 1984 PES round and a further £10 million is to be saved by 1991. This amounts to a cumulative reduction of 17% across the whole programme over a six year period. The 1987 Annual Review of Government Funded R & D indicated that in 1987/88 total public expenditure on R & D matters for which the Agricultural Departments are responsible would be as follows:

TABLE 1: PUBLIC EXPENDITURE ON 'AGRICULTURAL' R & D, 1987/88

£m	MAFF	DAFS	DANI	TOTAL AG DEPTS	AFRC (Science Budget)	TOTAL
Agriculture	78.1	33.2	7.3	118.6	38.2	156.8
River and coastal engineering	2.0	-	-	2.0	-	2.0
Royal Botanic Gardens	4.9	1.3	-	6.2	-	6.2
Food	16.3	1.6	1.1	19.0	10.8	29.8
Fisheries and Aquatic Environment	10.1	9.7	0.5	20.3	-	20.3
	111.4	45.8	8.9	166.1	49.0	215.1

These figures are at full economic cost (fec) and include eg administration, superannuation and historic interest costs together with capital overheads. As noted in Paragraph 3 above, the Science Budget (which also funds some relevant work at NERC) is outwith my terms of reference. I have also excluded from my review the work of the Botanic Gardens at Kew and Edinburgh and expenditure on river and coastal engineering which is wholly in support of policy. I have not considered in detail the programmes of work supported by the MAFF Open Contracting Fund (£3 million) and the DAFS Increased Flexibility Scheme (£0.6 million) which comprise short-term contracts awarded competitively and directed towards specific policy needs. The figures I have used are updated estimates provided by the Agricultural Departments with the result that the overall figures differ slightly from those in the Annual Review. The expenditure covered by my review is thus as follows:

TABLE 2: EXPENDITURE WITHIN THE REVIEW (1987/88 ESTIMATES)

£m	MAFF	DAFS	DANI	TOTAL
	99.3	45.0	7.6	151.9

Other sources of funding

13. No accurate figures are available. In agriculture, the supply industries, and in particular the agrochemical and veterinary pharmaceutical companies, fund a high proportion of their own R & D; their UK expenditure is estimated to be in the order of £200 million a year, mostly on the development of products. Funds for R & D raised through levies by agricultural producers have risen from about £5 million in 1985 (at the launch of the Government's initiative on industry funding) to about £10 million at present. Contributions or contracts from other producer-based organisations (eg breed societies, non-statutory sectoral bodies) amount to a further £10 million. The levy operated by SFIA generates revenue of about £3.5 million, of which about £0.3 million is spent on fisheries R & D each year. There is also £0.3 million of contract work placed with Torry. There are no official figures for the spend on R & D by the fish processing industry or the retail sector. The food and drink industry is believed to spend in excess of £100 million a year on R & D, concentrating on the science and technology of food processing with a heavy emphasis on product development. Much of this is done in-house but there is also some contract work with the research institutes (RIs), the four RAs, universities and polytechnics.

Organisation of publicly funded R & D

14. Each Agricultural Department describes its commissioned work in different ways. In agriculture, the programme funded by MAFF is organised in a set of Commissions; the AFRC component of these Comissions is described in a series of programme units each comprising one or more research objectives whereas the ADAS component is described by programmes and projects. The DAFS programmes with SARIs and SAC are covered in a set of programme units akin to those in the AFRC, but not all of which match the MAFF Commissions. The DANI programme also has a set of Commissions and subsidiary projects, although once again these do not align exactly with MAFF's. Essentially I have adopted the MAFF system in this report although this has been modified both to cope with the variations in the other programmes and to match with the sectors that I have reviewed. Details are in Annex II. I have dealt with fisheries (including aquatic environment) and food separately on a UK basis.

ANALYSIS OF NEAR-MARKET R & D

15. I began by referring to the expenditure on 'improvement of technology' provided by the Agricultural Departments in the 1987 Review of Government Funded R & D. This general categorisation based on 'primary purpose' was unhelpful for my review because it made no distinction between strategic work and that close to the market. Nor did it reflect the fact that many R & D

projects are dual or multi-purpose. (This was particularly noticeable in the agricultural Commissions where I found that the cumulative effect of primary purpose descriptions significantly understated the policy component: recommendation 13 in paragraph 42 is aimed at ensuring that future descriptions are more precise). I therefore needed to carry out a detailed scrutiny of the 2000+ projects funded by the Agricultural Departments. I thus held a series of discussions with commissioners, contractors and beneficiaries, whether actual or potential, during which I probed the categorisations provided by the various parties and tested the arguments adduced by them. I am satisfied that this initial sift was as rigorous as possible in the time available.

CATEGORISATION OF R & D

16. The programmes commissioned by the Agricultural Departments embrace a wide variety of work conducted for Departmental policy purposes, in support of the agricultural, fisheries and food industries, and in the furtherance of related science. The terms of reference required me to develop action programmes to enable government to take decisions on whether to terminate or transfer to industry funding support by the Agricultural Departments for near-market R & D. There is no accepted definition of near market. The interpretation given to this will vary between sectors and according to the nature of the research. In some cases it may be as little as one year, but, following advice from those closely concerned with the subject, I adopted an initial definition of near-market as that;

> "which is reasonably likely to lead directly to commercial application, whether as a product, process or system within up to three to five years".

Work which does not fall into that category I defined as far market. But in the analysis of the programmes commissioned by the Agricultural Departments I adopted a third category (which includes projects with both far and near market relevance) covering that work required to support Departmental policy, or for statutory or regulatory purposes. I was thus able to assign the whole programme of agriculture, fisheries and food R & D across this categorisation.

17. Work for policy purposes is commissioned or carried out in support of statute or to assist policy formulation or implementation. In some cases the description of the project allowed this to be recognised unambiguously - eg work in support of notifiable plant and animal diseases; work on the toxicology of food components in support of food hygiene and safety legislation; work on the monitoring of fish stocks in the sea. Where clear identification was not possible (ie the work had multiple objectives) I assigned a proportion (varying according to the work's relevance to statutory or policy support) to the 'policy' category with the remainder assigned as appropriate to near and far market - eg nitrogen leaching (pollution of water supplies/more efficient use of fertilisers); animal health (animal welfare/reducing livestock losses); biological pest control (reducing pesticide residues and environment

contamination/reducing agrochemical input costs). I decided that work relevant to the hills and uplands should be included totally in this category because it is conducted in support of social and regional policy for disadvantaged rural areas, where farm incomes are very low, and so cannot be expected to become an industry responsibility. Far market work embraces basic studies, including work in support of industry which is of a strategic nature and falls outwith the near market category.

18. Near market work. It became apparent during the course of the review that the definition given in paragraph 16 was not wholly satisfactory, partly because of the nature of the work and partly because of industry's perceptions. The agricultural supply and food processing industries in particular look to government-funded research to provide ideas or material leading to exploitable products or processes. In general, companies in these sectors are interested in funding pre-competitive research, often on a collaborative basis, exploiting the ideas or material in-house or through specific contracts. Such work may be more than five years away from application. But the perception of near market by organisations representing the farming industry was very much less than five years from application. Partly this reflects attitudes amongst contributing farmers who are unwilling to assume the risk associated with supporting R & D which they cannot see as being almost immediately applicable, ie within one to two years, and where there is little prospect of capturing and exploiting the intellectual property resulting. I refer to this again in subsequent paragraphs. It is also partly attributable to the nature of the R & D where much of the work is related to systems rather than products. In the fishing industry, where the major limiting factor is the amount of fish available for catching rather than the ability to catch it, most near market work is confined to the utilisation of the catch.

19. The result of this analysis (based on the '5-year' definition of near market R & D) indicated a spend by the Agricultural Departments of £59.0 million on R & D for policy purposes, £53.2 million on far market R & D, and £39.7 million on near market R & D (Table 3). I am satisfied that, on the basis of the information available to me, the expenditure for policy purposes is the minimum necessary to achieve government's objectives. But my review has inevitably to be a snapshot of the Agricultural Departments' evolving programmes - in fact a snapshot of programmes planned in 1986 to meet government requirements foreseen at that time. Since then the situation has changed (eg in response to the Priorities Board's recommendations that the Agricultural Departments should spend more on the environmental effects of agricultural practices) and this continues. I understand that, in recognition of government policy, some work that I have classified as near market and appropriate for industry funding has already been redirected toward strategic or public good ends.

Projects with a small near market content

20. Especially in work commissioned in RIs, much of the near market R & D forms only a small component of any particular

project in the flow from strategic to applied and tends to be some way from commercial application. I see little value in seeking savings in a way that would be administratively costly (eg in saving parts of posts in multidisciplinary projects) and where the separation or termination of this small component of the work could threaten the continuity of flow towards application. Instead, I believe that work should be reorganised as far as possible and new projects commissioned when appropriate in accordance with the guidance outlined at Annex III. In work commissioned with other organisations (ADAS, SAC, RAs etc) a small component of near market R & D is more usually associated with work that has a high policy content. Again it would in many cases be administratively costly to discontinue parts of projects and there would be unwarranted disruption to work that is being conducted largely for other purposes. I thus conclude that **the near market work in those projects whose near market content is small should not be considered for industry funding.**

21. One approach taken by the Agricultural Departments in the presentation of much of their data for this review involved assessing the policy, far market and near market components of each project on the basis of a stepped classification ie 0%, 1-25%, 26-50%, 51-75% or 76-100% in the appropriate category. This seemed sensible, given the difficulty of identifying precise allocations. Taking the de minimis argument developed in paragraph 20 above, I have excluded those projects that I agreed were in the 1-25% near market category from the figure considered for industry funding. This has the effect of reducing the near market figure from £39.7 million to £34.3 million (Table 3).

Work that is not commodity specific

22. Some of the Commissions (Soil Science, Crop Protection, Animals General, Economics) contain work that has near market elements but whose benefits apply broadly rather than to any specific sector. The individual beneficiaries and the extent to which they may benefit are likely to change from year to year. It was clear that the various sectors of the farming industry would not regard it as appropriate to fund from commodity levies work that was not itself commodity specific. Furthermore, the result of some of this work (eg in reducing agrochemical use) is against the commercial interest of the supply trade and funding cannot be expected from that quarter. The practical difficulties of mobilising private funding could result in damage to the substantial public good elements of the non-commodity specific work if the near market components were to be discontinued. **I thus consider that this work should continue to be publicly funded.** This has the effect of reducing the near market figure to £30.6 million (Table 3). For the future **I consider that there should be further study to assess the value to the farming community of work that is near market but not commodity specific and to identify the potential beneficiaries.** This should be a high priority for the evaluation systems which are now being developed. One element that is identifiable in market terms and so might be funded by alternative means is that part of the DAFS expenditure devoted to economics and marketing

R & D which directly supports the chargeable farm business advisory services and packages. (The total near market spend by DAFS on economics and marketing R & D amounts to £0.6 million.) This work should be appropriable and **it may be possible to fund its cost through advisory charges; those conducting the charging review will wish to consider the extent to which this could be accommodated.**

Special circumstances of horticulture

23. In comparing the extent of expenditure on near market R & D that might be offered to industry and the potential willingness and capacity of each sector to fund that R & D, I was struck by the fact (Table 3) that the horticulture industry (value £1.4 billion) would be asked to fund almost as much as the whole of the livestock industry (value £7.2 billion). Moreover, the definition of near market adopted for this review is less appropriate to horticulture than many other sectors because of growers need for rapid returns on their investments in research and new technology and techniques. The horticulture industry is fragmented, with many different enterprises and many small businesses. Yet its uptake of R & D results is rapid and the industry is currently raising about £1.25 million through the Horticultural Development Council (HDC) and the Apple and Pear Development Council (APDC). Unlike most other sectors it does not receive support under the CAP, except to a very limited extent, and in recognition of this government policy has been to support a rather higher level of R & D in relation to the value of output than has generally been the case elsewhere. In the light of this **I propose that, for horticulture, the aim might be for the £9.5 million of near market work to be jointly funded by industry and government on a 50/50 basis with government guaranteeing to continue to fund up to £5 million.** This would reduce the near market figure to £25.6 million (Table 3). In order to ensure that the government's share of near market expenditure remains relevant to the industry's needs, collaboration with the HDC and APDC would be essential when decisions on allocation of government funding are made. I also consider that this approach should if possible be accompanied by an examination of the overall structure of horticultural R & D with a view to rationalisation. This point is developed in paragraph 20 of Annex V.

Near market expenditure at RAs and SFIA

24. I then considered the extent to which it would be right to recommend that government should further reduce the extent of the work it commissions at the food RAs. Some 24% of this (about £0.6 million), while near market in its content, plays a valuable role in supporting and encouraging small businesses, a theme which is in tune with current government policy. RAs (which are discussed in detail in paragraph 32) are a worthwhile mechanism for attracting industry funding in the food sector. **I consider that it is justifiable for the government to continue this expenditure on the basis that it is essentially pump-priming to encourage small businesses to undertake work which is of a speculative nature.** I have also noted that some £0.3 million expenditure is commissioned by MAFF with the SFIA.

These projects are funded from the small extramural budget of Chief Scientist (Fisheries and Food) which also includes the Special Researches Fund. The financial allocation between these different classes of projects and in particular to the SFIA is not fixed and is reviewed regularly by the Fisheries Customer Group. In this sense the expenditure is analagous to the Open Contracting Fund which is excluded from consideration, as noted in paragraph 12, since it provides the Agricultural Departments with a useful degree of flexibility to buy in specialist resources not available in-house. **I do not consider that these resources should be reduced but in future they should not be used to fund near market projects.** Taken together, this reduces the near market figure to £24.7 million (Table 3).

Near market expenditure for industry funding

25. I thus believe that **a maximum of £24.7 million (at fec) of publicly funded near market work should be considered for industry funding.** A breakdown of this figure by Commission (Table 3) and by sponsor Department (Table 4) is as follows:

TABLE 3: CATEGORISATION OF EXPENDITURE BY GROUP AND COMMISSION (1987/88 ESTIMATES)

£k	Policy	Far market	Near market*				
			I (para 19)	II (para 21)	III (para 22)	IV (para 23)	V (para 24)
CROPS							
B Crop Protection	4310	4078	431	320	179	179	179
C Cereals	1181	2207	3088	2944	2944	2944	2944
E Other arable crops	995	4697	3236	2680	2553	2553	2553
Other	295	279	105	76	60	60	60
Sub-total	6781	11261	6860	6020	5736	5736	5736
HORTICULTURE							
F Field Vegetables	989	1496	2528	2528	2528	1220	1220
G Fruit	680	2178	2386	2231	2231	1077	1077
J Hops	70	173	107	107	107	51	51
K Protected Crops	543	1118	3287	3287	3287	1587	1587
L Ornamentals	68	551	1454	1432	1432	691	691
Other	4	0	80	80	80	39	39
Sub-total	2354	5516	9842	9665	9665	4665	4665
LIVESTOCK							
M Animals General	5285	3021	856	666	505	505	505
D Grassland	3591	2927	2492	2214	2214	2214	2214
N Cattle	2942	5984	3888	3376	3376	3376	3376
P Sheep	1683	2047	749	476	476	476	476
Ruminants	1558	3812	895	324	324	324	324
Q Pigs	820	1516	1455	1313	1313	1313	1313
R Poultry	1967	1953	1644	1509	1509	1509	1509
Sub-total	17846	21260	11979	9878	9717	9717	9717
OTHER AGRICULTURE							
A Soil Science/Survey	3162	2935	2115	1639	0	0	0
T Engineering	2204	1532	2561	2219	1305	1305	1305
Y Conservation	1174	84	38	30	0	0	0
Economics	509	120	662	607	0	0	0
Other	140	361	133	89	61	61	61
Sub-total	7189	5032	5509	4584	1366	1366	1366
AGRICULTURE TOTAL	34170	43069	34190	30147	26484	21484	21484
FISHERIES	18600	2311	1542	1154	1154	1154	846
FOOD	6277	7775	4012	2976	2976	2976	2335
OVERALL TOTAL	59047	53155	39744	34277	30614	25614	24665

*references are to those paragraphs in the text which give the background to the figures

TABLE 4: NEAR MARKET EXPENDITURE FOR INDUSTRY FUNDING, BY INDUSTRY AND DEPARTMENT

£k	MAFF	DAFS	DANI	TOTAL
Agriculture	16968	2823	1693	21484
Fisheries	846	0	0	846
Food	2010	190	135	2335
TOTAL	19824	3013	1828	24665

An expansion of Table 4 is given in Annex IV.

DISCUSSION OF EVIDENCE ON NEAR MARKET WORK

The Government's approach

26. The White Paper on Civil Research and Development* recognises that the government accepts that it has a major role in funding basic work to provide a platform for future exploitation by industry as well as in areas of statutory and policy responsibility such as consumer safety and environmental protection. On work nearer to the market, the White Paper states that public investment in science and technology will not achieve its full economic benefit unless industry takes greater responsibility for the applied work necessary to capitalise on the publicly funded base. Paragraph 30 of the White Paper also refers to specific measures by government to meet the R & D needs of small firms and I have noted that this is relevant to the sectors covered by the review.

Role of contractors

27. Research and development work is part of a continuum that flows from the fundamental/basic, through strategic to applied research into development and then application. There are no rigid constraints or time-scales associated with this flow - the research may point to a potential application at almost any stage and commercial organisations and the levy bodies look to link in with this flow in rather different ways. For the future, it would be desirable if those organisations concerned with basic research, applied research, development and technology transfer could be brought closer together so that these activities can be better integrated. The sugar beet, sector is perhaps closest to this ideal and appears to derive benefit as a result. But in general, there is an organisational break along the flow. In sectors of the food industry, for instance, there is an approximate division of labour with basic/strategic work confined to the RIs, and development and technology transfer the responsibility of companies and the RAs. In agriculture the RIs play a similar role, with the government advisory agencies equating to the RAs. On a number of occasions

*Government Response to the First Report of the House of Lords Select Committee on Science and Technology, 1986-87 Session (CM 185)

representatives of industry told me that they regretted the move by the RIs to seek near market contract work. They felt that the RIs had a poor perception of market requirements and the associated implications for product development, and that the diversion of effort in this way detracted from the primary role of RIs as a source of novel ideas (although it is noteworthy that the RIs are attracting significant external funding - see paragraph 39). They saw scope for RIs to seek pre-competitive contracts, and benefits deriving from a close association between near market R & D and the provision of technology transfer services. In the future, when levy bodies may become increasingly concerned about the protection of their intellectual property, this association is likely to be even more important. Existing arrangements are more complex than this picture would suggest (especially in Scotland and Northern Ireland where the additional educational dimension has to be considered). I have kept these views in mind in reaching conclusions.

Attracting industry funding

28. The evidence I received indicated that only if industry itself controlled or strongly influenced the work that it was asked to support were more funds likely to be forthcoming. In some sectors private funding is already well established - eg sugar beet, where producers fund both strategic and applied R & D together with British Sugar; and cereal groups whose programme of work is for immediate application. Ideally, the circumstances which would encourage industry funding of near market R & D might be a combination of:

R & D that produces results that are of direct relevance, immediate application and readily comprehended - and has been influenced by those funding it;

technological awareness amongst the users who will thus be ready to finance a service that provides identifiable value for money;

a clear link with a technology transfer service so that results flow rapidly to, and may be interpreted for, the funders;

appropriability of the results, ie the ability to protect intellectual property if the results are likely to give competitive advantage;

a sense of corporate identity (eg all sugar beet growers grow on quota through contracts controlled by British Sugar; cereal groups have a very local identity: scale may well be a factor here);

a capacity to fund R & D and technology transfer (important in the current depressed state of agriculture).

I gained the impression that much of the farming community may perceive the rapidity with which results are produced and their apparent applicability as more important than their total accuracy or reliability. The scientific community, however, attaches much importance to properly verified and accurate results which are of lasting value. This is a dilemma which is not easy to resolve.

Mechanisms for industry funding

29. The following paragraphs discuss a variety of mechanisms that might be used to encourage industry funding - levies, RAs and producer groups, collaborative schemes, and tax incentives. Pre-competitive funding is likely to be encouraged by DTI-type initiatives but near market 'systems' funding is only likely to come from the farming industry itself. Virtually all the evidence that I collected suggested that funding from the farming industry could only be achieved on a significant scale through the use of statutory levies. The problem of 'free-riders' rules out voluntary levies as a viable option in almost all cases.

30. Levy-funding. Levies operate in a number of sectors and some have been in place for many years. Although levies are sometimes described as compulsory, those introduced recently have had to be supported by the relevant sector, following a poll of producers, before they could be enacted. Support for their continued existence is sought by a further poll three years after their formation and every five years thereafter. Such levies are given a statutory base, for example in the form of a Development Council (under the Industrial Organisation and Development Act, 1947). Levies are in some cases used for more than one purpose - eg R & D; promotion and marketing; information and technology transfer. They are also used in other countries (eg France) to support R & D.

31. The sector levies currently in operation in the UK work in different ways and meet with differing receptions from those who are being levied. There can be a failure in certain sections of industry to perceive the benefits of the levy (the attitude of small abattoir owners and meat wholesalers was one example given to me); and there can be a problem with the actual collection of the levy (eg HDC). In horticulture and cereals, because information about producers can only be obtained from confidential Census data not disclosable to the levy administrations, definitive lists of contributors are not available, and this can impede the close relationship that is likely to be needed for success. Much will depend on the nature and the scale of the sector paying the levy and the extent to which its members share a sense of identity. But good structure allows some levies to work well (eg top fruit (APDC), fisheries (SFIA)) and, operational problems apart, I consider that at present levies are the most effective mechanisms for funding producer-supported R & D in agriculture.

32. Research Associations and producer groups. There are four RAs in the food sector, three of which I visited (British Food Manufacturing Industry RA (BFMIRA) at Leatherhead; the Campden Food RA at Chipping Campden; and the Flour Milling and Baking RA (FMBRA) at Chorleywood). I also visited the Building Services Research and Information Association (BSRIA) at Bracknell as an example of an RA serving a sector other than food. The four food RAs are commercial organisations supported by a mixture of subscriptions, contract R & D from members and government commissions. There is no grant-in-aid funding and the extent of support from MAFF commissions has reduced in recent years. It now ranges between 44% at the British Industrial Biological Research Association (BIBRA) and at FMBRA, which carries out more strategic research than the other three, and 15% at BFMIRA. The RAs provide information, problem-solving and technology transfer services mainly for small and medium-sized food manufacturers. They undertake investigative work for companies which lack their own facilities and also carry out contract R & D or investigative work for larger companies when it is not cost-effective for this to be done in-house. Information provision is a strength (especially at BFMIRA) and there are good overseas links, including membership. Total membership is typically in the 400-700 range and turnover varies between £2 million and £6 million annually. The RAs in the food sector provide a valuable and commercially viable service to small and medium-sized food manufacturing companies (ie up to 500 employees) and are of some use to larger concerns. In agriculture, the Protein Growers' Research Organisation (PGRO) at Peterborough has some of the attributes of an RA although it is funded by a voluntary levy collected at the point of first sale rather than through membership subscriptions. The levy raises about £0.14 million from 11-12000 members with 15% of PGRO's funding coming from MAFF.

33. A number of RIs were formed as a result of the efforts of producer associations, some of which still maintain a relationship with the RI despite the fact that funding now comes largely from government. Examples are the Animal Diseases Research Association (the governing body of the Moredun Institute in Edinburgh) and the Lawes Trust at Rothamsted. Many other Institute-linked farmers' and growers' associations exist and raise relatively small sums of money, often used to fund visits of scientists abroad, studentships or very small R & D projects. I do not see scope for building on such associations to raise the substantial sums that would be required to substitute for the withdrawal of government-funded near market research.

34. A limited number of producer groups fund their own R & D. Examples are ARC Ltd (Agricultural Research Centres, whom I met) and the Cambridge University Potato Growers Research Association (CUPGRA). I see some scope for building on the concept of membership subscriptions for very local trials/husbandry/demonstration centres. It was suggested to me that MAFF experimental centres, crop demonstration centres and local

authority agricultural colleges could all act as focal points for locally oriented work which surrounding farmers might be prepared to fund. While this may be so, I cannot see these producer groups generating sufficient funding to support more than a limited number of very applied projects. Moreover, such groups may fund R & D for farmers growing particular crops in particular areas but there is much to be said for co-ordinated experiments which cover a range of soils and climates, so providing information to meet the needs of the majority.

35. I see some scope for establishing an RA or RA-type organisation at the same location as the Institute of Food Research (IFR) Bristol to conduct near market R & D for the meat sector. This would provide a focus for the sector itself as well as releasing IFR from carrying out this type of work whilst permitting close association between the two. There might also be a case for an RA linked to the Hannah Research Institute or IFR Reading for milk products R & D; and for an RA-type arrrangement for Torry, more detailed discussion of which is in paragraph 41 of Annex V. The structure of the agricultural industry is quite different from that of the food industry. The scale and fragmentation of business in agriculture is unlikely to be suited to the RA structure and most farmers are unlikely to perceive benefits from membership. The appropriability of results would also be difficult to protect in agriculture, thus reducing competitive advantage. Problems such as these face the BSRIA whose membership (including professionally qualified structural and heating engineers) is perhaps more likely than farmers to appreciate the benefits and results of R & D. In general, therefore, I do not see RAs serving the needs of producer groups in agriculture.

36. Collaborative schemes and research clubs. There are several current projects involving DTI funding (ranging from 40-70%) essentially for pre-competitive research. Examples include the Plant Gene Tool Kit, enzyme supplementation in animal feed, and tractor clubs. In addition, DTI with MAFF and DAFS support the Agricultural Machinery Partnership Scheme (AMPS) administered by IER but separate from it. Details are given in paragraph 36 of Annex V. The scheme seems to work well but its membership is restricted and specialist. It may therefore be rather specially adapted to this particular sector and thus not necessarily applicable as a general model but the principles underlying it may be worthy of further consideration in the context of encouraging greater collaboration.

37. Tax incentives. Relief from taxation on expenditure in support of R & D was suggested as one means of encouraging increased funding. The nature of farming finance is such that tax incentives seem unlikely to be effective in inducing farmers to support R & D. The position of retailers and the supply trade or food industry is different; the likely costs and benefits of such a scheme would require careful analysis and the administrative complexities could be substantial. It may be worth pursuing if it is considered important to encourage the

retail sector in particular to support agricultural, fisheries or food R & D, although I understand that a recent study has concluded that tax incentives are unlikely to offer good value for money*

GENERAL CONCLUSIONS

Transfer to industry funding

38. The industries covered by my review already fund, and in some cases conduct, substantial amounts of R & D. Many of those to whom I spoke accepted that it was right to ask industry to fund more of its near market R & D although there were severe doubts about the amount of funding that might be forthcoming. It may be difficult, for example, to convince the levy payers of the justification for the overhead costs which are required to be included in fec. If industry funds are to be successfully attracted, it is important that those involved should be able to control the way in which their funds are disbursed and to perceive the relevance of the R & D that they fund. Moreover, industry will need to be reassured that the government's commitment to funding strategic and public good R & D is not going to be abandoned. Concern was also expressed that those sectors which are already funding their own near market R & D at a significant level should not be penalised by being pressed to undertake additional funding if government continued to support those sectors reluctant to fund. It will take time to achieve change and the two year period referred to in the terms of reference is likely to be too short in most circumstances. Rigid adherence to an artificially imposed timescale could result in antagonistic response with ultimately a lower level of industry funding than is potentially available, and also in damage to government programmes. There will be time lags between the introduction of new or modified levy mechanisms, the receipt of additional industry funding and the transfer to industry of responsibility for programmes funded on a financial year basis. In making recommendations I have suggested that **the objective should be to achieve transfer to industry funding in two years wherever possible, and that in all cases decisions should be reached within that period, while noting that the considerable practical and legal difficulties involved may well require a longer timescale.** The detailed conclusions thus envisage that the process of transfer to industry funding would be completed by the end of 1992.

Scope for collaborative funding

39. In paragraph 18 I referred to the different perceptions of what constitutes near market R & D. The agricultural supply industries are anxious to exploit ideas and material arising mainly in the RIs and show a willingness to fund pre-competitive

* Fiscal Incentives for R & D Spending: an International Survey (Joint Inland Revenue and HM Treasury study)

research; some arrangements for collaborative funding already exist (paragraph 36). Some food R & D is already carried out jointly with industry. Organisations representing farmers' interests and farmers themselves tend to see near market as being very close to application (within 1-2 years, perhaps 3 years at most). They see too high a risk attached to research that is more remote from application to justify using their funds. Whilst willingness to fund cannot be regarded as the sole criterion for what constitutes near market work I recommend that account is taken of it when decisions are reached. In particular, I see problems in attracting full industry funding for work that I have defined as near market but which is towards the 3 to 5 year end of the near market spectrum. **I therefore recommend that mechanisms should be sought to enable joint funding with the farming industry of near market work with greater emphasis placed on collaboration the further the work is from application.** Apart from ensuring the flow of research into application, this would have the added benefit of giving industry a greater influence over less applied research, something that it is likely to demand as part of its funding conditions (see paragraph 28). In the time available it was not possible to identify the extent of work which might be offered for collaborative funding and £24.7 million is in this sense a gross figure as are the sums referred to in the sectoral recommendations in paragraphs 45 to 57. Nor are there accurate figures on the extent to which industry already funds on a collaborative basis (sometimes referred to as 'bolt-on' funding) although AFRC estimates that about £20 million of external funding (including some expenditure by other Government Departments) is attracted by its RIs annually. This will be for both pre-competitive and near market work.

40. I was told on a number of occasions that the current arrangements for obtaining government contracts, for negotiating contracts with government-funded agencies, and for establishing joint ventures under existing schemes are over-complex and slow and so can act as a disincentive to achieving government objectives. **I consider that these and any new arrangements should be scrutinised to see if they can be streamlined whilst maintaining protection of the public interest.** Nor is the position on intellectual property rights clear; but this will be an important issue in attracting funding, especially since agriculture is such a fragmented industry. I believe that **the position of intellectual property rights in such arrangements needs clarification.**

Mechanisms for raising funds

41. I do not believe that a single solution would be appropriate for all sectors but extension of existing levy mechanisms seems likely to be most effective in generating additional funding for agricultural and horticultural R & D, especially if change is to be achieved rapidly. In GB some new levies may require to be introduced and others adapted. I understand that few of the existing levy arrangements apply in

Northern Ireland. In the time available it has not been possible to investigate how easily they could be extended or whether alternative mechanisms would be more appropriate. In general, however, I believe that **industry funding should be generated where possible through established means.** Once transfer to industry funding is complete and the principle of industry funding and commissioning its near market R & D firmly established, producers will be able to decide whether the levy mechanism or some other is likely to serve the needs of the industry in the long term.

Guidelines for future government commissioning of R & D

42. The review's conclusions and recommendations have implications for the systems of evaluation, commissioning and review of government-funded R & D, and for government's relationship with the different sectors of the agricultural, fisheries and food industries. These are developed further in the guidelines for commissioning future work (Annex III). My main conclusions are that:

for the future when new near market work is commissioned it should be relevant to support for statute or policy or on the collaborative basis described in paragraphs 23 and 39 above. The Agricultural Departments should redescribe their commissioned programmes for agriculture so that the policy related elements are more clearly defined than at present;

there should be improved arrangements to allow industry a more direct influence on the strategic and collaborative programme and better feedback about resultant changes;

the customer-contractor system provides a sound basis for commissioning, but it could be strengthened by moving further towards contract-type description of commissioned work with all contractors, including those in house, increasing their efforts to identify objectives, resource needs and timescales; objectives and inputs should be strictly adhered to;

effort should be directed towards post-hoc evaluation in order to assess the effectiveness of the new arrangements.

and that the monitoring system should ensure that work which is drawing close to the market is identified.

Aspects relating to national and international collaboration and contracting out to UK industry are discussed in paragraph 72.

Organisational and staffing implications

43. In the short time available it has not been possible to identify what the impact would be on particular establishments of failure by industry to replace government expenditure. In

any case, changes will depend on both the quantity and type of work that industry wishes to support. There may be a need for further organisational changes but I cannot predict at this stage what they will be. Change is likely to be very costly. For example, if no industry funding at all were forthcoming and it were decided to terminate £25 million worth of expenditure, the cost in redundancy payments alone could be of the order of £15 million and might be much higher. There would also be substantial additional re-structuring costs. Since there is unlikely to be provision in Departmental budgets for costs of this order I assume that, as on previous occasions, Treasury funding will be necessary. I have not been able to estimate the resources necessary to implement the guidelines proposed in the previous paragraph but they too would place an additional burden on Departments.

44. The staff of many of the establishments covered by the review have been affected by the considerable changes that have taken place as a result of reorganisations over the last three years. I know from my experience of personnel work the extent of redundancy, lateral transfers, retraining and domestic distress that changes of this nature can cause. I am aware that the existence of my study is causing further uncertainty which in turn is likely to sap morale and lead to losses of highly-trained staff whom we shall not easily replace. This point was also made by several large companies who were concerned about possible erosion of scientific capability. Major organisational change brings with it substantial management problems, especially if it results in the complement of any particular unit falling below the 'critical mass' needed for it to function effectively. I believe that human resource considerations should be given full weight in determining the pace of change.

RECOMMENDATIONS BY SECTOR

45. The following is a summary of conclusions on near market work, sector by sector. Supporting analysis and discussion is in Annex V. As paragraph 39 notes, the sums referred to here are components of the £24.7 million maximum figure to be considered for industry funding (paragraph 25). They do not take account of the possibility of collaborative funding for work further from application.

CROPS

46. Cereals (approximately £3 million worth of near market work). I consider that **the Home Grown Cereals Authority (HGCA) levy should continue to be used as the mechanism for the provision of R & D funds by the industry.** On timing, I suggest that **an action manager should be identified to develop and agree with the HGCA a programme for the phased transfer to industry of funding for near market R & D from the start of the HGCA's 1989 financial year (1 August 1989) with a view to completion by 31 July 1991.** I also believe that, if HGCA is to persuade farmers of the merit of increasing the R & D levy, there may

need to be further consideration of the mechanisms by which it commissions R & D.

47. Potatoes (approximately £1.75 million worth of near market work). I consider that the **existing levy arrangements operated by the GB Potato Marketing Board (PMB) would be an appropriate channel for increased funding,** subject to any changes which may arise as a result of the review which is just starting. On timing, I suggest that **an action manager should be identified to develop and agree with the PMB a programme for the phased transfer to industry funding of near market R & D from January 1990 with a view to completion by 31 December 1991.**

48. Sugar beet (approximately £0.1 million worth of near market work). I consider that **this should be offered for industry funding through the Sugar Beet Research and Education Council (SBREC) and that an action manager should be identified to open discussions with SBREC, with a view to completion by 31 March 1991.**

49. Oilseed rape (approximately £0.5 million worth of near market work). From observation of other sectors it seems likely that a levy would act as an effective mechanism for funding near market R & D. Accordingly, I consider that **Parliamentary time for its introduction should be sought in the 1989/90 session with the intention of having the levy in place by the start of the 1990 oilseed rape year (1 July 1990) and with a view to transferring the funding of near market R & D by 30 June 1992.** If a levy were not acceptable then a collaborative club or organisation along the lines of PGRO might be a possible alternative. **In this event the establishment of an organisation similar to PGRO, funded by voluntary levy, should be considered with, initially at least, a degree of government contract funding. An action manager should be identified with the remit to develop and agree with industry representatives arrangements for establishing such an organisation by 1991 with a view to transferring the funding of near market R & D within eighteen months of its formation.**

50. Peas and beans (approximately £0.3 million worth of near market work). It seems reasonable that **further funding could most appropriately be sought through the PGRO mechanism and I suggest that an action manager should be identified to liaise with PGRO over the transfer of the work from 1 April 1989 with a view to completion by 30 March 1991.**

HORTICULTURE

51. I have identified approximately £9.5 million worth of near market work. As noted in paragraph 23, I consider that this should be offered for collaborative industry and government funding, with the government continuing to fund £5 million. I

market R & D with a view to completion by the end of the MLC's corporate plan period (1990/91). I have made separate suggestions in paragraph 57 about the meat processing work.

54. Poultry and eggs (approximately £1.5 million worth of near market work). I have not been able to identify eggs expenditure separately. The poultry industry has traditionally resisted statutory levy arrangements and it seems likely that the British Poultry Federation (BPF) would be able to raise industry funding on a voluntary basis. I therefore recommend that **an action manager should be identified to explore with the BPF the possibility of a transfer of funding for the poultry near market R & D and to make recommendations by 31 March 1989, with a view to completion by 31 March 1991.** For eggs, the British Egg Industry Council (BEIC) could provide a focus for funding and I suggest that **an action manager should be identified to open discussion with the industry on this basis with the same timescale as for poultry.**

OTHER AGRICULTURE

55. Although, as paragraph 22 notes, it would be very difficult to mobilise funding for much of the near market work in the non commodity-specific Commissions, I have identified approximately £1.3 million worth of such work within the Engineering and Buildings Commission which should be available for industry funding. The work spans a number of commodity areas (glasshouses, grain stripping and drying, dairy parlour management and milking) and I recommend that **the sectoral action managers responsible for these areas carry forward in discussion with the industries concerned the possibility of transfer to industry funding on the same timescales as the other work.** Finally, I have identified approximately £0.06 million worth of near market work in respect of the Scottish Agricultural Statistics Service. I consider that **any work transferred to funding by industry in Scotland should bear its appropriate loading for statistical support.**

FISHERIES

56. I have identified approximately £1.1 million worth of near market work but, as noted in paragraph 24, I consider the £0.3 million expenditure by the Chief Scientist (Fisheries and Food) which includes the Special Researches Fund should continue to be publicly funded. The bulk of near market expenditure is at the Torry Research Station and I have considered a number of means by which further commercial funding could be attracted. In the time available it has not been possible to reach firm conclusions. A full study and cost analysis would need to be undertaken before decisions could be made and I suggest that **MAFF's Fisheries Department begin this study as soon as possible with the objective of producing detailed proposals on Torry's future status and funding arrangements before the end of 1989.** A small amount of expenditure (£0.07 million) is related to fish farming and I recommend that **transfer to industry funding should**

be sought within two years. Some of the work undertaken by the marine laboratories includes technology transfer/advisory activities and I suggest that **Fisheries Departments in MAFF and DAFS should consider whether such work should be charged for.**

FOOD

57. I have identified approximately £2.6 million worth of near market work mainly in respect of meat processing and milk utilisation. I believe that **development of an RA model in association with the appropriate RI with, initially at least, some government contract funding appears to offer the best prospect for attracting industry funding.** I suggest that **an action manager be identified to pursue this in detail with the industries concerned, with a view to establishing feasibility by the end of 1989 and introducion by the beginning of 1991 if the results of the studies are positive. In general, if additional funding is to be raised for food R & D, extension of existing collaborative arrangements for underpinning strategic initiatives seems likely to provide the most effective approach. I suggest that programme managers should be commissioned to develop such initiatives.**

TECHNOLOGY TRANSFER SERVICES

58. It was agreed at the outset that, because MAFF and DAFS are to undertake reviews of charging policy beginning in April when information is available on the first full year of operation, my remit in respect of technology transfer would be to conduct a factual survey and to draw out some general conclusions on industry funding. Annex VI contains this survey. I have also contributed to the Cabinet Office's own overview report.

59. As paragraph 27 notes, the R & D process is a continuum. Because R & D is by nature interactive, innovation can take place anywhere along the continuum. Technology transfer is part of the process by which information passes along and outside it. It is not always easy to separate from near market R & D; can take place at several points along the continuum; and can itself result in feedback which leads to further basic research. I have regarded as technology transfer services those activities organised specifically to provide advice and information and to transfer the results of R & D (ie the publicly-funded agricultural advisory services which I describe as PAS, private consultants and field staff of eg MLC and the MMBs).

AGRICULTURE

60. The three major justifications for government provision and funding of tt services through the PAS are set out in Annex VI. Briefly they can be expressed as support for small businesses; need to meet 'public good' statutory and policy objectives; and need to improve economic efficiency. This section of the report considers whether private consultants or privatised advisory services could meet these needs as effectively. I believe that there is benefit in having a close association between those who conduct near market R & D and those who interpret and advise on

the application of these results to farmers. Effective technology transfer is dependent upon ready access to current R & D. This has been true of the PAS in the past and is the case for example in the sugar beet sector where British Sugar both funds (jointly with the growers) near market R & D as well as providing its own advisory service.

61. In the area of 'public good', the supporting R & D is mainly publicly funded and much is necessarily conducted by PAS because of requirements for special facilities (eg the need for experiments to be conducted under controlled conditions) or the availability of particular expertise. No charge is made for technology transfer because the policy is to provide free advice and information on a range of topics that are in the public interest and will in many cases involve a cost penalty to farmers (eg conservation activities on farms). There are statutory responsibilities to provide elements of this and the PAS seem best placed to do so. Government objectives require that technology transfer and other public good information should be 'pushed' to the farming industry. It is conceivable that the PAS could operate solely to serve public good ends but this would have considerable disadvantages. At present the PAS take the opportunity when on farms for production-related purposes (the usual reason for visiting farms) to raise public good matters with farmers: and the PAS adviser is generally regarded by the farmer as being sympathetic and so is well placed to influence him. A public good-only service would have much less access to the farming community and public good ends would thus be more difficult to achieve. It is also important that government should receive rapid feed-back on policy issues, especially when, as at present, policy objectives are changing quickly. There is close contact (and no problem of confidentiality) between the PAS and those who formulate policy; this is a situation that should be maintained.

62. The position of technology transfer services outwith the area of public good is more fluid. The thrust of government policy is that the various sectors of agriculture should take increasing responsibility for their own near-market R & D, and this report contains a number of suggestions as to how that might be achieved. Each sectoral organisation will need to develop or apply its own approach to the protection or otherwise of the intellectual property resulting from the R & D that it has funded and to the mechanism by which that information will be transmitted to those who have contributed to the funding. If such organisations are not protective of their intellectual property and if they have no particular view on technology transfer mechanisms, there will be little incentive for change. On the other hand, they might wish to try to keep their intellectual property solely for the benefit of their levy-payers and/or might wish to control the mechanism that transmits this information to those levy payers. In effect, once industry is paying for its own near market R & D, market forces will determine whether or not the situation remains unchanged. There are some indications that farmers may be less willing to pay for technology transfer if they have already funded the R & D

supporting it but it is not clear how this would affect the PAS and private consultants.

63. From the point of view of this review, the process described above would appear to imply that the production-related technology transfer activities of the PAS should eventually reflect the cost of the intellectual property they acquire, except where regional or other policy indicates otherwise. However, there are many uncertainties and it will be for the charging reviews to consider this further in the light of experience and reach final conclusions. If, for example, the PAS were to operate fully commercially they would need to be released from some of the constraints (for example on reinvestment and carry over of income) under which government agencies operate. Attention would need to be given to the current definition of fec and the extent to which general overheads should be loaded onto advisory charges. Finally, if increased charges led to PAS' withdrawal from some areas of advice altogether it would be necessary to consider whether the government's commitment to provide an advisory service would be jeopardised.

64. I thus draw the general conclusion that **the government's public good obligations, together with its declared support for a competitive and efficient UK agriculture, make it essential to continue the provision and funding of technology transfer services.** The introduction of charging for these services is, of course, in line with the philosophy underlying my review but the rate at which this policy might be further developed is outside my remit.

FISHERIES AND FOOD

65. As Annex VI notes there is no equivalent of the PAS for fisheries and food although government does support a variety of technology transfer activities. I have suggested in paragraph 56 that the MAFF and DAFS Fisheries Departments should consider the possibility of charging for some of the technology transfer provided by their laboratories to the fish farming industry. The fish catching industry obtains advice directly from the Industrial Development Unit of the SFIA which is funded from the levy.

66. I also believe that MAFF and DANI support for technology transfer in food through funding of work or RAs or by in-house initiatives should continue, especially where food safety is concerned.

R & D FOR STATUTORY AND POLICY PURPOSES

67. The final part of my terms of reference asked me to consider the scope for increasing exploitation of international and national collaboration of the R & D required for statutory or policy purposes and to explore the scope for contracting out to UK industry that which cannot be supplied through collaboration or inward licensing. I collected evidence and

information on this aspect during the meetings referred to in paragraph 15 and in discussions throughout the review

International Collaboration

68. There is already a widespread network of links, both formal and informal, between countries within the EC and further afield. The Framework programmes of the EC are encouraging collaboration between the Member States with several of the Directorates organising programmes with relevance to agriculture, fisheries and food. Examples are DG VI (Agriculture) and the Programmes organised through SCAR; DG XI (Environment, Consumer Protection and Nuclear Safety); DG XII (Science, Research and Development) and the agro-industrial technology (ECLAIR) Programme; DG XIV (Fisheries); and DG XVII (Energy) with relevance eg to effluent disposal. There is a national policy interest in all these programmes. The EC also encourages the exchange between Member States of young and established working scientists. EC funds are available for all these activities.

69. The Directives of the EC require that co-ordinated statutory responsibilities, including support for R & D, be recognised by Member States and these are determined through central co-ordinating committees. Examples include matters relating to plant and animal health, National Listing of plant varieties, and standards for the quality and safety of commodities. In fisheries, the Agricultural Departments collaborate in the work of the EC, ICES, the International Oceanographic Commission and the International Dumping Conventions. Participation in such agreements is on the basis of shared responsibilities. The UK attends regular tripartite meetings on food with Canada and the USA and takes part in discussion of international standards under the Codex Almentarius of FAO/WHO.

70. I was told by the AFRC and others that if the UK is to make full use of the results of R & D conducted abroad it needs to maintain its contribution as an equal partner to collaborative programmes. It was argued that our ability to utilise such information would be damaged if we withdrew substantially from large areas of research, partly because we would then be unable to contribute and partly because we would lack scientists of sufficient calibre to assess the relevance of information from abroad. There is a balance to be struck between the competitive disadvantage of relying on information from abroad and the cost of carrying out the R & D in the UK. Opinions varied on the extent to which R & D conducted abroad is relevant to UK circumstances. Some of those I met told me that in many cases it was possible to apply the results of such work directly; others said that different soil and climatic conditions, different legislation on eg agro-chemicals and use of different varieties made direct application difficult. Where the UK is involved in policy areas which are controversial internationally, such as pollution of the North Sea or the effects of acid rain, it would not be in our national interest to rely for policy formation on research conducted by other

nations whose objectives may be different. Thus, whilst recognising the benefit to be gained from internationalcollaboration, I see limited scope to expand this approach in relation to policy or statutory work.

National Collaboration and Contracting Out

71. Arrangements for contracting out already exist with a range of organisations such as Agricultural Genetics Company, Cambridge Life Sciences Ltd, RAs, universities and polytechnics. Some of the larger companies told me that they would be interested in collaborative "pre-competitive" R & D; while their interest would naturally be market related some of this work, particularly in eg the agro-chemical area, is likely to have policy and statutory implications. However, where R & D work of a regulatory nature needs to be carried out in support of policy eg on food safety or pesticides, and where this work is likely to affect commercial interests I see difficulties in placing it with any particular commercial company since this might be seen by its competitors as giving it privileged access or might provoke accusations of bias or impropriety.

72. Another obstacle to contracting out by government seems to be the terms under which contracts are placed and supervised. I was told that the complexity and slowness of many of the procedures associated with the LINK programme deterred potential collaborators. There seems to be some evidence of similar difficulties in respect of contracting out and this was mentioned, for example, by the Huntingdon Research Centre, a private contract R & D laboratory with specific expertise in toxicology. In general, I gained the impression that market capacity for contracted out government R & D is somewhat limited. Most of the commercial companies with substantial in-house R & D facilities said that they would not seriously contemplate taking on large amounts of government work since their facilities were needed for their own purposes although one or two companies expressed some interest. Finally, it was put to me that contracting out can be costly in terms of supervision and monitoring and that the quality of the work is usually more difficult to control. My general conclusion, therefore, is that **while the government should seek to increase the amount of statutory/policy R & D it obtains through national and international collaboration and by contracting out to UK industry, the opportunities in practice are likely to be somewhat limited.** I have suggested in the guidelines for future commissioning that **as part of the ongoing appraisal procedure, Departments should assess (i) the scope for licensing technology either from within the UK or from abroad; (ii) the scope for international collaboration; and (iii) the extent to which it would be appropriate and possible to contract out the work to UK industry.** In the longer term, it may be appropriate to accompany these changes by an increase in the extent of competitive tendering.

C J A BARNES
14 April 1988

ANNEX I

ORGANISATIONS CONTACTED DURING THE REVIEW

Agricultural and Food Research Council (HQ and RIs)
Agricultural attaches, Bonn, The Hague, Madrid, Paris
Apple and Pear Development Council
Arable Research Centres Ltd
British Food Manufacturing Industry RA
British Institute of Agricultural Consultants
British Poultry Federation
Building Services Research and Information Association
Cabinet Office
Cambridge Life Sciences Ltd
Campden Food Preservation RA
Dairy Trade Federation
Department of Agriculture and Fisheries for Scotland
Department of Agriculture for Northern Ireland
Department of Education and Science
Department of Trade and Industry
Farm Advisory Services Team
Flour Milling and Baking RA
Food and Drink Federation
Home Grown Cereals Authority
Horticultural Development Council
Huntingdon Research Centre
ICI (Plant Protection)
Institute of Arable Crop Consultants
Institute of Professional Civil Servants
Marks & Spencer plc
Meat and Livestock Commission
Milk Marketing Board for England and Wales
Ministry of Agriculture, Fisheries and Food
National Farmers' Union
National Pig Breeders' Association
Potato Marketing Board
Potato Processors' Association
Priorities Board
Processors and Growers Research Organisation
RHM Ltd
Sainsburys plc
Scottish Agricultural Colleges
Scottish Agricultural Research Institutes
Scottish National Farmers' Union
Sea Fish Industry Authority
South Eastern Regional Panel Chairman and farmer members
Sugar Beet Research and Education Committee
Tate and Lyle
Unilever Ltd
United Kingdom Agricultural Supply Trade Association
Welsh Office Agriculture Department

ANNEX II

ORGANISATION OF PUBLICLY-FUNDED R & D, GROUPED AS IN PARAGRAPHS 46 TO 57

CROPS

Commission B - Crop Protection

ADAS - Mammal and bird pests of growing and stored crops (B1)
- Invertebrate pests and diseases of growing crops (B2)
- Arthropod pests and micro-organisms of stored food (B3)

AFRC - Coastal and environmental aspects of chemical control agents (IACR(L)08; IACR(R)06, 25)
- Pest, disease and weed biology; integrated control (IHR 25; IACR(R)02, IACR(L)25)
- Vector and virus forecasting (IACR(R)25)
- Honeybees (IACR(R)32)

SARI - Ecological aspects (SCRI 14)
- Host-parasite mechanisms (SCRI 15)
- Experimental techniques (SCRI 16)

DANI - Crop protection

Commission C - Cereals

ADAS - Variety evaluation (C1)
- Crop management (C2)
- Cereal crop nutrition (C3)
- Pests and diseases (C4)
- Weed control and growth regulations (C5)

AFRC - Oat breeding and genetics (IGAP 71)
- Weed competition and control (IACR(L)27)
- Disease resistance and pathogens; fungicides (IACR(L)35; IPSR 19, 20; IACR(R)08; IGAP 68)
- Fertilisers, growth and yield (IACR(L)37)

SARI - Barley breeding (SCRI 2)
- Barley diseases (SCRI 8)

SAC - Cereal production (17)
- Cereal protection (18)

DANI - Cereal production (2.08)

Commission E - Non-cereal arable crops

ADAS - Potatoes and sugar beet (E1)
- Oilseed crops (E2)
- Protein crops (E3)

AFRC - Genetics and breeding of peas (IPSR 01)
- Physiology and yield potential (IACR(L)32, IACR(R)19)
- Pests and diseases (IHR 26; IACR(R)04, 23)

SARI - Potato breeding (SCRI 1)
- Potato physiology and yield (SCRI 5, 7, 17)
- Potato diseases (SCRI 13)
- Arable legumes (SCRI 18)

SAC - Potato production (19)
- Other arable crop production (20)
- Mechanical handling of produce (28)

DANI - Potato production (2.09)
- Flax production (2.12)

[No MAFF Commission] - Crops general

SARI - Cell biology (SCRI 19)

DAFS-ASS - Plant varieties and seeds (1)
- Plant health (2)
- Pest control and pesticides (3)

HORTICULTURE

Commission F - Field vegetables

ADAS - Variety trialling (VG 01, 05, 10, 12, 20)
- Production systems (VG 02, 06, 11, 13, 21, 25)
- Pest and disease control (VG 26-28)
- Storage (VG 29)

AFRC - Breeding (IHR 01)
- Nutrition, physiology and agronomy (IHR 02, 03)
- Pests and diseases (IHR 04, 05)

SAC - Trials and production (21)

DANI - Vegetable production (3.09)

Commission G - Top and soft fruit

ADAS - Variety trials (GT 01, 03, 10, 12)
- Production systems (GT 02, 04, 11, 13, 21)
- Pest and disease control (GT 22, 23)
- Handling and storage (GT 20)

AFRC - Breeding and selection (IHR 06, 07)
- Physiology and production systems (IHR 08, 09)
- Pests, diseases and weeds (IHR 10, 11; IACR(L) 04)
- Cider pomology (IACL 06)

SARI - Soft fruit breeding (SCRI 3)
- Soft fruit husbandry (SCRI 6)
- Soft fruit pests and diseases (SCRI 9)

SAC - Fruit production (22)

DANI - Top fruit production (3.07)
- Soft fruit production (3.08)

Commission J - Hops

ADAS - Variety trials (GT 30)
- Production systems (GT 31)
- Pest and disease control (GT 32, 33)

AFRC - Crop health, pests and diseases (IHR 12)

Commission K - Protected crops

ADAS - Edible crops (PC 01-05)
- Ornamentals (PC10-13)
- Energy saving (PC 20)
- Pest and disease control (PC 22, 23)
- Mushrooms (PC 30, 31)

AFRC - Growth and environment (IHR 13, 14)
- Pests and diseases (IHR 15, 16)
- Mushrooms (IHR 17)

SAC - Protected crops (23)

DANI - Glasshouse crops (3.05)
- Mushroom production (3.10)

Commission L - Hardy ornamentals, nursery stock and bulbs

ADAS - Selection and propagation of nursery stock (FN 01, 03)
- Production systems for nursery stock (FN 02, 04)
- Pest and disease control in nursery stock (FN 05, 06)
- Bulb propagation (FN 10, 12)
- Bulb production, evaluation and selection systems (FN 11, 13)
- Bulb pest and disease control (FN 20, 21)

AFRC - Breeding and selection of hardy ornamentals (IHR 20)
- Propagation and production of hardy ornamentals (IHR 21, 22)
- Bulb breeding and propagation (IHR 18)
- Bulb health and diseases (IHR 19)

SARI - Bulb health and diseases (SCRI 11)

SAC - Amenity crops (24)

DANI - Shrubs (3.06)

[No MAFF Commission] - Horticulture, general

DANI - Horticulture, general (3.11)

LIVESTOCK

Commission M - Animals general

ADAS - Animal health (AH 1-3)

AFRC - Genetics (IAPG 15)
- Physiology (IAPG 2)
- Slaughter and meat quality (IFR 28)
- Animal health (IAH 1, 4-6, 8, 9, 11, 12, 28)

SARI - Physiology and nutrition (RRI 1, 4, 5, 9, 10)

SAC - Animal health (11)
- Animal behaviour (13)
- Animal production (14)

DANI - Livestock general (1.07)

Commission D - Grassland and Forage

ADAS - Variety evaluation (GR 01)
- Agronomy and management (GR 02-05, 07-09)
- Hills and uplands (GR 06)
- Crop conservation (GR 10)

AFRC - Breeding and evaluation, feed production (IGAP 72, 73)
- Nitrogen fixation and cycling (IGAP 69, 81)
- Agronomy and management (IACR(L)26; IGAP 8, 9, 83)
- Diseases and pests (IGAP 10, 67)
- Hills and uplands (IGAP 80)
- Conservation and utilisation (IGAP 14, 84)

SARI - Breeding and evaluation (SCRI 4)
- Herbage production and composition (MLURI 9, 10)
- Forage crop diseases (SCRI 10)
- Grazing systems (MLURI 11)

SAC - Grass production (15)
- Herbage conservation (16)
- Engineering for the uplands (29)

DANI - Grass utilisation (1.08)
- Grass production (2.01)
- Clover (2.02)
- Hill improvement (2.03)
- Grass conservation (1.09)

Commission N - Cattle

ADAS - Beef husbandry (BC 01 - 03)
- Dairy husbandry (DA 01-04)
- Cattle health CH 01-24)

AFRC - Breeding and genetics (IAPG 16)
- Grazing behaviour and intake (IGAP 11, 16)
- Cattle nutrition (IGAP 17-19, 21, 22)
- Cattle health (IAH 24-26)
- Management (IGAP 25)
- Enterprise modelling (IGAP 30)

SARI - Suckler cow systems (MLURI 14)
- Red deer (MLURI 15)
- Dairy cow nutrient supply and lactation (HRI 2, 3)

SAC - Dairy cattle (1)
- Calf production (2)
- Cattle production (4)
- Cattle health (5)

DANI - Beef production (1.01)
- Milk production (1.02)

Commission P - Sheep

ADAS - Husbandry (SH 01-04)
- Health (SH 10-20)

AFRC - Genetics and reproduction (IAPGR 12, 17)
- Nutrition (IGAP 23)
- Management (IGAP 12)

DAFS - Grazing behaviour (MLURI 12)
- Performance studies (MLURI 13)
- Goats (MLURI 16)

SAC - Breeding (6)
- Production (7)
- Health (8)

DANI - Sheep production (1.03)

[No MAFF Commission] - Ruminants

SARI - Nutrition (RRI 3, 7, 8)
- Health (RRI 6; MRI 1-3, 5, 6, 8, 9)
- Production systems (MLURI 17)

DANI - Ruminants, general (1.04)

Commission Q - Pigs

ADAS - Husbandry (PS 01-04)
- Health (PS 10-16)

AFRC - Genetics (IAPG 14, 18)
- Nutrition (IGAP 27)
- Health (IAH 27)

SARI - Nutrition and development (RRI 2)

SAC - Production (9)

DANI - Pig production (1.05)

Commission R - Poultry

ADAS - Production and rearing (PT 10-12)
- Health (PT 01-05)

AFRC - Reproduction efficiency (IAPG 13)
- Nutrition and growth (IGAP 40-42)
- Health (IGAP 43; IAH 14, 16, 18, 20)
- Welfare (IAPGR 19)

SAC - Production (10)

DANI - Poultry production (1.06)

OTHER AGRICULTURE

Commission A - Soil Science

ADAS - Soil chemistry (SC 01-06)
- Soil management (ST 01-09)

AFRC - Nitrogen cycling and grassland (IGAP 2)
- Soil nutrients (IACR(R)16)
- Soil management, cultivation and drainage (IACR(R)34)

SARI - Soil survey, plant communities and land resources (MLURI 1, 2, 4)
- Soil chemistry (MLURI 3, 6, 7)
- Soil micro-organisms (MLURI 5)
- Crop nutritional factors (MLURI 8)

SAC - Soil fertility (25)
- Soil management (26)

DANI - Soils (2.04)
- Fertilisers (2.05)
- Farm waste utilisation (2.06)
- Drainage (2.10)

Commission U - Soil survey

SSLRC - Soil survey for England and Wales

Commission T - Engineering and buildings

ADAS - Crop conditioning, grading and storage (BN 01, 02)
- Shelter and fencing (BN 03)
- Design of livestock buildings (BN 04-07)
- Engineering of fixed and field machinery (BN 08-10)
- Farm waste treatment (BN 11-13)

AFRC - Engineering for horticulture (IER 1, 9; IHR 23)
- Vehicle vibration and noise (IER 02)
- Design of livestock buildings (IER 03, 07)
- Poultry handling and slaughter (IER 04)
- Sprays and sprayers (IER 05; IACR(L) 34(a))
- Grass harvesting and conservation (IER 08)
- Wind loads on buildings (IER 06)
- Engineering for cereals (IER 10, 11)
- Livestock wastes (IGAP 03)

SAC - Machinery design (27)
- Farm buildings (30)

Commission Y - Conservation and environment

ADAS - Environmental conservation, land management and resource planning (Y1)
- Effects of agricultural chemicals on wildlife (Y2)

SAC - Waste management (12)
- Environmental work (-)

DANI - Freshwater aquatic environment (5.03)

[No MAFF Commission] - Other work

SARI - Scottish Agricultural Statistics Service (SCRI 20)

SAC - Economics and marketing (31-36)

FISHERIES

MAFF - Aquatic environment (A)
- Marine fisheries (B)
- Salmonid and freshwater (C)
- Fish cultivation (D)
- Fish utilisation (E)
- Marine and industrial bacteria (F)

DAFS - Fish resources
- Fish capture
- Fish cultivation
- Environment
- Freshwater

DANI - Marine fisheries (5.02)
- Marine aquatic environment (5.04)
- Freshwater fisheries (5.1)

FOOD

MAFF - Pathogens (101)
- Natural components (102)
- Contaminants (103)
- Additives (104)
- Toxicology (105)
- Other/methodology (106)

- Nutrients (201)
- Sensory quality (202)
- Microbiological quality (203)
- Other/methodology (204)

- Materials (301)
- Process development (302)
- Process control (303)
- Storage/packaging/transport (304)
- Other/methodology (305)

DAFS - Milk and milk products (HRI 1; SAC 2)

DANI - Food processing (4.01)
- Dairying and dairy products (4.02)
- Meat and meat products (4.03)
- Horticultural products (4.07)

ANNEX III

GUIDELINES FOR COMMISSIONING OF FUTURE WORK

Introduction

1. The arrangements for commissioning R & D in the Agricultural Departments have been changing and developing. Under the customer-contractor system introduced following the Rothschild report*, the Agricultural Departments act as proxy customers for the agricultural, fisheries and food industries as well as commissioning work in support of the formulation and implementation of policy and statutory requirements. In general the proportion of commissioned programmes directed to near market work is larger in agriculture than in fisheries or food.

2. With the transfer to industry funding of a large proportion of this near market work, it should be possible for the agricultural work in support of policy to be more clearly defined in the description of the commissioned programme, as it is in the fisheries and food programmes. It would also be desirable to increase industry's influence over the far market work in support of industry efficiency. It would be advantageous if greater accountability to the commissioners by the contractors could be achieved. And it is important to ensure that the commissioning process takes account of the need to avoid funding near market work in the future except on the basis described in paragraph 3 below. The following paragraphs enlarge on these points which, if implemented, might necessitate revision of the objectives set out in paragraph 10 of the report.

Programme Description

3. During the course of the review it became apparent that there are some differences in the way in which R & D is commissioned and monitored. In fisheries and food much of the policy related work is defined as such and few commissioned projects have multiple objectives. In agriculture, much of the policy related work is closely associated with production oriented research objectives. To some extent this is a reflection of the nature of the work itself but **for the future when new near market work is commissioned it should be relevant to support for statute or policy or on the collaborative basis described in paragraphs 23 and 39 of the report. I therefore recommend that the Agricultural Departments redescribe their commissioned programmes for agriculture so that the policy related elements are more clearly identified than at present.** The transfer to industry funding of a substantial proportion of near market R & D and its subsequent disappearance from the Agricultural Departments' comissioned programmes should provide the stimulus for a new approach. As noted in paragraph 72 of

* Framework for Government Research and Development, July 1972 (Cmd 5046)

the report, **I also recommend that as part of the ongoing appraisal procedure, Departments assess (i) the scope for licensing technology either within the UK or abroad; (ii) the scope for international collaboration; and (iii) the extent to which it would be appropriate or possible to contract out the work to UK industry.**

Influence of Industry

4. The Priorities Board advises government on the relative priorities for R & D expenditure between sector budgets and the Research Consultative Committees (RCCs) advise on priorities within each sector. I was not able to scrutinise the arrangements in detail but I was told that, because RCC members are invited by the Departments rather than nominated by industry, the RCC system leaves industry feeling it has a rather limited influence on commissioned programmes; it was also put to me that there is little feedback or accountability to industry on changes that occur. If this is so I would hope that the situation could be changed. Although industry will take the responsibility for directing its own near market R & D I also think it important for it to exercise a greater influence than at present on some of the more strategic research. It was argued by some industry representatives that AFRC should confine itself to basic research, for which it is highly respected, and should avoid the more applied aspects which in general industry felt the AFRC was not in a position properly to assess or understand. If this is correct, it is crucial for there to be a continuing programme of far market and collaborative near market research funded by the Agricultural Departments in close liaison with industry. In particular, **I consider that there should be improved arrangements to allow industry a more direct influence on the strategic and collaborative programme and better feedback about resultant changes.** Greater involvement of the appropriate levy-raising bodies is one possibility. In order to encourage the move towards more collaborative funding it will be important to clarify the position on intellectual property rights as soon as possible, particularly given the fragmented structure of the agricultural and horticultural industries.

Accountability and Assessment

5. I gained the impression that different levels of accountability operate in different areas of the R & D programme. The MAFF Open Contracting and DAFS Increased Flexibility Schemes, together with the extra-mural food and fisheries programmes, are based on discrete contracts. But other work seems to be commissioned in a more flexible way with projects sometimes altered or even terminated without reference to the commissioning Department. Areas of work are often described in general terms and those from industry frequently commented that they found it difficult to understand what was

being done. Estimates and costs appeared on some occasions to be in dispute between commissioners and contractors. I do not believe that such arrangements would prove acceptable for collaborative work jointly funded with industry and I am concerned that the commissioning agencies within the Agricultural Departments may have insufficient resources to meet existing or new requirements, although I have not made a study of this. Again, the transfer of much near market R & D provides an opportunity for change. I believe that steps are already being taken in this direction. **The customer-contractor system provides a sound basis for commissioning but it may be possible to strengthen it by moving further towards contract-type description of commissioned work, with all contractors, including those in-house, increasing their efforts to identify objectives, resource needs and timescales: objectives and inputs should be strictly adhered to.** Instead **I consider that effort should be directed toward post-hoc evaluation in order to assess the effectiveness of the new arrangements. The monitoring system should ensure that work which is drawing close to the market can be identified.** This could be included in the existing annual review procedures as well as in the four yearly Commission reviews.

TABLE A: EXPENDITURE BY AGRICULTURAL DEPARTMENTS WITH MAJOR CONTRACTORS IN THE POLICY/STATUTORY FAR MARKET AND INDUSTRY FUNDING CATEGORIES (1987/88 ESTIMATES)

£k	Policy + Statutory	Far Market	For industry funding
AGRICULTURE			
MAFF - ADAS	14383	6532	11246
- AFRC	9799	16220	5722
- SSEW	271	197	0
Sub-total	24453	22949	16968
DAFS - SARI	4712	16122	526
- SAC	2128	.2338	2237
- ASS	295	0	60
Sub-total	7135	18460	2823
DANI	2582	1660	1693
TOTAL	34170	43069	21484
FISHERIES			
MAFF - Torry	1237	1055	780
- DFR	5470	482	66
- Other	1304	359	0
Sub-total	8011	1896	846
DAFS	10457	368	0
DANI	132	47	0
TOTAL	18600	2311	846
FOOD			
MAFF - In house	889	0	0
- AFRC	781	4465	1698
- RAs	1842	1074	0
- Other	2410	779	312
Sub-total	5922	6318	2010
DAFS - SARI	47	1029	89
- SAC	26	30	101
Sub-total	73	1059	190
DANI	282	398	135
TOTAL	6277	7775	2335
TOTAL	59047	53155	24665

TABLE B: NEAR MARKET EXPENDITURE ON AGRICULTURAL R & D FOR INDUSTRY FUNDING BY COMMISSION AND CONTRACTOR (1987/88 ESTIMATES)

£k

Commission	MAFF			DAFS			DANI	TOTAL
	ADAS	AFRC	SSLRC	SARI	SAC	ASS		
Crops								
B Crop Protection	50	129	-	0	0	-	0	179
C Cereals	2042	339	-	21	300	-	242	2944
E Non-Cereal	1884	0	-	69	434	-	166	2553
Other	-	-	-	0	-	60	-	60
	3976	468	-	90	734	60	408	5736
Horticulture								
F Vegetables	690	396	-	-	67	-	67	1220
G Fruit	558	366	-	61	46	-	46	1077
J Hops	37	14	-	-	-	-	-	51
K Protected Crops	1240	278	-	-	4	-	65	1587
L Ornamentals	369	248	-	11	38	-	25	691
Other	-	-	-	-	-	-	39	39
	2894	1302	-	72	155	-	242	4665
Livestock								
Q Pigs	624	344	-	41	120	-	184	1313
R Poultry	650	670	-	-	138	-	51	1509
D Grassland	1131	394	-	0	216	-	473	2214
N Cattle	1431	984	-	0	746	-	215	3376
P Sheep	290	76	-	0	75	-	35	476
- Ruminants	-	-	-	262	-	-	62	324
M Animals General	0	429	-	0	53	-	23	505
	4126	2897	-	303	1348	-	1043	9717
Other Agriculture								
A Soil Science	0	0	-	0	0	-	0	0
U Soil Survey	-	-	0	-	-	-	-	0
T Buildings & Engineering	250	1055	-	-	0	-	-	1305
Y Conservation & Environment	0	-	-	-	0	-	0	0
- Econ/Marketing	-	-	-	-	0	-	-	0
- Statistics	-	-	-	61	-	-	-	61
	250	1055	0	61	0	-	0	1366
TOTAL	11246	5722	0	526	2237	60	1693	21484

ANALYSIS OF NEAR MARKET WORK BY SECTOR

INTRODUCTION

1. This annex contains detailed information and analyses in support of the conclusions and recommendations by sector summarised in paragraphs 45-57 of the report. The near market expenditure identified for each sector is the maximum that I consider should be offered for industry funding. When consideration is given to action plans for implementation, it will be important to bear in mind also the need for a collaborative approach to work further from the market, as outlined in paragraphs 39-40 of the report. In this sense the figures given below are maxima.

CROPS

2. This grouping embraces the Crop Protection, Cereals and Non-Cereal Arable Crop Commissions. The total R & D spend by the Agricultural Departments on crops is £24.9 million, of which I have identified £5.7 million as near market. Most of the work within the Crop Protection Commission is not commodity-related and has not been identified for industry funding. Work that is commodity-related and near market is included below with the appropriate crop.

Cereals

3. The value of output in the cereal sector, which comprises about 90,000 producers, is approximately £2 billion; expenditure on R & D by the Agricultural Departments is approximately £10 million. I have identified near market work worth approximately £3 million. This includes expenditure of about £2 million by MAFF with ADAS at eight EHFs on eg variety trialling and crop management, production systems, fertilisers, and disease and weed control systems; about £0.5 million by MAFF with AFRC at IACR, IPSR and IGAP, eg on cereal breeding and trialling, disease forecasting and surveys, growth and yield in relation to agrochemical inputs, and pest control; about £0.3 million by DAFS, mainly at SAC, on crop husbandry and harvesting systems, but with some work at SARIs on cereal breeding and trialling; and about £0.2 million by DANI on crop management.

4. Industry funding of R & D is currently operated through a levy administered by the HGCA introduced in 1986 in response to government's intention to reduce funding for cereals R & D. The levy is collected from both the buyer and seller at the point of first sale and is used to support the Food from Britain organisation and the British Cereals Export Promotion as well as R & D. The R & D component of the levy (currently £1.4 million rising to £2 million in 1990) is funded 60% by growers, 20% by merchants and 20% by processors (millers and bakers).

I consider that the HGCA levy should continue to be used as the mechanism for the provision of R & D funds by the industry.

5. From informal soundings it seems possible that the industry might be prepared to fund up to £3 million overall (twice the current level); however, the recent decision effectively to double the CAP co-responsibility levy for UK producers is likely to make it more difficult to attract additional levy funding. The figures imply a funding short-fall of at least £1.4 million. The HGCA will need to poll its members before it can add to the increases in the R & D component of the levy which have recently been agreed. I was told that producers are unlikely to agree to such increases before the HGCA's full review in 1990. Moreover, producers and the HGCA will almost certainly seek assurances that this change in government strategy for R & D funding is not simply a precursor for yet further withdrawals of State support for R & D in agriculture. If the timescale for decisions envisaged in my terms of reference is to be met, discussions will need to be opened quickly. I therefore suggest that **an action manager should be identified to develop and agree with the HGCA a programme for the phased transfer to industry of funding for near market R & D, from the start of the HGCA's 1989 financial year (1 August 1989) with a view to completion by 31 July 1991.**

6. I received some evidence to suggest that the HGCA's mechanism for deciding R & D priorities (through an R & D Committee) is too remote from growers and insufficiently responsive to their immediate requirements. Indeed I was told by HGCA that, because they do not have detailed information on who their levy payers are (their names and addresses are drawn from Agricultural Census data and these are confidential), it is difficult for them to take the initiative in seeking greater producer involvement. This may partly explain the growing number of farmers joining organisations such as ARC Ltd and funding their own R & D. Although the R & D levy has been in operation for only a relatively short period, if the HGCA is to persuade farmers of the merit of increasing it there will need to be further consideration of the mechanisms by which it commissions R & D; it may be appropriate to introduce or build on local/regional foci to which farmers can relate more closely.

7. By the same token the existence of companies such as ARC Ltd may indicate that the government's advisory services (PAS) are not fully matching the rapidity with which results are produced, or the local relevance of some of these groups. However, the quality of the service offered by these organisations and the extent to which they stand alone or draw on government facilities is not clear and this needs further analysis which I have not been able to undertake in the time available. I envisage that the PAS would continue to act as the main technology transfer channel for HGCA funded work as they do at present, given that the existence of a statutory levy

on all producers does not assign to any particular group intellectual property or competitive rights not available to others.

Potatoes

8. The value of the potato sector is approximately £0.5 billion and expenditure on R & D by the Agricultural Departments is approximately £6 million. I have identified near market work amounting to approximately £1.75 million. This includes about £1 million expenditure by MAFF through ADAS on eg potato production agronomy, variety testing and disease control; about £0.4 million by .DAFS with the SAC on improving crop establishment, development of handling systems and aphid and virus disease control, with some work at the SARIs on potato breeding and trialling; and about £0.2 million by DANI on eg testing and seed potato micropropagation. There are about 33,000 potato producers of whom around 21,000 are required by statute to register with the PMB and pay a levy which funds both R & D and market regulation. The PMB's annual R & D budget is almost £1 million, over half of which goes to run its Sutton Bridge Station. Through its membership of the European Association of Potato Research the Board is also involved in international collaboration. A review of the Board has just begun and I understand that the target date for any changes is 1 July 1990. I was unable to form a view about potato growers' likely willingness or otherwise to increase their funding of R & D but I note that there are some privately supported organisations such as CUPGRA whose existence indicates a willingness to support very near market R & D if the benefit of doing so can be recognised.

9. Some concern was expressed by the Potato Processors Association (who contribute about £0.02 million annually to joint R & D funding, in addition to their own R & D programme, and whose members carry out some R & D in house with the PMB) that the Dutch Government is attempting to acquire a greater share of the UK french fry market through a high level (85%) of funding of the relevant R & D, together with a guarantee of continued levels of funding into the future. I have not been able to verify this but I heard from several sources that the Dutch Government regards the maintenance of a high degree of public funding of R & D as essential to its agricultural strategy in many sectors. I was told that there is some evidence that the UK is at a competitive disadvantage in the European Community because of this attitude. Certainly there would be employment and economic implications if some of the large potato processors withdrew from the UK market.

10. **I consider that the existing levy arrangements operated by the PMB would be an appropriate channel for increased funding.** The potato marketing structure is, however, under review and it is not clear whether or not the arrangements to

operate beyond 1990 will include provision for the compulsory levy to continue. **Nevertheless, an action manager should be identified to develop and agree with the PMB a programme for the phased transfer to industry funding of near market R & D from 1 January 1990 with a view to completion by 31 December 1991.**

Sugar Beet

11. The value of the sugar beet sector is approximately £0.2 billion and expenditure on R & D by the Agricultural Departments is approximately £0.1 million, devoted solely to an ADAS project on sugar beet production. I have identified this as near market work. The sugar beet industry is self-contained, with some 11,000 producers mainly in East Anglia and close to British Sugar's 13 beet factories. The SBREC, on which both producers and British Sugar are represented, funds basic and applied R & D work through a statutory levy, of which about 75% is used for R & D the remainder being devoted to extension and technology transfer. Its total annual expenditure on R & D is about £1.9 million, of which about half is with the Brooms Barn Station, which is part of IACR and wholly devoted to sugar beet research. About 70% of SBREC's R & D is part of an ongoing programme, subject to regular review and there is good international collaboration through the International Institute of Research on Sugar Beet. Because the levy also funds a field service based on the factories, ADAS' role tends to be restricted to the provision of general farm management advice.

12. The ADAS near market spend is small and **I consider that the work should be offered for industry funding through the SBREC and that an action manager should be identified to open discussions with SBREC, with a view to completion by 31 March 1991.** Since this represents the sum total of government funded R & D on sugar beet, an assessment would have to be made of the extent to which such a move would damage or restrict the government's ability to formulate policy for this sector.

Oilseed Rape

13. The value of the oilseed rape sector, which comprises around 15,000 producers, is approximately £0.3 billion and expenditure by the Agricultural Departments on R & D is in the order of £1 million. I have identified near market work worth about £0.5 million. All but £0.03 million of this is commissioned by MAFF with ADAS on eg variety testing, production agronomy and pest and disease control, with the small remainder by DAFS with the SAC on eg production efficiency and crop establishment. I understand that research is urgently needed on double zero varieties in the critical period up to the planned restriction of EC support for such varieties from 1 July 1991. But I have been told that no Parliamentary time is available in the 1988/89 session for the primary legislation necessary to

establish a levy body, assuming that it was decided to fund the work by means of a statutory levy. Given that a producer poll and secondary legislation would need to follow the primary legislation, the very earliest that a levy body could be established would be some time in 1990. Moreover, I am not clear whether it would be sufficient to levy oilseed rape producers alone or whether there would need to be involvement by the crushing industry. From observation of other sectors it seems that a levy is likely to act as an effective mechanism for funding near market R & D, provided the industry is in support. **Accordingly, I consider that Parliamentary time for its introduction should be sought in the 1989/90 session with the intention of having the levy in place by the start of the 1990 oilseed rape year, ie 1 July 1990, and with a view to transferring the funding of near market R & D by 30 June 1992.** If a levy were not acceptable, then a collaborative club or organisation along the lines of PGRO might be a possible alternative. **In this event, the establishment of an organisation similar to PGRO, funded by a voluntary levy, should be considered with, initially at least, a degree of government contract funding. An action manager should be identified with the remit to develop and agree with industry representatives arrangements for establishing such an organisation by 1991, with a view to transferring the funding of near market R & D within 18 months of its formation.**

Peas and Beans

14. The value of the protein sector is approximately £0.1 billion but rising rapidly following CAP changes. Expenditure by the Agricultural Departments on R & D is £0.8 million and I have identified near market expenditure of approximately £0.3 million. All but £0.02 million of this is commissioned by MAFF with ADAS on optimising yield, quality and crop protection. There is no statutory levy but the PGRO is supported by a voluntary levy on specialist growers and general farmers together with some MAFF contract work. The levy is collected at point of first hand sale (users, merchants, processors) and currently raises about £160,000 from 11-12,000 growers. MAFF provides about 15% of PGRO's funding and there are close contacts with ADAS.

15. PGRO appears to be a successful and well supported organisation with a good reputation amongst protein growers as a valuable centre of expertise. Its concentration on protein crops provides a focus for extra funding but this would take time to organise, especially since it would involve more than doubling the existing voluntary levy. There is some read across to the HDC levy and arrangements for offsetting where double payments would otherwise arise. **It seems reasonable that further funding could most appropriately be sought through the PGRO mechanism and I suggest that an action manager should be**

identified to liaise with PGRO over the transfer of the work from 1 April 1989 with a view to completion by 30 March 1991.

HORTICULTURE

16. The value of this diverse and fragmented sector is about £1.4 billion (including mushrooms, the biggest crop with a value of about £100 million). R & D expenditure by the Agricultural Departments is approximately £18 million, of which apples and pears account for £1.3 million and mushrooms about £0.8 million. I have identified near market expenditure of around £9.5 million, including roughtly £1.0 million on apples and pears and about £0.6 million on mushrooms.

17. The near market R & D includes around £6 million by MAFF through ADAS divided between field vegetables (£1.4 million), top and soft fruit (£1.2 million), hops (£0.08 million), protected crops (£2.6 million) and hardy ornamentals and bulbs (£0.7 million) on eg variety trialling, pest, disease and weed control, improved production, handling and storage; about £2.7 million by MAFF with AFRC (all but £0.09 million with IHR) divided between field vegetables (£0.8 million), top and soft fruit (£0.8 million), hops (£0.03 million), protected crops (£0.6 million) and hardy ornamentals and bulbs (£0.5 million) on eg pests, disease and weed control, variety trialling, propagation, agronomy and production, improving yield, quality and storage; roughly £0.15 million by DAFS with SARI (all with SCRI) and, apart from one project on narcissus propagation, all on soft fruit yield, quality and harvesting, and disease, pest, nematode and virus control; around £0.3 million by DAFS with SAC divided fairly evenly between field vegetables, soft fruit and hardy ornamentals/bulbs (with a negligible amount on protected crops) on eg variety trialling, pests, weeds and pathogens control, micropropagation, harvesting and storage; and about £0.5 million by DANI, mostly on field vegetables, fruit and protected crops, on eg production and irrigation techniques, disease, nematode and weed control, apple scab, canker and disease control and soft fruit trialling. The GB industry is currently funding in excess of £1 million worth of R & D through the HDC and APDC levies. (Mushroom growers are not levied following the poll that established the HDC). There is significant competition from the Dutch, both through government funding of R & D and in support for horticulture generally, especially protected crops.

18. From informal soundings it seems that it might be feasible for the industry to raise up to £4 million for R & D, given sufficient time. **I believe that this should be achieved through the existing levy mechanisms.** Both the HDC and the APDC are due to be reviewed in 1989 and producers will need to take into consideration any proposed increases in the R & D component of their levy before deciding on the future of the two Development Councils. Accordingly, **I suggest that an action manager be**

identified to explore with the industry the proposals for collaborative funding of R & D set out in paragraphs 23 and 51 of the report. It may be necessary to review the collaborative arrangements after a sufficient period of operation and in the light of any changes arising from rationalisation (see paragraph 20 below).

19. The funding situation would be eased if the HDC were able to find a more effective levy mechanism and I understand urgent consideration is being given to this. I believe that further approaches are to be made to the multiple food retailers with the objective of seeking funding for R & D related to the products they sell. I support this initiative but the evidence I have received does not suggest that it will succeed because of the supermarkets' view that R & D is a responsibility of their suppliers. Further examination is needed of the scope for encouraging mushroom growers to fund R & D. **I propose that an action manager be identified as soon as possible to explore with mushroom growers whether scope exists for a consortium approach, perhaps based at IHR Littlehampton if mushroom work is transferred there on the closure of Lea Valley EHS. I consider that conclusions should be reached by 31 March 1990 on how collaborative industry/government funding can be achieved, with a view to completion by 31 March 1992. As for hops, I believe discussions should take place with English Hops Ltd and the other three producer groups with a view to establishing collaborative industry/government funding of the £0.11 million near market work I have identified, on a similar basis and time-scale to the rest of horticulture.**

20. It was suggested (by the NFU and HDC) that there is a need for further rationalistion of the R & D and technology transfer arrangements for horticulture. I am aware that considerable reorganisation took place when the IHR was formed and that a programme of integrated development between AFRC and ADAS has been introduced. Nonetheless, there may be scope for a reduction in overheads through further rationalisation, given that in England and Wales alone there are three AFRC stations and seven EHSs serving this relatively small industry. I appreciate that full integration would have its problems (different conditions of service and line management, ownership of East Malling site by growers, need to avoid further upheavals, redundancy costs, difficulty of combining and managing applied and basic science and advice) but **I believe that the issue of rationalisation merits further consideration.** Because of the proximity of the work to the market the horticultural sector seems the one most likely to benefit from such rationalisation.

LIVESTOCK

21. This grouping comprises the Animals General, Grassland and Forage, Cattle, Sheep, Pigs and Poultry Commissions. The total value of output is about £7.2 billion. The total spend by the

Agriculture Departments on R & D is approximately £51.1 million of which approximately £9.7 million is near market. Of this, £0.3 million is at IFR and is discussed separately in paragraphs 43 and 45. Work within the Animals General and Ruminants Commissions which is species specific and near market has been included with the appropriate sector below. The residual near market work in these two Commissions is primarily composed of one project at AFRC (IAH Pirbright) with a near market element of approximately £0.1 million dealing with non-species specific vaccine development, which should be offered to the animal pharmaceutical industry for funding. The near market work within the Grassland and Forage Commission, £2.2 million, has been allocated to the Dairying, Beef and Sheep sectors on a pro-rata basis. It encompasses about £1.1 million expenditure by MAFF through ADAS on eg variety evaluation, establishment, management, yield and conservation; roughly £0.4 million by MAFF with AFRC, all at IGAP apart from £0.05 million at IACL, on eg control of weeds, production, silage, composition and quality; around £0.2 million by DAFS with SAC on eg variety assessment, use of fertiliser efficiency, control of pests and weeds, production, grazing management, grass establishment; and in the region of £0.5 million by DANI on eg production and utilisation, silage making, nitrogen application. The Cattle Commission has been divided between Dairying and Beef on a project by project basis.

Dairying

22. The value of the dairy sector is approximately £2.4 billion; there are roughly 50,000 producers and Agricultural Departments' R & D expenditure is approximately £18 million. I have identified near market expenditure of approximately £3.5 million. This includes about £1.1 million expenditure by MAFF through ADAS on eg improvements in feeding programmes, reproduction and rearing, control of diseases and mastitis; around £0.7 million by MAFF with AFRC, split in roughly equal proportions between IAH and IGAP, on eg pasture utilisation, mastitis and machine milking; some £0.03 million by DAFS with SARI at RRI; about £0.4 million by DAFS with SAC on eg efficiency of feed utilisation to milk production; improved management, health and productivitiy, evaluating forage buffer feeds, high and low concentrate systems and rearing dairy herd replacement; and around £0.1 million by DANI on milk production and mastitis control. In addition, roughly £1.2 million of the UK spend on near market grassland and forage work is for the benefit of the dairying sector.

23. Current industry funding of R & D with outside bodies (through a joint committee of the MMBs and the DTF) amounts to just under £1 million annually, roughly equalling the MMB's in-house effort, while commercial dairy companies are said to spend about £8 million annually in product development. R & D funding is organised through the receipts from milk sales (the Boards

are the sole first hand purchasers of liquid milk in the UK) and funds are directed through the UK Dairy Industry Research Policy Committee, on which both producers and manufacturers are represented. I was unable to obtain an indication of the extent to which the dairy industry might be prepared to consider additional funding for R & D but **I believe that the MMBs are at present the only feasible means through which additional industry funding is likely to be raised. I suggest that an action manager be appointed to begin discussions with the MMBs on transfer to industry funding of the near market work which I have identified.**

24. However, I understand that there may be legal difficulties over the MMB commissioning work with the Ministry. Accordingly, **I do not believe that the process of transfer can begin until this matter has been fully resolved. Action would then need to begin, with a view to reaching decisions within the following two years and completion as soon as possible thereafter.**

Beef, Sheep, Pigs

25. Industry funding of R & D in these sectors is via a statutory levy operated by the MLC. Under its enabling legislation (the 1967 Agriculture Act), the MLC has raised a general levy since 1968, collected at the point of slaughter or export, which finances those expenses not met through its fees and charges. Although the 1986 Agriculture Act ended the requirement that all such MLC levies be charged on a 50 : 50 basis to the producer and the slaughterer/exporter, the MLC intends to continue funding R & D on this basis.

26. Under its corporate plan, recently presented to and approved by Ministers, the MLC envisages increasing its funding of R & D from £1.9 million in 1987/88 to £4.2 million in 1990/91. At present, all but £0.1 million of this work is conducted in-house but the intention is that this element should rise to £0.65 million in 1988/89 and £1.9 million in 1990/91. Before the corporate plan was agreed, the NFU thoroughly investigated the possibility of funding R & D by means other than a levy and concluded that no alternatives existed. Given that the MLC's corporate plan has been agreed with industry and government only after extensive consultation and debate there are likely to be substantial problems in securing radical alteration at this late stage.

27. Informal soundings have indicated that the sector might be prepared to fund up to £5 million per annum over the next five years or so. But the levy is contentious amongst some sections of the meat trade, notably the small abattoir owners and meat wholesalers who consider that they do not benefit from the results of R & D. I was told that they, unlike the large export slaughterhouse owners, show little inclination to apply the results of R & D. They can, therefore, be expected to protest

at plans for an increase in the levy. Because of this there may be some scope for separating out more clearly the funding of R & D by producers from that by the meat industry. One possibility would be for the MLC to raise funding for the R & D identified below through a producer only levy. The near market R & D covered in paragraphs 28-30 below is overwhelmingly directed towards producers and is thus primarily of benefit to them. It seems reasonable that they should bear the responsibility for funding (this is already done for meat promotion), with work of interest to the meat industry being funded separately, perhaps through the RA that I have proposed could be linked with IFR Bristol (paragraph 45). The MLC may wish to consider extending this principle to the R & D work it currently commissions and carries out in-house. In addition, if the MLC significantly increases its levied income for R & D, a greater emphasis might need to be placed on dividing up the work commissioned between the three species sectors.

28. The value of the **beef** sector is approximately £1.9 billion, comprising roughly 70,000 producers, with Agricultural Departments' R & D expenditure at around £11 million. I have identified near market expenditure of about £1.8 million, including roughly £0.6 million from within the Grassland and Forage Commission. The near market figure also encompasses approximately £0.4 million expenditure by MAFF through ADAS on eg improvements in performance, reproductive productivity, carcass characteristics and disease control; around £0.3 million by MAFF with AFRC, roughly split on a 5 : 4 : 1 ratio between IGAP, IAPG and IAH, on eg nutrition and lean growth, nitrogen application and other factors effecting production and reproduction performance, breeding efficiency and disease control; about £0.1 million by DAFS with SARI, fairly evenly split between RRI and MRI, on eg nutritional manipulation, protein depletion; roughly £0.3 million by DAFS with SAC on eg calf rearing systems, production systems, improve performance by use of silage-based diets, stocking rate, supplementary forage buffers, treated feedingstuffs and diet modifications; and around £0.1 million by DANI on eg production systems, nutrition, grazing management and silage based diets.

29. The value of the **sheep** sector is approximately £0.7 billion; there are roughly 85,000 producers; and Agricultural Departments' R & D expenditure is around £9 million. I have identified near market expenditure of about £1.1 million, including roughly £0.4 million from within the Grassland and Forage Commission. The near market figure also embraces approximately £0.3 million expenditure by MAFF through ADAS on eg reproduction, nutrition, feeding programmes, grazing systems and disease control; around £0.2 million by MAFF with AFRC, all at IGAP on eg forage intake, carcass composition and meat quality, substitution and supplements; about £0.1 million by DAFS with SAC on eg alternative systems for finishing store lambs, grazing systems, nutrition, growth and development;

approximately £0.03 million by DANI on eg intensive grazing systems, nitrogen application and grass utilization in intensive sheep production.

30. The value of the **pig** sector is approximately £0.9 billion, comprising roughly 24,000 producers, with Agricultural Departments' R & D expenditure at about £7 million, of which around £1.3 million can be classified as being near market. This includes around £0.6 million expenditure by MAFF through ADAS on eg reproduction, rearing, nutrition and husbandry; approximately £0.3 million by MAFF with AFRC, at IAPG and IGAP on eg reproduction, and nutrition; about £0.05 million by DAFS with SARI, all at RRI, on eg digestible energy in feeds, growth response to protein and energy, and sow trials; around £0.1 million by DAFS with SAC on eg reproduction, feed nutrition, growth and carcass quality; roughly £0.2 million by DANI on eg growth and fattening, diet energy values, liquid supplements and weaning, reproduction and sow feeding.

31. **My general conclusion is that the MLC levy should be the mechanism for attracting extra funds, but that the possibility of realigning it and dividing the R & D between the sectors should be considered.** I accept that there is likely to be substantial resistance from industry to further changes, especially as the corporate plan has just been presented and agreed but I consider nonetheless that **there is a case for the additional funding to be raised solely from producers; I suggest that an action manager be identified to develop and agree with the MLC and the industry a programme for the phased transfer to industry funding of £4.2 million worth of near market R & D with a view to completion by the end of the corporate plan period (1990/91).**

Poultry and Eggs

32. The value of the poultry sector is approximately £0.8 billion and that of the egg sector approximately £0.5 billion. R & D expenditure by the Agricultural Departments is about £5.5 million and I have identified near market expenditure of around £1.5 million: I have not been able to identify eggs expenditure separately. The total includes approximately £0.6 million expenditure by MAFF through ADAS on nutrition, husbandry, reproduction, rearing and disease control; about £0.7 million by MAFF with AFRC, of which £0.4 million is at IAH and the remainder at IGAP, on eg nutrient requirements, growth, production and selection against fat, disease control and vaccine development; around £0.1 million by DAFS with SAC on eg reproduction, nutrition, performance, efficiency of food utilisation, feeding systems, production and new products; and £0.05 million by DANI on goose and white feathered pheasant production.

33. The poultry industry has no intervention arrangements and so operates at low cost to the taxpayer compared with some other sectors. It is small and tightly knit (30 companies control around 95% of the market) and informal soundings indicate that it might be able to fund some near market R & D after scrutiny of the work currently being carried out. It is unlikely that a statutory levy would be welcomed by the industry, which has in the past consistently resisted statutory arrangements in the sector. However, in discussion the BPF, which already has experience of handling funds eg for poultrymeat hygiene inspection, indicated its willingness to fund through a voluntary mechanism. **I therefore suggest that an action manager should be identified to explore with the BPF the possibility of a transfer of funding and to make recommendations by 31 March 1989, with a view to completion by 31 March 1991.** If the currently publicly funded near market R & D became the intellectual property of some, but not all of the firms in the poultrymeat sector there would be implications for technology transfer and consequently the PAS.

34. The eggs industry is more fragmented. Producers have recently rejected the Eggs Authority which is now dismantled and whose assets of £1 million are being passed to the British Egg Industry Council at the rate of £0.1 million a year. This body is currently funding about £0.025 million of R & D a year. I conclude that the BEIC is the only vehicle for R & D funding which is likely to be acceptable to the egg industry (it is supported by the NFU and the BPF) although I have been told that it is unlikely that egg producers will wish to raise additional funding for R & D. **Nonetheless I suggest that an action manager should be identified to open discussions with the industry on the transfer of funding, on the same timescale as poultry.**

OTHER AGRICULTURE

35. This heading includes work in Commissions that are not commodity-specific - ie Soil Science, Soil Survey, Engineering and Buildings, Conservation and Environment, together with work funded by DAFS on economics for which there is no equivalent MAFF commission. It follows that this area of R & D does not have a sector 'value'; expenditure by the Agricultural Departments amounts to approximately £9.5 million. Much of the work (eg on efficient use of fertilisers; improved soil management and land drainage techniques; development of remote-sensing applications; animal waste management; wind loads on farm buildings; general building design; farm business management) does not relate to any particular customer grouping. However, I have identified approximately £1.3 million which is not already included in the commodity sector analyses as being near to the market and thus appropriate for industry funding. This is within the Engineering and Buildings Commission and includes £0.25 million funded by MAFF with ADAS on housing for pigs and cattle; £1.05 million funded by MAFF, mainly with IER on energy conservation in glasshouses; engineering for

vegetables and ornamentals; design and operation of fruit stores (IHR); grain stripping and drying; forage conservation; and dairy parlour management and milking. It seems likely that all these areas lie within the respective responsibilities of the various levy-funding agencies (HDC, HGCA, APDC, MLC, MMB) who may wish to seek funding involvement from the relevant engineering industry. **I recommend that the sectoral action managers responsible for these areas carry forward in discussion with the industries concerned the possibility of transfer to industry funding.**

36. Whilst there is no levy system for engineering and buildings, the arrangements at the Institute of Engineering Research (IER) are worth noting. As with other RIs, IER has an associated body which is called the British Society for Research into Agricultural Engineering Association. The Association has 500 members from farming, manufacturing and the education sector and organises several open days each year at which near-market material is displayed and where farmers and manufacturers are brought together. Tractor work at IER is partly supported through DTI-backed clubs who control the pre-competitive research funded by this mechanism. IER also runs the Agricultural Machinery Partnership Scheme (AMPS) for DTI and the Agricultural Departments. Companies in AMPS contribute annually 0.25% of turnover matched by an equal contribution from DTI, MAFF or DAFS. The ceiling set on the scheme is £0.375 million each for industry and government but in practice industry's contribution has been around £0.25 million. Membership enables companies to receive R & D and tt services up to the level of their (matched) contribution, and they may purchase further services. Contract work/consultancy may be arranged with IER, Scottish Centre for Agricultural Engineering (SCAE) or a University. The scheme is used at least as much for its tt as for R & D. At present, around 35 of the 60 to 70 most significant agricultural engineering companies participate in AMPS. I recognise that AMPS has evolved to meet the needs of the agricultural machinery sector and its particular structure. Equivalent schemes may not be directly applicable in other agricultural sectors but the principles underlying clubs, consortia, AMPS and RAs might usefully be further considered to see whether they could be used to encourage greater collaboration in R & D funding.

37. Finally, 'Other Agriculture' includes the work of the Scottish Agricultural Statistics Service funded by DAFS. SASS is a grouping of the statisticians within the SARIs and SAC whose work supports the whole spectrum of agricultural and food R & D funded by DAFS. The near market element of the total cost (£0.63 million, not included above) should reflect the near-market proportion of DAFS-funded agricultural and food R & D, and I calculate this to be £0.06 million. **I consider that any work transferred to funding by industry in Scotland should bear its appropriate loading for statistical support.**

FISHERIES

38. The quayside value of fish landings is approximately £0.4 billion. Expenditure by the Agricultural Departments is approximately £20 million of which about £4.3 million is devoted to the aquatic environment and not primarily for the benefit of the fishing industry. However, it should be noted that the DAFS spend within this total contains elements not covered by the Frascati definition of R & D. I have identified near market expenditure of £1.1 million but, as noted in paragraph 24 of the report have recommended that the resources underlying £0.3 million expenditure on projects commissioned by the Chief Scientists' Group at the SFIA should not be reduced. I note, additionally, that the SFIA, which currently raises some £3.5 million by means of a statutory levy on the fishing industry, is having to consider possibly doubling its levy from 1 April 1989 because of the phasing out of government grant aid for the Authority. There would, therefore, be problems in looking to the Authority to make a still larger increase in its levy to enable it to increase its expenditure on R & D.

39. DFR. I have identified a small near market spend of approximately £0.07 million. The work consists of three projects at the Conwy laboratory, two of which are concerned with trout farming and the third with sea ranching of trout. There is an existing voluntary body, the British Trout Association, which might be prepared to put in some funding towards two of these projects perhaps on a collaborative basis: but its income is small (about £0.1 million annually) and I understand that this is currently spent on market promotion rather than R & D. Because of concern over free riding the Association is considering seeking a compulsory levy through a statutory Development Council: it might well feel that before it could fund R & D it would need such a compulsory levy. Further consideration will be needed but **I recommend that transfer to industry funding should be sought within two years.**

40. In addition, I understand that some technology transfer/-advisory activities are undertaken by DFR without repayment during visits to fish farms. Some of the work is on disease control but advice on husbandry techniques is also given. I am not clear on the extent to which this is analagous to the work undertaken by ADAS but **I suggest that Fisheries Departments in MAFF and DAFS should consider whether such work should be charged for.** There may also be a need to investigate the extent to which PAS advice to fish farmers overlaps with that given by the laboratories.

41. Torry Research Station. The near market work which Torry undertakes is in the order of £0.8 million. Following decisions taken in 1984 Torry was set increasing annual commercial targets, culminating in a figure of £0.4 million for 1987/88, about 20% of Torry's industry related work, which has been

increased to £0.41 million for 1988/89. Over 30% of Torry's work is required by government for policy purposes and about half the remainder is far market and unlikely to be funded externally. While much of Torry's work is on processing and utilisation of fish there are some projects devoted to on-board handling of the catch (icing, salting, storage). Torry has had considerable difficulty in meeting its £0.4 million target and much of the work it has attracted has been in the form of very small contracts which are not primarily R & D eg routine analysis or servicing. This is perhaps partly a reflection of the nature of the industry it serves. Given time, it may be possible to increase Torry's external funding but this would probably require an extension of the Station's remit so that work outside the fisheries sector could be undertaken and a restructuring to allow a greater focus on consultancy and information services. In the time available it has not been possible to carry out full analysis but there seem to be three main options under which Torry might attempt to attract a greater degree of industry funding. These are as follows.

(a) Combining Torry with the SFIA. I understand that this has been looked at twice in the last ten years and rejected on each occasion. The commissioning of R & D by Chief Scientists' Group has been carefully structured so that there is now no overlap between the type of work carried out by the two bodies although there are some similarities. One difficulty with this course of action is that it might result in a dilution of Torry's (more powerful) science base and would also restrict its focus to fish, although it would have the advantage of bringing a practical fishing industry influence to bear on Torry's more basic work. However the main problem is likely to be financial. If Torry were part of SFIA, government would no doubt continue to fund work needed for public good purposes but I am doubtful about the fishing industry's willingness or ability to shoulder the additional levy burden that would be needed.

(b) Moving Torry out of MAFF either to become a fully privatised research association or a "next steps" agency. Torry would however still be heavily dependent on government funding because of the work which government needs done and which Torry is specially suited to carry out. Whether Torry would be able to develop a significant commercial activity must be uncertain, bearing in mind the difficulties it has had so far, and it is not clear what benefits the next steps agency option would achieve. While moving the Station out of MAFF might give its managers greater flexibility, any move away from civil service pay and conditions would probably have to be accompanied by redundancy costs for any existing staff affected; and there

could be considerable disruption with possible loss of staff, possibly with adverse effects on Torry's ability to do the work which government requires.

(c) Leaving Torry in MAFF as now but accepting the need to widen its remit, setting the Station a revised external funding target, allowing the time and resources for some restructuring and perhaps introducing an RA-type arrangement on the lines of AMPS; this approach could be helpful in attracting subscription income from outside the fish sector and indeed from outside the UK, although, given the fragmented nature of the industry, it would be unlikely to attract funding for the on-board work referred to in paragraph 41 above.

42. Of the three options I think the third is perhaps the most attractive, but a full study and cost analysis would need to be undertaken before decisions could be made. **I recommend that MAFF's Fisheries Department begin this study as soon as possible with the objective of producing detailed proposals on Torry's future status and funding arrangements before the end of 1989.**

FOOD

43. The value of the food manufacturing, distribution and catering sector is approximately £56 billion and the R & D spend by the Agricultural Departments is approximately £18 million. I have identified near market expenditure of approximately £2.6 million. This includes about £2.0 million by MAFF at AFRC, all at IFR apart from £0.13 million at IHR; approximately £0.1 million by MAFF with private industry; roughly £0.2 million by MAFF with government funded institutes other than AFRC; around £0.1 million by DAFS with SARI, all at HRI; about £0.1 million by DAFS with SAC; and about £0.1 million by DANI. The UK programme covers eg frozen storage and other factors affecting quality and processing of meat, effect of pre-slaughter handling on meat quality and carcase meat quality, quality assessment methods of meat, safety and quality of poultry in processing, food and beverage spoilage, SO_2 as a preservative, potato composition and processing, electrical stimulation of meat, meat grading by video image analysis, flavour and accelerated ripening in cheesemaking, storage, display and packaging of fruit and vegetables. However, MAFF has moved its expenditure on food and drink R & D away from near market and towards strategic research following a report by ACARD in 1982*, which recommended work to underpin and strengthen innovation. This process has been continuing and even the 1986 snapshot I have taken (paragraph 19 of the report) will overstate somewhat the current extent of expenditure on near market R & D.

*ACARD: Report on the Food Industry and Technology, September 1982. HMSO: ISBN 01 630 822

44. The food industry has a good record of funding its own R & D and, as paragraph 13 of the report notes, is thought to be spending in excess of £100 million a year from its own resources. Whilst much of this is spent on product development, some of the larger firms support underpinning work in RIs and universities. I was told that industry is beginning to show some interest in joint government ventures in areas of strategic significance although the extent to which significant funding would be forthcoming is in doubt. **If additional funding is to be raised, extension of existing collaborative arrangements for underpinning strategic initiatives seems likely to provide the most effective approach. I suggest that programme managers be commissioned to develop such initiatives.**

45. Although RAs mainly provide services to smaller companies, the limited number of large companies within the industry also makes use of them. They appear to be well suited to the near market R & D and associated tt requirements of the industry and I believe that there is scope for expanding their role by attaching RA or RA type organisations to IFR Bristol and HRI or IFR Reading. The RA or something similar, at IFR Bristol would take on and develop the Institute's meat processing work as it progressed into the near market area, but also its stunning, slaughter, pre-slaughter handling and carcase meat quality work. In this way not only meat processors but also the modern and efficient section of the slaughtering industry could be encouraged to identify and fund R & D and quickly take up its results. Likewise, an RA or some similar organisation attached to IFR Reading or HRI would progress the Institute's milk utilization work as it moved into the near market area, although there would need to be discussion with the MMBs and DTF to determine the scope for such a move and to avoid overlaps with existing programmes. If the RA option is to be pursued, the AMPS model may provide a useful precedent. **I believe that the development of the RA model in association with an RI with, initially at least, some government contract funding, appears to offer the best prospect for attracting industry funding; I suggest that an action manager be identified to pursue this in detail with the industries concerned with a view to establishing feasibility by the end of 1989 and introduction by the beginning of 1991 if the results of the studies are positive.**

TECHNOLOGY TRANSFER SERVICES

INTRODUCTION

1. As agreed at the outset I have confined this aspect of the review to a factual account of technology transfer (tt), focusing on tt services, taking into account information available up to the end of January 1988 and drawing out some general conclusions for further consideration during MAFF's and DAFS' reviews of charging policy. This annex is divided into separate sections dealing with agriculture, fisheries and food.

2. There is no single, generally accepted definition of technology transfer: it is essentially the process by which results of R & D are transferred to users in industry. Tt can take many forms, ranging from face to face advice on specific issues, to advisory packages based on recent R & D, to open days, education and training. Because tt services are integral elements of the much wider work of the publicly funded agricultural advisory services, ie those of ADAS in England and Wales, SAC in Scotland, DANI in Northern Ireland, (which, for convenience I have shortened to PAS), it is often very difficult to identify the tt element in isolation.

AGRICULTURE

Background to the industry

3. As paragraph 7 of the report notes, UK agriculture comprises around 254,000 holdings predominantly composed of small owner-occupied family businesses, nearly half of which (about 110,000) operate at subsistence levels. The majority of these marginal enterprises are concentrated in disadvantaged areas, particularly in Scotland, Wales and Northern Ireland. Farming is a fragmented industry which contains a wide mix of enterprises and experiences considerable variations in profitability between different sectors, regions and years.

4. The ease and rapidity with which new technology can be taken up within agriculture depends on a number of factors including: the complexity of the technology; whether its adoption will entail major or minor changes to farming systems or businesses; the degree to which its adoption is reversible; the degree of potential benefit likely to accrue; whether or not it is amenable to initial testing on a small scale and the ability of the individual farmer to comprehend and apply it. However, perhaps the two most important factors determining whether or not new technology is successfully transferred into the agricultural industry are the amount of capital required to introduce it and the quantity and quality of information available about it. I was told that because of its complex nature, biological R & D tends to require a good deal of interpretation to meet individual farming circumstances.

RATIONALE FOR GOVERNMENT INVOLVEMENT IN TT

5. Since the second World War the government has funded PAS throughout the UK to provide free technical advice to the agricultural industry. Section 1 of the Agriculture Act 1986 requires the Minister to maintain an advisory organisation and an assurance was given in Parliament of the government's intention to do so (Lords Hansard, 2 July 1986 Col. 912). The Act also requires Ministers to strike a balance between agricultural production, the environment and access to the countryside. The government's commitment to the continuation of PAS rests on three broad premises: support for small businesses, public good policy objectives and economic efficiency.

(i) Support for Small Businesses

Agriculture is a highly fragmented industry with a high proportion of small farms, many of which are one or two person businesses. Markets can only allocate resources efficiently if participants are well informed about the opportunities open to them and the likely consequences of their decisions. Small firms in particular often lack this necessary information, especially in respect of new technologies and the market mechanisms which might provide this information are inadequately developed.

(ii) Public Good Policy Objectives

The Wildlife and Countryside Act 1981 required advice on conservation to be provided free of charge by ADAS. When charges for advisory services were introduced on 1 April 1987 this requirement was removed although the provisions of the Wildlife and Countryside Act 1981 in relation to SAC (provision of advice) remain in force. Because Ministers were concerned that market forces were unlikely to lead to the adoption of objectives in relation to eg conservation, animal welfare, farm woodlands, pollution, plant disease and EC socio-structural policies, undertakings were given in Parliament that general advice on these subjects would continue to be provided free of charge. Such advice contains many disparate and diffuse elements of tt.

(iii) Economic Efficiency

Improvements in the economic efficiency and productivity of British farming through rapid adoption of new technology transferred into industry by way of PAS have enabled UK producers to compete successfully with producers in other member states for shares of the UK and EC markets. It was put to me that withdrawal of PAS would lead to a decline in UK producers' share of the EC

market, resulting in reduced revenue to the Exchequer and increased contributions to the EC budget by the UK, even after allowing for abatement under the Fontainebleau mechanism. The effect would become particularly marked after the introduction of the single European market in 1992, especially if other member states continued to maintain present levels of support.

AIMS AND OBJECTIVES OF PUBLICLY-FUNDED ADVISORY SERVICES

6. The major aims of the PAS are:

(a) to provide advice and technical services to the agricultural and related industries aimed at improving the efficiency and quality of production and on matters relating to conservation and to the health and welfare of animals.

(b) To strike the balance between agriculture and the environment required by Section 17 of the Agriculture Act 1986, taking into account the environmental implications of technology and the wider needs of the rural community.

(c) To identify and exploit opportunities for earning revenue by charging, where appropriate, those who benefit from such advice and technical services.

(d) To advise Ministers and to contribute to policy formulation on the scientific, technical and business implications of proposals.

ORGANISATION OF PAS

England and Wales

7. In England and Wales the Agricultural Development and Advisory Service (ADAS) is the main channel for technology transfer. ADAS contains approximately 4340 staff divided between:

- the Research and Development Service (RDS) with 890 ADAS staff based mainly at the central laboratories and at the experimental husbandry farms and horticulture stations. This service carries out about 65% of ADAS' commissioned R & D

- the Farm and Countryside Service (FCS) with 1950 ADAS staff in the regions ranging from front line advisers to regional and national specialists and providers of laboratory diagnostic facilities. This service carries out about 18% of ADAS' commissioned R & D and about 90% of ADAS' advisory work. FCS headquarters contains 190

staff including the ADAS marketing unit, the ADAS information services unit and other senior staff. Some 2% of FCS headquarters' time is associated with ADAS commissioned R & D activities.

- the State Veterinary Service (SVS) with 1310 staff. This service comprises the Central Veterinary Laboratory, the Veterinary Field Service and the Veterinary Investigation Service. Much of the SVS' work is in support of statute or policy. It carries out about 15% of ADAS' commissioned R & D. The SVS also has responsibility in Scotland.

8. ADAS is a multi-functional service whose activities include:

(i) R & D

ADAS R & D is concentrated in the central laboratories, at CVL, Slough, Harpenden, Tolworth and Worplesdon, and the Experimental Husbandry Farms and Horticulture Stations and Regional Science Laboratories. The R & D carried out supports ADAS' advisory and statutory work. Its scope ranges from strategic work to very applied projects as well as routine analyses and diagnoses. Its estimated net cost in 1987/88 is £39.4 million.

(ii) Statutory

ADAS is required to undertake a wide range of activities in support of statute or regulation. Among its many responsibilities are: control of notifiable diseases in animals and plants; monitoring, supervision and control of regulations relating to hygienic milk production; surveillance of products for controlling pests and diseases; work in support of CAP guidance and guarantee expenditure; export certification and inspection. The estimated net cost in 1987/88 of these and other activities is £51.3 million.

(iii) Advisory

FCS draws on the R & D carried out by RDS, SVS and AFRC in addition to its own research efforts in advising farmers and growers, but also provides advice on non-technical matters such as farm business management and socio-economics at an estimated net cost in 1987/88 of £43.3 million.

Scotland

9. In Scotland, advisory work is undertaken by staff of the SAC under the "Scottish System" through which education, research and advice are closely linked. The SAC is a company limited by guarantee which differs from ADAS in legal, constitutional, financial and organisational aspects, as well as reflecting the different socio-economic circumstances of farming in Scotland. There are currently 245 staff in the central General Advisory Service and the Veterinary Investigation Service; specialist advisers on the staffs of the separate Colleges also undertake teaching and R & D. In total, SAC employs 1177 scientific and administrative staff. SAC undertakes no statutory work per se but is involved in giving advice in areas of public good; regulatory and enforcement work is carried out by other bodies in Scotland, including the DAFS Agricultural Scientific Services Laboratory at East Craigs. There are good links with this laboratory and with the Scottish Agricultural Research Institutes (SARIs).

Northern Ireland

10. In Northern Ireland Advisory Services staff are members of DANI. There are 46 field advisers in agriculture, 8 in horticulture and 10 in the Food Technology Advisory Service. These staff devote up to 80% of their time to tt. In addition specialist scientific advice is provided by DANI's in-house research divisions as part of their integrated function within education and R & D.

COST OF GOVERNMENT TT SERVICES

11. The total net cost of ADAS in 1987/88 is estimated at about £134 million in MAFF's 1987 MINIM statement. The advisory component accounts for £43.3 million but not all of this includes tt. MAFF's estimate of the cost of tt in 1987/88 is £32 million approximately*. In the absence of any clear definition as to what constitutes tt, this figure was estimated by identifying and excluding those services which, prima facie, appeared to have little or no tt element (eg farm business management advice, routine analyses and diagnoses, advice to Ministers on the state of the industry); tt in support of policy (eg animal welfare, environment, diversification, socio-economics) was also excluded on the grounds that, while it provided benefits for the nation it would not necessarily result in economic benefit to the farming industry. The resulting total amounted to £29.6 million**. If tt is considered only as

* 1987 Review of Government Funded R & D

** This differs from the Review figure because of an error in attribution of 75 man years devoted to environmental advice

the transmission of relatively recent R & D findings, this figure would be substantially reduced since most ADAS advice is a blend of new information and findings and longer established procedures and techniques. In the time available I have not been able to pursue the question of tt costs further. I consider that there are likely to be elements of tt in some of the policy and statutory activities excluded from the original definition but precise figures cannot be extracted until results from ADAS' new work recording system are available. It may be appropriate for further work on this to be undertaken during the charging review.

12. The publicly funded element of the SAC Advisory Services amounts to £6.2 million. Figures are not available on which to base the detailed analysis as above for ADAS but the figure for the provision of tt services derived by analogy would be £4.2 million. DANI estimates the cost of publicly funded tt through its advisory service as around £1.6 million, with about a further £1 million of the tt activities carried out by its science service.

Introduction of charging

13. Following decisions taken by Ministers in the 1985 PES round, charges were introduced on 1 April 1987 as part of net expenditure reductions in the cost of advisory services of £16.5 million for MAFF and £3.5 million for DAFS. In the case of ADAS, it was expected that £5 million of revenue would be raised through advisory and promotional work with a further £6 million generated through charges for statutory and regulatory work, although no precise cost recovery targets as such were set. The charges cover a wide range of advisory and contract services provided by MAFF and DAFS including hourly charges, together with priced packages tailored to individual farm businesses' needs, subscription schemes and differential rates for specialist advice and services.

ROLE OF ADVISORY SERVICES IN TT

14. The PAS fulfil five major functions within tt.

(i) They provide a stream of information to farmers and growers about new and existing R & D drawn from their own research, both in-house and contracted, as well as from formal and informal contacts with RIs, industry and overseas research bodies, with the last of these, intelligence, always obtained on a collaborative basis. The PAS transmit this technology in a number of ways, including face to face advice, sales of advisory packages, discussions with small and large groups, customer publications, computer packages and dissemination of information through the farming media. However, before any of

these mechanisms is employed the basic R & D results need to be translated into specific advice, tailored for the particular manner in which they are to be transmitted and the customer for whom they are intended.

(ii) They facilitate the flow of technology between farmers and growers, as producers and advisers gain further knowledge from the commercial application of new technology. The interaction between advisers and progressive farmers is especially important here. While the PAS seek to replicate and confirm findings over several seasons in different soils and climatic conditions, . commercial application frequently produces fine tuning developments of practical value for other farmers or growers, knowledge of which the PAS helps to validate and disseminate.

(iii) They provide the conduit by which information from farmers, growers and commercial organisations flows back into government. This intelligence is used to influence decisions on which R & D projects should continue, or be re-directed or terminated and what new work should be commissioned.

(iv) They provide an interface between the farming community and those organisations concerned with the rural infrastructure and environment.

(v) In Scotland and Northern Ireland the advisory service - colleges link in which students benefit from close association with R & D conducted at the colleges aids the tt to agriculture students and thus the farmers of tomorrow. Smallness of scale is an advantage in the rapid transmission of information within the farming communtiy.

TT OUTSIDE GOVERNMENT ADVISORY SERVICES

15. There are many other channels for tt outside the formal arrangements of the PAS. These include:

(a) RIs, which transfer new technology directly to industry by way of work contracted with them and through open days, support associations and publications. The primary objective of such activity is to make available the results of R & D. The basic data are not usually interpreted or synthesised for the end user on the one to one basis generally used by PAS. Because of this, separate costing is difficult but the AFRC have suggested a figure of between £1 and £2 million annually*.

* 1987 Annual Review of Government Funded R & D

(b) Universities and Colleges, which transmit technology in the sense that their agriculture students subsequently enter the farming industry. Local Education Authority Agricultural Colleges also offer advice at meetings and consultancy packages under the umbrella of 'Agricola'.

(c) Government agencies or quasi-Government bodies such as the Forestry Commission, Countryside Commissions, Nature Conservancy Council, County and District Councils, FWAGs and, to a lesser extent, CoSIRA all of which provide free or subsidised technical information, primarily concerned with conservation, diversification and woodlands.

(d) Commercial companies which provide advice to specific sectors of the agriculture industry. The role of representatives of the feed, agrochemical and veterinary products industries is to sell their companies' products and these often represent or incorporate the results of recent R & D. Some of these companies offer analytical services (akin to those offered by PAS) which are usually 'free' if the farmer subsequently purchases the company's products. I was told that commercial organisations' views towards such services differ, with most reducing their provision. It is possible that some may move towards provision of general commodity-related and farm business management advice as well as that related to products but many are likely to be deterred by the cost. The levy raising organisations take different attitudes toward the provision of tt services. For instance, at one extreme British Sugar operates a complete service through about 40 field and specialist staff associated with British Sugar factories. This service is funded by the levy and by British Sugar. The Milk Marketing Boards (with 80+ advisers) and MLC (about 40) have a limited capacity for tt whilst HDC and APDC provide literature to interested growers about recent research findings. HGCA and PMB pay little attention to tt per se but the PMB supports tt indirectly through the provision of studentships.

(e) I have been told that there are about 600 independent consultants operating within the UK, but of these only perhaps 200 or so are full time. They are mainly confined to the arable/farm business sector, although a few cover livestock, and many can offer only partial advice within their particular sector. The majority of independent consultants operate in England and Wales. None can provide the range of services currently available from the PAS and all gain much basic information from government sponsored research.

They tend to be seen by farmers and growers as complementing or supplementing the work of the PAS, often offering, for example, weekly 'crop-walking' advice for which PAS have insufficient manpower.

(f) Progressive farmers who act as technical leaders within their local farming communities also provide tt, since the technology they actively seek out from any available source and then rapidly adopt may subsequently be taken up by their neighbours.

FISHERIES AND FOOD

16. In the fishing industry there is no equivalent of PAS. Technology tends to pass direct from those carrying out the R & D, whether from the government laboratories or the SFIA. In part this reflects the nature of the R & D. In part it is a reflection of the size and structure of the industries involved. As noted in paragraph 56 of the report, some tt is carried out by Lowestoft Laboratory in relation to fish farming: and the Torry Research Station undertakes a tt function in relation to fish utilisation through its contacts with industry, its publications and marketing and promotional events.

17. For food, technology transfer is provided by the RAs, with government encouragement and by contacts between those RIs concerned with food and the industry. One specific government service is the Northern Ireland Food Technology Advisory Service. This service maintains close contact with all food processing firms in Northern Ireland, channels their R & D needs to research management and disseminates R & D information to the food industry. A particular effort is being undertaken by IFR Bristol to bring the benefits of existing and new technology to the attention of the meat manufacturing industry. Trade associations also disseminate their information to members. In general the evidence from the food sector has been that it is the small to medium sized firms that seek and use technology transfer services: the larger companies are well-organised to obtain information from RIs, RAs and all other sources. The government currently supports work related to technology transfer at the RAs. MAFF's objective is to improve the dissemination of the results of the R & D it funds through appropriate literature and sponsorship of seminars and workshops.

GLOSSARY

ACARD - Advisory Council for Applied Research and Development (Cabinet Office)
ADAS - Agricultural Development and Advisory Service
AFRC - Agricultural and Food Research Council
AMPS - Agricultural Machinery Partnership Scheme
APDC - Apple and Pear Development Council
ARC - Agricultural Research Centres Ltd
ASS - Agricultural Scientific Services (DAFS)

BEIC - British Egg Industry Council
BFMIRA - British Food Manufacturing Industry Research Council
BIBRA - British Industrial Biological Research Association
BPF - British Poultry Federation
BSRAE - British Society for Research Into Agricultural Engineering
BSRIA - Building Services Research and Information Association

CAP - Common Agricultural Policy
CFP - Common Fisheries Policy
COSIRA - Council for Small Industries in Rural Areas
CUPGRA - Cambridge University Potato Growers Research Association
CVL - Central Veterinary Laboratory

DAFS - Department of Agriculture and Fisheries for Scotland
DANI - Department of Agriculture for Northern Ireland
DES - Department of Education and Science
DFR - Directorate of Fisheries Research
DTF - Dairy Trade Federation
DTI - Department of Trade and Industry

EC - European Community
ECLAIR - European Collaboration and Linkage of Agriculture and Industry through Research
EHF - Experimental Husbandry Farm
EHS - Experimental Horticulture Station

FEC - Full Economic Cost
FCS - Farm and Countryside Service (MAFF)
FMBRA - Flour Milling and Baking Research Association
FWAGS - Farming and Wildlife Advisory Groups

GDP - Gross Domestic Product

HDC - Horticultural Development Council
HGCA - Home Grown Cereals Authority
HRI - Hannah Research Institute

IACR(L) - Institute of Arable Crops Research (Long Ashton)
IACR(R) - Institute of Arable Crops Research (Rothamsted)

IAH - Institute for Animal Health
IAPG - Institute of Animal Physiology and Genetics Research
ICES - International Council for the Exploration of the Sea
IER - Institute of Engineering Research
IFR - Institute of Food Research
IGAP - Institute of Grassland and Animal Production
IHR - Institute of Horticultural Research
IPSR - Institute of Plant Science Research

MAFF - Ministry of Agriculture, Fisheries and Food
MINIM - Management Information in MAFF
MLC - Meat and Livestock Commission
MLURI - Macaulay Land Use Research Institute
MMB - Milk Marketing Board
MRI - Moredun Research Institute

NERC - National Environment Research Council
NFU - National Farmers' Union

PAS - Public Advisory Services
PGRO - Protein Growers' Research Organisation
PMB - Potato Marketing Board

RA - Research Association
RDS - Research and Development Service (MAFF)
RI - Research Institute
RRI - Rowett Research Institute
SAC - Scottish Agricultural Colleges
SARI - Scottish Agricultural Research Institute
SBREC - Sugar Beet Research and Education Council
SCAE - Scottish Centre for Agricultural Engineering
SCAR - EC Permanent Committee on Agricultural Research
SCRI - Scottish Crop Research Institute
SSLRC - Soil Survey and Land Research Centre
SVS - State Veterinary Service (MAFF)

TT - Technology Transfer

VIS - Veterinary Investigation Service

dti

the department for Enterprise

CONFIDENTIAL

The Rt. Hon. Kenneth Clarke QC MP
Chancellor of the Duchy of Lancaster and
Minister of Trade and Industry

Rt Hon John Major MP
Chief Secretary
HM Treasury
Treasury Chambers
Parliament Street
LONDON
SW1P 3AG

NBPM
PRG
11/4

Department of
Trade and Industry

1-19 Victoria Street
London SW1H 0ET

Switchboard
01-215 7877

Telex 8811074/5 DTHQ G
Fax 01-222 2629

Direct line 215 5147
Our ref
Your ref
Date 11 April 1988

Dear John.

LAUNCH AID

Thank you for your further letter of 18 March on this subject. I have also seen George Younger's letter of 21 March.

I have carefully considered your proposal that there should be interdepartmental work on launch aid with a view to reaching agreement within Whitehall on a standard launch aid model contract. I have to say I found your suggestion surprising. As my previous letter made clear, I propose to take a far more critical view of launch aid applications in future. To start work on a "standard" contract, implying that it might be used with some frequency, would seem entirely contrary to this aim.

I doubt very much that in any event one could hope to produce a standard contract given the different circumstances it would have to cater for. For example we have in the past supported British Aerospace in a multilateral aircraft project and Rolls-Royce in a single company aero-engine project. There are also wide divergences between contracts for programmes such as the Airbus A320, where fixed repayments and fixed levies are required of BAe to meet a target rate of return on the Government's investment, and launch aid contracts agreed with Shorts, which are much less demanding and provide for repayments only if there is a positive margin between revenues from sales of aircraft and the cost of producing them.

Rolls-Royce are now preparing for a Board decision on the launch of a derivative of their RB211-524 engine and the submission of a launch aid application. There is a Rolls-Royce Board meeting on 5 May at which a decision may be taken to proceed with the

dti

the department for Enterprise

2ND PSC: SUPPORT + INNOV. PT 5

launch. If a launch aid application is received, all the questions in the list attached to your letter will be addressed automatically.

I note George Younger's suggestion that we should look to using the resources available for launch aid more effectively to encourage companies to respond better to the competitive environment. I am not sure pecisely what he has in mind here but I should make clear there is no ongoing DTI expenditure programme on launch aid. Each launch aid application is considered on its merits by Ministers collectively. If colleagues had not decided last year to agree to launch aid for the A330/A340 programmes, this element of DTI expenditure would have rapidly dwindled and resources would not have been available for other DTI schemes.

I am copying this letter to the Prime Minister and George Younger, as well as to Tom King and Paul Channon, and also to John Fairclough and Sir Robin Butler.

KENNETH CLARKE

IS6AAK

888-273

cc PC

MINISTRY OF DEFENCE WHITEHALL LONDON SW1A 2HB

TELEPHONE 01-218 9000

DIRECT DIALLING 01-218

MO 30L

21st March 1988

NBPM

RRLG 22/3

PC to see

CMD 22/3

Dear Kenneth,

LAUNCH AID: BRITISH AEROSPACE

I have seen a copy of your paper for E(ST), (E(ST)~~(88)~~5), attached summarising the effect of the Government's launch aid commitments to British Aerospace.

As far as the detail of the paper goes, I am content simply to note it, although your memorandum does not make it clear, as does the attached paper by officials, that the negotiations on the A330/A340 launch aid agreement have not yet been concluded. My officials, who are conducting these negotiations on your behalf, are in touch with yours.

On the broader aspects of launch aid and its overall effectiveness, you will have seen my letter of 8th February to John Major and I have seen your reply to his of 27th January.

I remain convinced that you are right to give high priority to expenditure which provides the most effective support for industry's innovation programmes and that is why I welcomed the thrust of your Department's recent White Paper. But launch aid seems increasingly inconsistent with the industrial policy which underlies the White

The Rt Hon Kenneth Clarke MP

Paper's approach and, as I said in my letter, I do not believe industrial support of this nature to be the best way of providing an incentive to companies to operate competitively. We should look to using the resources available for this purpose more effectively to encourage companies to respond better to the competitive environment. With more than half of my Department's annual equipment expenditure subject to competitive forces, I am particularly interested in seeing the market work efficiently. I therefore welcome your intention to look very critically at any future applications for launch aid.

My officials remain ready to help in looking at ways of limiting the Government's exposure on this type of subsidy. Given the responsibility of my Chief of Defence Procurement as Accounting Officer for the efficient placing and management of launch aid contracts on your behalf, the recent course of the A330/340 negotiations makes me keen to reduce the number of occasions on which this procedure is invoked.

I am sending copies of this letter to other members of E(ST) and the Secretary of State for Northern Ireland and to Sir Robin Butler and John Fairclough.

Yours ever,

George

George Younger

.020/3294

CONFIDENTIAL

CCBC

NJBIM

RRCG

11/3

Treasury Chambers, Parliament Street, SW1P 3AG

The Rt Hon Kenneth Clarke QC MP
Chancellor of the Duchy of Lancaster
Department of Trade and Industry
1 - 19 Victoria Street
London
SW1H OET

8th March 1988

Dear Chancellor,

LAUNCH AID

Thank you for your letter of 2 March on launch aid in response to mine of 27 January. You will also have seen comments from Tom King and George Younger.

I found your response helpful. I am glad you agree that launch aid is inconsistent with your developing policies for innovation, and that you share my doubts about the value for money the Government obtains from this form of support. In particular your commitment to a 5 per cent real rate of return on future contracts will be a helpful basis for future work.

I recognise that is for you to decide whether the repeal of Section 1 of the Civil Aviation Act merits priority in your legislative programme. But I doubt whether a protracted timetable of the possibility of controversy necessarily mitigates against repeal per se. I should explain that following such a repeal I had in mind that support for civil aviation should not be in the form of launch aid but under an existing scheme of support such as Assistance for Exceptional Projects, where the criterion for funding is "exceptional national benefit". This would allow support for civil aviation to be assessed against competing priorities.

On the question of a review of launch aid, I agree that a public review would not be desirable for the reasons you mention. But joint internal work on this is justified even without the stimulus of a Rolls-Royce launch aid application.

George Younger's letter of 8 February to me supports this view.

Such work should, I suggest, look at the key terms of past contracts with the aim of reaching agreement within Whitehall on a standard launch aid model contract whose main terms are understood by firms concerned as the basis for aid. This would reduce significantly the detailed - and often protracted - negotiation needed on particular contracts, as is currently the case for the Airbus A330/A340 contract. Such work would, I believe, be quite consistent with the wider aim of international agreement to reduce the level of support for civil aviation.

As a basis for discussion, therefore, I attach a list of issues which officials might address: I would imagine that Treasury, DTI and possibly MOD would need to be involved. I should like to press forward quickly on this and look forward to hearing your response.

I am copying this letter to the Prime Minister, Tom King, George Younger, Paul Channon, and to Sir Robin Butler and John Fairclough.

Yours sincerely,

JOHN MAJOR

(Approved by the Chief Secretary and signed in his absence)

ISSUES FOR INTERDEPARTMENTAL WORK ON LAUNCH AID

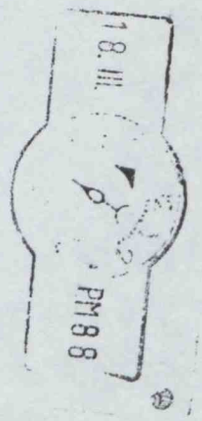
- Sharing of risk and rewards between HMG and companies, including the structure of payments and repayments.

- Target rate of return for HMG in light of risk and reward sharing arrangements.

- Monitoring requirements in relation to both project and company performance.

- Provision for adjustment to HMG payments.

IND Pol. Support + Innovation
PTS



CONFIDENTIAL

cc PS

NORTHERN IRELAND OFFICE
WHITEHALL
LONDON SW1A 2AZ

SECRETARY OF STATE
FOR
NORTHERN IRELAND

MBAM
RRC6
16/3

Rt Hon John Major MP
Chief Secretary to the Treasury
Treasury Chambers
Parliament Street
LONDON
SW1P 3AG

14 March 1988

Dear Chief Secretary

LAUNCH AID

I have seen your letter of ~~27~~ 14 January to David Young on this subject and Kenneth Clarke's response, together with that of George Younger.

As Kenneth Clarke points out I do have a direct interest, through Government's ownership of Shorts, in any proposals to review launch aid policy and I should therefore be grateful to be included in future correspondence.

The legislation under which launch aid has been granted to Shorts in the past is the Aircraft and Shipbuilding Industries (NI) Order 1979 rather than the Civil Aviation Act. While the suggested repeal of Section 1 of the Act does not therefore impact directly on Northern Ireland, associated policy changes could clearly do so.

While I share some of the concerns expressed about launch aid I am inclined to support Kenneth Clarke's belief that a review at this time is not desirable, for all of the reasons which he notes. I

CONFIDENTIAL

also very much endorse the view that we should concentrate on seeking international agreement on reducing overall Government assistance to the civil aviation sector in both Europe and the USA and that we should subject any future launch aid applications to rigorous value for money criteria.

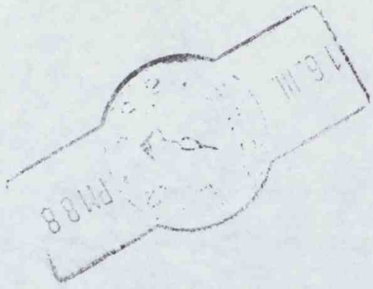
I am copying this letter to the Prime Minister, George Younger, Paul Channon, Kenneth Clarke and also to Sir Robin Butler and John Fairclough.

yours sincerely

Martin Donnelly

pp TK
(approved by the Secretary of State
and signed in his absence)

IND Pol : Support + Innovation
PTS



dti

the department for Enterprise

CONFIDENTIAL

The Rt. Hon. Kenneth Clarke QC MP
Chancellor of the Duchy of Lancaster and
Minister of Trade and Industry

Rt Hon John Major MP
Chief Secretary
HM Treasury
Treasury Chambers
Parliament Street
LONDON
SW1P 3AQ

Department of
Trade and Industry

1-19 Victoria Street
London SW1H 0ET

Switchboard
01-215 7877

Telex 8811074/5 DTHQ G
Fax 01-222 2629

Direct line 215 5147
Our ref
Your ref
Date 2 March 1988

Dear John,

LAUNCH AID

Thank you for your letter of ~~27~~ 1st January to David Young. He and I have discussed it but I am replying in view of my responsibility for this area of DTI policy.

As you know, David and I have strong doubts about the value of launch aid. We agree that such single company support sits oddly with the new direction of DTI policies as announced in our recent White Paper. I think we have to be clear, however, precisely what we might hope to achieve from any review of the kind you suggest.

As you say, given the current severe pressure on the Parliamentary timetable, there is no prospect whatsoever of early legislation to repeal Section 1 of the Civil Aviation Act. Any such legislation would in any event merely give rise to pointless controversy. The Act merely gives the power to provide financial support for certain civil aviation projects. How we choose to exercise the power is almost entirely a matter of our own discretion. For me to get up in the House and say that we wanted this power taking away from us would suggest some doubt about our own ability to control its use.

FE7ADP

dti

the department for Enterprise

I would also seriously doubt the wisdom of your proposal that, in the event of repeal, any future launch aid should be justified and financed under the Science and Technology and Industrial Development Acts. To use your own argument, this would put other industrial sectors on all fours with aerospace and would be likely to provoke launch aid type applications from a wider range of industries than we are obliged to face at present.

You suggest that we might reconsider the terms and conditions of launch aid contracts with a view to preparing a report on the modalities of limiting the Government's exposure. I am not sure what you have in mind here. I would not welcome a formal report or review. This would inevitably attract attention and lead to unhelpful publicity and lobbying. It would also undermine the UK's negotiating position, as one of the Airbus partners, in the current trade dispute with the US Government. I am already firmly committed in these negotiations to seeking a reduction in Government support both in Europe and the US, but my position would be considerably weakened if we were known to be considering the unilateral termination of launch aid.

As regards specific launch aid contracts, we are, as you know, formally committed to a 7% rate of return for the A330/A340. My officials and George Younger's are ensuring that the terms are tightly defined in drawing up the contract which will include, as you suggest, provisions for monitoring BAe's financial health.

The only application likely to be received in the near future is from Rolls-Royce for the development of a larger variant of their RB-211 engine. When that application is forthcoming, we can face up to our first practical decision on future launch aid policy. If we are moved by political or commercial arguments to offer launch aid at all, then I would certainly wish to press the case for a real rate of return of 5% as you suggest. In the meantime, I would be prepared for my officials to indicate informally to Rolls-Royce that we would take a firm line in the face of any application.

Finally, I should correct your statement that companies benefiting from launch aid are now all in the private sector. Shorts is a notable exception. Your proposals would have important implications for them and also for the Department of

FE7ADP

888-273

dti

the department for Enterprise

Transport's functions in relation to the development of civil aviation. I am therefore copying this correspondence to Tom King and Paul Channon.

I am copying this letter to the Prime Minister and George Younger, as well as to Tom King and Paul Channon, and also to Sir Robin Butler and John Fairclough.

KENNETH CLARKE

FE7ADP

888-273

IND POL : Support + Innovation PTS

CCBG

MINISTRY OF DEFENCE WHITEHALL LONDON SW1A 2HB

TELEPHONE 01-218 9000
DIRECT DIALLING 01-218 2111/3

MO 30L

8th February 1988

NBPM at this stage.
RRCG
10/2.

Dear John,

LAUNCH AID

WITH PQ? / WILL REQUEST IF REQUIRED

Thank you for sending me a copy of your letter of 27th January to David Young.

I very much support the objective that you and David have of giving high priority to expenditure which provides the most effective support for industry's innovation programmes. As you say, the Civil Aviation Act places the small number of companies in receipt of launch aid in the civil aerospace industry in a unique position and one increasingly inconsistent with our industrial policies. We are effectively talking about four companies only - British Aerospace, Shorts, Westland and Rolls-Royce - and I do not see the rationale for providing special help to this sector, although we have to recognise that overseas companies often receive Government assistance in some form or another. Industrial support of this nature is not the best way of providing an incentive to companies to operate competitively. Any encouragement which Government can provide for companies to operate effectively in a competitive environment is, of course, of particular benefit to the Ministry of Defence as a major customer of British industry.

But if launch aid is to continue, I agree that the Government must see a decent real return on its investment along the lines you propose. I should also prefer to see any support that we do provide made available to all companies rather than to a selected few.

The Rt Hon John Major MP

My officials would be ready to participate in the preparation of a report on ways in which the Government's exposure on this type of industrial subsidy might be limited. I have a particular interest in taking any steps to reduce the occasions on which this procedure is invoked, as the Chief of Defence Procurement has Accounting Officer responsibilities for the efficient placing and management of contracts on behalf of the DTI in this area.

I am sending copies of this letter to the Prime Minister and David Young and to John Fairclough.

Yours ever,

George

George Younger

003/3298

CONFIDENTIAL

LA

cc BG.

Treasury Chambers, Parliament Street, SW1P 3AG

The Rt Hon Lord Young of Graffham
Secretary of State for Trade and Industry
Department of Trade and Industry
1 - 19 Victoria Street
London
SW1H OET

27 January 1988

Dear Secretary of State,

LAUNCH AID

Chapter 8 of your White Paper on the role of DTI includes a commitment to review the aircraft and aero-engine Research and Development Programme. I think it would also be timely and appropriate to review the policy and legislative basis of launch aid - on which you commented during the 1987 Survey bilateral that you were sceptical of the value of this expenditure and said that you regarded it as a lower priority than the rest of your programme.

I share your scepticism about launch aid which historically has financed projects which have given very poor returns, both overall and to Government e.g. the prospective overall return on the Airbus A330/A340 is well under 5 per cent in real terms. Moreover the privileged position conferred to the aerospace industry by Section 1 of the Civil Aviation Act is very much at odds with the shift of DTI policy away from support for single companies as presented in the White Paper. This raises the question as to whether launch aid for civil aviation has any continuing justification. The Act places the small number of recipient companies in the civil aerospace industry in a unique position and one increasingly inconsistent with our industrial policies. Moreover beneficiary companies are now all in the private sector and should be looking for capital from the private sector to fund such projects.

There are in addition particular reasons for being concerned about the substantial share of launch aid going to support BAe's involvement in Airbus. As well as guaranteeing particular projects, the present inter-governmental arrangements imply

substantial, but as yet unquantified, contingent liabilities for Government. These must be a source of growing concern against a background of Airbus Industrie's and BAe's emerging difficulties with the current shift in the $/£ exchange rate.

For all these reasons support for civil aviation through the special arrangement of launch aid looks increasingly anomalous and poor value for money. This points clearly to repealing Section 1 of the Act, leaving launch aid to be justified and financed under your proposed "national interest" facility under the Science and Technology and Industrial Development Acts for the support of single company projects offering exceptional national benefits. This would put civil aerospace on all fours with other industrial sectors, but with the presumption in future against giving help in this form, just as for other single company projects.

I recognise, of course, that the severe pressure in the Parliamentary timetable this session may well rule out immediate legislative action on Section 1. However if launch aid is to continue in the short term I think we must at a minimum reconsider the terms and conditions of launch aid contracts. For example a requirement of a minimum 5 per cent real return to Government would at least place launch aid projects on a basis consistent with other public sector investment.

Given the expected application from Rolls Royce for launch aid for the development of a large variant of the RB-211 engine, I believe there is a strong case for moving quickly on these issues. If you agree, I suggest that our officials and George Younger's should together quickly prepare a report on the modalities of both legislative and other action which would limit the Government's exposure on this type of industrial subsidy.

I am copying this letter to the Prime Minister, George Younger and to John Fairclough.

Yours sincerely,

Jim Rutherford

PP JOHN MAJOR

(Approved by the Chief Secretary and signed in his absence).

PERSONAL AND CONFIDENTIAL

Foreign and Commonwealth Office

London SW1A 2AH

7 January 1988

Dear Charles,

International Collaborative Projects

Thank you for your letter of 3 January. I confirm that the Foreign Secretary never intended to give any wider circulation to his original minute, which was addressed personally to the Prime Minister. He would indeed welcome the opportunity of pursuing the discussion with the Prime Minister at a bilateral meeting when they are both back in London.

The Foreign Secretary's minute was not designed to suggest (and I think did not suggest) that international considerations should take precedence over others in taking expenditure decisions. The main thrust of his argument was that our management of R&D is still not sufficiently rigorous to ensure that we get full value from R&D projects, whether these are domestic or collaborative. This is primarily an issue of machinery of government, not foreign policy.

Nevertheless he would argue that the international dimension does need to be one factor, among others, and that it is one that too often gets little or no attention because of the piecemeal way in which individual decisions are often taken. Failure to take sufficient account of international obligations over a whole range of projects is in the end bound to affect our credit-rating as a collaborative partner.

Yours ever,

(A C Galsworthy)
Private Secretary

C D Powell Esq
10 Downing Street

PERSONAL AND CONFIDENTIAL

PERSONAL AND CONFIDENTIAL

EL3CJQ

file

bc PC

10 DOWNING STREET

LONDON SW1A 2AA

3 January 1988

From the Private Secretary

INTERNATIONAL COLLABORATIVE PROJECTS

The Prime Minister has seen the Foreign Secretary's note of 31 December about international collaborative projects. She has reacted sharply to it, commenting, among other things, that she detects in it a wish to allow international considerations to determine decisions on how other departments spend their money. I think you would be wise not to give the minute any wider circulation (I imagine it is not your intention to do so anyway). The Foreign Secretary may wish to pursue his points with the Prime Minister at a bilateral following her return.

CHARLES POWELL

A.C. Galsworthy, Esq., C.M.G.,
Foreign and Commonwealth Office.

PERSONAL AND CONFIDENTIAL

ea

(1)

PM/87/078

PRIME MINISTER

International Collaborative Projects

1. We are both worried, I know, by the pattern of recurring difficulty over a number of international collaborative projects, both in the civil and in the defence fields. Too often we are failing to get the full scientific, technological and financial value out of scarce resources. And too often we find ourselves appearing indecisive and unreliable to our partners, who are tempted to take decisions which ignore our interests. The accumulation of problems is more than a coincidence. It reflects a long standing weakness (not confined to the international field) in our arrangements for managing the strategy, as well as the day-to-day business, of our scientific and technological effort.

2. One important root of the problem, as you have detected, is our rigid system of divided departmental responsibilities, each separately accountable to the Treasury. This makes it difficult to deploy our R & D resources flexibly in relation to priorities rather than to individual departmental interests. The problem is not unique to R & D, but here the new E(ST) machinery which you have instituted at least provides an instrument. And although much remains to be done, E(ST) is beginning at last to get a grip on these weaknesses.

/Meantime

3. Meantime, it is axiomatic that some large scientific and technological projects can no longer be undertaken on a national basis, even by the largest countries. The Russians and Americans have signed up with Japan and the Commission to investigate possible collaboration on the next stage of nuclear fusion. For budgetary reasons the Americans are trying to get partners for their proposed Superconducting Supercollider, but may be persuaded to come into CERN instead. This international trend is certain to continue.

4. In the past we were often in the forefront of international collaboration. In the 1960s we proposed the creation of the European Space Research and Launcher Development Organisations. We were founder members of CERN. In the 1970s we fought a bitter political battle in the Community to have the JET project sited in this country. We entered these and many other projects with enthusiasm, and more often than not for good scientific reasons, even if we may sometimes have placed too little emphasis on the need for sound evaluation, prudent management, and real value for money.

5. We now find ourselves faced with decisions about a number of projects where we have already spent considerable sums, where we have political or legal commitments towards our partners, but about which we have (sometimes increasing) doubts for scientific, budgetary, commercial, or administrative reasons. We have already spent £230 million on JET, £200 million on the latest experimental device in CERN, £12 million on the preliminary studies for the International Space Station, and lesser (but still significant) sums on a number of

/other

other projects, such as the European Transonic Wind Tunnel, the European Synchrotron Radiation Facility, and the European space launcher project Ariane. Yet on many of these we are now having second thoughts.

6. In the defence field, we both know only too well the record of expensive misjudgements over national projects; here at least our international collaboration has recently been more successful. Even so we are about to face a number of difficult choices: on the NATO Frigate, on the TRIGAT antitank missile, and on the COBRA missile detection system.

7. My concern is that all the decisions likely to be needed in the next few months will be taken piecemeal, and will be driven too much by considerations of departmental convenience rather than by a coherent view of where our overall interest lies. This risk is a real one, to judge by the approach of some Whitehall departments. Some retrenchment is doubtless necessary. In any case, we must adopt a rigorous attitude to the cost effectiveness of our R & D, whether collaborative or domestic. We must encourage and enable our industry to stand on its own feet instead of relying on the government milch cow. The pressure on resources makes ruthlessness the only sensible policy. But we must also avoid the traps:

- wasting the money we have already sunk in existing projects;

/dispersing

- dispersing research teams (particularly those which have been sustained by over-lavish provision for Defence R & D) so that they may be driven to look for a home abroad instead of in civilian research in the UK;
- unduly alienating opinion in industry and the public;
- reinforcing the view of other governments that we are unreliable and inward looking partners.

8. I do not want to exaggerate this last point. But we have yet to convince others that our approach derives from genuine principles of orderly financial management rather than from the internal rigidities of our system. They see a sharp contrast between our remarkable overall economic success and the difficulties we make over managing comparatively modest joint projects. The French and Germans seem in consequence increasingly inclined to go ahead without us. That is not in our best interest.

9. I wonder whether the best way of pulling all this together would be to give E(ST) a chance to consider alongside each other the collaborative projects on which we face early decisions. That way we can get a picture of the scale of the problem, ensure that the decisions we take are coherent, and minimise the risks that I have outlined. The discussion could help to ensure that we get full value from the projects that we are already in, as well as to clarify the scientific, financial, and

/management

management principles that need to be satisfied before we join new projects in future. The way in which we have recently been able to work out a common approach to the problem of export credit for arms sales is an encouraging example of this kind of approach.

10. Perhaps we could have a word about all this when we next meet, after our New Year journeys abroad.

(GEOFFREY HOWE)

Foreign and Commonwealth Office
31 December 1987

ACOST
Advisory Council on Science and Technology
70 Whitehall, London SW1A 2AS
01-270- 0109

Qn 0286

The Rt Hon Margaret Thatcher MP
Prime Minister
10 Downing Street
London SW1

2nd December 1987

Dear Prime Minister,

ACOST received the Government Response to ACARD's comments on the 1987 Annual Review of Government Funded research and development at its meeting on 17 November.

I am writing to convey our appreciation of what was thought to be an encouraging response. We have taken note of the guidance it provides and will take account of this in preparing our advice on priorities for science and technology.

Yours sincerely

Francis Tombs

SIR FRANCIS TOMBS

Secretariat:
Telephone 01-270 0105
Telex 27582 CABOFF G
Fax 01-270 0074
Prestel 21 999 3466
Gold 81 MPO 005

FILE
SLH
CCO

10 DOWNING STREET
LONDON SW1A 2AA

THE PRIME MINISTER

9 November 1987

Dear Sir Francis,

The formal Government response to ACARD's comments on the 1987 Annual Review of Government Funded R & D is enclosed. You will see that an increase in planned expenditure on civil R & D of around £100 million a year has been agreed since you last saw the figures.

ACOST will now be developing its advice to Government on priorities for Science and Technology and paragraph 2 of the response provides some general guidance on what we would find most helpful. I look forward to receiving your advice in due course.

Yours sincerely

Margaret Thatcher

Sir Francis Tombs

10 DOWNING STREET

Prime Minister

I have not attached the AcARD report — it's 350 pages long. I wonder how much use it really is.

DCV
6/11.

CC 89

Ref. A087/3168

PRIME MINISTER

Government Response to Advice from the Advisory Council on Applied Research and Development (ACARD)

fie with DEN

Attached for your clearance is the proposed Government response to ACARD's advice on the 1987 Annual Review of Government Funded R and D. You indicated to Sir Francis Tombs that a Government response would be provided to these comments and a draft letter to Sir Francis is attached.

2. Since it is expected that the response will be referred to ACOST (as ACARD's successor), the opportunity has been taken in paragraph 2 to provide some general guidance on what would be helpful from ACOST in relation to its remit to advise on priorities. The latest plans for a further increase in civil R and D expenditure, as announced in the Autumn Statement and to be published in the 1988 Public Expenditure White Paper, are indicated in paragraph 3.

3. Clearance has been received for the enclosed responses from all those Ministers with a significant involvement with R and D.

RA

ROBERT ARMSTRONG

5 November 1987

Please type and attach
both the response to the
ACARD report (below) and the
ACARD report itself.
DRS

CONFIDENTIAL

DRAFT LETTER FROM THE PRIME MINISTER TO SIR FRANCIS TOMBS

The formal Government response to ACARD's Comments on the 1987 Annual Review of Government Funded R & D is enclosed. You will see that an increase in planned expenditure on civil R & D of around £100 million a year has been agreed since you last saw the figures.

ACOST will now be developing its advice to Government on priorities for Science and Technology and paragraph 2 of the response provides some general guidance on what we would find most helpful. I look forward to receiving your advice in due course.

s/sayj

Rie

PM
cc Mr Fairclough

10 DOWNING STREET
LONDON SW1A 2AA

THE PRIME MINISTER

21 August 1987

Dear Sir Francis.

Thank you for your letter of 17 August. I have noted the point you make, and will ensure that this is considered carefully, along with the comments from ACARD on the 1987 Annual Review. The Government will, as you know from my letter of 4 August, be preparing a response to the Council's comments later in the year.

Yours sincerely

Margaret Thatcher

Sir Francis Tombs

OA

File Prem

55

10 DOWNING STREET
LONDON SW1A 2AA

From the Private Secretary

MR. FAIRCLOUGH
CABINET OFFICE

You will wish to see a copy of the attached letter from Sir Francis Tombs to the Prime Minister. I will be submitting to the Prime Minister a draft reply for her signature simply acknowledging Sir Francis Tombs' letter, saying that she has noted the point he makes, and that this will be considered alongside the ACARD comments on the 1987 Annual Review, to which the Government will be responding later in the year, as the Prime Minister said in her letter of 4 August to Sir Francis Tombs.

M. E. ADDISON
19 August 1987

ACOST
Advisory Council on Science and Technology
70 Whitehall, London SW1A 2AS
01-270- 0109

CC BG

PS

Qn 0103

The Rt Hon Margaret Thatcher MP
Prime Minister
10 Downing Street
London SW1

17 August 1987

Dear Prime Minister, at trap PTQ

I wrote to you on 30 July with comments from ACARD on the 1987 Annual Review of Government Funded Research and Development.

I have since learned that the Government has decided to reduce expenditure on defence R & D to a greater extent than envisaged at the time of ACARD's final meeting.

Defence R & D, over the period from 1985/86 to 1989/90 will reduce, in constant 1985/86 prices, by 9.7% rather than 3%. Civil R & D over the same period will reduce by 2.5% rather than 2.8%. These changes will result in total Government expenditure on R & D falling by 6.2% rather than the 2.9% given in paragraph 3.1 of ACARD's comments.

The decrease in defence R & D is to be welcomed. What is not welcome is the reduction in the total of Government's expenditure on R & D. The present level, measured as a percentage of GDP, is not unduly out of line with that of our competitor nations. But making justified savings in defence and in some areas of civil R & D should not result in this level being eroded. Savings should be reallocated to important new developments. If this does not occur the Government will gain no respect at all from industry or from the academic community.

I write in such strong terms because I fear that the important new approach to science and technology which you signalled in the White Paper will be undermined from the start unless the need to at least maintain our overall level of spending on R & D is accepted.

Yours sincerely

Francis Tombs

SIR FRANCIS TOMBS

Secretariat:
Telephone 01-270 0105
Telex 27582 CABOFF G
Fax 01-270 0074
Prestel 21 999 3466
Gold 81 MPO 005

IND POL : Support + Innovation PTS

010

WO131

MR BEARPARK - No 10

c Mrs Bloom

14 August 1987

ACARD'S COMMENTS ON THE ANNUAL REVIEW

Sir Francis Tombs will write to the Prime Minister very soon to comment on some changes in the figures arising out of the first meeting of E(ST).

2. I attach a draft response from the Prime Minister. A substantive response will not be necessary until the Government response to the comments has been prepared. Probably in September.

3. I would be grateful if you would refer the letter to Margaret Bloom who will arrange for it to be circulated to members of E(ST).

John

JOHN W FAIRCLOUGH
Chief Scientific Adviser

DRAFT LETTER FROM NO 10 PRIVATE OFFICE TO SIR FRANCIS TOMBS

Thank you for your letter to the Prime Minister. It will be drawn to her attention when she returns from holiday. She will no doubt wish to respond after considering the full comments from ACARD on the Annual Review.

Yours sincerely

File SR
cc BG
SL HAMM

10 DOWNING STREET

LONDON SW1A 2AA

From the Private Secretary

MR. FAIRCLOUGH
CABINET OFFICE

ACARD COMMENTS ON THE 1987 ANNUAL REVIEW OF GOVERNMENT R&D

Thank you for your minute of 30 July to the Prime Minister. I can confirm, as I told Cathy Cunningham that I see no difficulty with your circulating ACARD's comments to members of E(ST). I am sure the Prime Minister would also be content for you to coordinate the preparation of the Government's response through E(ST)(O).

I am copying this minute to Trevor Woolley (Cabinet Office).

MARK ADDISON

5 August 1987

10 DOWNING STREET

LONDON SW1A 2AA

THE PRIME MINISTER

4 August, 1987.

Dear Sir Francis

Thank you for sending me ACARD's Comments on the 1987 Annual Review of Government Funded R&D.

The views of the Advisory Council will be considered carefully by the Government and I shall ask that a response is prepared later in the year.

I have welcomed the advice ACARD has submitted on the Annual Review over the past four years and I am grateful to you and your colleagues on the Council who have contributed to the wide ranging analyses of Government R&D.

I look forward to receiving advice from ACOST on priorities for science and technology.

Yours sincerely

Margaret Thatcher

Sir Francis Tombs

10 DOWNING STREET
LONDON SW1A 2AA

From the Private Secretary

SIR ROBERT ARMSTRONG

1987 Annual Review of Government-Funded Research and Development

The Prime Minister has seen your minute of 31 July. She agrees that the Review should be published.

(MARK ADDISON)

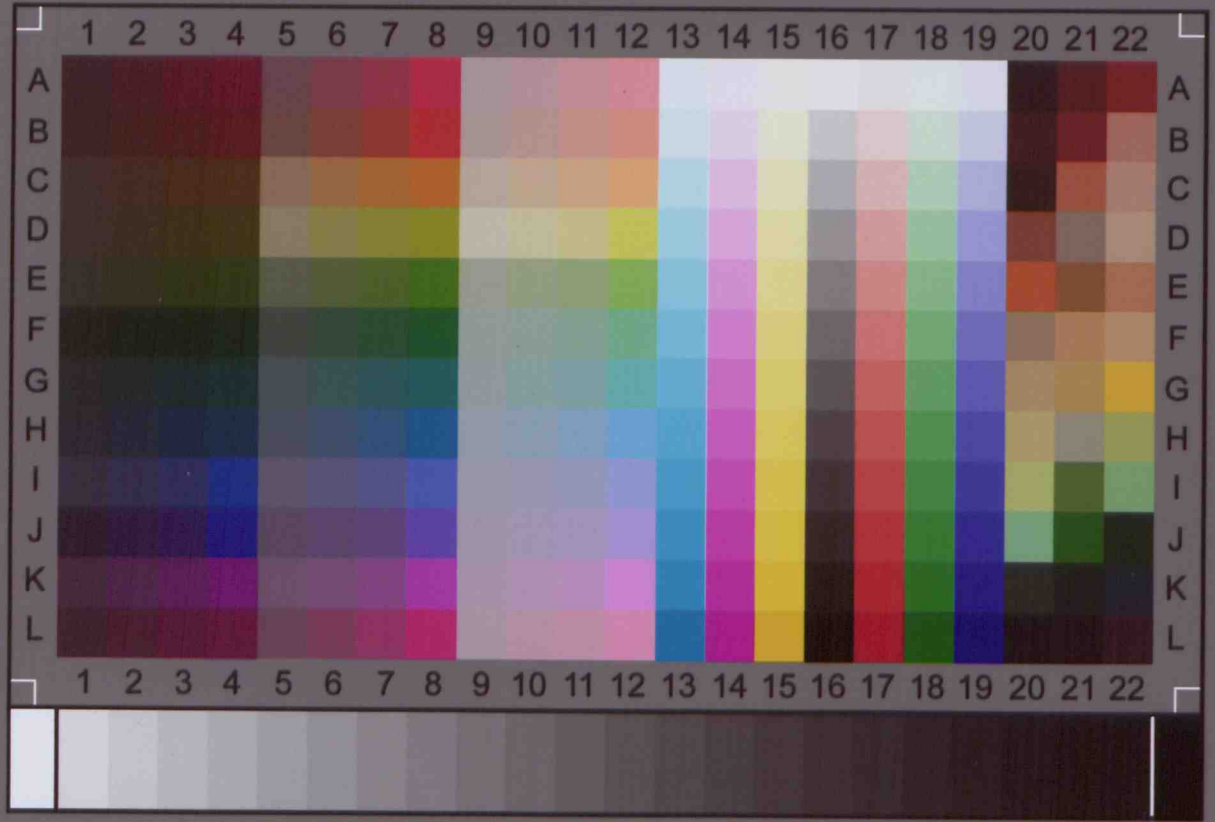
3 August 1987

PART 4 ends:-

RTA TO PM 31.7.V7

PART 5 begins:-

MEA TO RTA 3.V.V7



IT8.7/2-1993
2009:02

Image Access

IT-8 Target

Printed on Kodak Professional Paper
Charge: R090212